International Labour Organization

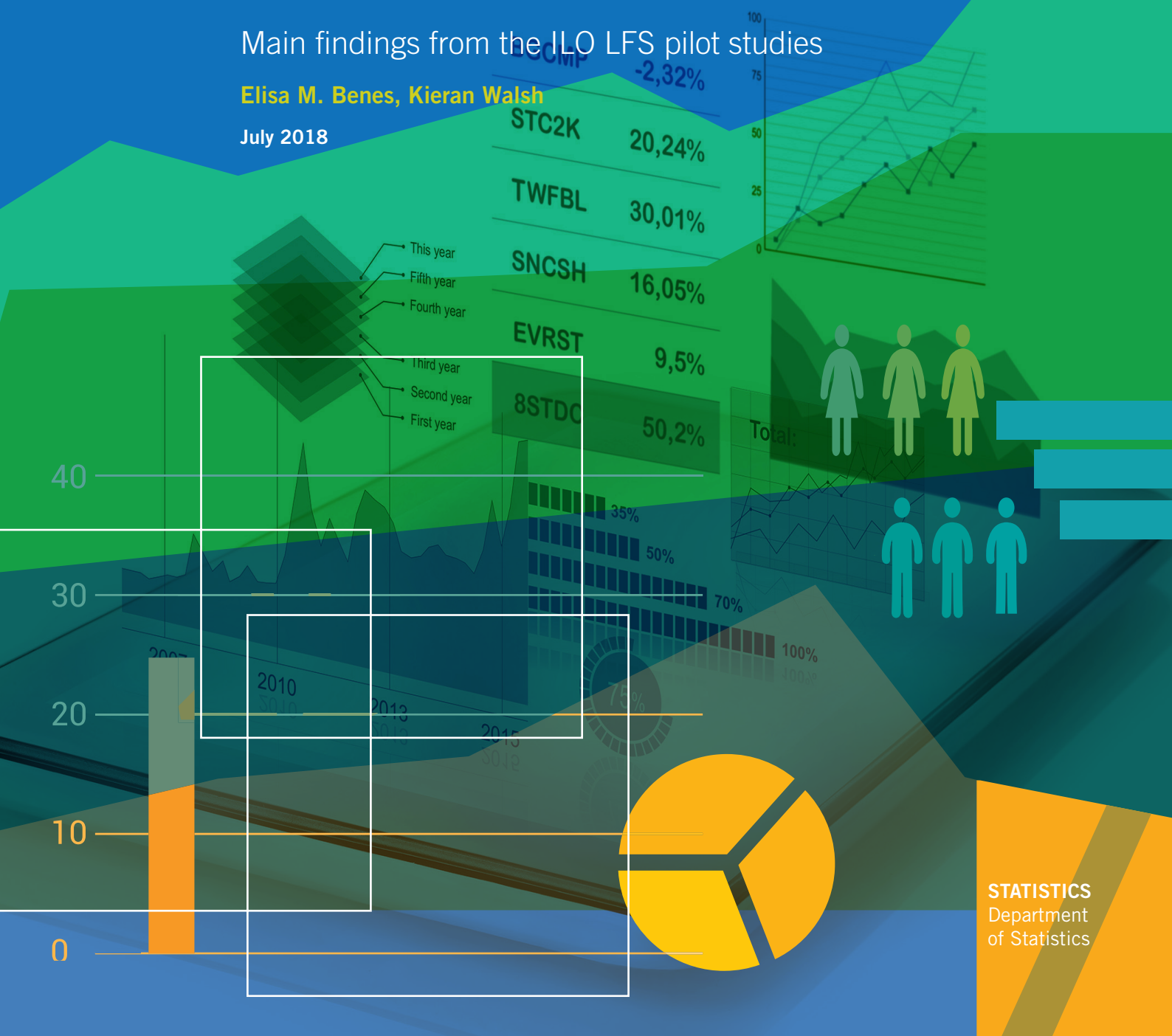
5 STATISTICAL METHODOLOGY SERIES

MEASURING WORKING TIME AND TIME-RELATED UNDEREMPLOYMENT IN LABOUR FORCE SURVEYS:

Main findings from the ILO LFS pilot studies

Elisa M. Benes, Kieran Walsh

July 2018



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Measuring Working time and Time-related underemployment in Labour Force Surveys:

Main findings from the ILO LFS pilot studies[1]

ILO Department of Statistics –Geneva, Switzerland

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Measuring working time and time-related underemployment in labour force surveys: Main findings from the ILO LFS pilot studies

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I. BACKGROUND

1. The latest international recommendations on how to measure some of the key headline labour market indicators, including the unemployment rate, are contained in the *Resolution I concerning statistics of work, employment and labour underutilization* adopted in 2013 by the 19th International Conference of Labour Statisticians (ICLS). These standards introduced a number of important updates that will impact the way work and labour force statistics are collected and disseminated by countries around the world in the years to come. To support their wide implementation, the 19th ICLS called on the ILO to "*conduct further conceptual and methodological work including testing*" and develop "*technical manuals and model data collection instruments*" aligned with the latest standards (ILO, 2013).

2. As follow-up, in 2015, the ILO launched a global project of labour force survey (LFS) pilot studies. The Project had as main aim to develop and test alternative survey questionnaires to collect statistics on high priority topics including employment, labour underutilization –comprising time-related underemployment, unemployment and the potential labour force, and own-use production work, in line with the 19th ICLS standards. The ultimate objective is to develop evidence-based guidance to support countries in adopting the new standards.

3. This report presents the main findings on the measurement of **working time and time related underemployment** drawn from the Project. The report is part of the ILO statistical methodology series that describe in detail the main findings of the Project. The full series is available in the website of the ILO Department of Statistics[2].

4. Section I provides a short overview of the background to the pilot studies on the topic of working time and time related underemployment including the different relevant standards. Section II discusses the main measurement issues with respect to these two topics explored in the ILO LFS pilot studies, the questions tested and the analytical approach taken. The main findings are described in Section III. The final section (IV) provides a summary of the main conclusions and recommendations that can be made on the basis of the findings.

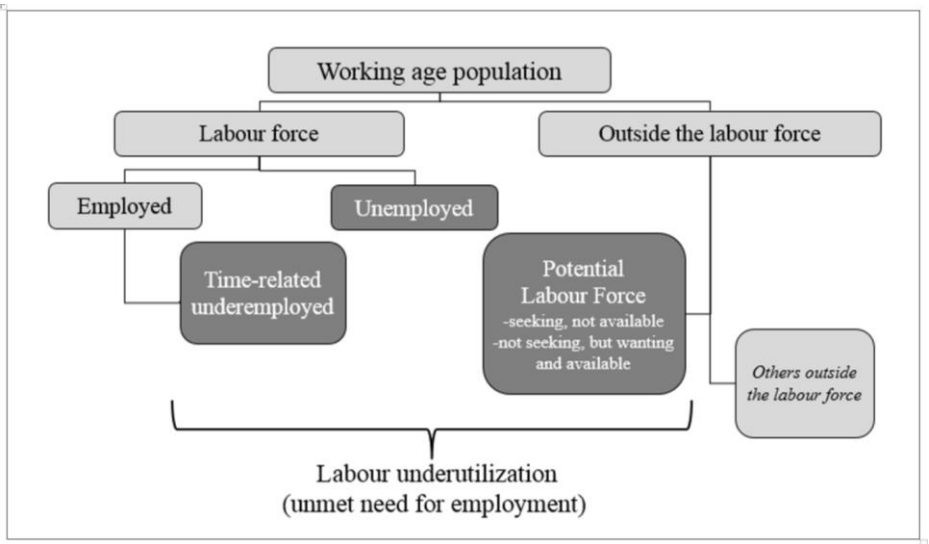
A. Latest international statistical standards

5. Resolution I concerning statistics of work, employment and labour underutilization adopted by the 19th ICLS, updated the previous standards from 1982 that had played a critical role as reference for the development of national systems of labour force statistics, and the design of labour force surveys (ILO, 1982). The new standards have greatly expanded the scope of labour statistics by recognizing the need to produce statistics on different forms of work, paid and unpaid, on a regular basis. They also introduced a number of important changes to labour force statistics that includes a narrower definition of employment as *"work for pay or profit"* and *a set of measures of labour underutilization*. The standards are described in more depth in a separate report in this series covering the background, objectives and methodology of the pilot studies.

[2] http://www.ilo.org/stat/Areasofwork/Standards/lfs/WCMS_484981/lang--en/index.htm

6. One innovation of the new standards is that it recognises that labour underutilization extends beyond *unemployment*. This is a critical development as it acknowledges, in line with accumulated international practice, that as useful as statistics on unemployment are, they do not capture the full set of situations of inadequate employment which can exist and supplementary indicators are needed. To reflect this, the new standards identify multiple components of labour underutilization for measurement and reporting, including *time related underemployment* and the *potential labour force* (see Figure 1).

Figure 1: Components of labour underutilization to monitor unmet need for employment



Time-related underemployment in the international statistical standards

7. Under the standards from the 19th ICLS *time related underemployment* is defined as "*when the working time of persons in employment is insufficient in relation to alternative employment situations in which they are willing and available to engage"* (ILO, 2013)[3]. This basic definition does not differ from the existing definition presented in the resolution of the 16th ICLS (ILO, 1998). However some of the details underlying the definition have been updated.

8. To support measurement, the latest standards also provide an operational definition which specifies that persons in time related underemployment are those *"in employment, who, during a short-reference period, wanted to work additional hours, whose working time in all jobs was less than a specified hours threshold, and who were available to work additional hours given an opportunity for more work"* (ILO, 2013)[4].

9. For data collection purposes the identification of time related underemployment therefore requires a sequence of questions which captures:
   i. Employment
   ii. Desire to work additional hours
   iii. Working time in all jobs
   iv. Availability to work additional hours

[3] Paragraph 40a
[4] Paragraph 43

10. The measurement of employment is covered by a separate report in this series. For the purposes of this report, it is assumed as a starting point that a person has been identified as employed. The focus is therefore on the remaining parts of the definition.

11. The next element of the definition relates to desire to work additional hours for which the standards do not provide explicit guidance, but is taken as the subjective desire on the part of the respondent. However, the standards do state that the additional hours may be *"in the same job, in an additional job(s) or replacement job(s)"* (ILO, 2013)[5].

12. With reference to *working time in all jobs*, the standards provide some flexibility, stating that the concept used can be *hours actually worked* or *hours usually worked* dependent on the measurement objective. This represents an update form the 16th ICLS which only referred to *hours actually worked* as the reference point for time related underemployment. The longer term position reflected by *hours usually worked* can align more closely with social policy interest in identifying those with persistent insufficient hours of work. As a consequence of this change, the 19th ICLS resolution now recommends that information is captured both on hours actually worked and hours usually worked in order to identify possibly different situations of time related underemployment.

13. The hours threshold referred to is *"based on the threshold between full-time and part-time employment"*, which can potentially be based on *"median or modal values of the hours usually worked of all persons in employment or on working time norms…"* (ILO, 2013)[6].

14. The final element of the definition is *availability*, which is to be established *"in reference to a set short period that reflects the typical length of time required in the national context between leaving one job and starting another"* (ILO, 2013)[7].

15. While not directly a part of the definition of time related underemployment, both the 16th and 19th ICLS standards refer to the value of also identifying those among the time related underemployed who have engaged in activities to search for additional/other work as an indication of immediate pressure on the labour market.

16. Given the definition, the measurement of working time is an intrinsic part of the measurement of time related underemployment. However, it is also a topic of high importance in its own right and thus an additional subject of focus of the pilot studies.

17. While the standards impact the activities which are considered within the scope of employment they do not change the standards regarding what is considered working time. As such, rather than emanating directly from the changes in the 19th ICLS, the testing of working time measurement in the pilot studies related to the long-standing challenge of trying to improve estimates of working time and develop evidence on the effectiveness of different question sequences.

[5] Paragraph 43b
[6] Paragraph 43c
[7] Paragraph 43d

Working time in the international statistical standards

18. The latest standards related to statistics on working time can be found in Resolution I of the 18th ICLS[8]. Those standards set out the overall scope of working time and provide definitions and related guidance for 7 different concepts of working time namely:
    i. hours actually worked
    ii. hours paid for
    iii. normal hours of work
    iv. contractual hours of work
    v. hours usually worked
    vi. overtime hours of work
    vii. absence from work hours

19. Coverage of these concepts of working time varies by source and country. For example different concepts may be more suited for measurement in establishment surveys while others are best measured through household surveys. Furthermore, different countries may prioritise different concepts depending on user needs.

20. The working time concepts most regularly measured through labour force surveys are *hours actually worked* and *hours usually worked*. The 2008 standards define h*ours actually worked* as *"the time spent in a job for the performance of activities that contribute to the production of goods and/or services during a specified short or long reference period"*[9]. The standards go on to provide guidance on which types of activities and related periods of time are considered within scope, broadly broken into direct hours, related hours, down time and resting time. Hours actually worked is a concept of particular relevance for labour productivity measurement as it forms the basis for estimation of total volume of work.

21. *Hours usually worked* is defined as *"the typical value of hours actually worked in a job per short reference period such as one week, over a long observation period of a month, quarter, season or year that comprises the short reference measurement period used"*[10]. Hours usually worked is particularly useful for social analysis as it reflects the usual situation of people in employment and will not be as heavily influenced by short-term peaks or troughs in working hours such as vacations or other absences.

22. In addition to providing definitions, the 18th ICLS standards provide operational guidance covering issues such as the order of questions to capture working time etc.

[8] Resolution I concerning measurement of working time: see http://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/publication/wcms_099576.pdf
[9] ILO, 2008. Para 11
[10] ILO, 2008, Para 15

II. METHODOLOGY

A. Testing strategy

23. The broader measurement objectives of the pilot studies and high level methodology are described in a separate report in this series entitled *ILO LFS pilot studies in follow-up to the 19th ICLS: Background, objectives and methodology*. Separate reports have also been published on the cognitive and field testing phases of the project.

24. A few issues of interest were selected as priority for testing in relation to working time and time related underemployment. It was decided not to include questions on these topics in the cognitive testing round. This was not because this would not have been useful, but rather the range of all issues which could be cognitively assessed was too large and priorities had to be set reflecting the main measurement objectives of the pilot study programme. Therefore, the testing strategy in the case of working time and time related unemployment focussed on the field tests plus some qualitative feedback received from countries collected during the field testing phase.

25. In the case of *time related underemployment* initial assessment focussed on the operation of questions on desire and availability to work more hours, and activity to look for additional/other work. In this regard there was an assessment of whether any impact of question order could be identified, specifically whether asking a question on a behaviour (job search) before questions on desire and availability impacted responses to those questions, as compared to an approach where desire and availability were asked first.

26. Also in connection with time related underemployment there was interest to assess the relevance of the concept to people in different employment situations. There was a particular interest in assessing the relevance of time related underemployment to those in self-employment given that inadequate volume of available work may not equate to low hours of work for this group.

27. Additionally, there was a focus on the impact of different working hours thresholds (such as median or mode as referred to in the standards) on estimates of time related underemployment and any notable differences between the two versions of the working time questions tested.

28. In the case of working time, among the 7 different working time concepts identified in the standards, it was decided to focus on the measurement of hours actually worked and hours usually worked for the purposes of the pilot studies. These 2 concepts are the ones most frequently measured in labour force surveys. Furthermore they are also the stated reference point for the measurement of time related underemployment in the latest standards. The focus of the studies was to assess the ability of respondents to report usual and actual working hours and whether this differed across the two versions of the working time module tested (described below). Conclusions on this are being drawn from qualitative feedback from countries and differences in reported estimates across versions of questionnaires. Related to this was the ability of respondents to comprehend and report differences between usual and actual working hours.

29. For respondents with differences between usual and actual hours a question on reasons for those differences was asked. This question could potentially offer policy relevant information to supplement estimates of working time. The assessment of this question focussed on the quality of the information generated in order to establish if such a question could be recommended for regular use in labour force surveys.

B. Versions tested

30. The ILO test design incorporated questions related to time related underemployment and working time in a dedicated module(s) of questions. Two versions of a working time module were developed (see Figure 2 below). Both versions contained common elements but with differences in question order and wording. Specifically both versions included questions covering:
    i. Hours actually worked (in employment) in the previous 7 days (main job, second job, other jobs)
    ii. Hours usually worked (main job, second job, other jobs)
    iii. Reasons for differences between usual and actual hours worked
    iv. Desire to work more hours
    v. Availability to work more hours
    vi. Number of additional working hours desired
    vii. Desire to change job
    viii. Reasons for desire to change job
    ix. Search for other work

31. Among other indicators the sequences allowed the generation of estimates of usual and actual working hours in all jobs (with the exception of model questionnaire 2 as discussed further below) and time related underemployment in line with the standards.

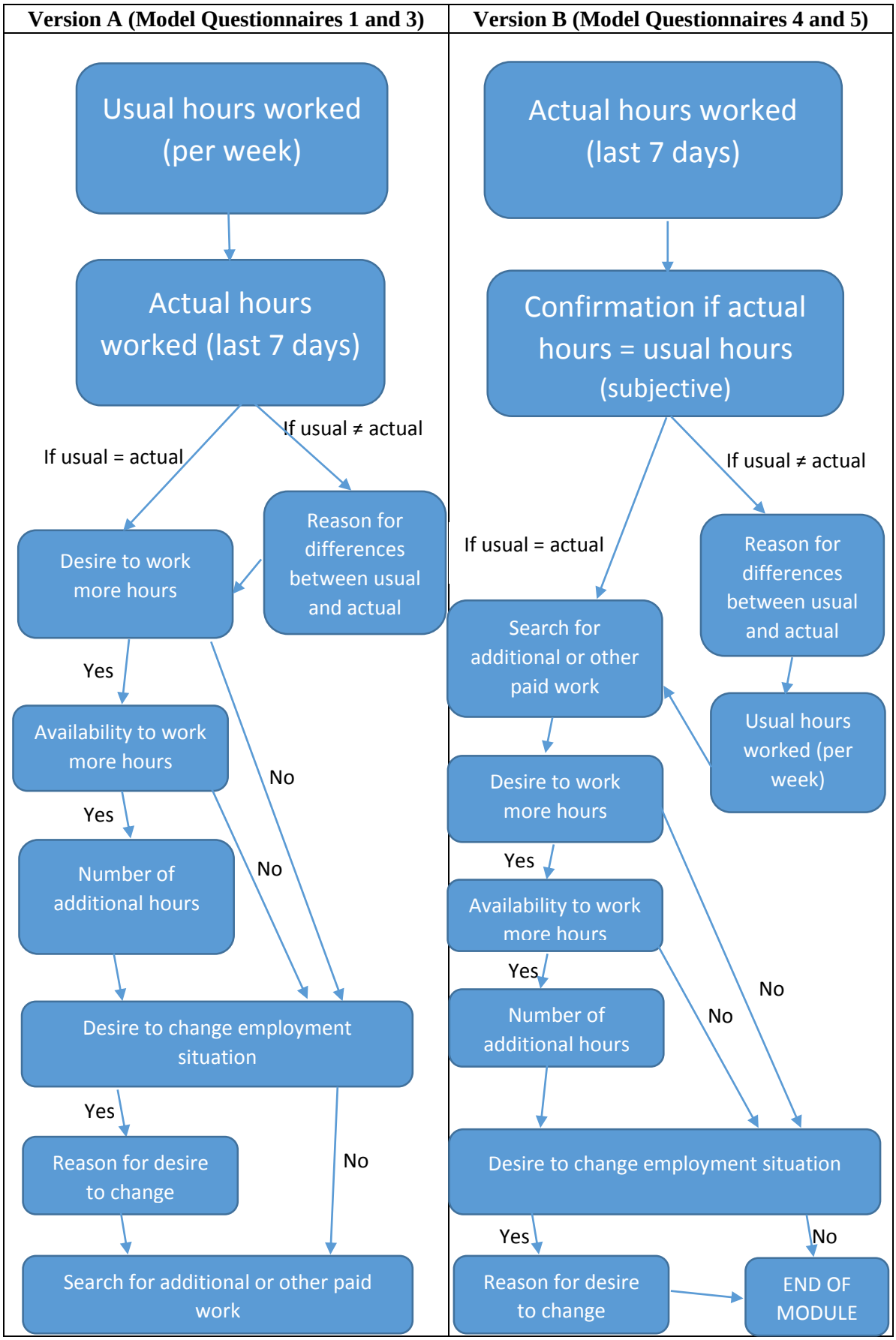
32. The primary difference of interest between Version A and Version B of the working time module was the order and wording of questions on actual and usual hours worked and, linked to that, reasons for differences between usual and actual hours worked.

33. In Version A questions on usual hours worked were asked initially followed by questions on actual hours worked. Based on calculated total usual and actual working hours the interviewer was prompted to identify respondents where those totals were different and if different the question on reasons for the difference was asked.

34. In Version B actual hours worked were asked first. Then the respondent was asked the confirmatory question *"Is that the number of hours (NAME) usually works per week?"*. Only if the respondent answered no to this question were they asked the following questions about reasons for different working hours and what the usual hours worked were.

35. Another way of explaining this difference is that for Version A both usual and actual working hours were fully asked for all respondents, whereas for Version B the respondent was only asked usual hours if they subjectively confirmed that actual and usual hours were different. Version B is potentially less burdensome for respondents, particularly those with very consistent working hours.

Figure 2: Versions of Working Time module from ILO LFS Pilot Studies



36. The question on the reasons for differences between actual and usual working hours was an open question: *"Why did (NAME) work (more/less) hours than usual in the last (week/7 days)?"*. A list of coding categories was prepared to code the responses but it was not read out for the respondents.

37. The questions on time related underemployment comprised a question on desire to work more hours than usually worked in all jobs followed by a question on availability to work more hours. While there is some flexibility in the standards on the working time concept used as a reference, for the pilot studies usual working hours in all jobs was chosen as the reference point for the question. The question used was *"Would you want to work more hours per week than you usually work, provided the extra hours are paid?"*. In the case of availability a two week reference period was chosen with the question asked being: *"Could you start working more hours within the next two weeks?"*.

38. No threshold of working hours was applied to filter the respondents asked the questions on desire and availability to work more hours, as no single threshold for part-time/full-time could be confidently established across the pilot countries. As such, the questions were asked to all respondents in employment to enable analysis using different thresholds. The wording and order of these two questions was the same between the two versions. For those wanting and available to work more hours they were asked how many more hours they could work.

39. Questions on time related underemployment were followed in both versions by questions on desire to change employment, and if there was a desire to change employment, why? These questions in particular relate to the measurement of inadequate employment situations as discussed in paragraphs 15 to 17 of the resolution of the 16th ICLS.

40. The final element of the working time module was a question on activity to look for other/additional work. Both versions of the module included the same question: *"During the last (month/4 weeks/30 days), that is from [DATE] up to [DATE/yesterday], did (NAME) look for additional or other paid work?"*. However, its order in the module was different between Version A (last question in the module) and Version B (just after usual hours but before time related underemployment questions).

41. The two different versions of the working time module were distributed across the 5 model questionnaires used for the pilot studies. Version A was included in model questionnaires 1 and 3, while version B was included in model questionnaires 4 and 5. The distribution of the model questionnaires across countries meant that Version A was tested in all 10 of the pilot countries (mainly due to its inclusion in model questionnaire 3), while Version B was tested in 6 of the countries (see Table 1).

Table 1. Pilot countries by version of "Working time" module tested

Country	Version A	Version B
Cameroon	M1	M5
Ecuador	M3	M5
Ivory Coast	M1 and M3	—
Kyrgyz Republic	M3	—
Moldova	M3	M5
Namibia	M1	M4
Peru	M3	M4
Philippines	M3	—
Tunisia	M3	—
Vietnam	M3	M4

42. Due to its overall difference in flow and structure model 2 did not include a full dedicated module of questions on working time in employment. Rather it had a question on hour usually worked in the main job for all persons in employment, plus, depending on the respondent's profile, hours usually worked in the second job. In addition questions relevant to time related underemployment (desire and availability for more working hours than usual), search for additional/other work and inadequate employment situations were asked in model 2 following the order and wording used in Version B of the module. Nevertheless, given the simpler approach used in model 2 to capture working time the findings in this report are primarily based on comparisons between models 1, 3, 4 and 5 with data from model 2 included where possible.

C. Analysis strategy

43. As already noted, questions on working time and time-related underemployment were not included in the cognitive tests. As such the focus of this report is on the findings from the field tests.

44. In the case of the field tests, following the split sample design, the analysis focuses on comparisons between the two model questionnaires tested *within* a given country. In particular, we look for differences in how Versions A and B of the *Working time module* worked within each country. Given the experimental design of the field tests, the results are not generalizable to the larger population. Simple weights were computed to account for random differences in the sex, age group and area distribution of the samples achieved within a given country. The weights were derived by creating a "pooled population" based on the average of the split samples within each country. More details on the weighting strategy are available in the report describing the field test methodology.

45. Comparisons between countries are made only to assess the extent to which the within-country patterns repeat themselves across countries. The cross-country comparisons serve to assess consistency in the findings across models and contexts. Any differences observed in the way the questions worked between women and men, respondents of different age groups (15-29, 30-54 and 55+ years), levels of education or place of residence (urban, rural) are highlighted.

46. Another point to bear in mind is that the working time module was only applied to respondents already identified as employed earlier in the questionnaire. Therefore readers should also refer to the report dedicated to the measurement of employment where differences observed in identification of persons in employment are discussed. Those differences are not considered likely to have a major impact on the measurement of working time and time related underemployment in the pilot studies and as such are not referenced in this report.

III. MAIN FINDINGS

47. While there was a key interest in the operation of the questions regarding time related underemployment, analytically it makes sense to consider first the measurement of working time. This is true because it preceded and set the context for the measurement of time related underemployment in the questionnaires. Reflecting this, the main findings presented in this section are divided into three subsections:
    a. Analysis of the reporting of working time
    b. Analysis of reasons for differences between actual and usual working hours; and
    c. Analysis of Time Related Underemployment.

A. Reporting of working time (actual and usual)

48. To set the context for the analysis it is instructive to note the outcomes of some other international testing experiences. In recent years co-ordinated testing activities covering working time took place both in the European Union and Latin America and the Caribbean.

49. In the European case, a comprehensive review of measurement of working time in the context of the EU LFS identified various specific difficulties which in particular created difficulties in achieving cross-country comparability (Eurostat, 2018). Absences from employment were found to be a key source of incomparability across countries and differences in question sequences and wording were observed to greatly impact the measurement of hours actually worked in the reference week. A broad conclusion drawn was that respondents could over-count hours actually worked by omitting absences from their calculations. Comparisons of practices and results across EU countries showed that some countries had sequences and wording which improved measurement of hours actually worked by ensuring respondents more adequately accounted for absences from work. This has generated a new model questionnaire which has agreed by the Labour Market Statistics Working Group (LAMAS) although this model questionnaire has yet to be applied in the countries[11]. The analysis supporting these conclusions was primarily based on the situation of full-time employees. Regarding other persons in employment (e.g. part-time employees, self-employed) the EU analysis also noted particular difficulties in reporting hours worked for those with variable working hours.

50. In the case of Latin America and the Caribbean (LAC), a co-ordinated set of pilot studies was organised during 2016 and 2017, also relating to the design of LFS questionnaires with the collaboration of the ILO and building upon the experiences in the ILO LFS pilot studies. Five different countries participated in the studies, among which 3 (Chile, Ecuador and El Salvador) tested questions on working time and time related underemployment both through cognitive and field tests. Each of the 3 countries tested different sets of questions on working time including approaches similar to those represented in Version A and Version B of the ILO pilot studies.

51. Given the similar coverage of the testing, finding from the LAC pilots are referenced in several places in this report. In the case of the measurement of working time while the issues assessed and findings varied somewhat we can note some specific findings of interest. Across the 3 countries no particular difficulties were observed with the comprehension of usual hours worked based on the

[11] It should be noted that the model questionnaire was not available at the point where the ILO pilot studies were being designed.

cognitive interviews. Nonetheless a variety of reporting difficulties were observed, with indications that these difficulties were related to the type of worker. For example employees or those with contracts tended to report usual hours as paid hours, specified by their contracts. For those without contracts or self-employed the calculation was more difficult, whether usual or actual hours were being requested. There was also some inconsistency observed in the scope of working time considered by respondents, some including travelling time to work, others excluding it, again in part related to the status in employment of the worker. The results of the project have been documented and used as a reference point in the region for questionnaire design.

Qualitative feedback from the ILO pilot studies

52. In addition to providing the microdata from the field tests countries were requested to provide qualitative feedback from the process, in particular regarding any difficulties encountered in the field either by respondents or interviewers. This is obviously more limited than the type of qualitative assessment possible through a structured process such as cognitive interviewing, but can be instructive nonetheless. Some of the feedback received was quite typical, for example, the difficulty of reporting working time for proxy respondents or for those with more variable working time arrangements. However, no notable differences were reported between the operation of versions A or B of the working time questions and no substantial negative feedback was received on the ability of respondents to respond to the questions.

53. An issue reported by more than one of the pilot countries was some difficulty in reporting of hours where respondents had simultaneous working activities. This might have been a mix of paid and unpaid working activities (e.g. caring for children while working in a family shop) or a mix of multiple paid activities that respondents undertake simultaneously (e.g. a person is an official in the local government but works on their own farm during some of the official working hours of the government job). Such cases had not been anticipated or addressed through training or interviewer manuals, or for that matter explicitly addressed within the international standards. This points to a particular complexity regarding simultaneous activities which requires further consideration and potentially further studies. Notwithstanding this the qualitative feedback did not indicate any particular points that would alter the analytical approach or point to major differences of note in the operation of versions A and B of the module.

Quantitative analysis

54. Other than in the model 2 questionnaire, data on working time was collected for all jobs (main, second and others). For the sake of achieving as clean comparisons as possible the main focus of analysis is on working time reported from the main job. This analysis was also completed using the data at the level all jobs held by respondents but no substantially different patterns were observed. In assessing the outcomes the focus was on identifying systematic differences whereby one version of the working time module led to consistently higher or lower outcomes than the other version.

55. Table 2 shows the mean, median and mode of the distribution for actual and usual hours worked in the main job by country and version. These indicators provide an overview of the centre of the distribution for each country and model. As expected the mean was systematically higher for usual hours than for actual hours for a given model and country. This finding can be explained by absences from work during the reference week which would impact actual but not usual hours.

Table 2. Indicators of the distribution of hours actually and usually worked in main job by country and model

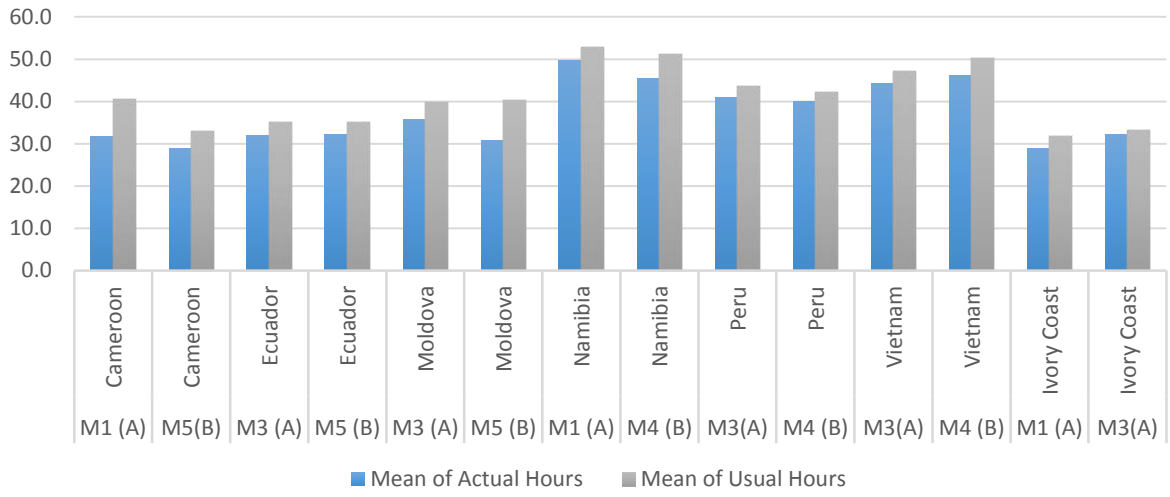
Main job		actual			usual		
		mean	median	mode	mean	median	mode
Cameroon	**M1[a]**	31.7	30	30	40.6	30	30
	M5[b]	28.8	28	0	33.0	33	36
Ecuador	**M3[a]**	32.0	35	40	35.1	40	40
	M5[b]	32.1	35	40	35.0	40	40
Ivory Coast	**M1[a]**	29.0	27	30	31.8	30	30
	M3[a]	32.1	30	30	33.2	32	30
Kyrgyzstan	**M2**	N/A	N/A	N/A	43.0	40	40
	M3[a]	39.6	40	40	42.4	40	40
Moldova	**M3[a]**	35.8	40	40	39.8	40	40
	M5[b]	30.7	35	40	40.4	40	40
Namibia	**M1[a]**	49.6	47	40	52.8	49	40
	M4[b]	45.5	46	0	51.2	50	84
Peru	**M3[a]**	41.1	42	48	43.6	48	48
	M4[b]	39.9	42	48	42.1	45	48
Philippines	**M2**	N/A	N/A	N/A	41.8	48	48
	M3[a]	40.3	42	48	40.7	42	48
Tunisia	**M2**	N/A	N/A	N/A	42.1	42	48
	M3[a]	41.5	46	56	44.2	49	56
Vietnam	**M3[a]**	44.3	48	56	47.1	48	56
	M4[b]	46.1	48	48	50.2	48	48

[a]*Version A of working time questions*
[b]*Version B of working time questions*

56. As highlighted by the means presented in Figure 3, at an aggregate level, the reporting of working time did not appear to vary substantially within country by model questionnaire or version in general. This is noteworthy given our interest in identifying any differences in the operation of versions A and B of the working time module. Within countries the differences observed in the mean were typically greater than the differences observed in the median which is expected given the influence of outliers on the mean (see Table 2).

57. This is not to say that no variability was observed within countries across model. Looking at mean actual hours the greatest observed difference was seen in Moldova where mean actual hours of 35.8 were recorded for version A (model 3) versus 30.7 for version B (model 5). By contrast the averages recorded in Ecuador were practically identical (32.0 versus 32.1) and Ecuador used the same 2 model questionnaires as Moldova (see Figure 3).

Figure 3: Mean of actual and usual working hours in main job by country and version



58. Where differences were observed they did not appear to be systematic based on the version used. Specifically, in some countries averages from Version B were higher than averages from Version A (e.g. Vietnam) while the opposite was observed in other countries (e.g. Peru). Additionally the direction of the difference between usual and actual hours did not always match, for example in Moldova Version A showed higher average hours actually worked, while for usual hours Version B showed a marginally higher average.

59. A high variability for modal values of actual hours worked was observed in some countries, namely in Cameroon and Namibia (see Table 2). On one hand, the mode for actual hours worked is 30 and 0 for Cameroon for models 1 and 5 respectively and, 40 and 0 for models 1 and 4 respectively for Namibia. On the other hand, for Namibia we observe a very high variability for the mode for usual hours worked across models. Indeed, for model 1 the mode is 40 whereas for model 4 the mode is 84. The pattern observed in modes supports some findings in the EU case that respondents had a tendency to round, sometimes to the nearest 5 hours or towards a national norm.

60. Some of the variability in the mode can also be explained with respect to how the survey operated. Specifically a mode of zero for actual hours in main job reflects the fact that the number of people absent from work in the reference week was more than the number reporting any other number in the distribution. Across a wide distribution with a relatively small sample this is perhaps not so surprising. In the case of a mode of 84 we can note that this was the maximum value allowed in some countries (12 hours per day for 7 days) and in this case represents all those respondents who reported 'high' usual hours. While this can be explained logically it does highlight the potential shortcomings of using the mode (as opposed to median or mean) for analytical purposes or as a threshold for time related underemployment, as referenced as one possibility in the standards. It also highlights some of the practical measurement issues which can arise when measuring different concepts of working time and should be considered by countries in their data processing and analysis practices. Different solutions could be imagined such as calculating a mode based on bands of hours rather than individual hours but these would still require assessment to ensure an appropriate outcome was achieved.

61. To take a more in depth view of data quality it is also useful to look at the higher end of the distributions, as the high values recorded influence the means presented in Table 2. Table 3 shows

the median and the 95th percentile of values recorded for both usual and actual hours in the main job. For the most part the 95th percentiles do not appear unusual, lying in the range of 52 to 75 hours across the majority of countries for both usual and actual hours. In a few cases more extreme values are observed, in excess of 90 for actual hours and usual hours in both models in Namibia and this was also the case for usual hours in Moldova (model 5). This, along with the issues observed with the mode highlights, some practical decisions which must be taken in capturing and processing data on working time.

Table 3. Median and 95th Percentile of usual hours worked in main job by country and model

		Actual hours		Usual Hours	
Time Related Underemployment		**Median**	**95th Percentile**	**Median**	**95th Percentile**
Cameroon	**M1[a]**	30	70	30	70
	M5[b]	28	70	33	72
Ecuador	**M3[a]**	35	65	40	66
	M5[b]	35	60	40	60
Ivory Coast	**M1[a]**	27	60	30	60
	M3[a]	30	60	32	60
Kyrgyzstan	**M2**	N/A	N/A	40	70
	M3[a]	40	70	40	70
Moldova	**M3[a]**	40	54	40	56
	M5[b]	35	52	40	97
Namibia	**M1[a]**	47	95	49	97
	M4[b]	46	91	50	97
Peru	**M3[a]**	42	75	48	80
	M4[b]	42	72	45	73
Philippines	**M2**	N/A	N/A	48	84
	M3[a]	42	84	42	84
Tunisia	**M2**	N/A	N/A	42	72
	M3[a]	46	70	49	72
Vietnam	**M3[a]**	48	70	48	70
	M4[b]	48	70	48	84

62. Firstly, it must be considered if an upper threshold should be set, some countries applied an upper limit of 84 hours (7 x 12 hours) while others did not, for example, the maximum value recorded in Cameroon model 5 for both usual and actual hours was 168 (7 x 24 hours). While such high values evidently appear infeasible in themselves, they can also have a disproportionate effect on published estimates of average hours thus warranting careful consideration at different stages of the process (instructions to interviewers, design of the survey instrument, data processing).

63. Secondly, careful consideration is needed of appropriate codes to be adopted for 'don't know', 'missing' etc. In the case of the pilot studies some countries initially adopted codes such as 97, 98, 99 for these purposes, which can easily be interpreted as actual values when summarised and thus may be difficult to edit as judgement is needed as to whether the value was genuine or an incorrectly entered code. For the ILO pilot studies it was decided to utilise 3 digit codes to avoid this possibility.

64. While the data in Table 3 does point to some data quality concerns, they would not appear to have been widespread or specific to Version A or Version B of the working time module. This, in combination with relatively low levels of difference in recorded means, medians and modes, and a lack of any obvious systematic direction of difference, leads to a conclusion that there was no evident impact of the version of the questions used on usual or actual working hours at the aggregate level.

65. The variability (or otherwise) of recorded working time across questionnaires can be further assessed by reviewing the distribution of hours reported across working time bands (see Table 4). For example we can note that looking at usual hours worked, very few respondents reported usual working hours in their main job as less than or equal to 5 hours. Indeed the percentage of employed in this category goes from 0% to 10% for usual hours and from 2% to 20% for actual hours (which can be zero due to temporary absence). Even if we add the second band, 6 to 10 hours, to the first one we still get a low proportion of the employed working very low working hours. This highlights that while the one hour criterion specified in the standards is necessary to ensure comprehensive measurement of all employment and labour input to production, it is not the case that a large proportion of those employed are working such low hours. Thus the impact of the one hour criterion on estimates of employment is likely to be low versus alternative higher thresholds, while setting any higher threshold could have negative implications for the coverage of estimates.

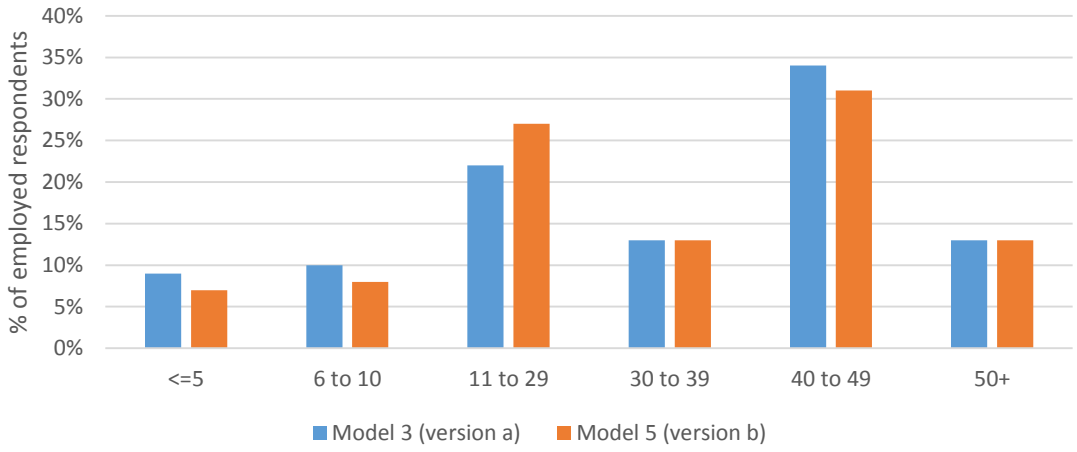
66. The type of estimates shown in Table 4 highlight the value of analysis of working time by bands as a supplement to averages and other summary statistics, as well as supplementing our understanding of the significance of the one hour criteria in the measurement of employment (discussed more in the separate report on that topic).

Table 4. Usual and actual hours worked in main job by hours band (% of all employed)

Working Hours - main job		usual						actual					
		<= 5	06 - 10	11 - 29	30 - 39	40 - 49	50+	<= 5	06 - 10	11 - 29	30 - 39	40 - 49	50+
Cameroon	M1[a]	8%	9%	25%	19%	20%	19%	11%	9%	22%	20%	20%	17%
	M5[b]	10%	8%	25%	19%	19%	19%	20%	8%	23%	16%	18%	15%
Ecuador	M3[a]	3%	8%	20%	14%	41%	13%	9%	10%	22%	13%	34%	13%
	M5[b]	2%	6%	26%	14%	38%	14%	7%	8%	27%	13%	31%	13%
Ivory Coast	M1[a]	2%	4%	40%	23%	19%	12%	7%	6%	41%	20%	16%	11%
	M3[a]	1%	4%	33%	27%	24%	11%	2%	4%	36%	26%	22%	10%
Kyrgyzstan	M3[a]	0%	1%	13%	13%	54%	19%	5%	0%	14%	14%	49%	17%
Moldova	M3[a]	1%	1%	8%	12%	68%	9%	8%	1%	12%	12%	60%	7%
	M5[b]	1%	5%	19%	12%	46%	17%	9%	5%	27%	15%	37%	6%
Namibia	M1[a]	3%	4%	9%	6%	28%	50%	6%	3%	9%	10%	26%	46%
	M4[b]	3%	6%	9%	11%	21%	51%	11%	5%	8%	11%	21%	43%
Peru	M3[a]	4%	4%	16%	10%	31%	34%	6%	4%	18%	13%	29%	30%
	M4[b]	3%	7%	14%	14%	32%	30%	6%	7%	16%	14%	29%	28%
Philippines	M3[a]	5%	8%	20%	8%	33%	26%	6%	8%	20%	8%	32%	26%
Tunisia	M3[a]	2%	6%	19%	9%	18%	46%	3%	5%	23%	11%	18%	40%
Vietnam	M3[a]	1%	2%	11%	7%	34%	45%	3%	2%	14%	9%	33%	39%
	M4[b]	0%	0%	10%	9%	33%	48%	2%	0%	15%	10%	32%	41%

67. No clear systematic patterns of difference could be observed in the distributions of hours worked across different model questionnaires in countries. In the majority of countries the distributions were very close across model questionnaires as shown by Figure 4 for the case of Ecuador. The most notable exception was Moldova where model 5 (Version B) had higher percentages of respondents working lower hours than Version A which accounts for the differences in overall averages as noted earlier.

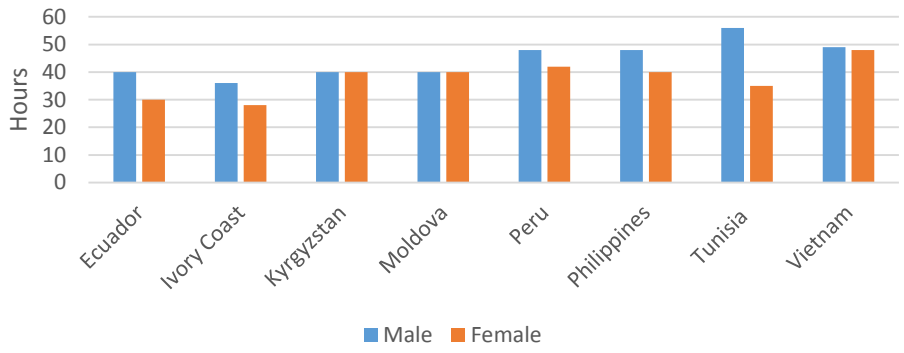
Figure 4: Distribution of hours actually worked in main job by model questionnaire - Ecuador



68. While the distribution of working hours did not vary substantially between model questionnaires within country there was, unsurprisingly, variability across countries. For instance, the band with the highest proportion of employed differed: *11-29 hours* for Cameroon and Ivory Coast, *40-49 hours* for Ecuador, Kyrgyzstan, Moldova and Philippines and, *50+ hours* for Namibia, Peru, Tunisia and Vietnam for usual hours worked. This is, in part, explained by differences in the social and economic structure of each country but given the experimental design these differences should not be assumed to reflect the situation of the populations in general.

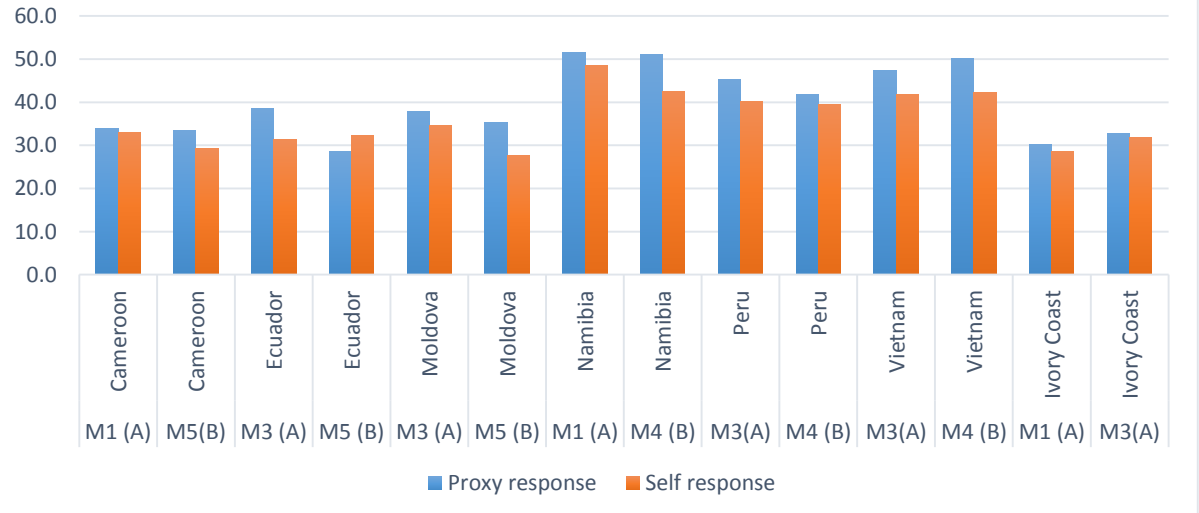
69. Disaggregation by sex showed results in line with expectations whereby for both men and women mean and median usual hours worked are higher than actual. The mean and median for both actual and usual hours worked were almost universally lower for women than for men. Figure 5 shows that men had higher median hours usually worked in their main job than women in 7 of the 9 countries who tested model 3, with relatively substantial differences in some cases (e.g. Tunisia). While the lower working time in employment for women may not be surprising it is important to take note of this when considering the calculation of time related underemployment which can rely on a single time threshold, as is common practice.

Figure 5: Median hours usually worked in main job by sex and country, model 3



70. The difficulty of obtaining information on the working time in the case of proxy response is well recorded. For the LFS pilots the samples of proxy and self-reporting respondents were not random and the level of proxy response across countries varied greatly. As such our ability to draw conclusions on the impact of proxy response is very limited. While needing to be cautious in interpretation of the results we can observe some difference between the reporting of working hours for proxies in comparison to self-respondents. The mean hours actually worked of proxies is, in general, higher than for self-respondents (see Figure 6 which focusses on the 7 countries who did not implement model 2). This pattern is repeated for the median and for hours usually worked. This confirms a similar finding in the analysis of the EU LFS data whereby proxy respondents generally reported higher average hours worked than self-respondents. We do not see any evident systematic difference between Version A and Version B so no conclusion can be drawn that one version or the other has a particularly differential impact on proxy response.

Figure 6: Mean hours actually worked in main job by country, model and respondent type



71. As noted earlier, one of the measurement objectives in the area of working time was to assess if status in employment impacted reporting and whether this varied by the version of questions applied. Figure 7 shows again the case of Ecuador to highlight some of patterns observed. To begin

with we can note that the averages generated by model 3 (Version A) and model 5 (Version B) were very close for each status in employment group leading us to conclude that there was no evident impact on the reporting of hours usually worked related to the version applied.

72. Further we note that of the 3 groups highlighted, family helpers had the lowest average hours reported. In addition, we can see that while the averages for self-employed and employees were relatively close, there was much greater variability in the reporting for those in self-employment. This is demonstrated by the interquartile range (distance between the 25th percentile and 75th percentile) which was much smaller for employees than other status in employment groups. Similar patterns were observed for actual hours worked (not shown).

73. In other countries (not shown) there were cases where averages for self-employed were higher than employees. The other patterns highlighted above were quite consistent however, i.e. lower averages for family helpers and greater variability in reported hours for self-employed.

Figure 7: Hours usually worked in main job by model and status in employment, Ecuador

74. The analysis presented above has focused on hours worked in the main job. Versions A and Versions B also included questions to capture hours worked in all jobs, both usual and actual. This information can be of value for various purposes, such as for labour productivity estimation and as a reference point for measurement of time related underemployment. Table 5 shows hours usually and actually worked in both the main job and all jobs.

75. Naturally, hours worked in all jobs is higher than hours worked in the main job in all cases. However, the level of difference varies depending on the volume of second and other jobs recorded. For example, in Moldova, where very few respondents reported multiple jobs, the averages for main job and all jobs are very close. In other cases such as Vietnam or model 4 in Namibia a more substantial difference was observed. We can also note that the gap between hours worked in the main job and all jobs is not always consistent across models within country. For example in Cameroon the gap was quite substantial for model 1 (e.g. 31.7 mean hours actually worked for model 1 but 41.6 in all jobs) but relatively low for model 5 (28.8 compared with 31.0). There is no particular pattern to these differences across countries so it likely relates to random sampling effects which has led to different prevalence of second jobs being captured across the samples within countries.

Table 5. Mean hours usually and actually worked in main job and all jobs by country and model

		actual		usual	
		Main Job	All Jobs	Main Job	All Jobs
Cameroon	**M1**[a]	31.7	41.6	40.6	53.4
	M5[b]	28.8	31.0	33.0	35.8
Ecuador	**M3**[a]	32.0	42.0	35.1	45.8
	M5[b]	32.1	46.8	35.0	48.2
Ivory Coast	**M1**[a]	29.0	30.4	31.8	33.3
	M3[a]	32.1	45.5	33.2	46.2
Kyrgyzstan	**M2**	N/A	N/A	43.0	N/A
	M3[a]	39.6	40.3	42.4	42.8
Moldova	**M3**[a]	35.8	36.2	39.8	40.1
	M5[b]	30.7	31.5	40.4	41.4
Namibia	**M1**[a]	49.6	51.6	52.8	54.1
	M4[b]	45.5	75.9	51.2	75.9
Peru	**M3**[a]	41.1	45.5	43.6	52.1
	M4[b]	39.9	52.3	42.1	47.0
Philippines	**M2**	N/A	N/A	41.8	N/A
	M3[a]	40.3	42.2	40.7	48.1
Tunisia	**M2**	N/A	N/A	42.1	N/A
	M3[a]	41.5	41.5	44.2	44.3
Vietnam	**M3**[a]	44.3	52.4	47.1	56.3
	M4[b]	46.1	55.7	50.2	72.2

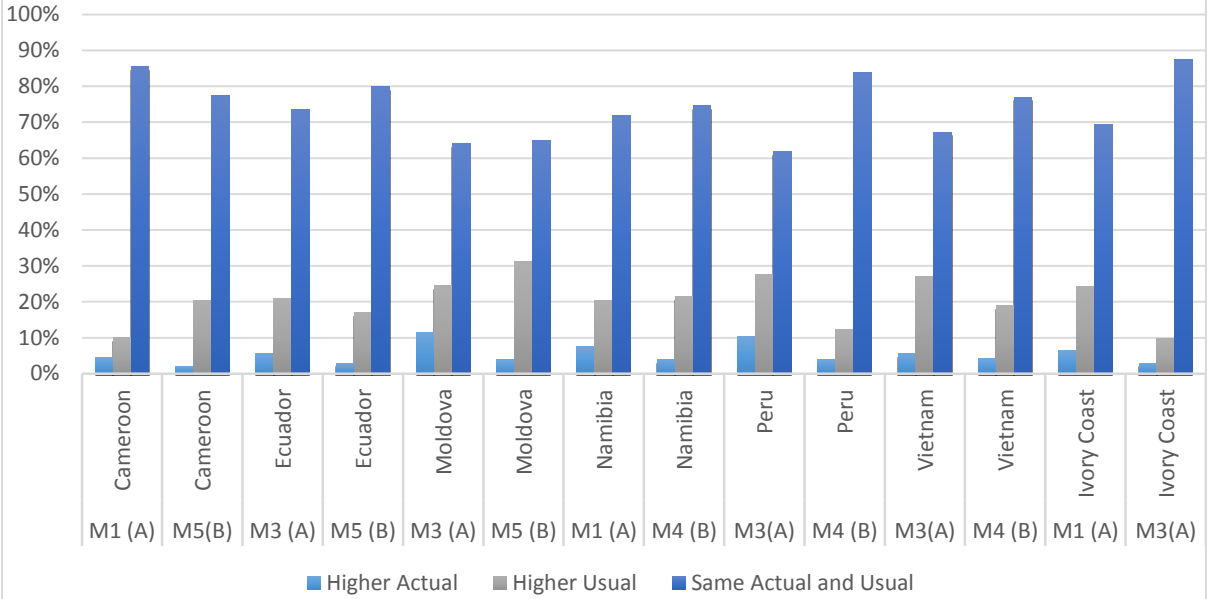
76. In addition to analysing working time differences at the aggregate level, analysis was completed at the individual level focussing on whether respondents reported different usual and actual working hours. As discussed earlier Version A required respondents to independently report usual and actual working time, while Version B asked actual work time then asked the respondent to confirm if that was the same as usual working time. It could be expected that this difference would lead to a larger number of respondents reporting different usual and actual working hours in Version A.

77. Related to this, one practical issue of note was observed, in particular reported in cases in Latin American pilot countries. There it was observed that it was necessary to reconfirm total usual hours worked with respondents. Errors were arising when total usual hours in all jobs was being calculated by summing the usual hours in different jobs (a common LFS practice). The source of the errors was the fact that some respondents with multiple jobs had irregular working patterns, i.e. not working in all jobs every week. This led to total usual hours worked being initially over-estimated when summed across jobs. The proposed solution for this is to ensure that all calculated totals (particularly for usual, but perhaps also useful for actual hours worked) should be reconfirmed with respondents and corrections provided by the respondent where needed.

78. Figure 8 shows the reported relationship between usual and actual hours worked in all jobs. There are several patterns in this figure. Firstly, most respondents reported the same hours actually worked as usually worked for both Version A and Version B. This was true for over 60% of all employed respondents for all countries and models and over 80% in some countries.

79. Secondly, the proportion of employed that reported the same usual and actual working hours was higher for Version B for all countries except for Cameroon. This is in line with a-priori expectations that the use of a confirmatory question would lead to the same hours being reported more frequently than independent questions on hours usually and actually worked. The difference between Version A and Version B is not always very substantial but relatively large differences are seen in the minority of cases (e.g. Peru).

Figure 8: Differences between usual and actual hours worked in all jobs by country and model (% of employed respondents)



80. Thirdly, the proportion of employed that reported higher actual hours worked than usual hours worked, while generally low, is systematically higher for Version A than for Version B in all countries. To illustrate this we note can look at the case of Moldova 4% of employed respondents of model 5 (Version B) indicated having higher actual working hours in the reference week than usual. For respondents to model 3 (Version A) the corresponding proportion was 11%. A similar pattern was repeated in other pilot countries who tested both versions.

81. Guidance included within the resolution of the 18th ICLS (ILO, 2008) proposed that hours usually worked should be collected before hours actually worked[12] (as done in Version A). However, the guidance also referred to the importance of prompting respondents to consider overtime or absences from work. Similar conclusions were drawn from the analysis of EU-LFS results referred to earlier, whereby it was noted that some respondents could overstate hours actually worked by being conditioned to consider usual hours worked when the question sequence started with usual hours. This can lead to respondents not considering absences when deriving their estimate of hours actually worked. Relating these findings and recommendations to the ILO LFS pilots, it could be inferred that the findings from the pilots indicate possible over-reporting of hours actually worked through Version A. Through the Version A sequence usual hours worked was asked first but with no specific question on absence for work before asking about hours actually worked. However, given the low and inconsistent within country differences between versions A and B in mean hours actually and usually worked, it is impossible to conclude with certainty that differences in the question order between versions A and B substantially impacted reporting.

[12] See para 20.3c (ILO, 2008)

82. Overall, we can summarise the main findings on measurement of working time as follows:

    a. While inevitably the reporting of working time can be difficult, the pilot countries did not report major difficulties with the use of the questions tested in the pilot studies. Some issues were reported with respondents who had simultaneous working activities, but this was not on a wide scale. Unsurprisingly, the provision of information on working time by proxy was also found difficult.
    b. Aggregate level analysis does not show any systematic impact of the version of working time questions used. Similar distributions, medians and means were generally observed both for usual and actual working time.
    c. While some differences in medians and means were observed when data was disaggregated by sex and proxy/self-response there is no evidence that these differences were systematic and linked to the model questionnaire version.
    d. The version used did not appear to impact reporting by status in employment. However, it can be noted that greater variability in reported hours was observed for those in self-employment and family helpers than employees. Along with qualitative feedback from separate pilots in LAC this suggests that care is needed in LFS design to ensure hours worked information can be adequately captured across different status in employment groups.
    e. Looking at the data at the individual level shows that the use of Version B could lead to higher reporting of the same usual and actual working time as it uses a confirmatory question. However, the level of difference was typically low and did not clearly impact overall aggregate working time estimates.

83. Regarding questionnaire design the conclusions we can draw are:
    a. For aggregate level analysis either Version A or Version B could be used without expecting systematic differences (e.g. consistent relative over or under-estimation of working time)
    b. If analysis of working time at individual level (e.g. differences between usual and actual working time) is considered important greater care is needed in questionnaire design with a higher proportion of respondents appearing to indicate the same usual and actual working time if a confirmation question is used (i.e. version B).
    c. A variety of practical considerations were highlighted by the studies such as the need to carefully choose validation and processing approaches and the need to ensure total usual hours worked in all jobs is confirmed with the respondent.
    d. Drawing on previous ILO guidance and recent EU experiences an approach involving asking about absences from work before hours actually worked, may assist in reducing over-reporting of actual hours worked but this was not tested in the ILO pilot studies and could benefit from further study.

B. Analysis of reasons for differences between actual and usual hours?

84. The second topic assessed was the reporting of reasons for working time differences (where usual and actual working time was different). There can be some analytical interest in such information, for example to understand why peaks or troughs in working time can occur at particular points in time.

85. The process to identify differences between hours usually and actually worked differed between versions A and B as described earlier in this report. In both versions, once it was confirmed that the hours usually and actually worked in all jobs were different, the respondent was asked the question *"Why did you work (more/less) hours and usual in the last (week/7days)?"*. The respondents were not directly asked to consider any specific job so it is not possible to know which job or jobs were considered when answering. Respondents provided their subjective response which was then coded across ten pre-defined response categories plus other (specify).

86. Figure 8 above already showed the outcome of the comparison between usual and actual working hours. For the purpose of analysing the outcome of the question on reasons for differences the reference group of interest is those who reported having different usual and actual working hours. As shown in Table 6 the percentage of respondents in that situation varied from a low of 3% (Philippines model 3) to a high of 38% (Peru model 3). There was no consistent pattern of difference between the responses of men and women. In some cases a higher percentage of women reported having differences between usual and actual hours worked but in other cases the percentage was higher among men. We can note that, for the most part, a not insignificant proportion of employed respondents reported differences between usual and actual working hours thus providing a useful base for the analysis of the reasons.

Table 6. Percentage of employed respondents with different usual and actual hours worked by model, country and sex (% of respondents)

		Male	Female	Total
M1(A)	**Cameroon**	14%	16%	15%
	Ivory Coast	30%	32%	31%
	Namibia	25%	30%	28%
M3 (A)	**Ecuador**	27%	25%	26%
	Ivory Coast	13%	13%	13%
	Kyrgyzstan	16%	16%	16%
	Moldova	38%	33%	36%
	Peru	43%	31%	38%
	Philippines	4%	3%	3%
	Tunisia	27%	32%	29%
	Vietnam	37%	28%	33%
M4 (B)	**Namibia**	27%	24%	25%
	Peru	17%	15%	16%
	Vietnam	24%	22%	23%
M5 (B)	**Cameroon**	19%	26%	23%
	Ecuador	20%	19%	20%
	Moldova	40%	29%	35%

87. The analysis of the outcomes from the question on reasons for differences mainly focussed on whether the reasons reported appeared consistent with difference in working time reported. For example it would not be expected that an *"increase in workload"* would be a valid reason for actual hours being lower than usual hours. However as shown in Table 7 a relatively large proportion of those who reported the reason *"increase in workload"* had higher usual than actual hours across different countries, namely Cameroon, Ecuador, Ivory Coast, Moldova and Namibia.

88. The highlighted cells in Table 7 show the cases where more than 20% of the respondents to the question reported a reason which seemed to contradict the difference in their working time. Other examples include respondents indicating *"high season"* as the reason for lower actual than usual hours and respondents indicating *"low or off season"* as the reason for higher than usual hours. Another potentially contradictory response would be *"reduction in clients or work"* when higher actual hours worked have been reported, but cases may exist of this among self-employed where volume of work is increased to offset a lack of clients. However, this is unlikely to account for a level as high as 70% as found in Cameroon.

89. This potential misreporting was found to some extent with each model questionnaire and version suggesting it was not particularly context specific to other elements of the questionnaire.

Table 7. Reasons for working time differences (% of those with different usual and actual working time in all jobs)

		Increase in Workload		Reduction in clients/work		High Season		Low or Off Season	
		Higher Actual	Higher Usual	Higher Actual	Higher Usual	Higher Actual	Higher Usual	Higher Actual	Higher Usual
M1[a]	Cameroon	73%	27%	70%	30%	100%	0%	14%	86%
	Ivory Coast	0%	100%	22%	78%	0%	0%	0%	100%
	Namibia	60%	40%	8%	92%	100%	0%	0%	0%
M3[a]	Ecuador	95%	5%	0%	100%	100%	0%	0%	100%
	Ivory Coast	10%	90%	50%	50%	0%	100%	100%	0%
	Kyrgyzstan	85%	15%	0%	100%	100%	0%	0%	100%
	Moldova	100%	0%	0%	100%	100%	0%	0%	100%
	Peru	84%	16%	5%	95%	66%	34%	8%	92%
	Philippines	0%	0%	0%	100%	100%	0%	0%	100%
	Tunisia	82%	18%	7%	93%	0%	0%	0%	100%
	Vietnam	100%	0%	0%	100%	100%	0%	0%	100%
M4[b]	Namibia	33%	67%	15%	85%	67%	33%	0%	0%
	Peru	84%	16%	0%	100%	55%	45%	38%	62%
	Vietnam	95%	5%	0%	100%	100%	0%	6%	94%
M5[b]	Cameroon	52%	48%	16%	84%	0%	0%	8%	92%
	Ecuador	80%	20%	0%	100%	63%	37%	3%	97%
	Moldova	57%	43%	7%	93%	66%	34%	0%	100%

90. The observed level of possible misreporting implies that respondents had some difficulty in interpreting the question and providing appropriate reasons. This is supported by qualitative feedback from some countries who observed confusion on the part of the respondents as the question did not sufficiently clearly reference their own working situation. In addition some countries reported confusion on the part of the interviewers who were required to code the response received to the available list of categories. This at least partly derived from the fact that the list of coding categories included some reasons relevant to lower hours and some relevant to higher hours. This was a consequence of the pen and paper implementation of the questionnaires and could have led to miscoding of responses which would be avoidable if computer assisted methods were used.

91. Reflecting on the observed difficulties, it appears clear that any country wishing to collect information of this type needs to develop and test the relevant question carefully as the version used in the pilot tests yielded some seemingly inconsistent information (regardless of whether Version A or Version B of the module was used). One proposed solution for this is to ensure the question is separately worded for those with higher than usual hours and those with lower than usual hours, with appropriate response categories for each case. This type of approach will be easier to implement with computer assisted modes of data collection.

C. Measurement of time related underemployment and inadequate employment

Desire and availability for more working time

92. This section covers the questions on desire and availability for more working time, which form the basis for the measurement of time related underemployment. In addition to operationalise the definition, a boundary needs to be set between full and part-time employment. Countries have adopted different approaches to operationalising the boundary, in some cases using self-reporting by the respondent that their job was part-time, while in others using means or medians of working time. For the purposes of this report we use a common threshold (median of usual hours worked in all jobs) for all countries that took part in the pilot studies. This will ensure comparability of the results. However, use of alternative thresholds would not substantially alter the findings.

93. For the pilot studies the interest centred on the identification of any evident operational issues with the questions needed to identify time related underemployment, and whether they are influenced by the version of the working time questions used. The intention was to draw conclusions on which approaches to measurement of time related underemployment can be recommended for labour force survey questionnaires.

94. No particular qualitative feedback indicating any operational difficulties was received from the pilot countries about the questions on desire and availability to work more hours. However, the separate LAC pilot studies did include qualitative assessment of these questions through cognitive testing. For the most part, while noting the subjectivity of desire to work more hours, the tests in that case did not uncover significant comprehension difficulties which would be expected to impact respondents reporting. When asked to paraphrase the question one respondent said *"You are wondering if I have time, if I am willing to work more paid hours?"*, while another, when asked what they considered when answering stated, *"That I have to pay the tuition for next year, that I need money"*. These answers, and other similar ones, indicate that respondents were able to relate the question as intended to their desire to earn additional money and their willingness to work more. Similarly, no notable comprehension or reporting difficulties were reported relating to the question on availability to work more hours. These findings are consistent with the conclusions from the ILO's cognitive testing of questions on desire and availability to work among those who are not employed, as covered by the separate report in this series titled *"Measuring Unemployment and the Potential Labour Force in Labour Force Surveys"*.

95. For the ILO pilot studies the question used for desire to work more hours was *'Would (NAME) want to work more hours per week than usually worked, provided the extra hours are paid?'*. Those saying yes to this question were then asked *'Could (NAME) start working more hours within the next two weeks?'*. The questions were worded identically between Version A and Version B of the working time section but the position and flow of the questions within the section differed. The

most important difference of note was that in Version B a question on activity to look for other work was asked before the questions on desire and availability to work more whereas in Version A that question was at the end of the module. This difference creates a possibility to assess if asking a question on a concrete activity such as search for other work could influence reporting of desire in particular.

96. Table 8 presents the proportion of people looking to work more and being available disaggregated by sex. The percentages presented are relative to the group asked the question. All employed respondents were asked the question on desire to work more hours so the proportions can be interpreted as a proportion of all employed respondents who wanted to work more hours. For availability the question was only asked if the person wanted to work more hours so the proportion in that case can be interpreted as the proportion of all those who wanted to work more hours that were also available to do so. At this point no hours threshold is applied so this covers all respondents asked those questions regardless of hours worked.

Table 8. Proportion of people wanting to work more and being available* by sex

		Desire to work more			Availability to work more		
		Male	Female	Total	Male	Female	Total
		% of employed persons			% of employed persons who wanted to work more hours		
Cameroon	**M1[a]**	40%	24%	33%	95%	95%	95%
	M5[b]	42%	39%	41%	88%	80%	84%
Ecuador	**M3[a]**	56%	55%	55%	86%	80%	84%
	M5[b]	50%	47%	49%	89%	88%	89%
Ivory Coast	**M1[a]**	38%	26%	33%	90%	86%	88%
	M3[a]	29%	23%	26%	87%	85%	86%
Kyrgyzstan	**M2**	21%	21%	21%	78%	56%	71%
	M3[a]	26%	18%	23%	94%	100%	96%
Moldova	**M3[a]**	18%	18%	18%	84%	97%	90%
	M5[b]	24%	18%	21%	92%	88%	90%
Namibia	**M1[a]**	37%	38%	38%	79%	84%	82%
	M4[b]	37%	29%	32%	92%	93%	93%
Peru	**M3[a]**	65%	62%	64%	91%	82%	88%
	M4[b]	49%	52%	50%	83%	83%	83%
Philippines	**M2**	53%	41%	47%	84%	90%	86%
	M3[a]	41%	34%	38%	80%	79%	80%
Tunisia	**M2**	31%	28%	30%	97%	95%	96%
	M3[a]	38%	27%	35%	99%	100%	99%
Vietnam	**M3[a]**	14%	13%	13%	83%	82%	83%
	M4[b]	13%	9%	11%	93%	93%	93%

** The proportion for those who are available is computed only for those who said that are willing to work more*

97. The degree to which the desire to work more hours was reported varied substantially by country, from as low as 11% for model 4 in Vietnam to 64% for model 3 in Peru. There was some variability of reporting across models within countries but generally to a relatively low extent with the greatest difference observed in Peru (64% for model 3 as compared with 50% for model 4).

98. There was no evident systematic impact related to which model or version of the working time questions was being applied, for example in Moldova a higher level of desire to work more hours was reported for model 5 (21%) as compared with model 3 (18%) but that was reversed in Ecuador with 55% being observed for model 3 and 49% for model 5.

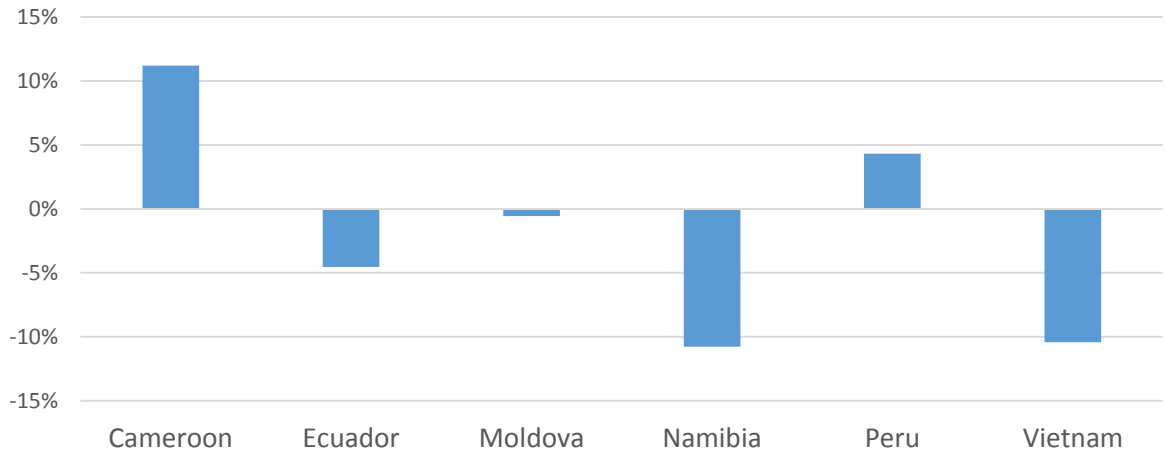
99. Disaggregation by sex does not show any evidence of differences in reporting by sex which could be related to the model questionnaire applied. Typically, but not universally, males were more likely to report desire to work more hours than females (e.g. 38% vs 26% for Ivory Coast model 1). This was quite consistent across model questionnaires within countries with very few exceptions. This could possibly be attributed to greater labour market participation among men more generally and lower demand for additional paid work among women due to other responsibilities.

100. Concerning "availability to work more hours" there are no substantial differences across versions within a country. In fact typically a very high percentage of those who wanted to work more hours indicated that they were available to do so. The highest level reported was for Tunisia for model 3 (99%) and for all but one case (Kyrgyzstan model 2) the level observed was above 80% of respondents.

101. As with desire to work more hours there was no clear systematic difference between the results regarding availability from Version A and Version B of the working time section. Figure 9 shows that while differences between versions were found, the direction and size of difference varied by country among the 6 countries where both version A and B were tested (Version A higher for 2 countries, Version B higher for 4 countries). This suggests that the reporting of desire and availability were not evidently sensitive to the order or flow of other questions with the working time sections tested.

102. Specifically, given that the major difference in the sequences was the placement of the question on activity to look for other work, we cannot conclude that this difference impacted reporting in any systematic way. In other words, there was no clear evidence that asking about a concrete activity to look for work first influenced the reporting of the more subjective concept of desire to work more.

Figure 9: Difference in reporting of availability to work more hours (Version A - Version B)



Persons in Time related underemployment

103. Information on working time along with desire and availability to work more hours were combined to identify respondents as time related underemployed.

104. Unsurprisingly the shares obtained vary substantially based on the type of working time threshold applied, defined by the standards as the boundary between part-time and full-time employment. To aid in comparison of the results 3 common approaches were initially applied, all with reference to usual hours worked in all jobs. Those approaches were the use of the mode, median or no threshold (in other words including all people who wanted to work more hours and were available to do so regardless of the number of hours they usually work). While the use of a mode is not a common international practice it is included here given that the standards reference it as a possible approach.

105. In line with findings already reported, there are no major differences across versions within countries in the percentage of employed people identified as time related underemployed. This is explained by the fact that in each country across the models tested the distribution of usual hours worked was very similar and because we did not observe any substantial difference in the reporting of desire and availability to work more hours.

106. Most notably we can see, as expected, the greater variability in time related underemployment where a mode threshold is used. For example in Namibia the estimate of time related underemployment from Model 1 was 8% versus 26% for Model 4 (see Table 9). However the difference was far narrower using the median hours worked as the threshold (14% vs 18%). This highlights again the need for careful selection of the hours worked threshold for time related underemployment purposes.

107. While the standards would not promote the use of no threshold of working time it is nonetheless interesting to note that many employed respondents reported desire and availability for more work even if they worked hours above the median, for example while 46% of employed respondents reported being interested in and available for more working time in Ecuador (model 3), only 21% were identified as time related underemployed when a threshold of the median was applied. Countries should consider if this is of national interest when designing their questionnaires but in doing so note the inevitable reporting burden this creates on respondents working full-time hours versus an approach that applies a threshold during the data collection process. Indeed, the separate LAC pilots did observe some social desirability effects for respondents working full-time or longer hours when responding to this question.

Table 9. Percentage of employed persons who were Time Related Underemployed by threshold type, country and model questionnaire

		Mode	Median	No threshold
Cameroon	**M1[a]**	14%	14%	34%
	M5[b]	20%	18%	36%
Ecuador	**M3[a]**	21%	21%	46%
	M5[b]	22%	22%	43%
Ivory Coast	**M1[a]**	14%	14%	29%
	M3[a]	11%	13%	22%
Kyrgyzstan	**M2**	7%	7%	22%
	M3[a]	5%	5%	15%
Moldova	**M3[a]**	8%	8%	16%
	M5[b]	7%	7%	19%
Namibia	**M1[a]**	8%	14%	31%
	M4[b]	26%	18%	30%
Peru	**M3[a]**	31%	31%	56%
	M4[b]	25%	23%	42%
Philippines	**M2**	14%	14%	30%
	M3[a]	22%	21%	41%
Tunisia	**M2**	16%	19%	34%
	M3[a]	19%	18%	29%
Vietnam	**M3[a]**	7%	4%	11%
	M4[b]	5%	5%	10%

108. Table 10 presents the percentage of employed men and women that were classified as time related underemployed using the overall median as threshold. For most countries, females tend to be classified as time related underemployed more often than male. Bearing in mind that men were marginally more likely to report desire to work more hours and there were no clear differences in the reporting of availability, this is entirely due to the impact of the hours threshold and the fact that women typically reported lower paid working hours than men. This result holds for both versions of the working time module across countries with few exceptions.

Table 10. Percentage of employed persons who were Time Related Underemployed (median threshold) by country, model questionnaire and sex

		Male	Female
Cameroon	**M1[a]**	15%	11%
	M5[b]	16%	17%
Ecuador	**M3[a]**	15%	31%
	M5[b]	18%	28%
Ivory Coast	**M1[a]**	12%	16%
	M3[a]	11%	14%
Kyrgyzstan	**M2**	5%	7%
	M3[a]	2%	0%
Moldova	**M3[a]**	7%	10%
	M5[b]	7%	8%
Namibia	**M1[a]**	8%	19%
	M4[b]	20%	17%
Peru	**M3[a]**	29%	34%
	M4[b]	16%	32%
Philippines	**M2**	19%	23%
	M3[a]	3%	5%
Tunisia	**M2**	17%	20%
	M3[a]	3%	4%
Vietnam	**M3[a]**	5%	3%
	M4[b]	6%	3%

109. One criticism of the concept of time related underemployment is its limited applicability to those in self-employment. The rational for this criticism is that if the self-employed are lacking in clients /workload at a point in time they can increase their working time to attempt make up the loss in income. This would prevent them from being counted among the time related underemployed despite an inadequate volume of work being available. However, evidence form the pilot studies shows that the prevalence of time related underemployment for self-employed is non negligible and up to 31% in the case of Peru M3. In fact in the majority of cases the prevalence was higher among self-employed than employees (see Table 11).

110. In many cases the highest level of time related underemployment was observed for family helpers. This is consistent with the findings reported earlier that family helpers typically reported lower working hours. This could indicate that a share of family helpers may be using the work in the family to avoid unemployment but it does not represent an adequate employment situation. Of course it remains true that other types of inadequate employment situation require an alternative measurement approaches (one of which is discussed later) but as regards time related underemployment it was found to be of relevance to different status in employment groups.

Table 11. Prevalence of Time Related Underemployment by country, model questionnaire and Status in Employment

		Employee	Self Employed	Family Helpers
Cameroon	**M1[a]**	9%	15%	12%
	M5[b]	14%	18%	16%
Ecuador	**M3[a]**	18%	23%	24%
	M5[b]	14%	27%	30%
Ivory Coast	**M1[a]**	10%	14%	18%
	M3[a]	10%	13%	15%
Kyrgyzstan	**M2**	3%	8%	20%
	M3[a]	1%	2%	0%
Moldova	**M3[a]**	5%	19%	22%
	M5[b]	5%	9%	21%
Namibia	**M1[a]**	14%	15%	14%
	M4[b]	15%	26%	0%
Peru	**M3[a]**	29%	31%	42%
	M4[b]	23%	23%	26%
Philippines	**M2**	13%	27%	30%
	M3[a]	4%	4%	5%
Tunisia	**M2**	16%	19%	22%
	M3[a]	4%	1%	9%
Vietnam	**M3[a]**	3%	6%	3%
	M4[b]	3%	7%	8%

Other issues covered in the working time section

111. In addition the questions on working time and time related underemployment the working time section included questions on the amount of additional working time respondents could work (for those wanting and available to work more hours) and desire to find additional/other work.

112. Table 12 shows the mean and median additional working hours respondents were available to work. One use of this information could be to estimate the volume of time related underemployment. The mean value tends to be higher than the median across versions and countries. There are some high values in the distribution of additional hours but most of the reported values were in the range 0-25 hours per week. In the majority of cases the reported additional hours were consistent across models within each country.

113. While no qualitative feedback was received during the ILO pilot studies indicating any difficulties in operation of the question some cognitive assessment was undertaken in the separate LAC pilot studies. Through those tests some difficulties were observed with the calculation of the response to questions of this type, for example with some respondents appearing to report a number of hours per day, rather than per week as intended. On balance countries may wish to consider inclusion of a question of this type if there is national interest in the data yielded, but should note the need for careful selection of wording and testing to ensure the targeted information can be

reported by respondents. Options which could be considered would be the inclusion of the possibility to record the hours by day, week or month depending on how it is reported by the respondent with the data subsequently standardised in data processing.

Table 12. Mean and median of additional hours available per week by country and model questionnaire

		Mean	Median
Cameroon	**M1[a]**	11.0	10
	M5[b]	7.4	4
Ecuador	**M3[a]**	16.0	14
	M5[b]	16.6	15
Ivory Coast	**M1[a]**	5.7	4
	M3[a]	6.7	5
Kyrgyzstan	**M2**	14.1	10
	M3[a]	13.7	12
Moldova	**M3[a]**	17.8	20
	M5[b]	17.6	20
Namibia	**M1[a]**	11.0	7
	M4[b]	7.0	3
Peru	**M3[a]**	16.0	14
	M4[b]	15.9	14
Philippines	**M2**	4.5	4
	M3[a]	4.6	4
Tunisia	**M2**	5.3	3
	M3[a]	7.4	4
Vietnam	**M3[a]**	10.7	4
	M4[b]	14.6	10

114. As specified in the international standards (16th ICLS) the desire to find additional/other work is considered a potentially useful approach to identify persons in situations of inadequate employment, in particular when combined with a questions on the reasons for wanting to change. A relatively high proportion of respondents reported the desire to change their employment situation (over 30% in all cases except Vietnam) while relatively lower, but still not insignificant proportions in most cases, reported having searched for additional or other work in most of the pilot countries (see Table 13). The findings do highlights the potential value of capturing both these pieces of information as they signal different situations, one where direct pressure is being put on the labour market (those searching for other work) and one where an inadequate situation is seen to exist regardless of whether or not there is any active search for other work.

115. Some impact related to order of these questions could have been imagined given that for Version A the question on desire to change employment was after the question on activities to seek other work, while the order was reversed in Version B. In theory, asking a question on the concrete activity of searching for work could have conditioned some respondents not to report desire to change employment if they had not also done something to look for work. However, like time related underemployment, while some differences are observed across models within country those did not appear to be systematically related to the version tested. In some cases the level of desire to change employment reported using Version A was higher than Version B (e.g. Ivory Coast, Peru) while in other cases it was lower (e.g. Cameroon, Moldova). As a consequence we cannot conclude that the order of questions particularly influenced reporting.

Table 13. Prevalence of desire to change job and search for other work, by country and model questionnaire (% of employed)

		Wanted to change employment situation	Searched for other work
Cameroon	**M1[a]**	49%	11%
	M5[b]	57%	15%
Ecuador	**M3[a]**	52%	15%
	M5[b]	51%	15%
Ivory Coast	**M1[a]**	55%	5%
	M3[b]	38%	7%
Kyrgyzstan	**M2**	37%	0%
	M3[a]	32%	6%
Moldova	**M3[a]**	38%	7%
	M5[b]	46%	9%
Namibia	**M1[a]**	51%	23%
	M4[b]	54%	17%
Peru	**M3[a]**	58%	16%
	M4[b]	47%	9%
Philippines	**M2**	44%	24%
	M3[a]	50%	15%
Tunisia	**M2**	55%	16%
	M3[a]	50%	11%
Vietnam	**M3[a]**	7%	2%
	M4[b]	8%	1%

116. For those who reported wanting to change their employment situation respondents were asked to indicate their *main* reason for wanting to change. This offers potential to highlight other types of situation where inadequate employment can exist, such as due to inadequate use of skills or inadequate pay. It should be noted that response categories were not read out thus relying on self-reporting by the respondent and subsequent coding by the interviewer. As shown in Table 14 the most frequently reported reason was to have a better paid job. In excess of 50% of those wanting to change employment indicating this as the main reason in almost all countries and for both models.

117. The next most frequently reported reasons included *"improve other working conditions"* and *"to have more clients/business"* (of particular relevance to those in self-employment). In the case of *"to have more clients/business"*, this reason could feasibly be reported by those wanting higher income meaning it's difficult to assign meaning to the different splits across countries between this category and those who reported wanting a *"better paid job"*. The category *"improve other working conditions"* is not defined in any detail meaning it could refer to a very wide range of working conditions such as type of contract, physical environment etc. In combination the 3 most commonly reported reasons were reported by 80% or more of all respondents who wanted to change employment in the majority of countries.

118. Among other reasons the next most common was *"present job is temporary"*, followed by *"change hours"* (either increase or decrease). *"Better match skills"* was very infrequently reported in all cases except Vietnam model 3, where in any case low numbers of respondents had reported wanting to change employment. However, this can at least in part be linked to the purposive sample design chosen for the pilot studies with relatively larger samples in rural areas thus relatively lower levels of education versus a generally representative sample.

119. In combination these findings highlight that these questions can be used to capture people in different situations of inadequate employment. However, the analytical possibilities are limited when only one question on main reason for the desire to change work is asked. Experience from the pilot studies suggest the responses in this case will dominated by issues related to pay and other working conditions. In the case where there is a targeted policy interest, such as quantifying skills mismatch, more targeted questions should be designed to ensure the phenomenon is more fully captured. Nonetheless, it can be noted that the questions appeared to operate as intended and generate plausible results. Thus, they are a valid option to consider where interest exists in this type of data.

Table 14. Main reason for desire to change employment by country and model questionnaire (% of those wanting to change employment situation)

Type of Inadequate Employment		Better paid job	Have more clients/ business	Improve other working conditions	Present job is temporary	Increase/ decrease hours	Better match skills	Other
Cameroon	**M1[a]**	63%	5%	19%	3%	1%	4%	5%
	M5[b]	70%	3%	14%	3%	4%	3%	3%
Ecuador	**M3[a]**	55%	2%	20%	4%	3%	0%	15%
	M5[b]	62%	3%	23%	2%	3%	1%	5%
Ivory Coast	**M1[a]**	46%	11%	27%	9%	2%	0%	6%
	M3[a]	69%	1%	22%	2%	2%	1%	2%
Kyrgyzstan	**M2**	68%	14%	4%	10%	1%	1%	1%
	M3[a]	58%	15%	11%	13%	3%	1%	0%
Moldova	**M3[a]**	53%	7%	2%	21%	12%	3%	3%
	M5[b]	53%	11%	3%	15%	10%	3%	5%
Namibia	**M1[a]**	63%	6%	13%	6%	8%	2%	0%
	M4[b]	64%	18%	3%	3%	7%	3%	2%
Peru	**M3[a]**	73%	1%	11%	2%	6%	2%	5%
	M4[b]	67%	3%	14%	3%	6%	4%	3%
Philippines	**M2**	63%	6%	14%	11%	1%	2%	4%
	M3[a]	65%	12%	11%	7%	2%	1%	3%
Tunisia	**M2**	47%	6%	12%	19%	2%	3%	11%
	M3[a]	57%	2%	25%	8%	1%	2%	5%
Vietnam	**M3[a]**	39%	3%	7%	15%	6%	10%	21%
	M4[b]	51%	4%	16%	11%	9%	3%	6%

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

120. Overall, the pilot studies showed that the two different versions of the module on working time worked quite well across contexts. Qualitative feedback from the countries indicated that any operational issues were relatively minor and related to issues such as difficulties with proxy response and cases where respondents were engaged in multiple simultaneous activities.

121. Some practical issues were observed related to the recording of working time, showing the need for care in the questionnaire design and data processing stages. These include:

i. Careful choice of any upper limits of hours worked applied at the data collection or data processing stage as this can either lead to false modes or influence averages unduly
ii. Need for appropriate checks on total hours usually worked per week, particularly for usual hours worked of people with multiple jobs, who may not work in all jobs each week.
iii. Need to ensure people in different status in employment groups are considered in questionnaire design as the degree of variability and difficulty is not uniform meaning the quality of aggregate estimates of working time could be impacted.

122. The two versions produced consistent results within countries for key indicators such as hours actually worked, hours usually worked and time related underemployment with very few exceptions. No evidence was found that there were systematic differences between the results generated by the two versions either at the aggregate level or when broken down by sex, age, proxy etc.

123. Questions on time related underemployment appeared to operate as intended and no differences were found between estimates generated through Version A or Version B of the working time module. Careful consideration is required to identify the appropriate threshold of working time to apply with multiple approaches possible. However, use of the mode, which is referenced as a possible approach in the standards, carries particular risks as the mode may not correspond to a boundary between full-time and part-time employment, as intended.

124. Also in relation to thresholds for time related underemployment, consideration needs to be given to the adoption of the threshold at the data capture stage (i.e. incorporating it during the interview). Doing so can lower response burden with the pilots highlighting some social desirability bias among those working full-time hours when asked a question on their desire to work more hours. However, there is a trade off in the loss of data which may be of interest to users regarding the inadequate employment situations of those working full-time hours. As with all issues a careful balance needs to be struck between user need, response burden and appropriate questionnaire design.

125. The concept of time related underemployment is relevant across different groups, including different status in employment categories (employees, self-employed and family helpers). As a consequence of the definition, groups with lower average hours worked will be more likely to be captured as time related underemployed, for example females had higher levels of time related

underemployed than males in the pilot studies, due to lower average hours usually worked. While this seems evident it is something which should at least be borne in mind in analysing results.

126. A question on the amount of additional hours available to work among those wanting to work more hours, can be used to generate estimates of the volume of time related underemployment. However, given experience from the pilots it should be possible for interviewers to record this information according to the period reported by the respondent (e.g. day, week, month) with standardisation done at data processing stage. This can help to reduce confusion and burden during the interview arising from the imposition of a common period for all respondents (e.g. additional hours per week).

127. A question on reasons for differences between usual and actual hours worked, while of potential policy interest, yielded inconsistent results and should be tested carefully if considered for use. The operation of this question could be improved by having separate response categories and different question wording for those who worked more hours than usual and those who worked less hours than usual. This would be relatively straightforward to implement with computer assisted collection modes.

128. There was no evident order effect related to the positioning of the question on activity to seek other/additional work. Placing it before questions on desire to work more or change employment did not appear to systematically impact the findings from those questions generated by the two different versions.

129. Questions on desire to change employment situation and activities to look for other work appeared to function well and yield seemingly plausible results. Countries could consider such questions for use subject to national interest in the data.

130. Combining a question on desire to change employment situation with a question on the associated reasons can yield information on inadequate employment other than time related underemployment with relatively low burden. However, the outputs generated by a single question on main reason can be analytically limited and more targeted approaches may be needed to address specific research or policy questions on topics such as skills mismatch.

B. Recommendations

131. Evaluation of the results from the ILO LFS pilot studies served to identify a number of recommendations related to the measurement of working time and time related underemployment. These include:

a) The creation of a dedicated module of questions covering working time and time related underemployment which addresses all jobs is useful and seemed to operate well in testing.

b) For good understanding of working time arrangements it is useful to capture information both on usual and actual hours worked and to cover all jobs, not just the main job.

c) While the order of questions did not appear to impact aggregate estimates systematically, recommendations from the 18th ICLS and experience from the EU should be borne in mind in

choosing the flow of questions. In the EU case it was found that care is needed to ensure respondents adequately account for absences when reporting actual hours worked in a reference week. Options to address this can include additional questions on absence from work before asking for actual hours worked and but any such approach should be carefully tested in different contexts. Notwithstanding this the two versions tested by the ILO offer a reasonable basis for development of national questionnaires.

d) Careful consideration should be given to the appropriate threshold to establish for the measurement of time related underemployment. The standards allow some flexibility in this choice. For the analysis of the ILO pilot studies multiple thresholds were applied among which median hours usually worked in all jobs is particularly highlighted in this report. The results showed a high degree of sensitivity to the choice of threshold.

e) Questions on desire to change employment and activities to search for additional/other work can be used in a sequence of questions on working time and time related underemployment to yield useful supplementary information related to inadequate employment and pressure on the labour market. If specific types of inadequate employment situation are of interest, more targeted approaches than those applied in the pilot studies may be needed.

f) While there may be interest in information on reasons for differences between usual and actual hours, the questions tested through the ILO LFS pilot studies yielded some dubious results. Care would be needed in design and testing for any country wishing to capture information of this type. Building from the experience of the pilot studies, two separate questions could be used, one targeting those with less working hours than usual and one targeting those with more working hours than usual.

g) As with all topics covered by the ILO LFS pilot studies each country will need to implement a programme of testing and development work to ensure questionnaires are appropriate to their country context and adapted to national information needs.

V. REFERENCES

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