



Decent work indicators for agriculture and rural areas: conceptual issues, data collection challenges and possible areas for improvement

C. Oya | SOAS – University of London | London | United Kingdom

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ABSTRACT

This paper aims to achieve three main objectives. First, to assess the relevance of concepts and indicators of Decent Work (DW) for rural areas and employment in agriculture, especially in low-income countries, where coverage, data availability and reliability are particularly problematic. Second, to examine some of the main reasons for the lack of data on DW for rural areas and agriculture, particularly with reference to problems with data collection, such as: the scarcity of employment-focused surveys; sampling challenges that lead to some categories of the working poor to be missed out or under-represented; questionnaire design issues; challenges in survey implementation from selection to training to supervision of interviewers. Third, the paper proposes a selection of more relevant indicators as well as some ways to improve data collection and their quality to better capture the realities of DW, especially in low-income countries (LICs). In this regard the paper presents options for the integration of DW indicators in existing national agricultural surveys, noting the main practical challenges and possible solutions.

PAPER

1. Introduction

This background paper aims to achieve three main objectives. First, to assess the relevance of concepts and indicators of Decent Work (DW) for rural areas and employment in agriculture, especially in low-income countries, where coverage, data availability and reliability are particularly problematic. Second, to examine some of the main reasons for the lack of data on DW for rural areas and agriculture, in terms of problems with data collection, particularly: the scarcity of employment-focused surveys; sampling challenges that lead to some categories of the working poor to be missed out or under-represented; questionnaire design issues; challenges in survey implementation from selection to training to supervision of interviewers. Third, the paper will attempt to propose a selection of more relevant indicators as well as some ways to improve data collection and their quality to better capture the realities of DW, especially in low-income countries (LICs).

The first Section of the paper focuses on three problems and tensions in the implementation of a DW agenda in developing countries and especially in the measurement challenges this agenda raises. By looking at the available lists of Decent Work Indicators (DWIs), their conceptual origins, their availability from existing data repositories, ideas about alternative indices, debates about their applicability to different contexts, and a critical appraisal of the quality of what is available, this section highlights three basic problems with DW concepts and indicators:

1. Context specificity is important for relevance of concepts and indicators. A long and rigid list of DWIs may reflect aims for universalism and the imperative of international comparability. However, while all dimensions DW are desirable, not all indicators are relevant and applicable to all contexts, so there is an external validity problem if an extensive list of DWI is used. As a result, there is a danger of focusing on too many indicators/dimensions many of which suffer from very poor coverage in terms of countries, i.e. some countries with only a very limited set of available data for some very broad background indicators for economic opportunities (employment rates, for instance).
2. Many of the available indicators in several low-income countries, especially in Africa, are basic employment indicators that serve as 'background information' (how many people are active, or employed in rural areas, or the employment rate) but do not provide any indication of 'quality' and key indicators of quality (returns to labour, frequency of employment i.e. underemployment rates, non-wage conditions, etc.) are often missed from agriculture/rural datasets. Especially in agriculture a proper measurement of overall working conditions (including quality job aspects) is crucial. In this sector, the employed population tends to have specific employment conditions which tend to be structurally different from other economic sectors. Standards DWIs might therefore result inadequate to measure job quality in agriculture.
3. Generally the quality of available labour statistics for rural areas in developing countries, especially

in low-income countries (LICs) in Africa, is very poor and may contain biases that would require some rethinking of survey design issues as explored in more detail in Section 2 of this paper.

The scarcity and low quality of labour statistics for agriculture and rural areas stem from two main factors:

- (a) Scarcity of employment-focused surveys, since labour force surveys (LFS) are not sufficiently frequent or not focused on rural areas, and most household budget surveys (HBS) cover too many topics, contain extensive and time-consuming modules on consumption, and are focused on welfare indicators (education, health, consumption) rather than on employment and earnings;
- (b) Inadequate survey design to capture the realities of rural employment, especially in LICs, including sampling and non-sampling problems.

Section 2 of this paper discusses some of these problems, especially issues of survey design. It also proposes a number of possible areas for improvement, in relation to the most suitable DWI as well as to survey design options. The main alternatives would require:

- 1. Some more selectivity in DW indicators, i.e. trying to focus on a smaller but more relevant set of indicators, including some that are not currently being collected (for example, detailed data on returns to labour, whether self- or wage-employment, as well as more precise measures of underemployment and occupation multiplicity/multiple job-holding).
- 2. Better survey designs for greater rural employment focus, including longer modules on DW indicators, alternative sampling methods, better design of questionnaires and questions, and far more training and supervision of interviewers and data collectors.

The paper will particularly focus on the types of countries that are more affected by the scarcity and inadequacy of rural labour statistics, namely low-income countries, especially in Africa. There will be therefore more use of examples from Sub-Saharan Africa, in order to better inform pilot exercises in Burkina Faso and Togo, coordinated by FAO in collaboration with the ILO.

2. From concepts to indicators: the meaning and measurement of DW in rural areas

This section offers an overview of some conceptual issues, how the concept of 'DW' has been built and the dimensions attached to it, as well as some tensions between its holistic character and its applicability in a wide range of contexts and situations. It will be argued that its applicability is variable across contexts and that many dimensions of DW indicators may not be fully relevant or feasible in LIC contexts, where agriculture represents the main source of livelihood (as own-account or wage work) and most people reside in rural areas. This section will particularly focus on dimensions of quantity (measures of employment and underemployment for different types of employment) and quality (especially on returns to labour and non-wage benefits).

Based on work previously done at FAO (ESS)-ILO, and on knowledge of existing databases (ILOStat as an international repository of various national sources, and FAO-RIGA databases, which are based on LSMS¹ datasets) a broad assessment of data availability will be provided and some priorities suggested. This section is organised around a number of themes and main arguments, some related to conceptual questions and some more strictly linked to data issues, as summarized below:

- a. In the absence of a simple and universal definition of DW, the choice has been to conceive multiple dimensions, but without a clear sense of what is most important or relevant for different contexts. Some of the dimensions and DWI, while desirable in themselves, are only applicable to particular labour markets and country contexts. As a concept, DW, should work in different contexts, but a rigid set of dimensions may not make the concept internally and externally valid.
- b. The evidence base is weak, especially because of problems of data availability and coverage, especially for LICs. The majority of indicators available are basic labour market indicators, or what can be considered 'background' employment information, i.e. the DW pillars of 'socio-economic context' and 'employment opportunities'.
- c. The second concern with regards to data problems is that what is available is not always reliable because some of the most conventional indicators may suffer from biases. It is the case of the distinction between 'self-employment' and 'wage employment' and the quality of data on returns to labour.
- d. Conceptually and statistically, an important challenge is the fact that occupation multiplicity (when a person combines two or more jobs) and underemployment are pervasive realities in many LICs and especially in rural areas, but they are not sufficiently captured by official statistics, because of reliance on problematic notions of 'main occupation' and the way 'employment status' is conceptualized and measured. An implication is that statistics of employment status are often problematic, as a result of the above, and rural wage employment is frequently underestimated and limited to a particular set of wage

¹ Living Standards Measurement Surveys.

jobs (typically more formal and stable).

The concepts and definitions of DW have gone through a lengthy period of development and operationalisation. The ILO has developed a set of guidelines and a working definition that has been evolving in the last 10 years. DW has been broadly defined by the ILO as being productive work for women and men in conditions of freedom, equity, security and human dignity. The definition rests on basically four pillars, namely employment creation and enterprise development (Pillar I); social protection (Pillar II); standards and rights at work (Pillar III); and governance and social dialogue (Pillar IV). The most challenging task has been to operationalize the concept in all its dimensions through a series of indicators. Only in 2012 a manual² for concepts and definitions was published (and further developed in ILO 2013a), although many years before a substantial literature on 'DW' and its measurement had been generated (note, in particular, the special issue of the *International Labour Review* in 2003). This reflects the difficulties in achieving a universally applicable set of concepts as well as in finding a sufficiently robust set of indicators. In this respect, according to Sehnbruch et al. (2015), the concept of DW has been less successful than the UNDP-linked concept of human development for various reasons. First, it is not sufficiently embedded in a long and well established theoretical tradition that has had great impact on development thinking (i.e. Sen's capability approach). Second, complex and sophisticated dashboard indicators such as those proposed for DW are harder to communicate and diffuse than methodologically simple and easy to understand indices, such as the UNDP HDI, despite its unavoidable reductionism. Third, these authors also rightly suggest that the 'empirical operationalization of the DW approach is probably its biggest sticking point' and reflects the challenge of finding consensus about a simple synthetic indicator because of the tripartite nature of the main promoting organization, the ILO³. Furthermore, these challenges compound the already perceived neglect of employment issues in the international development agenda (besides an ex-post inclusion of 'DW' under MDG1b), while the new proposals for Sustainable Development Goals do not advance a significant improvement in the visibility of the DW agenda⁴.

2.1 Too many indicators and dimensions? The applicability of the DW concept to rural employment in LICs

The process of conceptualization and measurement development around DW has led to the proliferation of indicators, which try to encompass its various dimensions. The current list of DW indicators includes 4 pillars and 11 dimensions. Each dimension contains a number of indicators, some about basic background information on employment (like employment rates) and some more specifically focused on questions of employment 'quality'. The list is long, with 60 indicators (see ILO 2012 and 2013a for a full explanation of these dimensions and each indicator). The dimension on 'economic and social context', including 12 indicators, provides very general background statistics, such as inflation rate, labour share of GDP or GDP per capita or some education variables. The dimension on 'employment opportunities' includes 11 indicators, most of which are general background employment indicators (such as active population, labour force participation, employment rate, unemployment rate and so on). The other dimensions (adequate earnings, working time, work to abolish, stability/security, etc.) are more focused, contain a smaller number of indicators and are more relevant to issues of employment 'quality' so, in a sense, many of the indicators in these dimensions should be critical for a good measure of DW deficit⁵. These are in fact the kinds of indicators that are often quoted in relation to DW deficit in OECD countries.

In sum, this long list includes all indicators that would be desirable for a full picture of DW situation, including general and specific aspects of employment as well as quantity and quality indicators. The problem is that some indicators, despite universal commitments to DW, may not be relevant across widely different labour market contexts, where employment realities reflect varying levels of economic development, productive structures, social structures and institutional development. For example, the unemployment rate is an important indicator of labour market performance, but it loses meaning and significance in poor countries where most people cannot afford to be unemployed due to the absence of any social protection system⁶. It is therefore not surprising that most LICs and indeed many countries in SSA register relatively low unemployment rates in their single digits, especially in rural areas (Baah-Boateng 2013).

² Decent Work Indicators; Concepts and definitions. Available at http://www.ilo.org/wcmsp5/groups/public/---d-greports/---integration/documents/publication/wcms_229374.pdf.

³ Although the ILO is the driving institution and the hub for the development and implementation of the DW agenda, this has also been appropriated by the UN system more broadly as reflected in the commitment of the 2005 World Summit of the United Nations General Assembly later reaffirmed in July 2006 at the high-level segment of the substantive session of the United Nations Economic and Social Council (ECOSOC).

⁴ DW is diluted in its joint inclusion with sustained economic growth in just one of the 17 Goals. See Goal 8 <https://sustainabledevelopment.un.org/sdgsproposal>. It is also true that the multiplication of goals and instruments make most goals less visible than in the original MDG agenda, so 'DW' is not the only victim of this proliferation of goals.

⁵ The notion of 'deficit' attached to DW can be inferred from the indicators given their wide range. So, for example situations with higher incidence of child labour, more under-employment, or more excessive working hours, higher proportion of low earnings, higher proportion of working poor, less union density, more occupational hazards, higher gender wage gaps or higher rate of precarious employment could all be interpreted as contributing to DW 'deficits'.

⁶ Unemployment rates are typically low in very poor LICs and especially in rural areas compared to urban areas, despite the obvious fact that rural working conditions are generally less decent than urban ones.

Attempts to construct rankings on the basis of even smaller sets of indicators are fraught with problems precisely because of the different relevance of these indicators to different contexts. For example, the special issue of the International Labour Review 142(2) in 2003 included a number of articles proposing DW indices, based on selected indicators, which could help classify countries according to DW deficit. One of these attempts, by Bescond et al. (2003), selected 7 indicators and devised a method to rank countries with the use of the trimmed mean of available indicators (meaning that the two extreme values are dropped). Different country indices would therefore be based on different sets of indicators. While the overall ranking made some sense since richer countries scored better than poorer developing countries, there were anomalies such as a relatively high ranking for Tanzania compared to countries like Mauritius and Spain. The main reason for this anomaly was precisely the low unemployment rates in Tanzania and low female-male labour participation rate gaps, which reflect the fact that most people, including women, simply cannot afford to be unemployed or inactive. It is however hardly plausible that the DW situation in Tanzania is better than in Spain and Portugal. In a nutshell, if understanding DW deficit in Denmark requires 40 or 50 indicators because of the nature of labour markets and social and employment structures there, this does not mean that the same indicators should be applied to Burundi for the sake of international comparability. Insufficient coverage and too many missing values already make international comparability very difficult⁷.

These examples and a close inspection of the applicability of several DW indicators to situations of informal, irregular employment and absence of social protection systems, underscores the importance of context specificity to analyse labour market performance and the problems with approaches that seek universal concepts and indicators and give primacy to international comparability. Many of these dimensions and indicators may be desirable in themselves but not applicable to some contexts. Some may be non-negotiable as is the case of the core labour standards, namely (a) no child labour, (b) no forced labour, (c) freedom of association and right to collective bargaining, and (d) no discrimination (across various dimensions). A DW agenda cannot ignore these even in poor countries, as it is a rights-based framework and, despite operational difficulties to enforce some of these rights, the effort to measure them cannot be avoided. The question is what other indicators are most suitable and relevant, knowing what is available, what data are collected with more reliability and what relevant indicators are missing in order to build a more realistic and effective DW agenda for rural areas in LICs.

2.2 What is available and from what sources?

A simple inspection of the available data in specialized international repositories like ILOSTAT-KILM shows that many of the available indicators in most low-income countries, especially in Africa, are basic employment indicators that serve as 'background information' (how many people are active, or employed in rural areas, or the employment rate) but do not provide any indication of 'quality', as key indicators of quality (returns to labour, employment below a desired capacity i.e. underemployment rates, non-wage conditions, etc.) are often missing from national agriculture/rural datasets.

A recent exercise conducted by staff at the FAO-ESS department tried to assess the coverage of 26 selected basic DWIs worldwide⁸. The assessment of available DWIs was based on the collection and classification of indicators according to data sources (ILO-STAT, World Development Indicators and World Trade Organization Statistics), availability/coverage, and disaggregation of data. Approximately 66 percent of the total DWIs for rural areas fall under Pillar 1 (employment creation), i.e. basic background information on employment for indicators such as employment ratios, total employment, unemployment rates, or labour force participation rate. Although important for the first pillar of DWI, these indicators only provide a very superficial picture of the DW deficit in a country and say little about the quality of actually existing employment.

In the main international repository for labour statistics (ILOSTAT and KILM), the coverage of the indicator for employment status, which is essential to distinguish between self-employed and wage-employed, is limited, particularly at a disaggregated level (rural vs urban). For example, for all African countries, most of which are low-income, employment status data are available for 73 percent of countries at aggregate level but only for 24 percent for rural areas (Table 1). For another sample of 7 non-African LICs, 4 out of 7 have aggregate statistics for employment status but only one of these 4 countries has disaggregated data for rural areas. In addition, some countries have disaggregated rural/urban information for wage employed people, but coverage is limited because the surveys these are based on are youth-focused only⁹.

Recently, the ILO has been committed to collecting youth DW related statistics through dedicated LFSs, namely school-to-work transition surveys (SWTSs)¹⁰. Such surveys, administered in more than 25 countries (both developing and in transition), were designed on the basis of the ILO statistical framework. The ILO project towards the collection of youth statistical indicators represents a first

⁷ The MDG agenda included the target 1b 'Achieve full and productive employment and decent work for all, including women and young people' but this in practice did not translate into a single indicator of DW with comparable data for all countries.

⁸ An internal working paper with this material will be published soon. I had access to early drafts.

⁹ These were school-to-work surveys, and thus they had a very specific purpose when they were conceived.

¹⁰ http://www.ilo.org/employment/areas/WCMS_234860/lang-en/index.htm.

attempt to expand labour market information for the world of youth, including information on rural characteristics of the labour market. Indicators collected through these surveys are in general well-suited to inform about urban labour market difficulties faced by youth in the transition from school to work. Nevertheless, labour market indicators for rural areas may require context-specific information whose reliability might be undermined if collection is done through a standardized labour module, as generally designed for urban areas.

Table 1: Employment status –availability by number of countries (Africa)

Availability	(number of countries)	%
<i>For rural</i>	43	73%
<i>Overall aggregate</i>	14	24%
<i>Total</i>	59	100%

Source: Own elaboration from ILOSTAT data

Most of the indicators pertaining to the four pillars of DWIs that are not of a 'background kind' or related to the notion of 'employment opportunities' are missing for rural areas and agriculture¹¹. Arguably a basic indicator of DW is the level and trends in agricultural wages, an area where major DW deficits are found. A recent check in ILOSTAT database showed that only 7 out of 59 African countries, and only one out of 7 non-African LICs, have data for agricultural wages. Disaggregated wage data for rural/urban strata are even scarcer, which shows the extent to which a key measure of DW is missing from available official datasets. Although this indicator is not directly included in the list of priority DWI prepared by the FAO-ESS paper, it should be considered of high priority. This is because the working poor in many LICs may be more dependent on casual wages in agriculture so information about their levels and trends is critical for any assessment of DW deficits in rural areas (Oya and Pontara 2015). Likewise, information on the incidence of migrant and seasonal/casual employment is virtually non-existent in Africa and most LICs in international data repositories (WB, ILO, FAO) but in some cases could be potentially calculated from HBS and LFS when available and if employment modules include questions on time-use. The shortage of statistical information for basic DWIs in agriculture/rural contexts is therefore alarming. Knowing the degree of underemployment is also probably a priority in contexts where full-time permanent employment is the exception and irregular employment the norm. However, a simple inspection of available statistics in ILOSTAT-KILM shows that in SSA there are only 6 countries with some data, only at aggregate level. And even for these countries the reliability is dubious since most have very low levels of recorded underemployment, i.e. below 10 percent of recorded employment, which is not particularly plausible (e.g. less than 4 percent in Zimbabwe in 2004). Again, this indicator can be estimated for some countries where HBS and LFS produce time-related data, but it cannot be assumed to be available whenever a HBS or LFS is accessible.

Most of the data available are derived from Population Censuses, which are low frequency (typically every 10 years), Labour Force Surveys (LFS), which are relatively scarce especially in LICs, and, in the absence of these sources, what can be calculated from Household Budget Surveys (HBS) that collect some basic information on employment. One problem with LFS and HBS, as noted in the FAO-ESS paper, is that 'while LFSs cover a wide array of DW related issues, they may exclude the agricultural sector... [HBS] usually fail to provide detailed statistics on all the pillars of the DW Agenda' (p. 19). Also, only a fraction of countries are covered and sometimes with low frequency, so data may be easily out-of-date.

In sum, a major challenge is the scarcity of 'rural employment'-focused surveys in most low-income countries and generally in many developing countries. This is partly because of scarcity of LFSs, because agricultural surveys are essentially focused on production and land statistics, and because other national household surveys are focused on consumption and social welfare indicators (LSMS-type surveys, household budget surveys – HBS –, Demographic and Health Surveys – DHS – to name the best known). This means that (rural) employment issues have been basically falling between the cracks and explains the large number of missing values in international data repositories for employment statistics. The other major challenge is that not all the indicators available are sufficiently relevant/applicable to LIC contexts whereas key DWI seem missing, as will be argued in the next section.

2.3 Are the available rural employment data sufficiently reliable and relevant?

Generally the quality of available labour statistics for rural areas in developing countries, especially in low-income countries (LICs) in Africa, is very poor and may contain biases that would require some rethinking of survey design issues, as explored in more detail below¹².

¹¹ Detailed information on the pillars and different dimensions of the DW measurement framework can be found in the ILO manual (2013a) - Available at: http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_223121.pdf.

¹² See Jerven (2013), who also provides compelling evidence of the unreliability of basic macroeconomic indicators

There are also issues with relevance. The discussion of multiplicity of DWI in the previous section argued that some of the key indicators of the labour market are not particularly appropriate or useful to understand labour market performance especially in rural settings of poor countries. The World Bank seems to agree with this argument: 'the typical indicators of labour force participation (for example, the employment-to-population ratio, the unemployment rate, main occupation and sector of activity) derived from the standard questions about the "main activity" are generally inappropriate to capture employment patterns such as these which tend to be significantly more complex' (emphasis mine)¹³. Thus it is not surprising that unemployment rates vary enormously across developing countries, even within Africa (particularly comparing Southern African countries with the rest of SSA), thereby reflecting problems of applicability and data collection¹⁴.

There are other indicators like employment status, which establish rigid categories, which may work in contexts where a single well-defined (and regular) activity per individual dominates, as in developed countries, but are less reliable to describe the complexity of rural employment, where there is typically occupation multiplicity, seasonality, irregular employment and generally substantial heterogeneity of rural livelihoods. This has been captured by an abundant literature on the 'rural non-farm economy' (RNFE) (Reardon 1997; Davis et al. 2010), but diversity and multiplicity of roles also happens within agricultural activities. In this sense, as will be argued in more detail in section 2.3.3, and especially but not only in SSA, an activity that is often badly captured is rural wage employment, especially agricultural wage employment.

Part of the problem with relevance and reliability lies in the applicability and operationalization of the most basic definitions. By 'employment', or what the World Bank has recently called 'jobs' (World Bank 2012), statisticians and data users usually mean 'work performed for pay or profit', which can be remunerated in a variety of ways, in cash or in kind¹⁵. Some analysts call this a 'market oriented' job, because there is some market transaction involved, but the participants in the transaction can be of many different types and contracts may vary widely (Belchamber and Schetagne 2013)¹⁶. To be sure, there are many types of work that are not explicitly remunerated in any way, but the boundaries between existing categories of 'work' are sometimes blurred, especially in the rural areas of poor countries. What the ILO now calls 'unpaid trainee work' (Belchamber and Schetagne 2013),¹⁶ for instance unpaid apprenticeships, are in fact very precarious, and common, forms of employment in the so-called 'informal sector' (more below), since the skills and knowledge acquired by a trainee could be classified as a 'wage'. Moreover, an activity that generates goods that may have a market value but that are consumed within the household can also be considered and is indeed normally considered 'employment', as in the case of what is called 'subsistence agriculture'. Nonetheless, in reality most rural people, even the poorest, have some engagement with markets (output and factor markets) so it is really hard to find purely 'subsistence' households.

Definitions of categories for employment status are also harder to operationalise in poorer countries, particularly for 'wage employment' and unpaid 'contributing' family workers. The notion of 'wage employment', and more generally the 'wage contract', may seem obvious in most countries in the world, and defined by ILO statistical conventions where an employee-employer relationship is assumed, but is actually hard to properly operationalize in rural areas of developing countries, especially in poor countries, characterized by widespread poverty, casual work and occupation multiplicity (section 2.3.3). There may for example be disguised domestic workers also classified as 'unpaid family workers', if there is no explicit cash remuneration and there is some family tie with the worker. There may also be many young people who 'help' in the household farm but also engage in multitude of other casual remunerated activities but are classified as 'unpaid family workers', a category that absorbs a very large proportion of the reported employed population in most LICs.

The key prefix 'rural' attached to employment is not without its challenges either, particularly when comparing countries at very different levels of development and with very different labour structures. Many studies on rural employment in low-income countries tend to take the 'rural' for granted. Researchers sometimes forget that the boundary between the rural and urban differs widely particularly when demographic criteria are used. For example, the cut-off point ranges from 200 inhabitants in Denmark to 50,000 in Japan, and two neighbouring African countries like Senegal and Guinea use very different cut-off point to define urbanity (10,000 and 1,500 respectively) (Dirven et al. 2011). Moreover, in the real world of households and individuals, often characterized by substantial intra-annual and intra-household mobility the rural-urban boundaries may be even more blurred (Bremen 1996). Lerche (2010)

in Africa, like GDP, often used in econometric analysis, and documents the major challenges faced by national statistical agencies to produce enough and good-quality data on various aspects of development.

¹³ See website at <http://go.worldbank.org/KAI66PHUY0>.

¹⁴ See Luebker (2008b), for an illustration of this point in the case of Zimbabwe. He shows that, in Harare, almost one half of those considered employed by ILO definition thought of themselves as unemployed. See also Bah-Boateng (2013).

¹⁵ The 19th ILS conference defined work as 'any activity performed by persons of any sex and age to produce goods or to provide services for use by others or for own use'. http://ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_230304.pdf.

¹⁶ See also ILO (2013b) at http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/event/wcms_175150.pdf.

and many authors writing on labour in India focus on the increasing fluidity of employment patterns straddling the urban-rural divide. In China this is a particularly important issue, as the rural-urban interconnections are as important to understand household and individual patterns as what happens within defined 'rural' areas (Zhang 2015). While multiple occupations can be found in 'rural' areas, typically 'rural' occupations like agricultural wage employment may also attract urban-based workers, for example in Latin America, as shown by Ortiz (2015) in relation to both coffee and citrus harvesters who live in town and cities not too distant from the farms. And there are plenty of other examples. The point is that it may be increasingly difficult to define employment and DW in terms of their 'rurality' and this may lead to a greater focus on sector- or activity specific employment indicators beyond the rural-urban divide. The next four sub-sections extend this discussion to four central questions:

- a. Centrality of seasonality and irregular rural employment in LICs.
- b. Whether notions of 'formal' and 'informal' would help us capture DW deficit in rural areas of LICs.
- c. Neglect and statistical invisibility of rural wage employment, especially in African countries.
- d. Challenges in capturing the employment features and DW deficit of small-scale producers.

2.3.1 The irregularity of rural employment

A key challenge in the application of DW concepts and indicators is the fact that most employment in rural areas tends to be irregular, or does not conform to the patterns typically associated with 'permanent' or 'regular' employment (the latter, for example, is the preferred term in the Indian context for workers with permanent contracts who work full-time)¹⁷.

Employment status categories (e.g., paid employee, own-account worker, employer, unpaid family worker, and so on) derive from the 'labour force approach', which is usually linked to notions of wage employment that are primarily relevant for developed countries and designed to contribute to national account statistics and unemployment figures (Standing 2006; Breman and van der Linden 2014). Breman and van der Linden (2014) link this approach to the notion of 'Standard Employment Relationship', i.e. regular salaried employment subject to regulations and a variety of forms of protection. At least, this is the way many national statistical agencies, the interviewers they hire and many respondents tend to interpret the concept. The concept needs to be carefully operationalized with a broad enough definition and the consideration of a variety of scenarios. Section 3.2 on questionnaire design explores this.

When the norm is irregular, seasonal and casual employment, i.e. a vast majority of rural people do not depend on one full-time activity with high frequency (duration in terms of months of work and frequency as hours per week), their livelihoods in reality hinge on two basic aspects of work:

- a. The effective number of 'days' (8-hour equivalent days) they manage to work in any given calendar year with explicit or implicit remuneration (i.e. both returns to self-employment and to wage employment in cash or in kind, including self-consumption).
- b. The explicit or implicit returns to those activities (per day of work).

Therefore, in these contexts, the big issue is time-related underemployment, which is perhaps one of the most relevant and useful DWI for rural areas in LICs. One of the main reasons for underemployment (as one key element of labour underutilization¹⁸) is seasonality of agricultural activities, which tend to dominate many rural settings despite the increasing rise of non-farm rural incomes (Davis et al. 2010 and 2014). In contexts of low-technology, low-productivity agriculture, most agricultural activities are highly seasonal, at times erratic, because of their reliance on vagaries of weather, and uncertain in terms of returns, due to high risks of crop failure or low productivity. In the case of semi-arid areas in Africa, the agricultural season may not last more than 4-5 months, from the time of land preparation to the harvest, with slack periods in between. Apart from the uncertainty of natural environments, farming is characterized by the fact that production time exceeds labour time to respect the natural rhythm of plants and animals, so employment in farming is quite different from employment in factories or in other non-primary activities, (Mann and Dickinson 1978; Bernstein 2010). These contexts thus generate obstacles for the development of capitalist agriculture and more permanent agricultural activities, and are exacerbated by the dependence on rainfed farming systems and limited availability of irrigation in most LIC contexts. As a result, rural people either remain idle without engaging in gainful economic activities or try to complement what they do with other non-farm activities. As an abundant literature has shown, the latter is the norm rather than the exception (Davis et al. 2010 and 2014; Reardon 1997). In fact, it may be the case that an individual is 'irregularly' employed in two or three different activities, but the sum of days of work accumulated in the different activities over a given year equates to almost

¹⁷ Winters et al. (2008) prefer to use the term 'permanent' or FYFT (full-year full-time) to distinguish from other forms of employment that may be 'full-year' but are only part-time or full-time but only for a period of time in a year (such as a season). Both terms 'regular' and 'permanent' are often used interchangeably.

¹⁸ The other elements are unemployment and 'potential labour force', as defined by the 19th ILS resolution. See footnote above. http://ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_230304.pdf.

a 'regular' or full-time status. In such contexts employment statistics derived from questions with short reference periods, such as the conventional 7-days, may lead to biases depending on whether the survey took place at the peak of the agricultural season or during the slack period. Therefore, a 12-month reference period is more suitable to capture the true extent of underemployment. This is why it is important to collect detailed information on effective time in work, so that distinctions can be made between different degrees of 'irregularity' and underemployment.

Pervasive underemployment and irregular jobs can happen amidst instances of 'overemployment' especially in the form of 'excessive working hours', another important DWI. Since most employment in rural areas of developing countries is not protected by labour legislation on maximum number of hours, the duration of a 'day of work' can vary widely from one job to another from one period of the year to another. This situation is particularly important at times of peak labour demand for agricultural activities, such as weeding or harvesting. Given the importance of harvesting on time, or sowing shortly after the rains, as in much of rain-fed semi-arid areas, farmers are forced to use their family and hired labour intensively, implying more than 10 hours of work per person in any given day. This can also entail the use of child labour, whether during school holidays or not. A lot of casual wage jobs in agriculture are defined in terms of tasks even when the mode of payment is daily. So, a worker will be asked to perform a task and, depending on his/her productivity. This task could take half-day or even require extra time the following day. At the same time, there are also people who work excessive hours because during certain periods of time they have to work in multiple jobs and extend the day of work to very long working hours. Thus, someone may start very early and work in the farm until midday, then go to work in the market and perhaps add another casual job later in the evening. This can be particularly burdensome for women when they combine productive and domestic/reproductive activities at times when productive activities are very demanding. In sum, a scenario of underemployment coupled with excessive hours of work (overemployment) is possible:

- a. A worker may be effectively 'active' working in agricultural tasks (as self-employed or wage employed or both) for a fraction of the year, say 120 days, which would mean 'under-employed' in that activity.
- b. However, the hours worked in some of these 120 days may be 10 or 12 or more, in which case there is over-employment or 'excessive hours of work'. The question is whether 'over-time' (rather than over-employment) is compensated or not and whether the worker would prefer to work fewer hours, which might mean less income if payment is task-based or piece-rate. All this is obviously hard to ascertain in situations where the labour relation is inherently 'informal', i.e. no contract, no hours stipulated, just tasks to be completed.

In sum, for the purposes of relevant and realistic DWI in relation to employment regularity, data on the number of effective days of work per year, for all recorded occupations would be needed in contexts where 'regular' employment is the exception. Moreover, estimates of instances of 'excessive hours' of work, which may happen in particular periods, are also important for a more encompassing consideration of DW in relation to time-use.

2.3.2 Definitions: do "formality" and "informality" help?

The irregularity of employment, multiplicity of jobs, variable hours and remuneration would suggest that this is a context of widespread 'informality'. Indeed, most of the employment in rural areas of LICs is 'informal' according to the usual definitions of informality, whether 'legalistic', scale- or productivity-based. The problem is that the dichotomy formal-informal means different things to different people and is defined and operationalized in multiple ways (Maloney and Arias 2007 – in Perry et al., chapter 1; Maloney 2004), and may create problems of applicability to diverse contexts as it happens with some DWI. Sometimes, the nature of the labour contract is emphasized, whether workers have formal contracts, receive benefits or pay taxes, for example. Other times, 'informality' is equated with the type of employer and especially its scale of operations, so a 'shortcut' is devised whereby enterprises are considered 'informal' if employing less than 10 workers and thus these workers may be classified as 'informal' by virtue of the scale of their employers rather than the nature of their labour relation. This can create biases insofar as there is a possibility of small-scale operators (especially in services) that may formally employ people and be 'formal' in the legal sense.

The ILOSTAT-KLM statistical repository only includes 18 countries in SSA with some data, often dated, on the proportion of informal employment in non-agricultural employment at aggregate level and in some cases coverage is limited to urban areas or to the capital city. This type of information is almost impossible to find in these compiled databases for rural areas and agriculture. The ILO technical notes point out that 'information for the indicator is often based on national definitions and users are advised to review definitions carefully when attempting to assess country comparisons', so there does not seem to be one universal definition in use. There are multiple layers in the definition and therefore multiple choices for national agencies to opt for one or a different combination of elements. The ILO combines categories of employment status with the 'legalistic' definition of their labour relations, and the type of employer ('productivity' definition), but has moved towards the 'legalistic' definition, focused on the nature of labour relations and contracts, to accommodate situations in which the employment

relation is 'informal' even if it happens within 'formal' units¹⁹. This combination of layers of formality creates multiple situations of 'informality' as illustrated by Maloney and Arias (2007). In some cases a combination that is adapted to a country context may result in a definition that is more operational but that excludes some groups. For example, in India informal work/employment (clearly distinguished from 'informal economy' and the 'informal sector') is defined as: 'Unorganized workers consist of those working in the unorganized sector or households, excluding regular workers with social security benefits provided by the employers, and the workers in the formal sector without any employment and social security benefits provided by the employers' (NCEUS 2009: 3). The inclusion of formal sector workers who do not enjoy the benefits of formality is important. The 'unorganised' sector is defined in relation to ownership (individuals and households) and scale (less than 10 workers), including 'all agricultural activities undertaken on agricultural holdings', quite a common option in most developing countries, where 'informality' is restricted to the nature of the employer and its scale.

Although knowing the extent to which an employment relation is 'informal' or takes place in an 'informal' setting may be useful, the applicability of the different definitions creates its own problems. In fact, the rigid guidelines applied make the concept of 'formal' largely irrelevant to the agricultural sector in LICs, especially when casual wage work and what is called 'subsistence agriculture' (more precisely 'own-use production work') dominate. However, this does not mean that there may not be employment that conforms to some of the definitions of 'formality', i.e. large-scale plantations where some workers may be deducted taxes on their pay, who have written contracts, albeit temporary, and where some statutory benefits (sick leave, annual leave, etc.) are available (Wendimu and Gibbon 2014, for an application in an Ethiopian context).

Given the challenges discussed above, leading authors like Breman (2006) and Wuyts (2011) have questioned the usefulness of the 'formal'-'informal' distinction and especially its inconsistent operationalization across contexts. They argue that what matters is knowing the dimensions and conditions that characterize a given employment and report them separately for different topics. Trying to establish an indicator of 'informality' is akin to the production of a composite DW index from the various dimensions it is supposed to encompass. As argued by Breman (2006) among others, what really matters is the nature of the employment relation or the form of work rather than the scale or productivity of the employer/producer irregular employment, no written contract, no benefits or rights, lack of formal registration, etc.).

For small-scale producers, the issue becomes even more irrelevant and complicated since they would not qualify as 'formal' either in relation to the nature and scale of the production unit (the small-scale own-account farm, for example) or to the nature of their employment (nor formally protected or registered, irregular, with uncertain remuneration, etc.). Moreover, rigid classifications may obscure a continuum of degrees of 'informality' among small-scale producers, from those with less market involvement (as sellers and buyers) to those who are primarily market-oriented producers²⁰. As Wuyts (2011) argues, the trouble is also that the application of rigid notions of 'informality' (i.e. that the self-employed are 'informal' by definition and that some 'informal' activities are therefore correspondent to self-employment) may lead to biases in the representation of employment status, inflating self-employment and underestimating wage employment (see more below in 2.3.3).

In light of these challenges and tensions, it may be advisable not to apply rigid formal-informal distinctions in the context of rural employment in developing countries, but rather focus on key central dimensions of DW and measure them properly without recourse to broad categorizations and dubious composite indices. Therefore, indicators of time-related underemployment, security, protection, registration, taxation and benefits, may be better to analyse separately and comparatively instead of being pooled and diluted in an aggregate index/classification of more inconsistent applicability, particularly when there are distinct categories of work (small producers, more or less market-oriented, casual wage workers, seasonal workers, etc.). What is at stake is their applicability to rural/agriculture contexts and not whether they can be combined in any meaningful 'reduced' composite index.

2.3.3 Rural/agricultural wage employment: biases and challenges²¹

According to the 2013 World Bank World Development Report on 'Jobs' (World Bank 2012, 6): 'a job does not always come with a wage'. In fact, Figure 1 in that report suggests that, on aggregate, employment is usually dominated by non-wage employment (a combination of own-account farming and non-agricultural self-employment). In most SSA countries and in many LICs the category of 'wage employees' category usually represents between 2 and 10 percent of the total employed population,

¹⁹ See, for instance, definitions for informal employment by the ILO, at http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_087622.pdf and <http://ilo.org/public/english/bureau/stat/download/papers/def.pdf> and http://ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/meetingdocument/wcms_223918.pdf.

²⁰ Moreover, in some cases and increasingly so small-scale producers may operate within cooperatives or producer organisations, also with varying degrees of integration, and therefore part of a different employment category beyond their degree of 'informality'.

²¹ The arguments and evidence in this section draw from Oya (2013) and Oya and Pontara (2015), which include more details.

the vast majority being classified as either self-employed or unpaid family workers, but there are some exceptions like the richest African countries as well as those located in Southern Africa (Oya 2010, Table 2). Beyond Southern African and African Small Island States the official statistical picture consistently shows very low incidence of wage employment in aggregate terms and especially in rural areas. For example, in the 2004-05 LFS in Ethiopia, a country with a large population, only 2.3 percent of rural people employed were paid employees by private companies, NGOs or individuals (including 0.5 percent of domestic workers). Anyone with some fieldwork experience in rural Ethiopia would question these figures, as wage jobs are very common and people working for wages far from a small minority. As will be argued below, the problem lies in the conventions of 'main occupation' and the way large-scale surveys are conducted.

There are important differences between regions and countries. The incidence of agricultural wage employment, in rural Africa is less than 3 percent in aggregate, compared with 22 percent of men and 11.4 percent of women in South Asia, and 21 percent and 2.3 percent respectively in Latin America (World Bank 2007). In addition, non-agricultural rural wage employment applies to only 9 percent of men and 3 percent of women in most African countries, whereas it represents a much higher proportion South Asia, Middle East and North Africa (MENA), East Asia and Latin America (World Bank 2007, 205 Table 9.2). Despite these figures, the Bank acknowledges that 'Making the rural labour market a more effective pathway out of poverty is...a major challenge that remains poorly understood and sorely neglected in policy making'.

Based on the RIGA databases and selected countries, a study by Davis et al. (2010), reporting income sources, confirms these contrasts by region and gives evidence of some large and possibly inconsistent discrepancies in findings between African countries²². In Latin American countries, rural labour market participation rates (based on questions of having worked as wage workers, not about the 'main activity') are quite high, while the three African countries considered present a very inconsistent picture in Africa: 55 percent of rural people having worked for agricultural wages in Malawi, compared to 3.7 percent in Ghana and 3.8 percent in Nigeria.

This neglect or apparent invisibility of rural wage workers is a serious challenge if we are interested in DW in rural areas. Indeed, research shows that most often the poorest rural people tend to depend more on casual wage employment (Sender 2003; NCEUS 2007; FAO-IUF 2005; Kevane 1994). A particularly problematic omission is paid domestic work, as opposed to domestic work tout court. In most countries there are either no statistics at all on this category or the values are almost insignificant as shown in the example above in Ethiopia. For example, in Zimbabwe and Botswana, 'wage employment in private households' (i.e. domestic workers) is quite a significant employment category in official statistics, at almost 5 percent of total employment in both countries (Luebker, 2008a: 32, and Central Statistical Office [Botswana], 2008: 20). In contrast, in other countries this category of workers seems invisible from official statistics. It is plausible that even in rural areas of poor countries thousands of domestic workers are employed in the houses of people employed by 'formal' enterprises and certainly in those of civil servants. It is precisely in these kinds of jobs where the potential DW deficit is greatest (see Cramer et al. 2008, for evidence from Mozambique). Hence the biggest priority should be to capture the true significance of this kind of employment in rural areas of LICs in order not to underestimate the extent of DW deficit in a country. The reasons for these low recorded levels of rural wage employment may be variegated, as different hypotheses have been considered by the literature, namely:

- a. high land/labour ratios and low population densities coupled with low productivity, which reduce the incentive to hire labour and also constrain wage labour supply (Berry 1993, Barrett et al. 2005, Mellor 2014)²³.
- b. Small-scale producers' resistance to become proletarianized and their protracted attachment to their land and own-account farming²⁴. While there is some contested evidence on this occurrence, total avoidance of market compulsion to work for wages is unlikely (Bernstein 2010)²⁵.
- c. This thesis is complemented with the idea that most labour hiring in African contexts takes the form of reciprocal labour exchange in the form of collective workgroups²⁶.
- d. The hypothesis of 'resistance' would be consistent with some evidence that households participate in agricultural wage employment because of liquidity constraints, so they may pull out and focus on

²² The RIGA (Rural Income Generating Activities) programme and database (<http://www.fao.org/economic/riga/riga-database/en/>) is an attempt to extract more detailed labour statistics and specifically wage employment data from existing national household surveys (LSMS-HBS). Davis et al. (2010) and Winters et al. (2008) report the key findings.

²³ See Oya (2013, 254 and Table 2) for a critique of this hypothesis.

²⁴ See Hyden (2006, 138-160) on the idea of 'uncaptured peasantry'. For criticisms of this position see Kitching (1989), Sender and Smith (1990), and Mueller (2015).

²⁵ See also Zhang (2015) on China.

²⁶ See Whitehead (2006) and Swindell (1985, chapter 5) for an analysis of the nature, decline and persistence of cooperative/reciprocal labour exchange and the extent to which collective workgroup may conceal disguised forms of wage labour, when reciprocity is not demonstrated and some individuals tend to benefit much more than others.

their own farm activities when improved access to social protection and/or finance reduces the need to rely on casual wage employment, such as ganyu in Malawi (Bryceson 2006)²⁷.

Among these hypotheses, one of the most convincing is that many low-income African countries still have underdeveloped capitalist sectors and have the lowest incomes per capita in the world. Historical evidence suggests that convincingly that as income per capita increases, the proportion of reported self-employment is substantially reduced (Gindling and Newhouse 2012).

However, none of these hypotheses questions the quality of data. So, a plausible alternative hypothesis is that some of this evidence essentially derives from the fact that data collection systems are inadequate and have failed to capture the significance and nature of rural wage employment, at least on the basis of more conventional questions (Oya 2013, Mwamadzingu 2003, 31; White et al. 2006; Cramer et al. 2008; Zhang 2015). This has partly to do with definition issues and their operationalization, as discussed in section 2.3 and 2.3.1 above. The reason this hypothesis is suggested is two-fold. First, the problems of reliability of rural labour market and agricultural statistics more generally have been shown through basic consistency checks, comparisons and some survey experiments (Carletto et al. 2015; Jerven and Johnston 2015; Sender 2003). Second, abundant micro-level labour surveys show a very different picture.

Various studies published in Oya and Pontara (2015) illustrate this point. For example, Mueller (2015), writing on Tanzania, finds in the West Usambaras Mountains, that around 60 percent of rural households had at least one member engaged in wage employment, in contrast with an official figure of 11 percent from national Integrated Labour Force Surveys (ILFS) in 2000/01. Around 22 percent of rural adults work for wages during the reference period of his study, compared to the 3.3 percent of waged or salaried workers in the economically active population based on the same ILFS. Although Mueller's and the ILFS methods are different and questions are not the same, the discrepancies suggest that we miss an important part of the picture of the rural labour market precisely because of how questions are formulated. Other studies (Petit and Rizzo 2015) also document the pervasive practice of agricultural wage labour, especially among the poorest households, in countries like Ethiopia and Rwanda where official estimates of the incidence of wage employment in rural areas do not exceed 10 percent²⁸. Other contributions on South Africa and Lesotho also point to the extent to which self-employment is overstated and how migrant labour is insufficiently captured (Pons-Vignon 2015; Johnston 2015). But these problems are not limited to LICs in Africa. Even in countries where labour statistics are relatively good, such as India, biases and underreporting occur, as Jha (2015) argues especially in relation to seasonal migrant labourers. In China the problems are even more serious. As indicated by Zhang (2015), one major challenge there is that 'hired agricultural workers' do not exist as an official statistical category. The use of costs of hired labour inputs is also fraught with problems (Zhang 2015), including the conflation of very diverse forms of wage employment. Rizzo et al. (2015), writing on Tanzania, argue that the limited evidence on informal employment, especially for non-agricultural activities, is largely due to many forms of wage employment being mistakenly reported as self-employment. The importance and dynamism of rural and agricultural labour markets may however be partly captured by analysing specific questions sometimes contained in nationally representative surveys, like LSMS. A recent study (Dillon and Barrett 2014), based on data from LSMS and ISA surveys led by the WB, looks more specifically and in detail at questions about hiring (employing) labour for agricultural activities. When these questions are asked (rather than 'your main occupation in the last 7 days'), a picture of important and dynamic agricultural labour markets emerges. According to this study, the incidence of labour hiring (in terms of farmers employing hired labour) ranged from 30 percent in Ethiopia to almost 50 percent in Niger, for a sample of 5 countries and various agricultural operations. This shows that LSMS-type surveys can potentially be used to extract this kind of information as long as employment modules contain the relevant questions.

To account for the discrepancies between official statistics and micro-level survey evidence as well as with qualitative research, methodological problems in data collection must be debated. This will be done in more detail in the discussion of survey design (Section 3). In previous research (Oya 2013), I have suggested four reasons why rural wage employment data are unreliable and scarce in most of Africa and many other non-African LICs:

- a. Lack of labour force surveys (LFS) focusing on the rural sector and small-scale enterprises;
- b. Growing marginalization and simplification of questions on labour and employment in nationally-representative household surveys (HBS), which are unsurprisingly biased towards the collection of consumption data for poverty indicators;

²⁷ However, this may apply in relation to the worst forms of casual wage employment in agriculture, which may be seen as 'last resort' but (a) not all forms of rural and agricultural wage employment are of this kind and (b) the likelihood that access to finance and assets might improve for the vast majority of small-scale producers in poor countries is very low because governments and NGOs have limited resources to substantially expand the outreach of these kinds of interventions. There is also evidence that cash transfers programmes in Malawi relax the labour constraint faced by poorer farming households and even allows them to hire ganyu for their own farms. See <http://www.fao.org/economic/ptop/programmes/malawi/en/>.

²⁸ See also Erlebach (2006) a rare in-depth study of rural wage employment in Rwanda, which confirms the huge importance of wage jobs for the poorest rural people.

- c. Inadequacy of some statistical conventions, definitions and survey practices, some already explored in previous sections of this paper;
- e. Issues about the definition and boundaries of the 'household'.

Section 3 will discuss the last three points. On the first point, the relative scarcity of LFS in Africa and LICs can be inspected by looking at existing survey inventories at the ILO and the World Bank²⁹, especially in comparison with Latin America and Asia (Mwamadzingo 2003). Generally, since the 'poverty reduction agenda' started dominating the international aid agenda HBS of the Living Standards Measurement Surveys (LSMS) type have overtaken traditional labour force surveys as sources of basic labour data in terms of frequency (Rizzo et al. 2015; Johnston 2015). The paucity of rural wage employment data in these countries has a knock-on effect on published research, which depends heavily on the use of international repositories and data from national household surveys, so that results in scarcity of published research too. In contrast, research on small-scale farming is abundant and, yet, data are not sufficiently rich so as to capture DW dimensions to be applied to these quantitatively important but highly diverse group.

2.3.4 Accounting for decent work among small-scale producers

This section focuses on some of main methodological and conceptual challenges in the definition of 'smallholders' and in the operationalisation of DWI in the situations of self-employment in agriculture.

In many parts of SSA and many LICs, most rural dwellers have some access to land, so they are liable to be recorded as agricultural producers, given their attachment to such land. This, however, does not mean that they depend primarily on their land-based activities as much of the RNFE literature has shown. The issue is that, as a group/category, is excessively heterogeneous, even if it concentrates a significant proportion of the 'rural poor' according to much of the literature. If a survey collects enough background information about farm households or small-scale farmers at least a continuum of cases can be devised along the set of the categories below:

- a. Small (agricultural) producers who consistently employ labour and for whom the only relevant questionnaire is the module on 'agricultural production' (and sales), including information on the labour they hire, possibly obtaining relevant information for DWI. Although it is not ideal to obtain DW data from employers (in this case small-scale producers), this route may be better than failing to sample the casual workers employed by them. Relevant DWI that could be collected from this category are agricultural wages, incidence of labour market participation in poorly paid casual agricultural jobs, and non-wage aspects of the employment relation.
- b. Small (agricultural) producers who employ labour but also frequently or significantly work for others (in farm and non-farm sectors), in which case it is equally important to collect detailed information about agricultural production and wage employment. Information on wages, non-wage conditions (benefits) and time-related under-employment can be collected from this category.
- c. Small (agricultural) producers who may not or only sporadically employ labour and mainly rely on family labour and who do not work outside their farm, in which case detailed information about their agricultural production work done on the farm and agricultural sales is necessary. Here the focus of DWI data collection can be on the irregularity and levels of earnings (farm income), time-related underemployment, child labour and excessive hours during peak periods.
- d. Small (agricultural) producers or landless workers who essentially depend on their wages (agricultural and non-agricultural) and for whom the key modules would be one on wage jobs. The focus of data collection would be on the quality of jobs accessed as well as on time-related underemployment.

Small-scale producers will be normally situated along the continuum of those categories. Note that the same 'profiles' may also be engaged in own-activities in non-agricultural sectors, for which a questionnaire ought to include a specific module too. This heuristic classification serves to illustrate the fact that 'small-scale producers' as a single category may be too ambiguous and broad. To tackle this issue there are three main conceptual and methodological challenges that need to be addressed in order to better capture DW among small-scale producers:

- 1. Defining the 'smallholder' as an agricultural producer, in terms of scale, use of labour and other attributes.
- 2. Distinguishing 'smallholders' from other groups of people in the 'rural sector', especially from wage workers.
- 3. Distinguishing different classes of smallholders.

²⁹ <http://www.ilo.org/global/statistics-and-databases/lang--en/index.htm> <http://go.worldbank.org/JF4LVHJBS0>.

2.3.4.1 Defining a 'smallholder' or self-employed small-scale producer

As with other labour categories, the definition of small-scale producer may not be as straightforward as that of simply 'own-account worker' in the agricultural sector. A key issue is what is meant by 'small', as references to farm size only may result in some inconsistencies and bias.

Dixon et al. (2004), in an FAO book/report (Smallholders, globalization and policy analysis), note that 'the definition of smallholders differs between countries and between agro-ecological zones. In favourable areas with high population densities, they often cultivate less than one ha of land, whereas they may cultivate 10 ha or more in semi-arid areas, or manage 10 head of livestock. Often, no sharp distinction between smallholders and other larger farms is necessary.' The quote reflects the confusion around the meaning of 'smallholder'. The Ethical Trading Initiative (ETI) Smallholder Guidelines (2005) explicitly state that 'the definition of smallholder differs significantly according to crop, and to the social, cultural, economic and political context' (p. 13). As an alternative to definitions based on farm size the ETI opts for a definition that encompasses a number of well-established criteria whereby 'smallholder farmers' or small-scale producers:

- a. produce relatively small volumes of output on relatively small plots of land;
- b. may produce an export commodity as a main livelihood activity or as part of a portfolio of livelihood activities;
- c. are generally less well-resourced than 'commercial-scale' farmers;
- d. are usually considered as part of the 'informal economy' (not be registered, excluded from aspects of labour legislation, limited records);
- e. may be men or women;
- f. may depend on family labour, but may hire significant numbers of workers;
- g. are often vulnerable in supply chains.

These multiple criteria refer to production scale, market orientation, relative resource endowment, levels of 'informality' and labour use. These are common to many other definitions and often implicitly assumed more than explicitly stated. In relation to 'scale' a challenge is whether farm size should be preferable to farm capitalisation or business scale (e.g. annual turnover). This is particularly important in the light of bad measurement of land size in contexts of scarce resources for data collection (Carletto et al. 2015; Hannertz and Losch 2006). Moreover a particular farm size means different things depending on the crop, the technology and the production system. For example, in Ethiopia, compare a 2ha technologically sophisticated flower farm that may require US\$ 1 million of start-up investment with a cereal (teff) farm of equal size that can be started with a few hundred dollars to start up or even less. In large agricultural producing countries in Latin America, such as Argentina, the definitions are on a completely different scale. An institutional report in 2007 (Scheinkerman et al. 2007) defined 'small producers' in terms of labour use and some farm size ceilings, usually set at 500ha (!). As Berdegú and Fuentealba (2011) note in relation to Latin American smallholders, 'the "2 hectare" definition is a measure of our ignorance and not of our understanding of smallholder farming, nor of what is needed for well-designed strategies and policies'. However it is widely used in the literature (cf. Wiggins et al., 2010; Hazell et al., 2010; IFAD, 2010). Many surveys tend to concentrate on (badly) measuring land, when they could more systematically collect up-to-date data on investment and capitalization. Furthermore, given the fact that in many contexts (such as India) land can be used under multiple tenancy systems it makes sense to talk about 'cultivated land' rather than owned land.

The definition of 'small-scale' producers/farmers also hinges on data collected on labour use. Bernstein (2010) suggests that typically small-scale producers are defined as those whose farm size is determined by the availability of family labour and often conflated with the idea of 'subsistence production'. Thus in its 'pure' form, a small farmer would only use family labour on a relatively small farm, size-wise, and without selling labour in the labour market, i.e. without being a wage worker as well. The Fairtrade Labelling Organisation (FLO) also defines a smallholder as a producer who is dependent on family, as opposed to non-family, labour. However, it is well known that small-scale agricultural production heavily depends on casual wage labour inputs, and the exclusion of this category therefore introduces another serious bias in the definition (Cramer et al. 2014).

As with other labour categories, context matters also for the operationalization of definitions of small-scale farmers. The key lesson from this discussion is that surveys may start with a broad 'international' definition based on a combination of criteria (relative production scale and labour use patterns), but then will have to adapt such definitions to each context in terms of: country, crop and technology. In other words, universal criteria such as 'less than 2 hectares' or 'only using family labour' should be avoided. Surveys ought to collect more and better information on business scale (production scale, investment) and on the use of labour (whether family or hired, permanent, seasonal or casual), i.e. directly by asking small-scale producers.

2.3.4.2 Distinguishing smallholder farmers from other people in the 'rural sector'

The problems in defining 'small farmers' have an impact on the distinction between 'small farmers' and 'wage workers' in rural areas. This distinction may be problematic in rural contexts of LICs, characterized by occupation multiplicity, insofar as many smallholders could also be considered 'wage workers'. In many parts of SSA, South Asia and elsewhere, large segments of the 'smallholder population' straddle occupations between different forms of wage labour and their own-account farming, in addition to petty non-farm business. They frequently combine the 'places' of capital and labour, which makes their treatment in analytical and statistical terms rather complicated (Bernstein 2010). Whether they are more reliant on their own account farming or on wage employment is an empirical question that many household surveys fail to adequately ask and probe, resulting in biased representations of what people do in rural areas and underestimates of the incidence of rural wage labour as argued in section 2.3.3.

A couple of practical examples may help illustrate these ambiguities, which require careful survey design:

Box 1. Employment status: ambiguities and diversity. Case 1

Case 1. Border between Senegal and Mauritania, semi-arid context

Mr Diop has a 1ha farm along the bank of the Senegal river in Senegal. He combines the cultivation of a small plot of irrigated rice for commercial purposes and millet and vegetables for own family consumption and some for the market. He and members of his family travel across the border to find employment in a horticultural plantation named GDM, which employs hundreds of casual labourers on a daily basis especially during harvesting times. Diop and his family use the money obtained with their seasonal work to buy fertilizers, complement the purchase of food (some of which is cheap imported rice) and to pay for irrigation costs. Mr Diop has been a member of the state-promoted rural cooperative for the past 20 years and is now member of a small GIE (*Group d'Interet Economique*), set up by a number of wealthier farmers of the area to attract NGO funding and credit. They use the GIE also to lobby the government for more support in irrigation facilities and more remunerative marketing arrangements. None of the Diops is member of a trade union on the Mauritanian side to look after their interests as employees of GDM.

NOTE: DIOP & FAMILY COULD BE EASILY CLASSIFIED AS SMALLHOLDER RICE FARMERS, SINCE THEIR LOBBYING INTERESTS AND FARM CASH INCOME DERIVE FROM RICE FARMING AT A SMALL SCALE, BUT THEY ARE ALSO WAGE WORKERS INsofar AS THEIR EMPLOYMENT IN A NEIGHBOURING PLANTATION ACROSS THE BORDER IS CRUCIAL FOR THEIR LIVELIHOODS AND THE SURVIVAL OF THEIR SMALL FARM. **A CATEGORY SMALLHOLDER/MIGRANT WORKER WOULD BE RELEVANT TO THIS CASE.**

Box 2. Employment status: ambiguities and diversity. Case 2

Case 2. Tobacco outgrower farmer in Manica, Mozambique

Mr Bolacha is a small outgrower tobacco farmer in the province of Manica, central Mozambique. Bolacha is a Mozambican citizen and return migrant from Zimbabwe after the events of the fast track land reform in 2000. He managed to get some land in his family village and used his contacts with tobacco farming companies to obtain an outgrowing contract with one of them, farming 1.5 ha of tobacco, in addition to 1.5 ha of maize and vegetables. He also owns three cows. Mr Bolacha has invested much of his savings from years of work as farm labourer in Zimbabwe in his own-account farming. He employs family labour in his tobacco and food crop fields although his son has recently migrated to neighbouring provincial capital Chimoiio to work in private transport as a driver.

Bolacha depends enormously on the support of his tobacco buyer, in terms of credit, technical assistance and access to fertiliser. He has also joined an association of tobacco outgrowers to lobby for better contractual conditions.

Bolacha employs one permanent worker as his family labour is not sufficient, especially for highly time demanding operations in tobacco cultivation and basic processing. At the time of harvesting he also routinely employs 5-10 casual daily workers from his village and surroundings.

NOTE: THIS CASE WOULD BE CLOSER TO A SMALLHOLDER-EMPLOYER WITH TYPICAL COMMERCIAL FARMER INTERESTS AND LOBBYING NEEDS VIS-À-VIS CORPORATE AGRIBUSINESS/BUYERS. HIS PAST AS A FARM LABOURER COMPLICATES HIS SELF-REPRESENTATION AS HE SEES HIMSELF AS A 'SIMPLE HARD WORKER' AND NOT AS AN EMPLOYER.

These two illustrations show the potential for bias if the two cases are simply classified as 'small farmers' with implications for a proper understanding of DW deficit in each of these cases. Therefore, when collecting information on people who may be generally classified as 'small farmers', it is important to work with context-specific categories that contemplate the possibility of non-overlapping definitions and which would allow a more precise distinction, for example between 'small-scale agricultural own account workers' and 'people who mostly depend on casual agricultural wage incomes for their own and their families survival'. Both may have land and farm but are not affected by the same DW deficit issues.

2.3.4.3. Distinguishing among different 'classes' of small-scale producers and generating DW deficit estimates for small producers

Assuming that a distinction between categories can be established, the next challenge is to account for heterogeneity within these categories. In the case of small farmers who mostly depend on their own-account farming to live, how do we account for wide differences in assets, vulnerability, farm practices and labour relations among them? How do we account for the differences between a 'small farmer' who barely produces surplus for the market from one who is strongly commercially oriented and largely depends on markets for his/her survival with much higher returns to his/her labour and capital? The constraints they face may be different and their aspirations and priorities may also differ.

Much of the agrarian political economy literature works with such distinctions. For example, in the literature on India it is common to see a distinction between: poor (marginal) smallholders, middle farmers and richer farmers (NCEUS 2007). These distinctions may be articulated in terms of relative DW deficits. For a self-employed farmer, the key issues in terms of the quality of this employment would be:

1. Time used in the activity (given a level of farm income, less time is better than more time, and particularly avoidance of excessive hours during the peak season).
2. Returns to labour time, in terms of net returns to the farm business but including the returns to the household labour employed (Samphantharak and Townsend 2012), which requires imputing monetary values to hard-to-estimate agricultural production (Carletto et al. 2015).
3. Volatility of farm income, determined by the volatility of production, especially in contexts of rainfed agriculture, and the volatility of farm prices in the contexts of liberalization. Uncertainty and vulnerability are indeed issues that affect the DW status of small producers.
4. Assets consumed/used, new assets acquired (investment) and an estimate of returns to capital, by considering the opportunity cost of assets used (especially land) – (Carletto et al. 2015).
5. Access to producer organizations or forms of associational power that may help them manage risk and vulnerability.
6. OSH (occupational safety and health) hazards, including possible pesticide poisoning or attacks from wild animals, and availability/access to mechanisms to prevent such hazards.
7. Access to social protection mechanisms, which can enhance income security and reduce need for last-resort low-paid activities (usually characterised by high DW deficit).

Collecting accurate information on the 7 above aspects, especially on the first and the second, will provide the basis for a realistic account of DW status among small-scale producers and will allow for identification of classes of small farmers that are more severely affected by DW deficit. The challenge will be to define, if necessary, any benchmarks whereby a DW 'deficit' is established. This is unlikely to work ex-ante unless a measure of minimum returns, related to ongoing minimum wages, average agricultural wages or to the national poverty line can be accepted as suitable benchmarks to assess returns to small-scale farming. For both under-employment and excessive working hours, weekly or monthly benchmarks could be also applied if time-use is accurately measured. Whether producers access cooperatives or other forms of collective representation may be used as benchmark, but such indicator would not tell us the extent to which individual producers do benefit from or are active in these organizations. Finally, far more difficult is to find benchmarks for aspects 3 and 4. However, a maximum level of farm income volatility (as coefficient of variation), informed by knowledge of national realities, could be devised, particularly through simple questions on maximum and minimum farm incomes over different periods; also, the acquisition or not of new assets could be used as benchmark for DW deficit in relation to assets, or any evidence of asset depletion (sales, loss) as a qualitative measure. This would be however harder to operationalise. An option may also be to find a benchmark for business incomes and asset use in other sectors/areas and assess the relative distance between these and the results for agricultural producers, as a proxy for DW deficit.

Meanwhile, data for OSH are likely to be hard to find in available surveys and the range of hazards may be large, which can complicate the choice of key risks for measurement purposes, especially when hazards vary a lot from one agro-ecological context to another. Access to basic social protection measures may be relevant in some cases and not in others, but it is not advisable to miss out such possibility, since it does have an impact on DW standards.

To be sure, obtaining accurate information on the above indicators/issues is a major challenge in LICs, given the measurement problems with basic agricultural data and incomes in smallholder population settings (Carletto et al. 2015), which will be briefly discussed in the section on questionnaire design.

2.4. Towards a more relevant and operational set of DWIs in low-income countries

Based on the detailed considerations on various aspects of the relevance and reliability of DWIs in rural areas, and considering some of the specific challenges in dealing with irregular employment, 'informality', capturing wage employment and devising specific DWI for small-scale producers, this section briefly selects a set of indicators that may be more relevant to the rural contexts of LICs and contain a more consistent mix of key aspects of DW in these contexts. Considering what was said in section 2.1 on the excessively long list of dimensions and indicators, a more limited and necessarily more selective set would make operationalization easier and would also allow for a concentration of efforts and resources in improving the reliability of the data for these indicators and adding new dimensions that have not been properly accounted for. The table below shows a selection from the list of 'main' and 'additional' DWIs as devised by the ILO (2012). This is followed by a shortlist of additional indicators that do not feature in the main ILO list but are related to some of the 'main' ILO DWIs. The additional indicators would be helpful in terms of complementing and improving the evidence collected for the main DWI. They are designed to capture the particular vulnerability of certain groups of workers whose employment experience is characterised by irregularity and by the need to straddle multiple casual activities in order to survive. The incidence of employment remunerated in kind is also an indicator of precariousness and casualization. Finally, and given problems with capturing child labour a particular indicator can be added to capture child labour that is performed for pay and someone else, which is important

Table 2: DW Indicators: priority selection from available lists

Indicator from DWI list (and ILO link)	Sources	Comments and possible adjustments
Children not in school (%) – CONT1	Census, UNESCO, DHS	Key issue will be to use consistent sources since there can be discrepancies between official data and DHS-type data
Employment by status(%) – EMPL8	Census, LFS, HBS	Problematic if 'main occupation' and 7-day question apply
Labour underutilization or Time-related underemployment (%) – TIME4	LFS, HBS	It should not be limited to hours within last 7 days but extended to 12 months reference period – Ideally surveys should capture total number of days of work per year effectively done
Working poor – EARN1	HBS	Relies on good estimates of poverty lines and needs to be disaggregated by employment status
Low pay rate (below 2/3 of median) – EARN2	LFS, HBS?	Requires detailed wage data across different activities and including casual workers and especially in agriculture where the worst paid jobs tend to concentrate
Average real wages (especially in agriculture) or an 'agriculture wage index' –adaptation of EARN4 and EARN6	LFS, HBS?	Special focus on agriculture and wages paid to casual workers – since these are the most likely to be over-represented among the working poor and the poorest of the poor
Excessive hours (in relation to week) –TIME1	LFS, HBS	Not easy to operationalize when there is no minimum for rural / agricultural employment but important especially for peak agricultural labour periods when working days can be very long (10-14 hours)
Child labour (with disaggregation) – ABOL1	LFS	It may be hard to apply in situations of 'disguised child labour'
Forced labour – ABOL4	LFS	Hard to operationalize and requiring various probing questions in a questionnaire
Precarious employment rate –STAB1	LFS, HBS	Criteria for 'precarious' need to be discussed by context
Casual workers in agriculture / rural (% total employment) – as part of STAB1	LFS, HBS	Needs a suitable concept of 'casual' – less than 6 months and less than 20 hours per week?
Occupational segregation by sex – EQUA1	LFS, HBS	Question is benchmark especially in contexts where activities are highly gendered
Occupational injury frequency rate, fatal and non-fatal – combination of SAFE1, SAFE2 and SAFE3	LFS	Hard to find consistent and complete data across rural sectors
Labour inspectors per 10,000 employed persons – SAFE4	LFS	Possibly available at aggregate level but less so for agriculture / rural areas
Trade union density rate – DIAL1	LFS	Not likely to differentiate between LICs as all characterized by very low densities

Table 3: DW Indicators: new additional indicators for consideration

Additional indicators	Sources (potentially)	Comments and possible adjustments
Number of days per year effectively worked	LFS, HBS and micro-surveys	The main challenge is to obtain an accurate indicator when several casual activities predominate – the use of an employment matrix can help
Longest period of time without any remunerated work	LFS, HBS and micro-surveys	This complements the previous indicator and helps identify groups of workers particularly vulnerable to periods of lack of work
Occupation multiplicity (total number of reported economic activities)	LFS, HBS and micro-survey	As above – the use of an employment matrix can help address this need
Paid child labour (excluding unpaid contributing family labour)	LFS, HBS and micro-surveys	This requires a distinction between child labour performed as 'contributing family workers' and child labour for someone else, sometimes involving direct payment
Percentage of wage workers paid in kind (including small-scale producers)	LFS, HBS and micro-surveys	This can be an additional percentage indicator to complement previous indicators on precarious employment and casual work and particularly important in rural areas of LICs
Occupational safety and health – specific agriculture specific indicators	LFS, HBS, Agricultural surveys, and micro-surveys	This is part of the core DW agenda but can be adapted to realities of agricultural contexts and be applied also to own-account producers and contributing family workers. Examples are: 1. Incidence of hazards per worker such as snake bites, infections, and so on in any given year 2. Use of pesticides and other hazardous material/equipment (per worker per year)
Farm income volatility	HBS, Agricultural surveys	Considering the challenges in obtaining reliable indicators of returns to labour in own-account farming, data on volatility may be especially important, since the variation in remuneration via farm incomes is a major driver of poverty and seasonal shocks. This indicator can be constructed through questions on highest and lowest farm incomes in a given year and comparing three years, if a measure of continuous farm income over 12 months is hard to obtain
Association/producer organisation density rate	HBS, Agricultural surveys and micro-surveys	While trade union density can only apply to wage employees, a measure of collective bargaining and associational power may also be relevant for self-employed producers, particularly small-scale farmers. The indicator can be similar to the trade union density but referred to producer organisations (instead of trade unions) and small-scale farmers (instead of wage workers)

and perhaps a form of child labour even more alarming than child labour within a family operation (farm, non-farm business).

The key DWIs listed above can potentially assist in establishing a framework that is particularly relevant for rural areas and LICs in particular. DW deficits in these realms are critical and can provide a consistent picture of labour market performance and the realities of employment in poorer countries. They are also particularly important for agriculture and also apply to small producer.

3. Survey design challenges and options

The previous section has provided an extensive discussion of key conceptual and methodological challenges in the applicability of a DW statistical agenda for rural employment especially in LICs and in SSA. One of the key arguments advanced in that section is that methods and the way data are collected matter a lot for the achievement of this difficult aim. There is an increasing awareness that collecting household and individual-level information on employment, production, and incomes is marred by difficulties and practical challenges, and results in the misapplication of international conventions. In short, survey design matters for all kinds of data. And it matters particularly for key data on agricultural production, poverty and indeed labour, particularly, but not only, in LICs.

The World Bank and its Surveys and Methods team have engaged in recent years in an ambitious programme of data quality experiments. Some have been conducted to assess issues of survey design and effects on

employment data³⁰. For example experiments were conducted in Tanzania which 'assess the effect of different ways of collecting labour statistics. It uses two different modules, a long module and a short module, and administers each to either the person him/herself or to someone else in the household answering on their behalf (a proxy respondent). Both proxy respondents and self-reporting respondents are sampled randomly from the roster of household members³¹.

The central concern of all data collection activities should be exposing the 'truth' and the avoidance of any systematic biases. In reality, it is impossible to make socio-economic observations that are entirely free of biases – the real world is not a laboratory. That said, it is important to attempt to prevent the worst forms of bias, and particularly systematic biases. There are different types of biases that can lead to measurement error in labour surveys: cultural and wealth differences between respondent and interviewer leading to under-reporting or exaggeration of activities; application of inadequate categories/conventions on key concepts/indicators; language issues, especially when translation is needed and key terms have not been properly translated; expectations of benefits and incentives on the part of the respondent, leading to responses driven by how the respondent thinks answers could increase benefits.

Some of the points made in this section and the recommendations provided are based on extensive experience in conducting rural labour surveys and in the associated literature of micro-level case studies that have developed and implemented similar methods (see Oya 2013, Oya and Pontara 2015, and various references therein). By and large, many of these case studies make use of mixed methods in micro-level surveys, and place emphasis on capturing occupation multiplicity and the specificities of each type of labour relation in each context³². Research methods in these studies are in some ways innovative, especially in their attempt to better capture nuances and concealed aspects of labour relations, labour market participation and workers' mobility. A careful integration of quantitative surveys and in-depth qualitative research focused on longitudinal aspects of employment histories, is a demanding but rewarding approach. In addition, qualitative research can contribute to better survey design by ascertaining key terminologies and concepts, and give insights into the perceptions and aspirations of different categories of rural people. Common to this research is some differences in the design of the questionnaires, the sampling decisions to capture the 'hidden populations', the selection and the training of interviewers, as compared to large-scale nationally representative surveys. The point here is that national surveys could indeed learn from the micro-survey experience and scaled lessons up, even if perhaps not all innovations are equally feasible in the context of a large-scale nationally representative household survey.

The challenge of integrating such innovations into established frameworks for national household surveys cannot be underestimated. There is of course a need for embedding the improvements in the collection of rural labour data into the national statistics strategies of developing countries. Sometimes compromises may be necessary as it is impossible to have the 'ideal' questionnaire or survey design. There is currently an ongoing process of revisions in data collection systems. Many African countries are revising their GDPs, for example (Jerven et al 2015), and generally both aid agencies and governments in most developing regions are working to tackle some of the challenges discussed in this paper (see, for example, AFRISTAT and Paris21 Secretariat 2008 and <http://www.copenhagenconsensus.com>; Glassman and Sandefur 2014 and their work at the CGD). The main argument is the need to make sure that some of the efforts at improving the measurement and statistical capacities especially of LICs are sustainable over the long run through their institutionalization in data collection systems and protocols. In that regard, the recommendations in this paper and the tools to be subsequently piloted at country level should provide a basis to inform and influence national strategies for data collection. It is foreseen that for that to happen, countries should allocate sufficient funding for the collection of the relevant data, as well as to strengthen their NSO capacity for collection and tabulation/analysis. Unfortunately much of the data collected is never really tabulated and analysed, especially at more disaggregated levels.

While there are far too many survey quality issues that could be discussed, this section will focus on the most salient aspects that may affect the quality of DWI in rural areas of LICs.

3.1. Sampling issues

There are various sampling issues and decisions that are central to any survey design. First is the sample size and whether the data are planned to be statistically representative of a population. For statistically representative data a key question is the level at which inference is to be made (national, provincial, district) and the degree of heterogeneity of the target population. In cases where the whole rural population is the target then heterogeneity is likely to be a challenge and detailed information is needed for adequate stratification (by administrative area, agro-ecological zone, density, gender, age, production scale, socio-economic status, etc.). Thus, required sample size may be large if substantial heterogeneity is anticipated. Second, when the goal is not broad national-level statistical inference but capturing a particular issue (wage variation and determinants in agricultural employment) or a particular population (child labour, seasonal migrant labour), sample design must take into account the challenges of finding relevant respondents (especially for 'hidden populations') in the absence of adequate sample frames. Related to this is whether sampling is based on a residence-based

³⁰ See <http://go.worldbank.org/KAI66PHUY0>.

³¹ Look for SHWALITA (Survey of Household Welfare and Labour in Tanzania) <http://edi-global.com/publications/>.

³² See also collection of papers in forthcoming Oya and Pontara (2015).

framework or on a job-based one. In contexts where significant numbers of workers (especially in agriculture, harvesting) are resident in urban areas and work seasonally in agriculture, a job-based framework may be more suitable, or simply a framework where seasonal migrant labour is captured regardless of the 'permanent' residence of respondents (see also discussion of household roster below).

National household surveys aim to obtain statistically representative data for the overall population. While this aim is justifiable the conventional methods used to attain sometimes come at the expense of little or biased coverage of some particular groups, which can be considered in sampling terms as 'hidden populations'. Seasonal migrants, children at work, people subject to human trafficking, people not residing in 'normal' residential units or not being part of official household lists at village level. There are many cases and all relevant for an accurate picture of rural DW deficits. This underscores the need to rethink sampling methods to make sure hidden populations are included even in nationally representative samples.

In this regard, seasonality is a related aspect that has implications for sampling. In section 2.3.1 the paper has discussed the centrality of 'irregular' employment in LIC contexts and how some activities are concentrated in particular periods compared to other activities. This means that the time of the survey matters and that sampling may have to be adapted to make sure all relevant activities are captured. Although this is possible through 'good recall'³³, the reality is that misreporting of details of activities may be due to interviews taking place when the activity is not ongoing. In contexts of multiple occupations the time of the survey may thus lead to under-reporting of some activities, especially if they are of a casual nature. There are also implications for some of the 'hard-to-reach' populations who may only be available at a particular place during a particular period of time. Therefore, in contexts where migrant labour (for agricultural and non-agricultural employment) needs to be captured, survey designers will need to identify the periods when this 'population' can be found for interview purposes. Missing the right period may mean missing these specific groups altogether. The main mechanisms to circumvent these challenges are twofold. First, survey designers may decide to organize data collection in different rounds within a given year (as it is done for HBS) once seasonal patterns have been identified. Second, questionnaires can be designed to provide full information on all activities for a 12-month reference period, making sure interviewers are well trained to probe answers and make sure there is not any activity that goes unreported.

Another issue is sample size. Most national household surveys have a large enough sample size for statistical representativity at fairly aggregate levels (national, rural/urban, provincial/regional). However, this works in contexts where there is sufficient population homogeneity within these aggregate strata. If multiple distinct groups who are not randomly distributed exist in a given context, then the risk of missing them out or under-sampling is great. For example, agricultural wage workers and migrant labourers may be concentrated in particular pockets of dynamic export agriculture (Ejido in Spain, Sao Francisco Valley in Northeast Brazil, flower producing areas in Ethiopia, etc.). In addition, the different categories of small-scale producers may also be more concentrated in some places and harder to find in others without any random pattern. Information about more conventional groupings by gender or age-groups is also necessary to make sure stratified random sampling works well. These situations require not only a larger sample size but also 'pre-survey scoping research' to attempt to identify whether there may important 'hidden groups' in a given national context, and where these 'hidden groups' concentrate or in what kind of residential units they tend to live to adapt sampling methods to capture these groups while keeping the core probability sampling techniques. What do we mean by 'pre-survey scoping research'?

Essentially the combination of carefully designed qualitative scoping research to reveal some of the patterns mentioned above, in addition to consultation with experts with extensive fieldwork experience in the rural areas of a given country.

In addition to the scoping research implemented to improve the sampling process, when data collection starts, there are also other options for serious consideration:

1. Conducting a fresh full census to construct an up-to-date sample frame, including residential units that may house temporary migrants or people without fixed residence, as well as areas where child labour and forced labour are known to be present.
2. Including additional stratification in the sampling stages to be able to capture some of the hard-to-reach groups.

Cramer et al. (2014) elaborate on the first point. Their argument is that official household surveys in African countries (and one could argue also in other developing countries) such as Ethiopia and Uganda are based on samples drawn from lists of rural households provided by village-level authorities³⁴. The problem is that sometimes these lists are politically manipulated, i.e. often used as the basis for the distribution of scarce resources such as food aid, or subsidized agricultural inputs and credit., which may lead to potential biases in

³³ Good recall refers to the capacity of respondents to remember activities in which they have engaged in the reference period. For example remembering all activities for a 12 month-period would be very good recall compared to just remembering activities in the past 7 or 30 days.

³⁴ See also a related example on 'hidden' migrant populations in peri-urban areas of Vietnam (Pincus and Sender 2008).

reporting if authorities have an interest in excluding particular groups³⁵. Fieldwork experience also suggests that, apart from potential systematic exclusion of some marginalized groups, many of these lists are far from up-to-date and may exclude newly arrived individuals or households³⁶. The alternative adopted by the FTEPR research (Fair Trade Employment and Poverty Reduction project www.ftepr.org), documented by Cramer et al. (2014), and which can be proposed in the FAO pilot surveys, is to create a sample frame on the basis of a new and complete census of all types of housing structures discovered in the research sub-sites that have been previously selected for the survey. The definition of the 'Residential Unit' is broad enough to minimize biases towards more 'established' households, hence worded as any structure in which at least one person was sleeping. This would mean that a very basic structure, even without a roof, where squatters sleep (likely to be temporary migrants), could be considered for the sampling frame. A challenge would be whether this method can be 'mainstreamed' in national surveys, since these follow long-established sampling frameworks, household-based lists (rather than simply residential units) and use the same methods over long periods of time to ensure comparability over time. In principle, the advantages of the proposed innovations probably outweigh the possible logistical constraints but one cannot underestimate the potential resistance to such changes. However, one possibility, assuming that there is a sufficiently recent population census, would be to combine existing official sampling frames, especially if countries have renewed and updated the local registers, with ad-hoc additional lists prepared by fieldworkers for potential respondents who are temporarily in the area (e.g. migrant workers, people without fixed residence etc.) but fail to be included in official registers. Such combination of sources would not be too onerous and would substantially improve the coverage.

The above innovation is at the heart of debates about operationalizing the concept of the 'household'. Trying to work with a universal concept of the 'household', which is central to most surveys, is in fact a major challenge, but frequently ignored by survey designers and data users. There is increasingly substantial research, including survey experiments, which highlight some of the challenges and biases derived from the uses and misuses of the concept of 'household' (O'Laughlin 1995; Randall and Coast 2015). In the next section on questionnaire design, we elaborate further on this, looking in particular at the questionnaire requirements for an adequate identification of household rosters for the purposes of measuring DWI.

However, as advanced above, rigid definitions of the household may lead to exclusion of key groups. Carr-Hill (2014) notes how population censuses and household surveys routinely 'omit by design' or under-report mobile 'footloose' populations, particularly nomadic or pastoralist populations, internally displaced people who may have lost their homes, and institutional populations (such as but not only care homes, factory barracks, hospitals, the military, refugee camps, etc.). In practice, he argues, surveys also tend to miss out fragile, disjointed or multiple occupancy households, people living in slums, and areas that pose some security risks. To this it could be added that in situations where child trafficking, forced labour and child labour happen, conventional surveys are unlikely to capture them because they get misreported as de facto 'contributing family workers' at their employers' households³⁷.

With regards to 'fragile, disjointed or multiple occupancy households' and similar cases, Randall and Coast (2015) discuss evidence from Tanzania and Burkina Faso, where 'households' may be of different types and organised in different ways, defying the application of rigid household definitions, and requiring new typologies, like the one they propose of 'open' and 'closed' households. Accounting for pastoralist groups is quite difficult because of their mobility but also because of the social organisation and the different prevailing notions of 'household'. For example, official surveys tend to split-up Masai 'open' households ignoring their preference to consider themselves to be one economic unit of production and consumption. Part of the problem is also survey logistics and the difficulty of dealing with loosely extended households. When these nuances are not captured at the design stage, the implication is that (often poorly trained) interviewers are left to decide who to include and why in a given household roster, reflecting the power of interviewers in translating these complex concepts into something meaningful in both small- and large-N surveys (Randall et al. 2013).

Taking into account the challenges with rigid definitions of the household and the fact that a lot of the DWI apply to the level of the individual, an important sampling issue is whether the key unit of observation is the household or the individual. In reality this dichotomy is problematic since both are interrelated. However, for practical purposes and given that labour indicators normally refer to the individual, the anchor unit of observation should be the individual as long as an appropriate system to define the household roster is adopted (see section 3.2.1). This is important especially when own-account activities involve the pooling of family labour, especially in farming and the analysis of the activity could be done at 'household level'. However, in practice it is possible to collect household-level evidence (including on the 'farm enterprise') even when the anchor unit of observation is the individual who acts as 'principal respondent' and from whom a household is empirically defined. Then individual- and household-level information can be linked through identifying codes. What matters is that enumerators are well trained to know when they need to ask at the level of individual and when at household level.

In sum, although it is a challenge to question well-established and deep-rooted conventional sampling methods, the issues discussed in this section are serious and should provide the basis for some re-thinking,

³⁵ See, for instance, related ethnographic work in Ethiopia by Bishop and Hilhorst, (2010) cited in Cramer et al. (2014).

³⁶ See examples in Cramer et al. (2014).

³⁷ See, for example, Anyidoho, N. and P. Ainsworth (2009) on West Africa.

and notably to consider:

- a. Measures to capture 'hidden' or 'hard to reach' populations (like the ones mentioned here, such as avoiding official lists or including different types of residential units).
- b. The operationalization of a more flexible definition of 'households', to accommodate a variety of circumstances that may be important in any particular national and local context.
- c. The focus on individuals as anchor units of observation for DWIs, while context-relevant and empirically observed household units are also addressed in the data collection process, resulting in three types of data: individual, household (including a 'family activity') and job/activity. What matters is that the three levels are consistently linked and no relevant information is missed out.

3.2. Questionnaire design

This section focuses on key aspects of questionnaire design that can have an impact on the quality of data for DWI. The discussion is also based on available survey experiments (especially at the World Bank), relevant literature on survey methodology and especially the author's own survey experience. The focus is on two key issues: the household roster, or who is included in the list of household members and the information collected therein; employment modules and labour data issues. A key message is that the consideration of alternative definitions (household roster), the re-organization of employment modules to avoid typical biases, and the precision and context specificity in questions and wording are key to obtain higher quality data.

3.2.1. The household roster

Who is included or not in a household roster matters a lot for indicators of well-being, which are frequently collected at household level but then normalized per individual, consumption and income being leading examples.

Recent survey experiments with alternative definitions of the household and different ways of preparing a household roster show a significant impact on survey outcomes. According to Beaman and Dillon (2012) slight changes in definitions of the 'household' lead to significant variations in both household size and household composition, with important implications for the measurement of basic outcome variables, such as per capita consumption expenditure, asset statistics and per adult equivalent agricultural output measures, which may affect any analysis of DW deficits. The conundrum is that, on the one hand, a consistent and easy to interpret household definition is required for time and population comparisons, but, on the other hand, over time and for a given population, 'the definition must also identify the correct economic or decision making unit, which may in fact differ according to the research question'.

Leone et al. (2010) and Randall and Coast (2014: 6), reporting on various case studies, show that 'children move between households on a weekly or longer-term basis' rendering multiple households 'open'. Therefore, the decision of where to include a child is not straightforward if the criterion is one of residence and/or consumption. Akresh and Edmonds (2010), in another experiment, show that that households are extremely fluid, and characterized by substantial mobility of some of their individuals with 10 percent of individuals spending some time away over a three year period, averaging 16 of the 36 months away. This phenomenon is not randomly distributed across household members but affects specific categories such as the youth, hence leading to potential bias and miscounting if rigid definitions of residential status are applied. Avoiding this kind of bias would require consideration of different and less stringent residential criteria or using alternative criteria such as 'economic linkages' regardless of residence patterns as suggested in the paragraph below.

In light of the rigidity and potential bias of standard 'residential' definitions of the household (such as being resident for over 6 months in past 12 months), Cramer et al. (2014) and the FTEPR research (FTEPR 2014) opted for an 'economic' definition of the household roster to avoid the bias of missing out key individuals who may be important to understand the wellbeing of the household. The concept of a list of 'economically linked' individuals offers additional and extremely useful information on labour market participation and the other characteristics of individuals usually considered 'absent' (according to strict residential definitions) and therefore irrelevant to an analysis of the welfare of rural populations³⁸.

The implication of this discussion is that a more detailed and thorough measurement of household composition in multi-purpose household surveys is essential to avoid systematic biases in the estimation of key outcome variables. In addition, some changes in definitions could be contemplated, such as the option of using 'economic linkages' between members and not simple residential rules. The main possible drawback

³⁸ The four following categories of linked individuals could be thus identified and surveyed (directly or through proxy respondent): (1) those who live permanently with the principal respondent and who share income and expenditure; (2) those who, even if not sharing residential accommodation on a regular basis, make significant economic contributions (in cash or in kind) to the expenses of the household/respondent; (3) those who, even if not sharing residential accommodation, regularly depend on economic contributions in cash or in kind from the respondent or others in the RU; (4) those who, even if not resident at all in the same place as the respondent, either can be relied upon by the respondent, or receive contributions from the respondent.

is related to training. Applying an economic definition of the household is less straightforward and therefore more training time-consuming than a conventional residential definition. Sometimes the criteria for 'economic linkage' may be ambiguous and sometimes may result in unmanageable household rosters. These problems, however, can be tackled through careful selection, training and supervision.

3.2.2. Employment modules

An important question for good quality DWIs is measurement error. Some indicators are particularly vulnerable to this kind of non-sampling error. There are different areas in which quality particularly matters for DWI:

1. Identification of economic activities in which an individual has been engaged in the past 12 months, and the key characteristics of each of these activities.
2. Collection of sufficient information on each of these activities, with priority given to the ones that contribute most to the livelihood of individual/households.
3. Avoiding large measurement errors in time-related questions as well as in questions on returns to labour (whether self-employment or wage employment).
4. Capturing child labour and forced labour in contexts where respondents may want to conceal such practices.

3.2.2.1. Accounting for occupation multiplicity and accuracy in the definition of occupations/activities

This is by far one of the key challenges and one of the reasons why some key indicators of the labour market (employment rate, employment status, sector of employment etc.) are particularly sensitive to what questions are asked and how. LFS and some HICES and MICS include questions on 'secondary' job holding, but virtually all headline statistics refer to the 'main' job. While it is best practice, even by ILO standards, to use an activity list to determine whether somebody was employed and the nature of each job, this is not systematically applied or analysed (Oya 2010).

The usual reliance on the tricky notion of the 'main job-holding', designed to give a single classification for every individual surveyed, is problematic even if the goal is an aggregate picture for international comparability. Unfortunately, in contexts of occupation multiplicity, irregularity and strong seasonality, the interpretations and use of the concept of 'main activity' are influenced by the biases of both respondents and interviewers. Moreover, conventional reference periods are problematic³⁹. Many countries still rely on standard questions with a seven-day reference period (designed to generate internationally comparable statistics) which, in contexts of strong seasonality, irregularity of activities and occupation multiplicity, can lead to significant statistical biases and thus turn to be meaningless for international comparisons. The use of relatively short timeframes tends to compound the biases introduced by the reliance on notions of 'main activity' when this is defined in terms of time. As practiced in India, a combination of different reference periods (12 months, 30 days and 7 days) applied to same or different questions may help reduce this bias.

Properly identifying and capturing different kinds of activities is also challenging. This is because certain types of activities, and indeed many wage jobs that are particularly relevant for the most deprived rural people – characterized by severely exploitative conditions, even forms of bondage – are highly stigmatized and can, for that reason, easily be under-reported and overlooked. Mueller (2015) provides examples of the most widely terms used for casual wage work (kibarua) in Tanzania, an activity that can be often under-reported or unreported altogether. Oya (2015) also finds particular activities like charcoal making and trading in rural Mauritania of going under-reported because of official bans on them, thereby leading to biases if not enough probing is done, since this is one of the most important sources of accumulation and survival for many rural people in remote areas of the country⁴⁰, as shown in his comparison between official statistics and micro-survey data. Oya (2013), Chand and Srivastava (2014).

An adequate identification of all the economic activities of individuals and households also requires appropriate wording. Much is lost in bad translation as suggested in section 2.3.3. For example, key terms like 'salary' or 'wage', 'gainful activity' or 'remunerated activity' may be linked by design and practice to limited sets of activities and jobs because of what respondents (and interviewers) usually understand by those terms (Rizzo et al. 2015). Oya (2015) on Senegal, and Rizzo et al. (2015) provide concrete examples of instances in which a poor translation or a misinterpretation of key terms leads to measurement error and bias⁴¹. The issue is not only adequate use of local terms and preparing suitable

³⁹ There are differences across surveys in this respect though.

⁴⁰ See also Oya (2013) and Chand and Srivastava (2014) for other examples of 'stigmatized' activities that result in under-reporting of female employment.

⁴¹ Rizzo et al. (2014) provide detailed examples of the problems of questionnaire design and specifically how questions on employment are 'lost in translation' in the context of Tanzania, leading to a biased characterization of employment patterns for informal labour, and to wage employment being classified as self-employment. Oya (2015) documents a variety of terms normally used in rural vernacular Wolof in Senegal for concrete occupations in the broad spectrum of casual wage work. By contrast, inadequate translations because of bad guidelines to interviewers result in these specific relevant terms not being used to capture wage jobs and therefore missing them altogether.

glossaries for enumerators, but also the importance of systematic and careful probing, which in some surveys is often overlooked because of time constraints and wrong incentive systems.

Adequate wording and probing of course require conceptual clarity, as survey designers need to clearly train interviewers about what each key concept means. Although this may seem obvious, fieldwork experience is often compounded by a biased conceptualization of key terms. For instance, this is the case with the distinction between wage employment and self-employment, with the result that a particular occupation (e.g. street vendor) is automatically related to a given status (e.g. self-employment) without the required probing (Oya 2015). Huang (2013, 349), in the context of China, argues that Chinese statistics reduce wage workers to '[a] high-status category of regular "employees-workers" that excludes the great majority of the labouring people of present-day China'. Wuyts (2011), Rizzo et al. (2015) and Breman (2006) provide other similar examples concerning large segments of 'informal workers'. The solution is a theoretically and empirically grounded definition that avoids strict boundaries: thus 'wage employment' refers to any form of work for another person or entity in exchange of any kind of compensation whether in kind (including land, for example) or in cash. If the 'employer' provides all or the bulk of the means of production (i.e., land, working capital, equipment, seeds, and so on) the labour relation is characterized by a wage-contract even if in a disguised form, e.g., as labour tenancy or sharecropping (see Banaji 2010).

Probing is also critical to capture a range of forms of child labour, forced labour and to understand the gendered nature of labour markets and various forms of occupational segregation. Since these are sensitive issues, the wording in standard questionnaires may not be the most suitable, hence interviewers must respond by adapting the wording or finding ways of circumventing the sensitivity about these topics by using the most appropriate and least 'threatening' terms as well as maintaining a fluid conversation during the interview, which may put at ease the respondent.

What matters is to get a full picture of the employment situation of an individual in these heterogeneous and fluid contexts is the accurate enumeration of the complete set of economic activities in which individuals engage over an extended period of time (e.g., 12 months) and the relative importance of each of them for their subsistence. The RNFE literature not only systematically documents the importance of occupation multiplicity and livelihood diversification, but also the contingency of the dominance of one particular activity or another. In China, most rural people are engaged in more than one activity—farming and off-farm employment but, as Huang maintains (2013, 359) their final classification hinges on what activity they are engaged for more than 6 months a year. In many African countries, characterized by relative land abundance and proliferation of small-scale producers (whether viable or not) the idea of 'main occupation' may be particularly misleading, resulting in either respondents or enumerators emphasizing own-account farming (because it reflects property attachment as well as a more 'regular' activity regardless of its returns) at the expense of other more irregular but perhaps more remunerative activities.

The alternative to the use of 'main activity' is clear: a full enumeration of all relevant economic activities in the past 12 months, whether in the form of self-employment or wage employment or other employment status categories. In practice, this information can be collected through a carefully designed and context-specific (in order to capture key local activities and key local terms) 'employment matrix' (example in Appendix A1). The list can be designed based on prior research in the country and a context-specific knowledge of the most important types of employment in rural areas. This matrix does not only include a checklist of all context-relevant activities in which the individual has participated, but can also include information on duration and frequency of each activity, their seasonal pattern, the location and whether they performed the activity accompanied by a child or not. The latter can be an important question for DW evidence. Even if it does not entail child labour (it could be a woman carrying a baby on her back while working) it shows the burden of a combination of productive and reproductive tasks on women and can feed into evidence on occupational gender segregation.

3.2.2.2. Tailoring questionnaires to specific types of employment

Once we are confident all activities and their duration and frequency have been identified, we need accurate information on each of these activities, especially the most important ones in terms of returns (remuneration), security (duration and frequency), and other conditions related to the quality of employment, whether in terms of health & safety, collective bargaining, gender (or other type of) discrimination, or additional non-wage benefits. The challenge is that each activity has its own specificities so questions should be tailored to each type. Therefore, rather than using a single set of standard questions for each of these activities, separate modules can be prepared to collect relevant information in each case. As the GIRM-WB (2007) report shows, specifically designed modules work well for own-account farming, wage employment in agriculture, own-account non-agricultural business, wage-employment in non-agricultural activities, and questions specific to contributing family workers. Therefore, a combination of the sector of activity and employment status can be used to devise specific questionnaire modules to collect detailed information on each of the key activities listed. Within each sub-module there may be reporting of more than one instance, e.g. two or three jobs as casual wage worker in agriculture, or two different non-agricultural businesses. Depending on the

number of questions included, this can be operationalized by adding different rows per question (one row corresponding to one job) or by applying the same sub-module separately for each job (this may be too cumbersome in cases where the number of activities and jobs reported is very large).

Each type of activity entails its own challenges. Own-account farming and generally household business require accurate data on aspects such as: production, sales, input costs, use of hired and household labour, assets, land measurement, credit, associations, etc. The problems in accurately measuring each of these items are dependent on the type of crop or type of business, so context specificity does matter. Carletto et al. (2015) and Samphantharak and Townsend (2012) present detailed accounts of the main challenges some of which will be explored in more detail in the section below.

Wage employment requires accurate data on different aspects: the nature/type of employer (scale, 'formality' or not; relations, etc.), types of contractual arrangements, whether only labour is provided (and not tools or land), payment methods, levels of remuneration, frequency, non-wage benefits, issues of harassment and conflict, trade unions, etc.

Likewise, questionnaires should contain specific questions that may help shed some light on DW deficit for small-scale producers, following the examples and recommendations made in section 2.3.4. In particular good estimates of returns to labour, farm income trends and volatility, and of underemployment as well as overemployment will be very useful for a picture of DW for this group. In addition, other measures of quality of employment, related to hardship and risks associated with small-scale farming, as well as indications of associational power can provide additional elements for a more complete picture of DW among small-scale producers.

These are just illustrations of the sorts of issues that the survey design must tackle in order to prepare sufficiently detailed employment modules that will be necessary if DWI are to be improved.

3.2.2.3. Minimizing errors in estimates of returns to labour – understanding remuneration systems

The accuracy of some of the data needs mentioned in the previous section is crucial. In particular, and for contexts of rural areas in LICs, the accuracy of measures of underemployment and overemployment can be addressed with carefully designed employment matrices (Appendix A1). In addition, good quality data on returns to labour should be ensured in any system for DW measurement in agriculture and rural areas. However, the reality is that this kind of information is often missing or fraught with measurement errors. Generally there is a major evidence gap on labour returns, especially for rural wage employment. Sender (2003, 414) notes in particular that:

'[In] most developing economies no efforts at all are made to collect time-series data on the wages of those employed in small-scale farm and non-farm rural enterprises, especially on the wages of those who are irregularly, seasonally, or casually employed.'

Collection of reliable information on wages is particularly challenging in rural areas of LICs, especially in agriculture because payment systems vary and are sometimes complex (Hatlebakk 2004; Rogaly 2005). For example, in agriculture, payments can often be in the form of either a daily wage (following local 'norms'), a piece-rate wage (e.g. monetary rate per kg of output harvested) or, more typically, a task-based wage (clearing x area of land; sowing x number of rows, or pruning x number of trees). To complicate matters, in some workplaces workers may receive a daily wage but they must complete a task so the payment becomes de facto task-based. As argued by Cramer et al. (2008) 'the literature on piece-rate systems and farm wage differentials attempts to explain marked differences between how workers are paid, even when they are doing similar things and in comparable locations'.

Other authors have documented substantial variation, and particular forms of labour market segmentation that are related to complex labour relations (Bardhan and Rudra 1986; Rogaly 2005; Ortiz 2015; Cramer et al. 2008). There may be great variation even within the same local context, depending on crop, type of employer, type of sector, season, and market conditions. This underscores the need for detailed modules with sufficient number of relevant questions. It is therefore quite possible that a full questionnaire page must be devoted to capture the nuances of these payments and make sure that all relevant data is collected in order for data users to estimate comparable and reliable daily wages. For example, if a casual worker is employed by the task, detailed information about the task is needed, especially with regards to the time to complete it. Sometimes casual workers are paid daily but they need to complete a task. In case this is not completed, they may need to continue the day after, in which case the payment is not daily but task-based (see FTEPR 2014; Wendimu and Gibbon 2015). Another complication that requires attention is the use of -in-kind payments and methods to impute value to the goods offered in exchange for labour. The quality of these estimates is crucial for any DWIs related to earnings.

The challenges in capturing earnings are not limited to those working for wages. Indeed, a measure of earnings/ returns to labour for the self-employed, especially small-scale producers, may even be more difficult. In fact, recent literature suggests that for small-farming activities the quality of the data collected in large-scale surveys leaves much to desire. For example, net farm income for

smallholder farmers is hard to measure for different reasons. The fluctuations in farm revenues, the deliberate misreporting of production, consumption and sales, recall problems in relation to precise quantities of consumption items or to labour time use, the complicated valuation of opportunity costs (own or family labour or equipment depreciation), and many other problems mean that questionnaire design, training of interviewers and their supervision are crucial for good quality data. Samphantharak and Townsend (2012), based on a survey experiment in Thailand, emphasize the importance of four important challenges for household enterprises (including farming):

- a. Distinguishing and measuring accrued vs cash incomes and between purchased and used inputs.
- b. Measuring the implicit compensation of household labour, which can be done with different alternatives of shadow wages depending on whether the household workers also participate in the labour market or not.
- c. Paying attention to gifts and transfers, including labour exchange, which should also be valued
- d. Dealing with valuation and depreciation of assets.

With regards to the last point, the collection of relevant information on assets, both productive assets (such as irrigation equipment, motorbike, tractors, etc.) and consumer durables is certainly an important task, whether to estimate long-term returns to household enterprises or to adequately characterize the socio-economic status of respondents, whether self-employed or wage employed. Assets and durables are generally easier to observe and verify (thus less potential for measurement error) than current consumption. And, as they provide a measure of long-term wealth, such information may be used to complement data on earnings, which tend to fluctuate every year due to the nature of the activities involved (Howe et al. 2012). Both smallholder farmers and rural wage workers may be substantially differentiated in terms of available assets and this can be a reflection of having been exposed to more DW in the medium-long term.

More specifically in relation to own-account farming, Carletto et al. (2015), writing on SSA, confirm that the evidence base about farm size, productivity, and contribution of agriculture to welfare is very poor. The problems are, however, not uniformly distributed across types of farmers and crops (hence the importance of identifying these categories ex-ante as suggested in section 2.3.4.3). Carletto et al. (2015) document a number of specific problems:

- a. Accounting for inter-cropping, which substantially affects measures of returns to farming. Depending on the pervasiveness of the practice and the level of production in question, it is advisable to consider all crops mixed in an inter-cropping arrangements. There may be recall problems for some harder-to-measure agricultural products, thus making inter-cropping estimates somewhat unreliable. The priority is to capture orders of magnitude first to then choose the crops that are more important for the team.
- b. Land measurement and problems with recall and administrative data. The alternative of GPS-based measurement is increasingly applied and is not without its problems but clearly reduces potential measurement error on a very important indicator. It is recommended that, to the extent possible, enumerators probe respondents' reporting of land area by randomly choosing plots and measure them with GPS devices.
- c. The production of some crops is harder to measure than others: generally root crops and 'fast crops' (onions and vegetables), which may be harvested continuously are far more negatively affected by recall bias than other annual crops characterized by one (or perhaps) two key harvest seasons and also often marketed. This would require rethinking questions and measurement methods to capture the volume of harvested output with higher frequency data perhaps. Therefore, questions about production/harvest in cotton will have to somewhat differ from questions about production/harvest of cassava. An option is to obtain rich qualitative information on production and harvesting patterns for these crops. The questionnaire can make a particular distinction between crops that generate cash and crops that are consumed by the household in large proportions. For the latter a shadow market price can be applied to provide a monetary value to the physical production estimates.
- d. Regardless of the type of crop, a common problem is the use of non-standard measurement units (banana bunches, heaps of cassava, '50kg sacks, etc.), which translate in inconsistent weights and introduce non-random biases on production estimates, which are crucial to estimate returns to labour in own-account farming. The methodological option is to calculate accurate conversion factors to specific non-standard units encountered in the survey and using CAPI to facilitate this process and input context-specific conversion factors.
- e. Imputing monetary value to self-consumption when relevant price data are not available. This would require more adequate information on relevant (local) prices for agricultural products consumed within the household, taking into account the importance of seasonality in these prices.

The discussion in this section suggests that the only way to minimize the measurement errors identified in the literature on economic activities / employment is to add detailed questionnaire modules and design activity-specific questions to obtain consistent estimates of earnings. Generally, detailed information on farm budgets should be collected separately in order to obtain more accurate measurement of returns to labour in family activities, entailing a detailed farm budget module with the net data then being compared to the less detailed agricultural revenue information collected through an employment module, for example.

Detailed modules have a substantial (positive) impact on the quality of data. Experimental research on poverty-related questions indeed suggests that 'equivalent as well as same households answer the same questions differently when interviewed with a short questionnaire vs. the longer counterpart', which suggests a potentially serious bias in short questionnaire-surveys for complex issues like poverty and employment (Kilic and Sohnesen 2015). A long questionnaire, in turn, raises issues of sequencing. For this purpose there are a couple of rules of thumb that can help. First, the key questions for the high-priority DWIs, e.g. earnings and underemployment, should not come too late in the questionnaire as respondents may be tired at the end of it and these questions require attention and use of memory. Second, there should be a logical flow between different questionnaire modules. So, the employment matrix should come first for all employment-related (DW) questions, followed by relevant modules for each key type of activity (own account activity, agricultural wage employment, non-agricultural wage employment, etc.). The end of the questionnaire should include questions that are complementary to the main focus (DW – employment) but not essential.

The challenges and recommendations included in this and other sections above suggest that there is an advantage in developing longer employment modules and generally longer questionnaires. There is however a trade-off between lengthening questionnaire and practical, financial and logistical constraints. Long interviews, if conducted in one go, may also affect the quality of the information collected in each case, if respondents and interviewers get tired. However, available evidence from survey experiments suggests that the pros of more detailed and longer questionnaires outweigh the cons, as in the case of poverty indicators (Kilic and Sohnesen 2015).

3.3 Selection and training of interviewers

It is not enough to improve questionnaire design and adopt more flexible sampling approaches. The quality of DW indicators highly depends on careful selection of interviewers, much more intensive training than usual (including conceptual training on key concepts) and close supervision, particularly in pilot and early data collection phases.

For example to be able to capture the nuances of distinctions between self-employment and wage-employment; the particularities of remuneration methods for different occupations; the characteristics of the 'household'; the different types of small producer; the OSH issues; instances of child labour and forced labour; forms of discrimination; to name a few key issues, interviewers would have to be carefully trained to understand these conceptual and methodological differences and work with plenty of concrete examples from the country where the survey will take place. For example, addressing child labour is not straightforward in contexts where the use of child labour is pervasive even if not always resulting in out-of-school children. Enumerators and supervisors may not see this as 'child labour' and will need to be carefully trained so that they can consistently capture it and make sure they use the right terminology (local terms) and deal with existing sensitivities in a suitable way. Preparation of training will therefore require substantial scoping research to understand context specificity and better communicate concepts to interviewers. The conduction of careful scoping research processes may be done before a large-scale survey is conducted and ahead of training and questionnaire design. This is an important investment, the results of which can be carried forward to different rounds of similar surveys. However, it should not be simply seen as a one-off investment, insofar as conditions and context also evolve. If survey rounds follow a 5-year frequency, for example, some updates of the scoping work may be needed although the time taken may be less than during the first core round. Survey designers will assess the main changes in context between surveys and decide on the kind of scoping needed, particularly on the focus of the scoping as there may just be some issues to focus on (migration patterns, new activities emerging and so on). The scoping work required to improve survey design should be institutionalized, i.e. not simply contracted out to external consultants. While the latter could assist in the process, national data collection agencies should have focal points to conduct this scoping research so that practices are not externally driven.

Scoping and deeper training are critical factors contributing to better probing skills. Well-trained interviewers certainly have to probe to make sure they understand in which category the respondent is, or what kind of wage contracts the respondent has been involved in, for example. In some instances there may be 'social desirability bias' among respondents, whereby own-account activities are seen as morally superior or desirable compared to 'working for others', or where certain activities are deemed demeaning and not worth reporting. Therefore the probing will have to be particularly careful to make sure the respondent is not under- or un-reporting wage work activities, or any activities that may be considered illicit in some contexts (e.g. charcoal making, smuggling), various forms of discrimination,

and activities that should be abolished under the DW agenda (child labour, forced labour). In order to make sure interviewers do enough and good probing three basic conditions generally apply:

- a. Adequate incentive systems, so for example avoiding piece-rate payment (per questionnaire) which may lead to excessive urgency and speed in administration.
- b. In-depth training on the key concepts and indicators, turning interviewers in quasi co-researchers, making sure there is substantial 'buy-in' for the survey among them. This means that periodic/annual training for annual agricultural surveys, for example, should not be simply limited to 1-2 days of work going through the questionnaire but should include some time for basic conceptual discussion around indicators and how probing can be done for the most challenging questions, all this complemented with more days of pilot work.
- c. Close and sustained supervision in the field, especially in the early stages, to make sure that any systematic errors are avoided and that different situations are tackled with the help of supervisors.

3.4. Survey implementation

Once design, selection and training are completed a key issue is implementation. Below are a number of key recommendations that may work in most contexts although survey designers will have to understand the context of the survey to address any particular practicalities.

- a. **Survey teams.** Normally it is better to work in smaller teams, each guided by an experienced and very well trained supervisor. A smaller team of about four enumerators may be easier to manage especially when internal conflict arises (between enumerators or between supervisor and enumerators) as discipline is critical in situations where fieldwork is physically and mentally demanding. A close supervision is critical, and being able to go through questionnaires and different scenarios in the evenings is also highly advisable, to make sure any corrections can be made on the spot. Another possibility is having smaller teams or even individual enumerators who spend long periods of time in the same village and administer the different questionnaires to be used. This would facilitate the familiarization of the enumerator with the context or could be compatible with the reliance on a locally-resident enumerator with adequate training. The composition of teams is also important. First, a good mix of experienced and less experienced but highly skilled enumerators is advisable. Having only very experienced enumerators may be problematic if new concept or new forms of implementing the survey are important for the study. Enumerators with excellent interpersonal and communication skills and good capacity to understand new concepts brought by training are essential. Particularly with a long and detailed questionnaire it is imperative to find interviewers who can turn the sequence of questions into a conversation, which requires them being engaging. Second, it is preferable to have with direct experience in rural areas of the sampled zones and a high command of the key languages spoken in each area, bearing in mind the possible presence of migrants from other parts of the country. This means that each candidate should be thoroughly tested on the relevant languages before embarking on fieldwork. Overall, however, the main priority is to conduct intensive and in-depth training, followed by sufficient pilot-testing (a few times in two or three different sites for at least one week) and a system of close supervision with regular inputs from main survey designers.
- b. **Place of interview.** Places where respondents potentially are not free to talk should be avoided. These include public areas where others can overhear and in particular the workplace where the presence of employers or supervisors or even other workers may intimidate respondents. Generally, all interviews should be conducted in private and without the possibility of external interference. Survey teams should also stick to sampling targets and avoid being driven to particular respondents by 'gatekeepers', such as village chiefs or other local authorities.
- c. **Survey technologies.** Survey design also needs to consider the ways in which available technologies can help better implementation, faster data processing and minimisation of interview errors. An increasingly popular option is the use of computer assisted personal interviews (CAPI) instead of conventional questionnaires on paper. The main advantages are: (a) reducing the potential number of data entry mistakes by a set of filters and consistency checks; (b) substantially cutting or even eliminating data processing time, since data are automatically entered into a database as enumerators fill in tablet questionnaires; (c) as data are 'live' and arrive 'just in time' researchers and survey designers can cross-check consistency and run some analysis as survey goes on, without having to wait until the survey has been completed. Appendix A2 considers the main pros and cons of this option.

4. Summary of key recommendations

The discussion in this background paper has tried to (a) assess the relevance of concepts and indicators of Decent Work (DW) for rural areas and employment in agriculture; (b) examine some of the main reasons for the lack of data on DW for rural areas and agriculture, in terms of problems with data collection; and (c) propose a selection of more relevant and suitable indicators as well as some ways

to improve data collection.

The main implications of this analysis are:

1. The concept and indicators of DW present problems of applicability and relevance in rural contexts of LICs, especially in SSA. Context specificity is indeed important for the relevance of concepts and indicators. A long and rigid list of DWI may reflect aims for universalism and the imperative of international comparability. Therefore it is proposed that more selectivity is applied to the choice of DWI, i.e. trying to focus on a smaller but more relevant set of indicators, including some that are not currently being collected (for example, detailed data on returns to labour, whether self- or wage-employment, as well as more precise measures of underemployment and occupation multiplicity/multiple job-holding). Since not all dimensions/indicators may apply equally across countries, it may not be possible to have a single set of DW deficit indicators that is internationally comparable. Section 2.4 provided a list of DWIs that could be the basis for a primary attention if rural and agricultural sectors, particularly in LICs, are the main focus of analysis.
2. Despite advances in the conceptualization of labour categories and conventions, there are tensions and challenges that should be addressed and not ignored. Distinctions between categories of employment status need to be operationalized more carefully, so that the true incidence of self-employment and wage employment is adequately captured through a variety of methods and questions. This is important as there are different options of DWIs to be applied to self-employment vs wage employment situations. Distinctions in terms of levels of 'formality', given variation in definitions and applicability, may obscure more than reveal about DW deficit in rural employment. Thus, dimensions normally associated with 'informality' should be spelt out and reported separately.
3. More precise estimates of the degree of underemployment and 'overemployment' by individual as well as by type of activity (job) are needed for a more accurate picture of time-related DW deficits, which are crucial especially for the working poor who frequently straddle different irregular jobs.
4. Better survey designs for greater rural employment focus, including:
 - a. Suitable sampling methods to ensure coverage and inclusion of 'hard to reach populations' (seasonal migrants, child labour, forced labour, people in less accessible areas, etc.)
 - b. Longer and better designed modules on employment questions, e.g. the use of employment matrices, separate sub-modules with specific questions for each type of activity, and careful design of questions on returns to labour, both for self-employment and wage employment
 - c. Context-specific questions for aspects of DW not related to earnings, thus OSH, access to social protection and gender-related discrimination.
5. Improvements in sampling and questionnaire design will be insufficient if the quality of those who participate in surveys (from designers to supervisors, interviewers and data users) does not improve. There needs to be conceptual clarity and methodological awareness among all these groups. Careful selection and training of interviewers and field teams, as well as appropriate incentive systems are crucial for success in data collection.

Finally, it is clear that most of these recommendations can be applied in the context of independent micro-level surveys that operate with some degree of freedom over design choices. However, an important objective is also to 'mainstream' these methods into existing nationally representative household surveys. In other words, some of the 'solutions' proposed here could be incorporated in the design of such large-scale surveys. My own experience is that this is challenging because (a) of resistance from national statistical agencies to changes (path dependency) (b) because of the fear of losing international comparability, and (c) due to alleged logistical/financial constraints (which affect any survey anyway). This means that, realistically, perhaps not all methodological alternatives proposed in this paper can be embedded in official systems but some can. In that case the question would be to identify the most important alternative options, something that is likely to depend on the national context.

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APPENDIX A1. EXAMPLE OF EMPLOYMENT MATRIX

Note to the enumerator: Provide a complete list of <u>all</u> activities engaged in by The Respondent and ask questions for each of these activities Matrix E1. Describe <u>ALL</u> of the activities / occupations on which you have worked <u>DURING THE PAST 12 MONTHS</u> [Note to enumerators: It is expected that each Respondent will have undertaken SEVERAL activities]					
Type of Occupation / Work	1(a) Number of months	1(b) Usually, how many days per month?	1(c) Usually, how many hours per day?	1(d) How long does it/did it usually take for you to travel to your place of work in this occupation?	1(e) Did anybody help/work for you in this activity for a payment in cash or in kind Yes No
1a. Farmer (on your own or on your family farm)				...hours ...minutes	1 2
1b. Agricultural labourer (on large farm as permanent or seasonal worker)				...hours ...minutes	1 2
1c. Agricultural labourer (on any other type of farm as casual worker)				...hours ...minutes	1 2
1d. Fishing (using your own or family equipment)				...hours ...minutes	1 2
1e. Fishing (for a wage or part of the catch)				...hours ...minutes	1 2
2a. Collecting, begging, recycling, foraging				...hours ...minutes	1 2
2b Wood/charcoal/ collector and seller				...hours ...minutes	1 2
3a. Sales / wholesale trade / shop-keeper (warehouse)				...hours ...minutes	1 2
3b. Sales / retail trade (street vendor)				...hours ...minutes	1 2
4a. Transportation (bicycle, motorcycle –boda boda-, fares collector, porter, wheel barrow pusher)				...hours ...minutes	1 2
4b. Transportation (lorry driver, bus driver or chauffeur)				...hours ...minutes	1 2
5. Construction labourer / brick making / sand collecting/ quarrying/ stone breaking				...hours ...minutes	1 2
6. Carpenter/Mason				...hours	1 2

				__ minutes	
Type of Occupation / Work	(a) Number of months	(b) Usually, how many days per month?	(c) Usually, how many hours per day?	(d) How long does it/did it usually take for you to travel to your place of work in this occupation?	(e) Did anybody help/work for you in this activity for a payment in cash or in kind Yes No
7. Cleaner (in a company, hotel, etc.)				.....hours _____minutes	1 2
8. Domestic servant (in a private house)				.....hours _____minutes	1 2
9. Restaurant / bar (server) / food stall worker (inc. hotel) / local drinking hall				.....hours _____minutes	1 2
10. Security guard, including vehicle (car, motorcycle etc.) guard				.....hours _____minutes	1 2
11. Factory worker (including processing for tea, coffee, etc.)				.....hours _____minutes	1 2
12a. Professional / technical (<u>teacher</u> , electrician, mechanic, plumber etc.)				.....hours _____minutes	1 2
12b. Managerial / administrative / team supervisor				.....hours _____minutes	1 2
13. Clerical / secretarial				.....hours _____minutes	1 2
14. Food / drink preparation or processing				.....hours _____minutes	1 2
15. Craftsmanship (incl. tailoring, crafting, cobbling, basket production, pottery)				.....hours _____minutes	1 2
16. Personal services (laundry, barbers, photography)				.....hours _____minutes	1 2
17. Other, describe: ..... ..... .....				.....hours _____minutes	1 2

Matrix E2. Describe the characteristics of the Respondent's
 ESS Working Paper No. ESS 15-10, October 2015
employment/work/activity carried out (each column)

Type of occupation / work	2(a) Type of employment	2(b) Location of workplace: Where do you/did you usually work in this activity?
1a. Farmer (on your own or on your family farm)	<input type="checkbox"/>	<input type="checkbox"/>
1b. Agricultural labourer (on plantation/large farm permanent or seasonal)	<input type="checkbox"/>	<input type="checkbox"/>
1c. Agricultural labourer (on any other type of farm as casual worker)	<input type="checkbox"/>	<input type="checkbox"/>
1d. Fishing (using your own or family equipment)	<input type="checkbox"/>	<input type="checkbox"/>
1e. Fishing (for a wage or part of the catch)	<input type="checkbox"/>	<input type="checkbox"/>
2a. Collecting, begging, recycling, foraging	<input type="checkbox"/>	<input type="checkbox"/>
2b. Wood/charcoal/ collector and seller	<input type="checkbox"/>	<input type="checkbox"/>
3a. Sales / wholesale trade / shop-keeper (warehouse)	<input type="checkbox"/>	<input type="checkbox"/>
3b. Sales / retail trade (street vendor)	<input type="checkbox"/>	<input type="checkbox"/>
4a. Transportation (bicycle, motorcycle boda boda, fares collector, porter,	<input type="checkbox"/>	<input type="checkbox"/>
4b. Transportation (lorry driver, bus driver or civil service driver)	<input type="checkbox"/>	<input type="checkbox"/>
5. Construction labourer / brick making / sand collecting/ quarrying/ stone	<input type="checkbox"/>	<input type="checkbox"/>
6. Carpenter or Mason	<input type="checkbox"/>	<input type="checkbox"/>
7. Cleaner (in a company, hotel, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
8. Domestic servant (in a private house)	<input type="checkbox"/>	<input type="checkbox"/>
9. Restaurant / bar (server) / food stall worker (inc. hotel) / local drinking	<input type="checkbox"/>	<input type="checkbox"/>
10. Security guard	<input type="checkbox"/>	<input type="checkbox"/>
11. Factory worker (including processing for tea, coffee, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
... cont	<input type="checkbox"/>	<input type="checkbox"/>
14. Food / drink preparation or processing	<input type="checkbox"/>	<input type="checkbox"/>
15. Craftsmanship (incl. tailoring, crafting, cobbling, basket production,	<input type="checkbox"/>	<input type="checkbox"/>
16. Personal services (laundry, barbers, photography)	<input type="checkbox"/>	<input type="checkbox"/>
17. Other,	<input type="checkbox"/>	<input type="checkbox"/>
CODES: 2(a) 1. Private salaried (monthly); 2. Private wage (daily, weekly, piece rate, task rate); 3 State salaried (monthly); 4. State wage (daily, weekly) 5. Own account; 6. Commission; 7. Cooperative salaried; 96. Don't know		CODES: 2(b) 1. Home (of respondent); 2. House (of employer); 3. Factory; 4. Shop, hotel, bar; 5. Office; 6. Street, fixed location; 7. Street, no fixed location/moving around; 8. Field/bush; 9. Other... ..

APPENDIX A2. Computer assisted personal interviews (CAPI)

Since the innovation of tablet computing this practice is increasingly becoming the norm in social science research, due to a number of inherent advantages. These include:

- a. **Cost:** Usually, after only a relatively small number of interviews (depending on setup, about 100-200 interviews per tablet computer) the cost of the initial investment will be amortised. The main reason for this is that CAPIs induce significant savings of recurrent costs because of procedures like the printing and shipment of questionnaires, data backup (physical copying), and in particular manual data entry are no longer required. Especially the latter point regularly constitutes a considerable saving of financial and human resources.
- b. **Availability of data:** Electronically generated data is immediately available for data analysis and cross-checks by researchers and survey designers, with no need for separate data entry. Given modern forms of telecommunication, collected data can be analysed both by field officers as well as researchers based in different places, on the same day that it was collected, assuming interviewers and supervisor can access internet.
- c. **Data consistency and quality:** due to the possibility to programme a wide range of internal consistency checks, skip & fill rules, data validation tools, as well as in-built questionnaire navigation and guidance, CAPIs routinely generate data that is much more consistent and of higher quality compared to that collected on paper. Interviewers are prevented from committed to the majority of common mistakes (such as typos, illogical answers, or asking wrong questions), because the electronic questionnaire will highlight/disallow inconsistent answers and generally guide interviews as required in any specific case, i.e. only displaying questions that are applicable to a particular respondent based on previous answers. As a result, the need for data cleaning is greatly reduced (implying another significant cost saving). Moreover, electronic equipment also facilitate the use of media during the conduction of interviews. This is important as a source of key notes to add to questionnaires, for example on measurement units when these are not conventional or consistent, so interviewer can take pictures to illustrate the case.

These advantages make a compelling case for the use of CAPIs, especially in circumstances where questionnaires are highly standardised and repeated in large numbers. Familiarisation with the computer devices aside, arguably there will be a reduced need for interviewer training, because the scope for errors is vastly reduced. Field experience by the FTEPR study also suggests, that conventionally expressed challenges related to rural fieldwork are usually of little concern:

- a. **Battery life** of modern devices is usually sufficient to last for at least 8 hours, i.e. at least one full or two half working days. In most circumstances, external batteries (including car batteries) or generators can be used to charge devices in cases of power outages.
- b. Most modern devices are **GPS enabled**, which create a large potential for further facilitation of the sampling and data collection process. (as discussed above)
- c. **Rugged cases** are available for most devices, making them highly resistant against most adverse situations in the field (including dust, rain, falling, etc.)
- d. The often-feared alienating effect of computing devices has not been observed by the FTEPR team, which has used this technology in highly remote areas in Uganda and Ethiopia without respondents reacting negatively to the use of computers instead of paper questionnaires. To the contrary, more often than not, respondents showed an increased curiosity and interest to participate and cooperate.

The main challenge associated with CAPIs are concerned with the time spent on programming and setup, maintaining the devices in the field, as well as the initial cost of investment. To effectively make use of the potential of CAPIs, it is essential that sufficient time and resources are reserved to allow the careful programming (and testing) of the electronic questionnaire. Specific experience is required to successfully develop a functioning electronic questionnaire, including the necessary validation rules, underlying navigation and skip- & fill logic, etc. Depending on the length of the questionnaire, an experienced programmer can be expected to spend between one and three weeks (full-time) to finalise such a tool. Furthermore, as with all technological equipment, maintenance in the field is an important aspect of this approach. For this reason, it is crucial that at least one member of the survey team (usually the field supervisor) is well-versed in the use and maintenance of the devices, in case any error or fault should occur. In addition, the initial cost of investment is of course considerable, especially if survey entails a large number of enumerators. This may be an important consideration, especially if the financial savings derived from no need for data entry and no printing of questionnaires are not substantial as some World Bank specialists have pointed out (Kilic 2012).

Another possible challenge is battery and charging devices in situations where there are frequent and extended power cuts. In such scenarios an alternative plan with paper questionnaires or having a back-up power generator would be advisable to prevent any delays or even interruption of fieldwork due to

logistical constraints.

Finally, there will be additional training needs since not all selected enumerators will have expertise in the use of CAPIs for purposes of questionnaire-based interview. However, in our experience, the training involved is relatively straightforward and most enumerators nowadays are used to working with tablets and smartphones.

In sum, the various pros and cons of using CAPIs as part of the survey have to be weighed up against each other. The main recommendation is that, provided that qualified team members can be relied on, the advantages of using electronic questionnaires greatly outnumber the downsides.

Contact:

Statistics Division (ESS)

The Food and Agriculture Organization of the United Nations

Viale delle Terme di Caracalla

00153 Rome, Italy

www.fao.org/economic/ess/workingpapers

FAO-statistics@fao.org