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Are female employment statistics more sensitive than male ones to survey design?

Evidence from three West African countries

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Abstract

In many African countries, labor force surveys are not available on a regular basis and the way existing household surveys and censuses measure employment differs greatly, both over time and between countries. This makes it difficult to properly study labor market dynamics and to draw meaningful policy recommendations. This paper investigates the effect of several survey questionnaire characteristics on labor statistics. Using data from more than forty surveys and censuses conducted in Cameroon, Mali and Senegal between 1976 and 2012, we first review the diversity of survey instruments used to measure employment. Based on this diagnosis, we then exploit within-survey variations of key questionnaire characteristics to assess their effect on employment rates. As suggested in the literature, women are expected to be more sensitive than men to survey design, due both to the nature of their work and to social norms. Empirical results suggest that if female employment rates are more sensitive to the detail of labor modules and to the wording of questions, male employment rates display higher variations with changes in the reference period.

JEL Classification: C81, C83, J21, J71, O55

Keywords: Employment statistics, Survey design, Gender, Methodology, Data comparability, West Africa

Résumé

Dans la plupart des pays africains, les enquêtes emploi ne sont pas disponibles sur une base régulière et la manière dont les enquêtes auprès des ménages et les recensements mesurent l'emploi diffère fortement entre les enquêtes, à la fois dans le temps et entre les pays. Cela rend difficile l'analyse convenable des dynamiques du marché du travail et l'élaboration de recommandations politiques pertinentes. Sur la base d'une quarantaine d'enquêtes et recensements collectés au Cameroun, Mali et Sénégal entre 1976 et 2012, nous mettons en avant dans un premier temps la diversité des caractéristiques de questionnaires d'enquêtes utilisées pour mesurer l'emploi. Nous évaluons ensuite l'influence de la formulation des questions, du détail du module emploi et de la longueur de la période de référence sur les statistiques d'emploi produites. Pour ce faire, nous exploitons les variations intra-enquêtes de ces caractéristiques en étudiant systématiquement les différences de sensibilité selon le sexe et le milieu de résidence. Les résultats empiriques suggèrent que si le taux d'emploi des femmes est plus sensible que celui des hommes au détail du module emploi et à la formulation des questions, il l'est moins à la période de référence.

Mots clés: Statistiques d'emploi, Design d'enquête, Genre, Méthodologie, Comparabilité des données, Afrique de l'Ouest

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1 Introduction

Labor market data provide key information to analyze labor market dynamics and draw meaningful policy recommendations. Ideally, labor market statistics should be produced on a regular basis to monitor economic activity. Unfortunately, this is very seldom the case in Sub-Saharan African countries, where, instead, labor market statistics are generally computed from household surveys and census data. While many household surveys and censuses collecting information on individuals' labor market status have been conducted since the 1970s in Sub-Saharan African countries, the way employment is measured differs greatly across surveys. Labor market statistics are therefore calculated from surveys using different definitions, concepts, and methodologies. This compromises their comparability, over time and between countries.

The existing literature suggests that the measurement of employment is affected by, on the one hand, the definitions and concepts used, and on the other hand, by the way these concepts are operationalized in the survey design and data collection process. These two problems are likely to have a greater influence on the measurement of female employment (Langsten & Salem 2008) because of the specific characteristics of their work (the importance of domestic and unpaid family work, the seasonal, casual, temporary, unpaid nature of work, etc.) and the social norms regarding gender roles (Beneria 1981). Along with the actual variations in employment, the characteristics of the survey design may contribute to account for the differences observed between the estimates produced by surveys. Yet, there is still few evidence on the size and the direction of the effect of these characteristics on the resulting labor statistics. Moreover, little is known about how individual characteristics (i.e. gender and area of residence) can account for the sensitivity (if any) to survey design.

In this paper, we investigate the impact of survey design on employment statistics. Using a sample of forty four surveys and censuses collected over three decades in Cameroon, Mali and Senegal, we first present the diversity of survey questionnaires used to measure employment and identify key characteristics likely to influence labor statistics. Then we assess to what extent these features influence the resulting employment statistics and finally, we investigate how the sensitivity to survey design differs across individual characteristics (i.e. gender and area of residence). Exploiting within-survey variations, we find that the questionnaire design significantly affects the resulting employment rates. The detailed labor modules add between 3 and 6.8

ppts to the employment rate produced by a simple question (short module). Employment rates produced by a short reference period underestimate of up to 9.6 ppts the employment rate that would have been computed from a long reference period. As regards the role of the wording, we only rely on one survey conducted in Mali to show that an additional question on work adds more than 20 ppts to the employment rate produced by the “occupation” question. The heterogeneity analysis suggests that women are not systematically more sensitive than men to survey design. If they appear to be more sensitive to the detail of the labor module and to the wording of questions, variations in the reference period have a larger effect on male employment rates. Finally, on the basis of these findings, we provide some recommendations on the preferred surveys instruments to measure employment. The structure of the paper is as follows. The literature is reviewed in Section 2, while section 3 presents the diversity of labor modules in survey questionnaires. Section 4 presents the impact of several key questionnaire characteristics on the resulting employment statistics. Section 5 draws recommendations and concludes.

2 Literature Review

This paper relates to two strands of literature. The first one discusses the issue of the measurement of women’s work in statistics, in particular in developing countries. The second one examines more specifically to what extent the survey design affects the resulting statistics.

2.1 Women’s work in statistics: conceptual and measurement issues

There is a broad consensus in the literature that women’s work is poorly measured in statistics, notably in developing countries. Following the seminal work of Boserup (1970), many studies have highlighted the systematic underestimation of women’s work, be it in population censuses or in labor force surveys (Beneria 1981, Anker 1983, Anker & Anker 1989, Donahoe 1999, Mata-Greenwood 2000). In the 1980s, a series of debates have emerged on the restrictiveness of traditionally used definitions of work.

A first issue relates to the inclusion of domestic work and unpaid family work in the definition of work, that are not recognized as such even if they contribute to the well-being of the family. According to Beneria (1981), the underestimation of women’s contribution to production is both due to an ideological bias linked to the prevailing norms in the society on gender roles

(women's work being usually considered as secondary and less important than that of men) and a more practical aspect, related to the way employment statistics are produced. She argues that conventional definitions should be expanded to take into account all workers involved in the production, if it has either a use (non-market) value or an exchange (market) value, including activities such as domestic production and all types of subsistence production that contribute to the family welfare.¹ Beyond conceptual aspects, she criticizes survey questions used in questionnaire survey on "main occupation" that tend to underestimate women's economic contribution. Indeed, many women see themselves primarily as housewives who mainly perform domestic work, even though they also perform economic activities.

Another issue with the measurement of women's work is related to the importance of the agricultural sector and its specificities. Dixon (1982) puts forward the systematic underestimation of women in the agricultural labor force because, compared to men, they are more likely to work as unpaid family workers or in subsistence production. Several improvements have been made over time to overcome some of these conceptual and operational limits. The International Labour Office (ILO) has extended its definition of the labor force in 1982 to include in the economically active population "*all individuals engaged in the production and processing of primary products, whether for the market, for barter or for own consumption, the production of all other goods and services for the market and, in the case of households which produce such goods and services for the market, the corresponding production for own consumption*", notably to take into account the production for household consumption. Conceptually, the notion of "contributing family worker²" (formerly "unpaid family worker") was progressively introduced in the measure of the "economically active population" to take into account workers who perform subsistence activities or help in the family business even if they are not paid with a salary. However, domestic work is still excluded from the definition and the border between economic work and domestic work remains often blurred, some activities performed at home (e.g., preparing food, carrying water, taking care of children, etc.) could indeed be considered as economic activities. Moreover, the concepts and methods used in developed countries (including those of the ILO) may not be suitable for developing countries insofar as individuals are more likely to work seasonally rather than throughout the year, to have temporary or occasional jobs and to perform several activities rather than having one single permanent job. For this reason, the

choice of the length of the reference period (the period over which employment is measured, e.g., last week, last month, last year) is crucial. Indeed, the use of different reference periods can lead to a large variations in the estimations of employment and affect the comparability of data from one survey to another. In the presence of seasonal activities or when a significant proportion of the labor force population consists of casual and temporary workers, the use of a short reference period may not reflect seasonal work depending on when the survey is conducted (Mata-Greenwood 2000). A short reference period (a day or a week) may lead to an underestimation or an overestimation of the economic activity if the chosen period is unusual for the respondents. Some authors, such as Freedman et al. (1977), then recommend using a longer period in questionnaires, for instance one year, to measure agricultural labor. Besides, if long reference periods are more likely to produce statistics that better reflect economic activity throughout the year, some authors argue that the information given by the respondent is less precise. A short reference period (a day or a week) would produce more updated and accurate data. According to Kalton & Schuman (1982), the length of the period can introduce bias in responses from respondents, notably the due to the “recall loss” and the “telescoping effect³.” Consequently, Grosh & Glewwe (2000) advocate the use of two reference periods, the last year and the last week, with less detailed questions following the last 12 months question since it is more difficult for respondents to accurately recall the characteristics of their activity over a long period of time. ILO standards follow these recommendations and define two concepts of labor force participation: the “currently active population” which is measured over a day or a week and “the usually active population” calculated over a long reference period, such as one year.

Moreover, while informal employment⁴ is the main form of employment in developing countries, it is often badly apprehended in statistics (Charmes 1998, Chen 2001, Roubaud 2009). Informal activities are often underestimated because survey instruments are generally designed for developed countries where wage employment is the norm. Chen (2001) notes that since women are more involved in informal activities (e.g., economic activities performed at home or in the street such as making, selling products or preparing food for sale, washing, doing the laundry or doing the cleaning for another household for pay, animal husbandry, etc.) than men, their economic contribution is likely to be even more underestimated in the data. As a result,

a large part of women even if they have paid jobs remains “invisible” in labor statistics. The concepts and definitions of the informal sector and informal employment were progressively introduced in the international standards (International Labour Office 1993, 2003). However, it remains difficult to retain an harmonized definition of employment adapted to different contexts. Furthermore, although the conceptual aspects are essential, the operationalization of these concepts in surveys plays a key role in the production of labor statistics (Roubaud 2009).

2.2 The impact of survey and questionnaire design on statistics

The way concepts are operationalized in surveys is an essential dimension of the question of the measure of employment. Indeed, the survey and questionnaire design can have a significant impact on the resulting statistics, especially for women.⁵ Survey instruments have historically been designed to measure work in developed countries and mainly aim at capturing wage employment whereas a large part of the population in developing countries is more likely to be self-employed, employed in domestic or subsistence production, a family business, to perform seasonal, casual, informal or unpaid jobs, etc. Conventional methods of data collection to measure work generally rely on keyword questions with terms such as “work”, “job”, “main activity.” Anker (1983) points out the limitations of such an approach that leads to a recurrent misunderstanding from the respondents of the concepts used in the questions. For instance, “job” could represent only wage employment for the respondents while “work” could encompass a higher range of economic activities. He advocates the alternative use of an exhaustive list of economic activities to better capture women’s work. Two studies conducted in India and Egypt, show that the list questions leads to higher estimates of women’s work compared to the keyword ones (Anker 1983, Anker & Anker 1989). Likewise, Langsten & Salem (2008) find that the format “list of activities” is more effective than a single (or several) keyword question(s) to capture women’s work, especially that of women in casual, intermittent, part-time, home-based or unpaid jobs, i.e. in the less formal jobs. Bardasi et al. (2011) analyze the impact of the detail of labor modules on several employment statistics (participation rates, hours of work, main activity, type of work) for adults through a randomized experiment conducted in Tanzania. Surprisingly, employment rates are found to be higher with the short labor module for both men and women than with the detailed one that comprises several specific questions about

the type of work done by the respondent in the last 7 days. This may suggest, at first glance, that a simple general question lead to an overestimation of employment rate, a possibility that has not been considered in the literature. After a reclassification of respondents who declared domestic duties as their main occupation into the “no work” category in both types modules, the employment rate turns out to be lower for women with the short module than with the detailed one. This suggests that the short questionnaire captures a larger share of women who declared themselves as “employed” but who are actually engaged in domestic duties. However, this reclassification based on a question about “main occupation” could be misleading if some employed women have been reclassified as “not employed” even if they perform at the same time an economic activity alongside their domestic work. Guarcello et al. (2010) investigate the impact of the type of survey, the type of questions, the period of field work on child labor estimates. Overall, observable survey characteristics account for 8 % to 48 % of the variations in children’s economic activity across survey. They identify three broad categories of questions used to measure child labor: simple questions, complex questions, questions determining the status in the main occupation, and the other cases.⁶ The authors shows that the complex questions and the simple ones lead respectively to 13 and 10 percentage points (thereafter ppts) higher estimates than questions on the main occupation.

Another survey feature that matters is the type of respondents (self-reporting or proxy informants). Survey designers generally provide rules about who is eligible to answer the questions. In most surveys that measure employment, responsible adults, at home at the time of the survey, are eligible to answer for themselves and for other members of the household (Hendershot 2004) and the head of household is generally chosen to provide information about children’s activities (Dammert & Galdo 2013). The impact of the type of respondent on the estimates is not clear *a priori*. On the one hand, the information given by the respondents themselves can be seen as more accurate since proxy informants are likely to have incomplete information on the activities of other household members. Presumably, proxy respondents’ responses may also be biased by their opinion of the other members of the household. For instance, child labor could be misreported because of social desirability: if child labor is seen as socially “bad”, proxy respondents are more likely to under report the children’s work (Dammert & Galdo 2013). It can also be the case for women if proxies do not consider as work women’s activity even if it

does Bardasi et al. (2011), or if it is not well accepted in the society that they work. On the other hand, one might instead consider that proxy respondents have better and more objective information than individuals themselves. Anker et al. (1987) find no significant effect of the type of respondent on the estimation of female labor force participation in India. On the contrary, Bardasi et al. (2011) show that the use of proxy respondents has a large and significant impact on several employment outcomes: an underestimation of the labor market participation and the number of weekly hours worked and an overestimation for the daily remuneration and the share of unpaid family workers. They explain the differences between self and proxy respondents by information problems in the household, the age difference between the respondent and the person for whom information is collected, whereas gender and educational differences seem to be less influential factors.

As mentioned above, the timing of the survey is crucial, especially in contexts of seasonal activity. Seasonal fluctuations can be related to climate (seasons and rainfall), institutional aspects (e.g., holiday periods), religious (e.g., Ramadan, pilgrimage), cultural (e.g., baptism, marriage, funeral), and the nature of jobs performed (e.g., casual, temporary, seasonal). Therefore, employment statistics may be affected by the period surveys are conducted, especially if the reference period used is short. Guarcello et al. (2010) find that the field work periods (in school, partially outside school term, outside school term) affect child labor estimates. The fact that surveys are not always carried out at the same time gives rise to problems of data comparability between surveys (and within surveys for those that are conducted over a long period).

In this paper, we contribute to the existing literature in several ways. First, we establish a diagnosis of the diversity of survey instruments used in three West African countries over three decades. Second, we take advantage of within-survey variations of questionnaire characteristics to accurately assess the effect of the wording, the length of labor module and the reference period. Finally, we provide recommendations for labor data users and analysts.

3 Overview of data comparability issues in three West African countries

The analysis is carried out on data from 44 nationally representative surveys and censuses collected in Cameroon, Mali and Senegal⁷ between 1976 and 2012 (see the list of surveys and acronyms that will be used in the remaining of the paper in Tables A1, A2 and A3).

3.1 Employment rates evolution in Cameroon, Mali and Senegal from 1976 to 2012)

Figure 1 displays employment rates calculated from nationally representative surveys between 1976 to 2012, on the population aged 15-49 years and provide a first overview of data comparability issues in Cameroon, Mali and Senegal over time.⁸ Our analysis focuses on employment rates since we can calculate this statistic for all the available surveys, which is not the case for other labor market indicators such as labor force participation, unemployment rate, number of working hours, earnings, etc. These figures show some surprising and large variations in employment rates both for men and women over the period under study. For the same year or over a short period of time in the same country, two surveys can produce very different employment rates. For instance in 2001 in Mali, two surveys were administered to the same respondents, and produced quite different female employment rates: it is equal to 78.1 % in the EMEP survey and to 54.4 % in the QUID⁹ (Figure 1b). The same observation can be made for the male employment rate: in 1987 in Mali, it reaches 96.3 % according to DHS whereas the RGPH estimates it at 87.1 %. In Senegal, female employment rate goes from 22.7 % in RGPH 1988 to 52.2 % in ESP 1991, which corresponds to a rise of about 30 percentage points (thereafter ppts) in three years (Figure 1c). As regards men, we observe an increase in their mean employment rate of about 17 ppts between 2009 (MRHS) and 2010 (EDS). In Cameroon, female employment rate goes from 60.4 % in 2005 (EESI) to 42.6 % 2006 (MICS), and then to 70.1 % in 2007 (ECAM3).

[INSERT FIGURE 1]

The magnitude of these gaps questions the comparability of labor statistics across surveys and casts serious doubts on their reliability to run rigorous temporal and spatial analysis and to

draw meaningful policy recommendations. These variations could be explained (1) by sampling errors, induced by differences in characteristics between the subsample on which employment rate is estimated and the whole population, (2) or by non-sampling errors that relate to data collection and processing procedures. This second category covers several very different aspects such as the quality of interviewers, errors from the respondents (e.g., misunderstanding), data entry or coding errors, etc. In this paper, we focus on errors that arise from the questionnaire design. Indeed, we suspect that differences in those characteristics across surveys can explain a substantial part of the variations in employment rates observed over the period.

3.2 The diversity of labor modules

This section shows the diversity of labor modules through three questionnaire characteristics that are most likely to influence employment statistics: (1) the wording and type of questions, (2) the length of labor modules and (3) the reference period used. We discuss the possible role of differences in these questionnaire characteristics in influencing employment statistics. The details about the characteristics of each survey questionnaire are given in Appendix in Tables [A1](#), [A2](#), [A3](#).

3.2.1 The type of questions and the wording

As mentioned in the literature review, the wording, the length, the detail and the form of questions are likely to influence answers given by the respondents (Beneria 1981, Kalton & Schuman 1982, Kasprzyk 2005, Guarcello et al. 2010, Bardasi et al. 2011).

First, questions can imply different types of answers according to their formulation. Two main forms of questions can be distinguished in our sample of survey questionnaires: closed questions that expect a “yes/no” answer and questions with a list of proposed answers (see Table [A4](#) for examples). Closed questions are the most common type of questions. The other form expects one (or several) answer(s) among the different alternatives proposed by the interviewer. These lists can be about economic activities or occupational status. Second, as suggested in the literature the wording and the keywords used are essential (Anker 1983). Several keywords related to employment are used in questions: “*work*” , “*economic activity*”, “*job*”, “*occupation*”, “*type of activity*” (see Table [A4](#) for examples). These keywords can have different meanings

for the respondents. For instance individuals may perform an actual “*economic activity*” (e.g. prepare food for selling) but not consider it as a “*job*” or consider that they “*work*”, women may consider themselves as “*mainly occupied*” as a housewife but still perform in addition an economic activity, individuals may have not worked during the past week but however have a job, etc. Third, the detail of the question may also matter and influence the respondents’ answers. Questions can be more or less precise across surveys, and provides details about the amount of time spent working (e.g. work at least for one hour), remuneration (e.g. work for cash or payment in kind), type of economic activity or several types of detail at the same time (see Table A4 for examples). Additionally, it is worth noting that some surveys, i.e. the DHS surveys, do not ask the same questions to men and women¹⁰, so male and female employment rates produced by these surveys are not strictly comparable.

In our sample, 70 % of the surveys contain questions on “work” or “economic activity” and about 40 % contains questions on “occupation” (see Table A5).¹¹ Questions on “occupation” were more frequent during the period 1976-1990, and questions about “work” became more and more widespread from the 1990s onwards, in line with the recommendations made by the ILO. Questions with a list of economic activities, the word “job” and “other wording” generally refer to complementary questions present in detailed labor modules and aim at better capturing employment. They will be explored in further details below.

3.2.2 The length and detail of labor modules

Moreover, the length and the level of detail of labor modules are also likely to play a role in influencing employment statistics (Bardasi et al. 2011). While some surveys and censuses rely on one single question to determine the labor force status of respondents, others have labor modules containing a wide range of questions. Table A6 shows the distribution of the types of labor modules: 59 % of surveys in our sample rely on several questions (long modules) to determine individuals’ labor status, the remaining of the surveys only contain one single question to measure individuals’ labor force status (short modules). Among long labor modules, additional questions can refer to: (i) another reference period than in the initial question (e.g., “*Did you work during the last 12 months?*”, “*Did you work during the last 7 days?*”, CM ECAM1 1996), (ii) another question on “work” if the first question was about occupational

status (e.g., “*What is your current occupation regarding employment?*”, “*During the last week, did you however work at least an hour for an occasional or unusual work?*”, ML EMEP 2001), and vice versa (iii) a list of economic activities that may not have been considered as “work” by the respondent in the first place (e.g., “*Even though you did not do any (paid) work last week, did you do any of the following activities, inside or outside your home?*”, ML EPAM 2010) , (iv) having a job despite not working during the reference period or absence at work during the reference period even if the respondent actually has a job (e.g., “*Although you did not work last week, do you have a job?*”, CM ECAM2 2001). Detailed labor modules can contain one or several of the four types of additional questions we identified. They are expected to provide higher employment rates since they ask additional questions that aim at catching up workers who would have not declared themselves as employed with a unique question on work.

3.2.3 The reference period and seasonality

As discussed in the literature review, the reference period is also likely to have an impact on the measurement of employment, especially in contexts where seasonal activity is widespread. There are five different reference periods in our sample of survey questionnaires: “1 week/7 days”, “Currently”, “1 month/4 weeks”, “1 year/12 months” and “No reference period specified.” Basically, the standard question asked is “*Did you work during [the reference period]?*” or “*What was your occupation during [the reference period]?*” for the first four reference periods and “*Even if you did not work during the [reference period], do you have a job?*” for the “No reference period specified.” The share of surveys using each of the mentioned reference periods over the reporting period is described in Table A7. The most frequent reference period is “1 week” present in half of the surveys, and “1 year” in about 45% of surveys.¹²

Besides, the period of data collection can also be crucial in the context of our three countries of West Africa insofar as economic activity is particularly prone to seasonal variations. The variations in activity all over the year depends on the agricultural calendar determined by seasons. Consequently, we pair up our analysis of the effect of the reference period with a parallel study of the effect of the data collection period on employment rates. The effect could go both ways (underestimation or overestimation) depending on the data collection period and the economic activity during this period. Linking this to the reference period used, we assume

that using a long reference period would enable to overcome seasonality issues likely to influence employment statistics.

4 The sensitivity of employment rates to survey and questionnaire design

We assess the sensitivity¹³ of employment rates to survey and questionnaire design by focusing on three features we believe play a role in influencing labor statistics: (1) the detail of the labor module, i.e. the use of screening questions to better capture work (2) the reference period, studied along with the data collection period and (3) the wording, i.e. the use of questions on “occupation” versus questions on “work.” Our objective is first to estimate the magnitude of the effect of each characteristic on the resulting employment rates and, second, to identify who is more sensitive to questionnaire design (i.e. women or men, rural or urban).

4.1 Methodology

We assess the effect of the survey design on labor statistics by exploiting within-survey variations of questionnaire characteristics. We differ from Guarcello et al. (2010)’s approach that compares several surveys with different survey instruments. We instead rely on surveys with long labor modules (with at least two questions) that present a questionnaire characteristic (wording, detail, or reference period) that varies within the same survey. More precisely, we use surveys that have questions both on “occupation” and “work” to investigate the effect of the wording on employment rates. We resort to surveys with questions on two (or more) different reference periods to study the role played by the reference period in influencing statistics. Concerning the effect of the detail of the labor module, we follow the same strategy by exploiting variations in individuals’ declared labor force status between the first general question asked in the labor module (e.g., “*Did you work last week?*”) and the following ones, more detailed about what should be considered as work (e.g., a list of economic activities) or about having a job despite being absent from work during the reference period. Indeed, some individuals would have been considered as not employed with only the first question, but may have been reclassified as employed thanks to the following questions of the module (if they declare having a job or if they performed an economic activity even if they declared they did not work during the

reference period in the first question). Basically, we evaluate the magnitude of the effect of the questionnaire design by comparing employment rates produced by different modalities k of a given characteristic C (alternatively the wording, the type of question in a detailed labor module and the reference period). Specifically, we compare for the same respondents the responses given to the “occupation” and “work” questions, to the first and the following questions of a detailed labor module, and to questions on two different reference periods, to respectively assess the effect of the wording, the detail of the labor module, and the reference period. Note that this strategy implies that, by construction, the difference will always go the same way for the detailed labor modules due to the sequence of questions and the presence of screening questions. Therefore, detailed labor module will systematically produce higher employment rates than respectively the first simple question of the long labor modules, and short reference periods. This will be the case also for the long reference periods that will systematically lead to higher employment rates because respondents who answer positively to the question “*Did you work during the past week?*” will also logically answer positively to the question “*Did you work during the past year?*”. The questions with different wordings are asked independently (there is no screening question), so the expected direction of the difference in responses is unclear *a priori*. Our purpose here is to assess the magnitude of the effect of using a certain survey instrument compared to another one. In other words, how many workers are surveys missing if they use a question on “occupation”, only one single general question and only a short reference period instead of using respectively an additional question on “work”, a detailed labor module and a long reference period? Besides, we examine if the sensitivity to questionnaire characteristics differs across gender and area of residence.

Formally, an individual i will declare to be employed (or not) according to a given question with a characteristic C (which alternatively refers to the detail of the labor module, the length of the reference period or the wording) taking the modality m ¹⁴:

$$\begin{cases} y_{i,m} = 1 \text{ if employed,} \\ y_{i,m} = 0 \text{ else.} \end{cases}$$

Hence, for the same respondent, the employment status y_i can be different when measured with a of characteristic C and modality 0 ($y_{i,0}$) or of modality 1 ($y_{i,1}$).

The overall effect of each questionnaire characteristic can be measured by regressing a categorical variable C_m on the employment status. Since the employment status y_i of individual i is also determined by a set of individual and household characteristics, we additionally control for a set covariates X_i . For our purpose, we then estimate the following linear probability model on samples expanded m times¹⁵:

$$y_{i,m} = \alpha_0 + \alpha_1 C_m + \alpha_2 X_i + \theta S + \epsilon_{i,m} \quad (1)$$

where $y_{i,m}$ is a dummy equal to 1 if the individual i work according to the question of characteristic C and modality m , X_i are individual, household and survey characteristics: gender, area of residence, age, education, marital status, household size, month of interview (depending on the availability of these variables). We also include survey fixed effects, θS , to control for unobservable characteristics of surveys when the analysis is run out on more than one survey. Since we have multiple observations (m) of each respondent, we account for serial correlation in the error terms by clustering standard errors at the individual level. We add interaction terms between the variable of interest C_m , gender and area of residence to investigate the differences in sensitivity between male and female, rural and urban employment rates. If the work status declared depends on the characteristics of the respondents, the measures of employment will differently diverge depending on the choice of the survey instrument.

Second, another interesting question relates to the characteristics of the workers who would have been misclassified if they were only asked a single question with the characteristic C of modality $m = 0$ instead of another question with the same characteristic of modality $m = 1$ (or $m = 2$). In particular, we are interested in whether the probability of inconsistencies between different modalities differs across gender and area of residence among workers. To do so, we investigate the determinants of the inconsistency in responses depending on the modality of a given characteristic:

$$D_i = \beta_0 + \beta_1 X_i + \gamma S + \mu_i \quad (2)$$

where D is a dummy equal to 1 if the responses differ across the modalities (e.g., $y_{i,0} =$

1 and $y_{i,1} = 0$ or $y_{i,0} = 0$ and $y_{i,1} = 1$) and 0 if the individual is systematically classified as employed ($y_{i,0} = 1$ and $y_{i,1} = 1$). X_i are the same individual characteristics described previously and γS are survey fixed effects. By adopting this strategy we aim at comparing the characteristics of workers who would have been misclassified according to a certain survey instrument to workers who provide consistent answers.

We run our estimations separately for each characteristic¹⁶ and separately for Cameroon, Mali and Senegal because we hypothesize that sensitivity to survey design differ across countries.

4.2 The contribution of detailed labor modules

In this section, we assess the contribution of the detailed labor modules composed of several questions compared to labor modules with only one single question. Detailed labor modules are usually designed with the intention to improve the measurement of employment since a single question might “miss” some workers. We use a subsample of eight surveys with similar detailed labor modules¹⁷ with detailed labor modules that include: (0) a simple question on whether the individual worked during the previous week, (1) a question with a list of economic activities and (2) a question on having a job despite not working during the reference period or a question on the absence at work during the reference period.¹⁸

The first additional question (1) provides details about economic activities that may have not been considered as “work” by the respondents in the first question (0). The aim of the second additional question (2) on having a job or being absent from work is to check if the respondent actually has a job even if he declared he did not work during the previous week (0). Our strategy, as described above, consists in exploiting within-surveys variations to estimate the effect of additional questions on employment variables. So here, we will compare three measures of employment rates : the first one relying only on the first question of the labor module, the second one on the first two question (with the additional question on economic activities), and a third one measured with the complete labor module (with the other additional question on having a job) for the same respondents.

The underestimation of employment rates in short labor modules

Table A8 reports descriptive statistics on employment rates generated by a single question and by detailed labor modules, broken down by survey, sex and area of residence. Detailed labor modules adds between 2.1 and 7.9 ppts to the employment rates produced by a single question. In proportion of the initial employment rate, detailed labor modules systematically contribute to capture more female workers than men. Employment rates are more likely to be underestimated with a single question in rural areas in absolute terms, but more more workers are added by the detailed labor modules in proportion of the employment rate with one single question in urban areas (with two exceptions ML EPAM 2004 and SN ENTE 2005). Table 1 reports the estimates of the contribution of detailed modules, controlling for individuals' characteristics and surveys' unobservables features. The questions on economic activities adds on average, other things being unchanged, 3.3 ppts to the probability of declaring oneself employed in Cameroon, 1.8 ppts in Mali and the effect is close to zero in Senegal (columns (1), (4), (7)). Table A9 describes the type of activities that have not been considered as work in the first simple question. It appears that workers who are included thanks to this additional question are mainly helping in the family business or working in the field in rural areas. In Mali and Senegal, a high share of the women who declared they did not work the previous week actually either made products for sale or did something at home for pay.

[INSERT TABLE 1]

Overall, the detailed module (the combined contribution of both additional questions) significantly increases the probability of declaring oneself employed by 6.8 ppts in Cameroon, 3 ppts in Mali and 4.5 ppts in Senegal. The probability of declaring oneself employed with a detailed labor module instead of a short module is significantly higher for women than for men (columns (2), (5) and (8)), but the difference is only around 1 ppt. In Senegal, rural workers are significantly more likely to declare themselves employed than in urban area, while this is not the case for the two other countries (column(9)).

Do workers characteristics explain the differences in responses?

Table 2 shows the results of the estimation of equation 2. It presents the characteristics of the workers who switched their answers between the first general question and the following ones of the detailed labor module in comparison with the ones of those who declared directly

themselves as workers in the first simple question. Female workers are more sensitive than men to variations in the detail of the labor module. They are systematically more likely than men to switch their answer between the first general question and the last question on having a job despite not having worked during the reference period. Respondents living in urban area are more likely to rectify their answer in urban area in Cameroon and Mali, while it is the opposite in Senegal.

[INSERT TABLE 2]

The literature suggests that the “list of activities” question is more effective than a single (or several) keyword question in capturing women’s work (Langsten & Salem 2008, Anker 1983). We find that the contribution of this kind of additional question is however quite small. However, its combination with a second additional question significantly adds adds between 3 and 6 ppts to the employment rate compared to a single question. The introduction of the question on having a job appears particularly relevant to capture the workers who would have been missed by the simple question. Female employment rate is significantly more sensitive than that of men to this questionnaire feature. Female workers are more likely than their male counterparts to modify their work status with the detailed labor module. This must be kept in mind when designing questionnaire because women’s employment rate may potentially be more biased than that of men with a short module with a single question. More workers are captured by detailed labor modules in rural area compared to urban area in Senegal, but the sensitivity does not significantly varies across area of residence in the two other countries.

4.3 The length of the reference period

We now turn to investigate the role played by the reference period in influencing the employment rates. We group the “1 week” and “Currently” reference periods into a “short reference period” and we will compare it to the “1 year” reference period representing a “long reference period” to simplify the analysis. We leave aside the “1 month” reference period which is neither purely a short reference period nor a long one and the “No reference period specified” insofar as it is not a strictly speaking reference period, and refers most of the time to an additional question in detailed modules. We use a sample of twelve surveys that contain a labor module with both a short and a long reference period questions, and with a similar wording in the two

questions so that we can to capture the “pure” reference period effect: “*Did you work during the [short/long reference period]?*”.¹⁹

The underestimation of employment rates with the short reference period

Table A10 describes the average differences observed within surveys that contain a labor module with a short and a long reference period questions, disaggregated by gender and area of residence. Overall, the difference between the long and short reference period varies greatly across surveys, between 3 and 23 ppts. On average the magnitude of the differences between the reference periods is larger in Senegal than in the two other countries, suggesting that respondents may be more sensitive to the reference period in Senegal. There is no clear general patterns in descriptive statistics of differences across gender, nor across area of residence. The length of the reference period is associated with larger variations in employment rates in proportion of the employment rate produced by a short reference period in urban areas for Cameroon, whereas it is the opposite in Senegal.

Table 3 shows that the long reference period yields to significantly higher estimates than the short one: from 5 (in Mali) to 9.6 ppts (in Senegal) added to the employment rate that would have been produced with a short reference period. Unlike the analysis of the detailed labor modules, male employment rate is more sensitive than female one to the reference period used. If the use of a longer reference period adds more workers in rural Mali and Senegal, it is the opposite in Cameroon where more workers are included in urban areas than in rural ones.

[INSERT TABLE 3]

What are the characteristics of the workers who are missed by the short reference period?

Table 4 shows that the probability of changing their labor force status with a long reference period is higher for women than for men in Senegal, whereas it is the opposite for Mali. There is no significant difference between men and women in Cameroon. Divergent patterns also appear when comparing workers in urban and rural areas: rural workers are more likely to be missed by the short reference period in Mali and Senegal, whereas it is the opposite in Cameroon.

[INSERT TABLE 4]

This is contradictory with our expectations derived from the literature. Indeed, as suggested by Dixon (1982), we would have expected women to be more likely to “be missed” with a shorter

reference period because their work is supposed to be more occasional, irregular, seasonal, etc. than that of men. We also expected rural employment to be more seasonal and thus more sensitive to the length of the reference period, but this is not the case in Cameroon. Additional information provided by the DHS surveys confirms that women in those three countries are more likely to have a seasonal or an occasional job than a permanent one compared to men (Table A11). Nevertheless, even if occasional and seasonal workers are more likely to be captured by the longer reference period, more men than women are captured. As regards differences across area of residence, while urban workers are more sensitive to the reference period than rural ones in Cameroon, we observe the contrary in Mali and Senegal where the longer reference period helps to include more rural workers into the labor force. Employment tends to be more seasonal in rural area, nevertheless, in proportion, more workers are captured with a longer reference period in urban area (except for Senegalese women).

Finally, we examine the relationship between the reference period and another survey feature: the period of data collection. Indeed, the effect of the month of interview can go both ways (underestimation or overestimation) depending on the time of the survey. More specifically the agricultural calendar is likely to explain variations in the level of activity all over the year. Thus, a short reference period is expected to give a bad picture of the employment throughout the year. A long reference period is expected to reduce this potential measurement bias and provide a smoothed measure of the employment rate over the year. We explore this issue by investigating the variations in employment rates depending on the month of interview. We use the DHS surveys conducted over several months and for which we have information on the day respondents were interviewed and that use both a long and a short reference period. We examine seasonality separately for the three countries as they are not subject to the same seasonal variations. Figure 2 displays the monthly coefficients for employment rates (results of the estimation of the effect of the months of interview on the probability of declaring oneself employed, controlling for region, area of residence and survey) for males and females. These figures show how important the choice of the month of interview can be when one wants to measure employment.

[INSERT FIGURE 2]

The use of a long reference period fades the size of the variations from one month to another,

but can still provide a bad picture of the employment throughout the year. Indeed, for some specific months of interview, the yearly employment rate can display high deviations from the average annual employment rate. This suggests that the use of a longer reference period does not entirely solve the problem of seasonality. Indeed, the recall bias may be non negligible, respondents may not remember correctly episodes of employment if they are distant in the past (Kalton & Schuman 1982). It is also likely that respondents' current labor force status influences the perception of their activity during the past year.

4.4 The wording: “Occupation” versus “Work”

We now explore the effect of the wording of questions on employment rates and respondents' answers. To do so, we investigate the following questions: to what extent do surveys misclassify workers if they only use one question on “occupation” with occupational status as possible answers instead of using an additional question on “work”? And who, among respondents, is more sensitive to the wording of questions?

Our strategy consists in comparing the responses of the same respondents to questions using both wordings. Only one survey ML EMEP 2001 ask two questions on “occupation” and “work” to the same respondents for the same reference period. It uses the “occupation” question as a screening question (the respondents will only answer the “work” question if they did not declared themselves as employed in the first question, so this question will always produce higher estimates, we are mainly interested in the size of the gap here):

1. *What is your current occupation, your situation regarding employment?*

a. Work b. Look for a job c. Student d. Retired e. Annuitant f. Housewife g. Other inactive

2. *During the past seven days did you however work, at least one hour, for an occasional or exceptional work (consider also unpaid activities, e.g., helping a household member)?.*

Three other surveys, ML EMCES 1994, SN ESP 1991 and SN ESAM 2001 (2 rounds), use both wordings in independent questions, but along with two different reference periods, so we will not be able to disentangle between the wording and the reference period effect with those three surveys. We can still however compare the responses given to those two kinds of questions,

but we must keep in mind that for these surveys we do not measure the “pure” wording effect, but a combined effect with the reference period. The following questions are asked:

1. “What was your main occupation status during the past 12 months”

a. *Employed*²⁰ b. *Unemployed* c. *Student* d. *Retired* e. *Annuitant* f. *Housewife* g. *Other inactive*

2. *Did you work during the past week?*

For these surveys, questions are asked independently, so the gap can go both way. Questions on “main occupation” are expected to underestimate women’s work because they tend to consider themselves mainly as housewives even if they work Beneria (1981). Besides, since questions on “main occupation” relates to the one year reference period it is also possible that they produce higher employment rates if the respondents are interviewed during a period of low economic activity that does not reflect their annual activity (and vice versa).

The difference in employment rates between “occupation” and “work” questions

Table A12 displays the employment rates generated by the two wordings, broken up by survey gender and area of residence. The “work” question adds more than 20 ppts to the initial employment rate produced by the “occupation” question for the same short reference period (ML EMEP 2001). For the other surveys, the gap between the two wordings (and also the two reference periods) largely varies across and within the context of study: the overall gap is negative in Mali and positive in Senegal. Differences in the size of the gaps observed in Senegal may depend on the data collection period. As we can note for the SN ESAM 2001 survey that collected data twice within the same year, the employment rate produced by the short reference period varies a lot (38.2 % for the first round versus 51.1 % for the second one) depending on the period of data collection. In such a context of seasonal activity, a longer reference period appears preferable because it is less subject to fluctuations and may avoid potential problems of comparability with surveys conducted over different periods. In Mali, the negative gap is largely driven by women, which is in line with the fact that this kind of question on occupation may underestimate more women than men because they consider themselves as mainly housewives In Senegal, the female and rural employment rates appear more sensitive to the variation in the wording. Table 5 shows in column (1) the “pure” effect of the wording

in Mali (both wordings use the same short reference period). The question about occupation tends to largely underestimate the employment rate that increases by more than 23.4 ppts with the “work” question. The female employment rate appears largely more sensitive than that of men (column(2)), so is it the case for the rural employment rate compared to the urban one. Remaining columns display the combined effect of “occupation” and a long reference period versus “work” and a short reference period. The occupation over the past year question considers as workers more men than women compared to a question about work during the past week, and also increases rural employment rate. However, this is the result of the combined effect of two characteristics so we cannot decompose the effect of the wording and that of the reference period.

[INSERT TABLE 5]

Are female workers more likely to be misclassified?

As regards gender differences in sensitivity to the wording, Malian women appear significantly more sensitive to the wording than men (column(1) in Table 6). Their probability of changing their answer with the work “question” is 45.6 ppts higher than that of working men. Table A13 provides more details about the structure of the Malian population by occupational status (1), the share within each occupational status who worked during the last week (WLW) (2) and the contribution of each occupational status to the difference in employment rates observed between the “occupation” and the work question (3). Men are less sensitive to the wording first because their employment rate is much more higher than female one, so the possibility for correction is more limited. While about half of the women are housewives, men are mostly employed, all the more in the rural area (90.5 %). Second, an interesting feature is that many women who declare themselves as housewives actually perform economic activities on top of their domestic work, 43.3 % of them did work during the past week in urban area and 84.7 % of them in rural area. This aspect largely explains why female employment rate is more sensitive than male one to the wording: women are mainly housewives, and they are more likely to work at the same time compared to other occupational status. Thus, they contribute up to 87.9 % to the gap in employment rates between the two wordings in urban area, and up to 96.7 % in rural area. This supports Beneria’s criticism towards the “main occupation” questions that would tend to underestimate women’s real economic contribution. Besides, men who look for a job are more

likely than women with the same occupational status to have worked last week among those who are not employed. As regards other occupational statuses, women are systematically more likely than men to have worked last week if they did not declare themselves employed. It could mean that unemployed men can nevertheless perform temporary work to make money, waiting to find what they could consider to be a “real” job. The share of students is higher in the urban area but in proportion they work more along with their studies in the rural area (35.8 %). Rural students are plausibly helping in the family farm or business and studying at the same time.

[INSERT TABLE 6]

For the other surveys, we also investigate the probability that the respondents answer differently to the work question with a short reference period and to the occupation question with a long reference period (in columns (2) to (5) of Table 6). Women are systematically more likely to declare a different work status, which suggests that they are more sensitive than men to the survey design overall. Since women were not more likely than men to be misclassified with a long reference period in the preceding analysis in Mali, these results now suggest that they may however be more sensitive than men to the wording. Urban workers are more likely than rural to have worked during the past week if they declared their main occupation during the past year was not employed.

We can only investigate the “pure” wording effect with one Malian survey that uses both wordings with the same reference period. A parallel analysis with three additional survey show the combined effect of a variation in wording and reference period. Results suggest that women are systematically more sensitive to the wording than men.

5 Conclusion

Given that employment statistics are widely used both for academic research and to guide employment policies, we examine to what extent labor data produced by surveys conducted in three countries of West Africa are reliable to conduct comparisons and to draw meaningful recommendations. Using data from more than forty nationally representative household surveys and censuses carried out in Cameroon, Mali and Senegal from 1976 to 2012, we first come to the conclusion that even if similarities are observed within the same type of surveys, the rule

seems to be that every new survey uses a newly designed labor module.²¹ As a result, statistics are not comparable over time and space and implications in terms of credibility and reliability of analyses are of concern. Therefore, we investigate the sensitivity of employment statistics to questionnaire design to evaluate to what extent this diversity in questionnaire features affects labor statistics. More specifically, we analyze the influence of three questionnaire features: the detail of the labor module, the length of the reference period (in parallel with the period of data collection), and the wording. We assess the gap induced by a change in one of these questionnaire characteristic and explore if women are more sensitive than men to survey design.

Instead of comparing several surveys with different characteristics as Guarcello et al. (2010) did to study child labor variations with survey design, we exploit within-survey variations of our characteristics of interest in long labor modules. It allows us to compare the work status declared by the same respondents across different survey instruments, while controlling for surveys' specificities. Our results confirm that employment statistics are sensitive to the design of the survey questionnaire. A summary of results is displayed in Table A14. The detailed labor modules add between 3 and 6.8 ppts to the employment rate produced by a simple question (short module). Employment rates produced by a short reference period underestimate of up to 9.6 ppts the employment rate that would have been computed from a long reference period. As regards the role of the wording, we only rely on one survey conducted in Mali to show that an additional question on work adds more than 20 ppts to the employment rate produced by the "occupation" question. The magnitude of the effect of each characteristic under study on employment rates appears to be context-dependent. Our findings do not enable to conclude on the superiority of one survey instrument to capture employment since our strategy does not allow to assess the comparative effect of all the characteristics simultaneously. Nevertheless, our results enable to draw analysts' attention on the fact that using surveys with one single question on occupation (such as censuses, e.g., RGPHs), or one single general question on "work" during the past week (e.g., SN ESAM1 1994, SN DHS 1992) instead of a detailed labor module may produce underestimated employment rates. Moreover, relying only on a short reference period (e.g., ML EESI, ML ELIM 2003, SN ESPS 2005) without asking the same question on a long reference period are likely to provide a bad picture of the employment throughout the year.

Are female employment rates more sensitive than male one to survey features? We explore heterogeneous effects to investigate differences in the sensitivity to questionnaire characteristics across gender and area of residence. An informative conclusion of our analysis is that, contrary to our expectations derived from the existing literature, women are not systematically more sensitive than men to survey design. If they appear to be more sensitive to the detail of the labor module and to the wording of questions, variations in the reference period have a larger effect on male employment rates. Moreover, our results suggest that rural individuals are not systematically more sensitive than urban ones to survey design either. Focusing only on the workers, we also find that women have a higher probability of inconsistencies across the different surveys instruments, except for the reference period, where it is only true for Senegal.

On the basis of this analysis, several recommendations can be drawn to improve the measurement of employment. As an *ex ante* strategy, a first best would be to carry out harmonized repeated labor force surveys with several rounds a year. A second best would be to systematically include a standardized module in surveys (such as a QUID questionnaire). Another implication of our study relates to the contents of the labor modules. Questions on marginal economic activities are not as “effective” as expected to include workers into the labor force, but its combination with questions on having a job or about being absent from work during the reference period seem more able to capture workers who did not declare working during the reference period. Further information on the nature, formality, type and remuneration of the job should also to be included to provide a clear picture of employment (see for instance 1-2-3 Surveys). As suggested earlier, time use surveys that list all activities performed over the day/week can be an alternative enabling to define *ex post* what should be considered as “work.” However, there is always a trade-off between accuracy and cost (in time and money), such that implementers are not always able to follow recommendations from international standards on the measurement of economic activity. As regards *ex post* strategies to implement with already collected data, rigorous methods for harmonizing data are needed. However, *ex post* harmonization is difficult due to the high variability of surveys characteristics to take into account. At the aggregate level, the strategy presented by Guarcello et al. (2010) constitutes a good starting point. However, rigorous methods to correct data and improve *ex post* temporal and spatial comparability have to be developed. Another alternative is conduct comparative analyses only

using comparable surveys, i.e. the more recent DHS surveys whose labor modules vary little over time and space compared to other surveys. Further efforts remain to be done on the basis of this sensitivity analysis to survey characteristics. The role of other questionnaire features still need to be explored (e.g., the position of the question in the questionnaire), as well as other dimensions of heterogeneity in the sensitivity to survey design. The role of the data quality in explaining variations in employment rates needs further investigation. Indeed, it is likely that interviewers' training plays a key role in the data collection process.

Notes

1. Likewise, Donahoe (1999) suggests to broaden the traditionally accepted definition of work by incorporating all activities, including those which only have a use value. She proposes a typology of work that is closer to the reality of women's labor in developing countries, identifying different forms of work (housework, subsistence production, income generation activities, and non-family employment) that goes beyond formal paid employment. She recommends the use of questionnaires on time use. This approach is a good way to capture women's work since it provides detailed information on all activities performed by women and imposes no *a priori* restrictive definition of work. It is however costly and cannot be collected over very long periods of time. It is however costly and cannot be collected over very long periods of time.
2. "Contributing family workers" are those workers who hold a "self-employment" job in a market-oriented establishment operated by a related person living in the same household, who cannot be regarded as a partner, because their degree of commitment to the operation of the establishment, in terms of working time or other factors to be determined by national circumstances, is not at a level comparable to that of the head of the establishment." (Resolution concerning the international classification of status in employment, adopted by the 15th International Conference of Labour Statisticians (Geneva, 1993).
3. The recall loss is linked to the memory of the respondent and depends on the length of the recall period and the ability of the respondent to remember information from her/his past. The telescoping error corresponds to the fact of "*remembering an event as having occurred more recently than in fact the case*" (Kalton & Schuman 1982).
4. "*Employment in the informal sector includes all jobs in informal sector enterprises or all persons who, during a given reference period, were employed in at least one informal sector enterprise, irrespective of their status in employment and whether it was their main or a secondary job*" (Seventeenth International Conference of Labour Statisticians, Geneva, 2003).
5. Several authors have investigated the effects of the wording, position and length of the questions in a questionnaire on survey responses (Kalton & Schuman 1982, Kasprzyk 2005). Beyond the bias introduced by respondents related to their understanding of the concepts used in the questions, they emphasize the importance of how questions are phrased. Kalton & Schuman (1982) note that compared to open questions, closed ones (which include a list of possible answers for the respondents) have the advantage of a standardized treatment, but they have the disadvantage that the available choices are not necessarily adapted or exhaustive and may influence the answers given. Moreover, responses to closed questions may be affected by the order of answers. Some authors find a slight tendency to get a higher share of responses in favor of the first alternative in writing, while the last one seem to be more favored orally. However, other authors find that the order has no effect (Kalton & Schuman 1982).
6. Simple questions take the form: "*Did [Name] work in the past 7 days?*". Complex questions are chain questions that include lists of activities. Status in the main occupation can be for instance: employed, unemployed, housewife, student, retired, etc.. The other cases refers to questionnaire in which the economic activity is only determined by the number of weekly working hours.
7. Cameroon, Mali and Senegal are three West African countries of comparable size with a population respectively estimated at 22, 17 and 15 million inhabitants (World Bank 2015). They differ somewhat however on a number of dimensions. Cameroon displays higher Gross National Income per capita (according to the Atlas method), higher educational attainment and lower poverty rates (measured by the poverty headcount ratio at national poverty lines) than the two other countries. However, Senegal enjoys a larger life expectancy and a lower child mortality. While the agricultural sector contributes to 40 % of the Gross Domestic Product in Mali, its contribution is around 20 % in Cameroon and Senegal. In those three countries, the agricultural sector employs more than half of the working age population.
8. Employment rate is the proportion of the country's working-age population (here aged 15 to 49 years old) that is employed. "The employed comprise all persons above a specific age who during a specified brief period, either one week or one day, were in paid employment or in self-employment" (ILO). In order to ensure the comparability of the surveyed population, we excluded from our initial sample of surveys: surveys conducted only in urban areas; men in CM DHS 1991 because the subsample is only composed of married men, hence not representative of the whole population. Since DHS surveys only interview 15-49 years old women, we calculate all employment rates on this age range for sample comparability purposes across surveys. Note that when several questions are asked, we systematically use the question with the shorter reference period (usually "1 week or Currently") to calculate the employment rate. Surveys for which employment rates are not calculated on the "1 week" or "Currently" reference periods are indicated below figures.

9. A Unified Questionnaire on Development Indicators designed by the World Bank.
10. For instance, women are asked “*As you know, some women take up jobs for which they are paid in cash or kind. Others sell things, have a small business or work on the family farm or in the family business. In the last seven days, have you done any of these things or any other work?*”, and men “*Have you done any work in the last 12 months?*” (CM DHS 1998).
11. Note that this classification only considers questions that enable to determine whether an individual should be considered as employed or not. Thus, some labor modules may contains more questions related to employment that are not considered here. Besides, since the same survey can contain several questions related to employment, and thus it can be assigned simultaneously both types of wording. For this reason, the two types of wording do not sum up to 100 % .
12. The short reference period (one week or currently) is used to determine the “currently active population” (ILO) measuring the economically active population. The long reference period (one year) refers to the “usually active population”, a concept that was introduced as an international standard at the 1982 Thirteenth International Conference of Labor Statisticians.
13. The sensitivity is defined here as the degree of response of employment rates to a variation in survey characteristics.
14. In particular: $m = 0$ for the first question of the detailed labor module, and $m = 1$ for the second question of the labor module, $m = 2$ for the third question of the labor module for the characteristic “length of the labor module”; $m = 0$ if the question refers to a short reference period, and $m = 1$ if the question refers to a long reference period for the characteristic “length of the reference period” and $m = 0$ if the question is about “work”, and $m = 1$ if the question is about “occupation” for the characteristic “wording.”
15. This allows us to have several measures of the work status for the same individual within the same survey
16. All surveys do not have all characteristics that vary simultaneously so we cannot investigate all these characteristics at the same time. For instance, detailed labor modules may not use different wordings in their questions.
17. Note that ENTE survey is not strictly comparable to the other surveys, because the economic activities proposed in the list slightly differ from the other surveys. Since there is no other nationally representative survey with this type of labor module in Senegal, we keep it in our analysis to have an idea of the effect of the detail of labor module in this country. This point however must be borne in mind for interpretation of differences in the effect between countries.
18. “0. *During the previous week, did you work, even if only one hour?*”
 1. *Even though you did not do any (paid) work last week, did you do any of the following activities, inside or outside your home?*
 - a. *Work in a personal business*
 - b. *Make a product for sale*
 - c. *Do something at home for pay*
 - d. *Render a service for money or a benefit in kind*
 - e. *Help in the family business*
 - f. *Apprenticeship with/without pay*
 - g. *As a working student*
 - h. *Working for another family*
 - i. *Build own house*
 - j. *Any other paid activity*
 - k. *None of the above*
 2. *Although you did not work last week, do you have a job?*

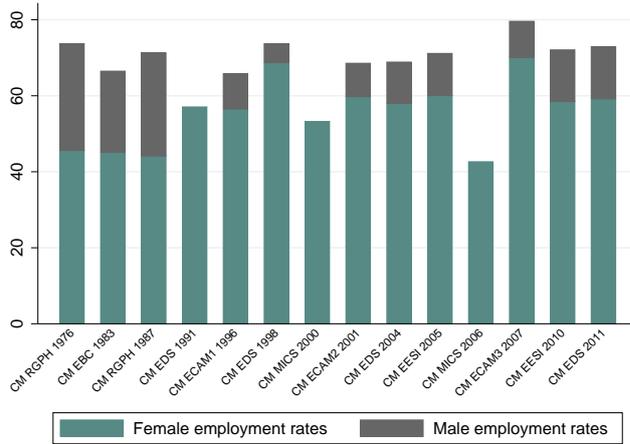
Note that we consider that a question about absence at work boils down to the same idea of having a job but not having worked during the reference period. We exclude surveys that ask only one of these two questions for comparability purposes (CM DHS 2011, ML EMEP QUID 2001, ML DHS 2012-2013, SN DHS 2010).
19. We exclude surveys with two different reference periods but with two different wordings to capture the “pure” effect of the length of the reference period. We will investigate this kind of surveys in the next subsection.
20. Note that the status in the main occupation are more detailed in ML EMCES 1994 than in the two other surveys.
21. The DHS Surveys seem to have quite similar labor modules over time, with only few exceptions, and when they add new questions they do not remove questions used in the past which allows for data comparability.

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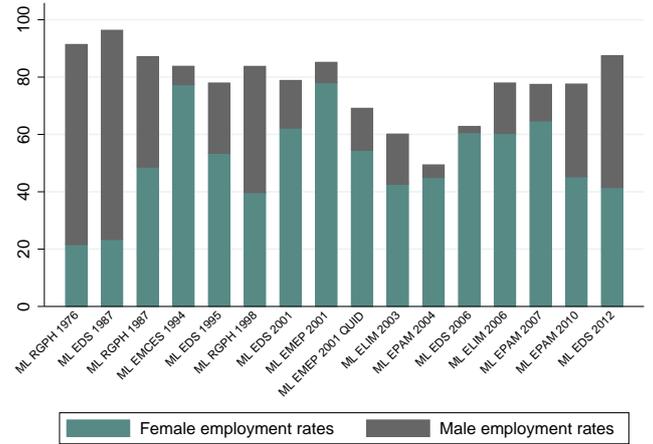
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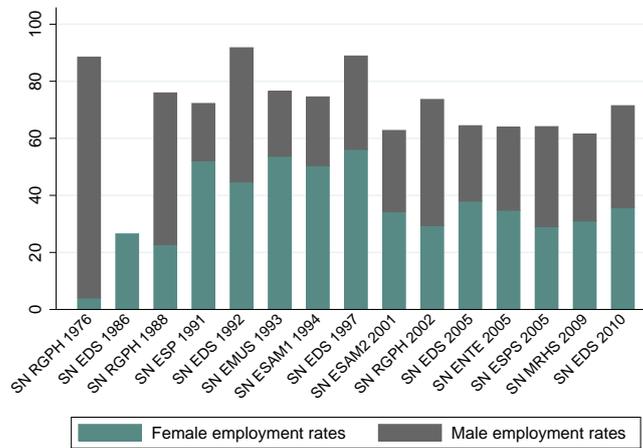
Figure 1: Female and male employment rates



(a) Cameroon from 1976 to 2011



(b) Mali from 1976 to 2011



(c) Senegal from 1976 to 2011

Notes: Employment rates are weighted and calculated for 15-49 years old individuals for comparability purposes, for "1 week or currently" reference period when it exists.
 For CM MICS 2000 and 2006, CM DHS 1991, ML DHS 1987, SN DHS 1992 for men for men, and SN DHS 1997 they are computed with "No reference period" and for CM ECAM2 2001, ML RGPH 1987 and 1998, with a "1 month" reference period. For SN RGPH 1976, 1988, 2002 and SN ESAM1 1994 they are computed with a "1 year" reference period.
 CM MICS 2000 and 2006, SN DHS 1986 did not interview men.

Table 1: The contribution of detailed labor modules on the probability of declaring oneself employed - A within-survey analysis by country

	Cameroon			Mali			Senegal		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Economic activities (<i>Ref. simple</i>)	0.033*** (0.001)	0.030*** (0.002)	0.034*** (0.001)	0.018*** (0.001)	0.017*** (0.001)	0.019*** (0.002)	0.002*** (0.000)	0.002*** (0.001)	0.002** (0.001)
Has a job	0.068*** (0.002)	0.061*** (0.002)	0.068*** (0.002)	0.030*** (0.001)	0.027*** (0.002)	0.031*** (0.002)	0.045*** (0.002)	0.040*** (0.003)	0.031*** (0.002)
Economic activities × Female		0.004* (0.002)			0.001 (0.002)			-0.000 (0.001)	
Has a job × Female		0.013*** (0.003)			0.006** (0.003)			0.009** (0.004)	
Economic activities × Rural			-0.002 (0.002)			-0.003 (0.002)			0.000 (0.001)
Has a job × Rural			-0.001 (0.003)			-0.001 (0.003)			0.028*** (0.004)
Female	-0.132*** (0.005)	-0.138*** (0.005)	-0.132*** (0.005)	-0.240*** (0.007)	-0.243*** (0.007)	-0.240*** (0.007)	-0.292*** (0.009)	-0.295*** (0.010)	-0.292*** (0.009)
Rural	0.151*** (0.006)	0.151*** (0.006)	0.152*** (0.006)	0.133*** (0.010)	0.133*** (0.010)	0.135*** (0.010)	0.029*** (0.011)	0.029*** (0.011)	0.019* (0.011)
25-34 (<i>Ref. 15-24</i>)	0.242*** (0.006)	0.242*** (0.006)	0.242*** (0.006)	0.128*** (0.009)	0.128*** (0.009)	0.128*** (0.009)	0.170*** (0.012)	0.170*** (0.012)	0.170*** (0.012)
35-44	0.303*** (0.007)	0.303*** (0.007)	0.303*** (0.007)	0.207*** (0.009)	0.207*** (0.009)	0.207*** (0.009)	0.240*** (0.014)	0.240*** (0.014)	0.240*** (0.014)
45 and more	0.293*** (0.010)	0.293*** (0.010)	0.293*** (0.010)	0.180*** (0.013)	0.180*** (0.013)	0.180*** (0.013)	0.274*** (0.020)	0.274*** (0.020)	0.274*** (0.020)
Primary education (<i>Ref. No education</i>)	0.069*** (0.008)	0.069*** (0.008)	0.069*** (0.008)	-0.049*** (0.011)	-0.049*** (0.011)	-0.049*** (0.011)	-0.017 (0.012)	-0.017 (0.012)	-0.017 (0.012)
Secondary education	-0.046*** (0.008)	-0.046*** (0.008)	-0.046*** (0.008)	-0.224*** (0.011)	-0.224*** (0.011)	-0.224*** (0.011)	-0.199*** (0.015)	-0.199*** (0.015)	-0.199*** (0.015)
Tertiary education	-0.102*** (0.011)	-0.102*** (0.011)	-0.102*** (0.011)	-0.229*** (0.023)	-0.229*** (0.023)	-0.229*** (0.023)	-0.210*** (0.020)	-0.210*** (0.020)	-0.210*** (0.020)
Married polygamous (<i>Ref. Monogamous</i>)	0.058*** (0.006)	0.058*** (0.006)	0.058*** (0.006)	-0.013 (0.008)	-0.013 (0.008)	-0.013 (0.008)	-0.005 (0.014)	-0.005 (0.014)	-0.005 (0.014)
Single	0.042*** (0.010)	0.042*** (0.010)	0.042*** (0.010)	-0.045*** (0.009)	-0.045*** (0.009)	-0.045*** (0.009)	0.010 (0.012)	0.010 (0.012)	0.010 (0.012)
Other	0.060*** (0.010)	0.060*** (0.010)	0.060*** (0.010)	-0.013 (0.026)	-0.013 (0.026)	-0.013 (0.026)	0.056 (0.036)	0.056 (0.036)	0.056 (0.036)
Household size	-0.008*** (0.001)	-0.008*** (0.001)	-0.008*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
Constant	0.474*** (0.013)	0.477*** (0.013)	0.474*** (0.013)	0.666*** (0.020)	0.667*** (0.020)	0.665*** (0.020)	0.675*** (0.027)	0.678*** (0.027)	0.683*** (0.027)
Observations	170,001	170,001	170,001	90,495	90,495	90,495	37,749	37,749	37,749
R ²	0.234	0.234	0.234	0.223	0.223	0.223	0.153	0.153	0.154
Months of interview dummies	Yes								
Regional dummies	Yes								
Survey fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No

The dependent variable is a dummy variable equal to 1 if the individual is employed. Observations have been expanded twice to estimate the effect of each of the two additional questions. The variable "Economic activities" measures the additional probability of declaring oneself employed with the question on the economic activities performed compared to the first single question. The variable "Has a job" measures the additional probability of declaring oneself employed with the question on having a job despite not working during the reference period compared to the first single question of the module.
 The considered sample is the population aged 15-49 years.
 All regressions are weighted so that each survey contributes equally to the estimation whatever the size of the initial sample interviewed (except for Senegal since there is only one survey).
 Standard errors are clustered at the individual level. Significance levels: * 0.10 ** 0.05 *** 0.01.
 Surveys: CM ECAM3 2007, CM EESI 2005, CM EESI 2010, ML ELM 2006, ML EPAM 2004, ML EPAM 2007, ML EPAM 2010, SN ENTE 2005.

Table 2: Determinants of the inconsistencies in workers' classification between the simple and detailed labor modules

	Cameroon		Mali		Senegal	
	simple=0 & activities=1	simple=0 & job=1	simple=0 & activities=1	simple=0 & job=1	simple=0 & activities=1	simple=0 & job=1
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.019*** (0.003)	0.039*** (0.004)	0.013*** (0.003)	0.027*** (0.004)	0.002 (0.002)	0.064*** (0.008)
Rural	-0.009** (0.004)	-0.026*** (0.005)	-0.011** (0.005)	-0.011* (0.006)	0.002 (0.002)	0.046*** (0.009)
25-34 (<i>Ref. 15-24</i>)	-0.065*** (0.005)	-0.067*** (0.006)	-0.007 (0.004)	-0.001 (0.005)	-0.004 (0.003)	-0.032*** (0.010)
35-44	-0.067*** (0.005)	-0.073*** (0.007)	-0.017*** (0.004)	-0.015*** (0.005)	-0.006* (0.004)	-0.051*** (0.012)
45 and more	-0.068*** (0.005)	-0.071*** (0.008)	-0.004 (0.006)	-0.005 (0.007)	-0.007* (0.004)	-0.059*** (0.016)
Primary education (<i>Ref. No education</i>)	-0.000 (0.004)	-0.007 (0.006)	0.009* (0.005)	0.017** (0.007)	0.001 (0.002)	0.003 (0.009)
Secondary education	0.010* (0.005)	0.016** (0.008)	0.014** (0.007)	0.023*** (0.008)	0.004 (0.005)	0.055*** (0.015)
Tertiary education	-0.002 (0.007)	0.007 (0.010)	0.011 (0.016)	0.031 (0.020)	0.000 (0.003)	0.016 (0.017)
Married polygamous (<i>Ref. Monogamous</i>)	-0.020*** (0.004)	-0.015*** (0.005)	0.008* (0.004)	0.016*** (0.005)	0.001 (0.004)	0.003 (0.013)
Single	-0.030*** (0.005)	-0.036*** (0.007)	0.003 (0.004)	0.004 (0.005)	-0.002 (0.002)	-0.020* (0.010)
Other	-0.022*** (0.007)	-0.024*** (0.009)	-0.001 (0.009)	0.008 (0.013)	-0.004*** (0.001)	-0.024 (0.023)
Household size	0.003*** (0.000)	0.002*** (0.001)	-0.000 (0.000)	-0.001** (0.000)	-0.000 (0.000)	-0.001 (0.001)
Constant	0.100*** (0.008)	0.135*** (0.011)	0.029*** (0.008)	0.043*** (0.009)	0.036 (0.058)	0.063*** (0.017)
Observations	37,162	39,084	20,365	20,738	5,569	6,152
R ²	0.066	0.045	0.012	0.015	0.005	0.066
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
Survey fixed effects	Yes	Yes	Yes	Yes	No	No

The dependent variable is a alternatively a dummy variable equal to 1 if the individual declares she/he is employed to the question on economic activities (columns (1), (3), (5)) or on having a job (columns (2), (4), (6)) whereas he declared not working during the reference period according to the first simple question. The variable is equal to 0 if the respondent declared he/she was working in the simple question.

"simple" relates to the first simple question of the labor module : "During the previous week, did you work, even if only one hour?". "activities" relates to the first additional question with a list of economic activities : "Even though you did not do any (paid) work last week, did you do any of the following activities, inside or outside your home?". "job" relates to the second additional question on having a job despite not working during the reference period or a question on the absence at work during the reference period : "Although you did not work last week, do you have a job?".

The model is estimated as a linear probability model.

The considered sample is the population aged 15-49 years.

Robust standard errors in brackets. Significance levels : * 0.10 ** 0.05 *** 0.01

All regressions are weighted so that each survey contributes in the same way to the estimation whatever the initial sample interviewed (except (5) and (6) since there is only one survey in Senegal). Surveys: CM ECAM3 2007, CM EESI 2005, CM EESI 2010, ML ELIM 2006, ML EPAM 2004, ML EPAM 2007, ML EPAM 2010, SN ENTE 2005.

Table 3: The effect of a long reference period on the probability of declaring oneself employed - A within-survey analysis by country

	Cameroon			Mali			Senegal		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Long reference period (<i>Ref. Short reference period</i>)	0.062 *** (0.001)	0.068 *** (0.002)	0.075 *** (0.002)	0.050 *** (0.001)	0.077 *** (0.003)	0.038 *** (0.002)	0.096 *** (0.002)	0.108 *** (0.003)	0.068 *** (0.003)
Long reference period * Female		-0.012 *** (0.002)			-0.053 *** (0.003)			-0.025 *** (0.004)	
Long reference period * Rural			-0.025 *** (0.002)			0.024 *** (0.003)			0.061 *** (0.004)
Female	-0.115 *** (0.004)	-0.109 *** (0.004)	-0.115 *** (0.004)	-0.258 *** (0.005)	-0.232 *** (0.006)	-0.258 *** (0.005)	-0.329 *** (0.006)	-0.317 *** (0.006)	-0.329 *** (0.006)
Rural	0.119 *** (0.004)	0.119 *** (0.004)	0.131 *** (0.005)	0.027 *** (0.008)	0.027 *** (0.008)	0.016 ** (0.008)	0.003 (0.006)	0.003 (0.006)	-0.027 *** (0.006)
25-34 (<i>Ref. 15-24</i>)	0.251 *** (0.005)	0.251 *** (0.005)	0.251 *** (0.005)	0.149 *** (0.007)	0.149 *** (0.007)	0.149 *** (0.007)	0.217 *** (0.008)	0.217 *** (0.008)	0.217 *** (0.008)
35-44	0.290 *** (0.005)	0.290 *** (0.005)	0.290 *** (0.005)	0.176 *** (0.008)	0.176 *** (0.008)	0.176 *** (0.008)	0.295 *** (0.008)	0.295 *** (0.008)	0.295 *** (0.008)
45 and more	0.288 *** (0.006)	0.288 *** (0.006)	0.288 *** (0.006)	0.178 *** (0.010)	0.178 *** (0.010)	0.178 *** (0.010)	0.309 *** (0.011)	0.309 *** (0.011)	0.309 *** (0.011)
Primary education (<i>Ref. No education</i>)	0.065 *** (0.005)	0.065 *** (0.005)	0.065 *** (0.005)	-0.002 (0.007)	-0.002 (0.007)	-0.002 (0.007)	0.011 (0.007)	0.011 (0.007)	0.011 (0.007)
Secondary education	-0.059 *** (0.006)	-0.059 *** (0.006)	-0.059 *** (0.006)	-0.151 *** (0.008)	-0.151 *** (0.008)	-0.151 *** (0.008)	-0.182 *** (0.009)	-0.182 *** (0.009)	-0.182 *** (0.009)
Tertiary education	-0.119 *** (0.011)	-0.119 *** (0.011)	-0.119 *** (0.011)	-0.169 *** (0.019)	-0.169 *** (0.019)	-0.169 *** (0.019)	-0.153 *** (0.018)	-0.153 *** (0.018)	-0.153 *** (0.018)
Married polygamous (<i>Ref. Monogamous</i>)	0.038 *** (0.005)	0.038 *** (0.005)	0.038 *** (0.005)	0.075 *** (0.006)	0.075 *** (0.006)	0.075 *** (0.006)	0.070 *** (0.007)	0.070 *** (0.007)	0.070 *** (0.007)
Single	-0.077 *** (0.005)	-0.077 *** (0.005)	-0.077 *** (0.005)	-0.037 *** (0.008)	-0.037 *** (0.008)	-0.037 *** (0.008)	0.055 *** (0.008)	0.055 *** (0.008)	0.055 *** (0.008)
Other	0.015 * (0.008)	0.015 * (0.008)	0.015 * (0.008)	0.062 *** (0.020)	0.062 *** (0.020)	0.062 *** (0.020)	0.132 *** (0.016)	0.132 *** (0.016)	0.132 *** (0.016)
Household size	-0.005 *** (0.000)	-0.005 *** (0.000)	-0.005 *** (0.000)	-0.003 *** (0.001)	-0.003 *** (0.001)	-0.003 *** (0.001)	-0.001 ** (0.000)	-0.001 ** (0.000)	-0.001 ** (0.000)
Constant	0.176 *** (0.027)	0.173 *** (0.027)	0.169 *** (0.027)	0.685 *** (0.014)	0.672 *** (0.014)	0.691 *** (0.014)	0.531 *** (0.018)	0.525 *** (0.018)	0.546 *** (0.018)
Observations	132636	132636	132636	120140	120140	120140	88522	88522	88522
R ²	0.235	0.235	0.235	0.176	0.177	0.176	0.239	0.239	0.240
Months of interview dummies	Yes								
Regional dummies	Yes								
Survey fixed effects	Yes								

The dependent variable is a dummy equal to 1 if the individual is employed. Observations have been expanded once to estimate the effect of the length of the reference period, i.e. the effect of a "long reference period" question, compared to the "short reference period" question (the reference category).
 The considered sample is the population aged 15-49 years.
 All regressions are weighted so that each survey contribute equally to the estimations whatever the size of the initial sample interviewed.
 Standard errors are clustered at the individual level. Significance levels: * 0.10 ** 0.05 *** 0.01
 Surveys: CM ECAMI 1996, CM ECAM3 2007, CM EDS 1998, CM EDS 2004, CM EDS 2011, ML EDS 1995, ML EDS 2001, ML EDS 2006, ML EDS 2012, ML ELIM 2006, SN EDS 2005, SN EDS 2010, SN ENTE 2005.

Table 4: Determinants of the inconsistencies in workers' classification between the short and the long reference periods

	Cameroon week=0 & year=1 (1)	Mali week=0 & year=1 (2)	Senegal week=0 & year=1 (3)
Female	0.002 (0.003)	-0.052*** (0.003)	0.066*** (0.005)
Rural	-0.031*** (0.003)	0.033*** (0.003)	0.107*** (0.006)
25-34 (<i>Ref. 15-24</i>)	-0.084*** (0.003)	-0.027*** (0.004)	-0.088*** (0.006)
35-44	-0.100*** (0.004)	-0.029*** (0.005)	-0.113*** (0.008)
45 and more	-0.095*** (0.005)	-0.034*** (0.006)	-0.126*** (0.010)
Primary education (<i>Ref. No education</i>)	-0.011*** (0.004)	0.009** (0.004)	0.002 (0.006)
Secondary education	0.050*** (0.004)	0.013*** (0.004)	0.120*** (0.007)
Tertiary education	0.055*** (0.007)	-0.002 (0.009)	0.057*** (0.012)
Married polygamous (<i>Ref. Monogamous</i>)	-0.012*** (0.004)	-0.025*** (0.004)	-0.013* (0.008)
Single	-0.001 (0.004)	0.019*** (0.005)	-0.009 (0.008)
Other	-0.000 (0.006)	0.005 (0.012)	-0.009 (0.014)
Household size	0.001*** (0.000)	-0.000 (0.000)	0.001*** (0.000)
Constant	0.247 (0.344)	0.106*** (0.008)	0.094*** (0.017)
Observations	48,659	37,801	23,212
R^2	0.068	0.030	0.096
Regional dummies	Yes	Yes	Yes
Survey fixed effects	Yes	Yes	Yes

The dependent variable is a dummy equal to 1 if the individual declares she/he is employed to the question with the long reference period whereas she/he declared not working during the short reference period. The variable is equal to 0 if the respondent declared he/she was working in the short reference and the long reference period questions.

The model is estimated as a linear probability model.

The considered sample is the population aged 15-49 years.

All regressions are weighted so that each survey contribute in the same way to the estimations whatever the initial sample interviewed.

Robust standard errors in brackets. Significance levels : * 0.10 ** 0.05 *** 0.01

Surveys : CM ECAM1 1996, CM ECAM3 2007, CM EDS 1998, CM EDS 2004, CM EDS 2011, ML EDS 1995, ML EDS 2001, ML EDS 2006, ML EDS 2012, ML ELIM 2006, SN EDS 2005, SN EDS 2010, SN ENTE 2005.

Table 5: The effect of the wording on the probability of declaring oneself employed - A within-survey analysis by country

	Mali (same reference period)			Mali			Senegal		
	(same reference period : short)			(occupation / long & work / short)			(occupation / long & work / short)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Occupation (<i>Ref. Work</i>)	-0.234 *** (0.004)	-0.048 *** (0.003)	-0.137 *** (0.005)	-0.009 *** (0.002)	0.025 *** (0.002)	-0.051 *** (0.003)	0.045 *** (0.003)	0.049 *** (0.004)	0.027 *** (0.003)
Occupation * Female		-0.352 *** (0.007)			-0.063 *** (0.004)			-0.006 (0.005)	
Occupation * Rural			-0.142 *** (0.008)			0.052 *** (0.004)			0.041 *** (0.005)
Female	-0.282 *** (0.006)	-0.106 *** (0.006)	-0.282 *** (0.006)	-0.123 *** (0.005)	-0.091 *** (0.005)	-0.123 *** (0.005)	-0.297 *** (0.005)	-0.294 *** (0.006)	-0.297 *** (0.005)
Rural	0.119 *** (0.008)	0.119 *** (0.008)	0.190 *** (0.008)	0.199 *** (0.006)	0.199 *** (0.006)	0.173 *** (0.006)	0.226 *** (0.008)	0.226 *** (0.008)	0.205 *** (0.008)
25-34 (<i>Ref. 15-24</i>)	0.092 *** (0.007)	0.092 *** (0.007)	0.092 *** (0.007)	0.077 *** (0.006)	0.077 *** (0.006)	0.077 *** (0.006)	0.106 *** (0.007)	0.106 *** (0.007)	0.106 *** (0.007)
35-44	0.131 *** (0.007)	0.131 *** (0.007)	0.131 *** (0.007)	0.096 *** (0.006)	0.096 *** (0.006)	0.096 *** (0.006)	0.217 *** (0.007)	0.217 *** (0.007)	0.217 *** (0.007)
45 and more	0.117 *** (0.012)	0.117 *** (0.012)	0.117 *** (0.012)	0.084 *** (0.008)	0.084 *** (0.008)	0.084 *** (0.008)	0.228 *** (0.011)	0.228 *** (0.011)	0.228 *** (0.011)
Primary education (<i>Ref. No education</i>)	-0.117 *** (0.011)	-0.117 *** (0.011)	-0.117 *** (0.011)	-0.109 *** (0.007)	-0.109 *** (0.007)	-0.109 *** (0.007)	-0.059 *** (0.007)	-0.059 *** (0.007)	-0.059 *** (0.007)
Secondary education	-0.255 *** (0.011)	-0.255 *** (0.011)	-0.255 *** (0.011)	-0.144 *** (0.015)	-0.144 *** (0.015)	-0.144 *** (0.015)	-0.106 *** (0.009)	-0.106 *** (0.009)	-0.106 *** (0.009)
Tertiary education	-0.118 *** (0.039)	-0.118 *** (0.039)	-0.118 *** (0.039)	-0.128 *** (0.025)	-0.128 *** (0.025)	-0.128 *** (0.025)	0.071 *** (0.016)	0.071 *** (0.016)	0.071 *** (0.016)
Household size	-0.000 * (0.000)	-0.000 * (0.000)	-0.000 * (0.000)	-0.001 *** (0.000)	-0.001 *** (0.000)	-0.001 *** (0.000)	-0.005 *** (0.001)	-0.005 *** (0.001)	-0.005 *** (0.001)
Constant	0.815 *** (0.012)	0.722 *** (0.012)	0.767 *** (0.012)	0.699 *** (0.011)	0.682 *** (0.011)	0.720 *** (0.011)	0.552 *** (0.019)	0.550 *** (0.019)	0.561 *** (0.019)
Observations	73228	73228	73228	70988	70988	70988	56661	56661	56661
R^2	0.282	0.318	0.287	0.167	0.169	0.168	0.234	0.234	0.235
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable is a dummy equal to 1 if the individual is employed. Observations have been expanded once to estimate the effect of the wording, i.e. the effect of a "work question", compared to the "occupation" question (the reference category).
The considered sample is the population aged 15-49 years.
All regressions are weighted. Regressions for Senegal are weighted so that each survey contributes equally to the estimation whatever the size of the initial sample interviewed.
Note that unlike the previous analyses, we do not control for the month of interview and for marital status because the information is not available for all these surveys.
Standard errors are clustered at the individual level. Significance levels : * 0.10 ** 0.05 *** 0.01

Table 6: Determinants of the inconsistencies in workers' classification between the different wordings

	Mali (same reference period)	Mali		Senegal	
	occupation=0 & work=1	occupation=1 & work=0	occupation=0 & work=1	occupation=1 & work=0	occupation=0 & work=1
	(1)	(2)	(3)	(4)	(5)
Female	0.456*** (0.005)	0.015*** (0.003)	0.091*** (0.003)	0.149*** (0.004)	0.059*** (0.003)
Rural	0.008 (0.007)	0.005 (0.006)	-0.186*** (0.006)	0.101*** (0.006)	-0.035*** (0.004)
25-34 (<i>Ref. 15-24</i>)	-0.032*** (0.005)	-0.004 (0.003)	-0.011*** (0.003)	-0.067*** (0.005)	-0.027*** (0.003)
35-44	-0.050*** (0.006)	-0.002 (0.004)	-0.022*** (0.004)	-0.126*** (0.005)	-0.046*** (0.004)
45 and more	-0.058*** (0.009)	-0.010* (0.005)	-0.017*** (0.005)	-0.140*** (0.007)	-0.053*** (0.005)
Primary education (<i>Ref. No education</i>)	0.052*** (0.009)	0.043*** (0.004)	0.041*** (0.004)	0.018*** (0.006)	0.018*** (0.004)
Secondary education	0.056*** (0.009)	0.019** (0.009)	0.015 (0.009)	0.044*** (0.008)	0.009* (0.005)
Tertiary education	-0.015 (0.026)	0.052*** (0.012)	0.064*** (0.013)	0.026 (0.017)	-0.015 (0.010)
Household size	-0.001*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)	0.003*** (0.000)	0.001*** (0.000)
Constant	0.190*** (0.010)	0.053*** (0.008)	0.217*** (0.007)	0.127*** (0.009)	0.151*** (0.005)
Observations	29,254	24,410	25,149	42,487	34,308
R ²	0.293	0.025	0.139	0.141	0.074
Regional dummies	Yes	Yes	Yes	Yes	Yes
Months dummies	Yes	Yes	Yes	Yes	Yes
Survey fixed effects	No	No	No	Yes	Yes

The dependent variable is a dummy equal to 1 if the worker provides different answers to the "occupation" and to the "work". The variable is equal to 0 if the respondent declared he/she was working in both questions.

The model is estimated as a linear probability model.

The considered sample is the population aged 15-49 years.

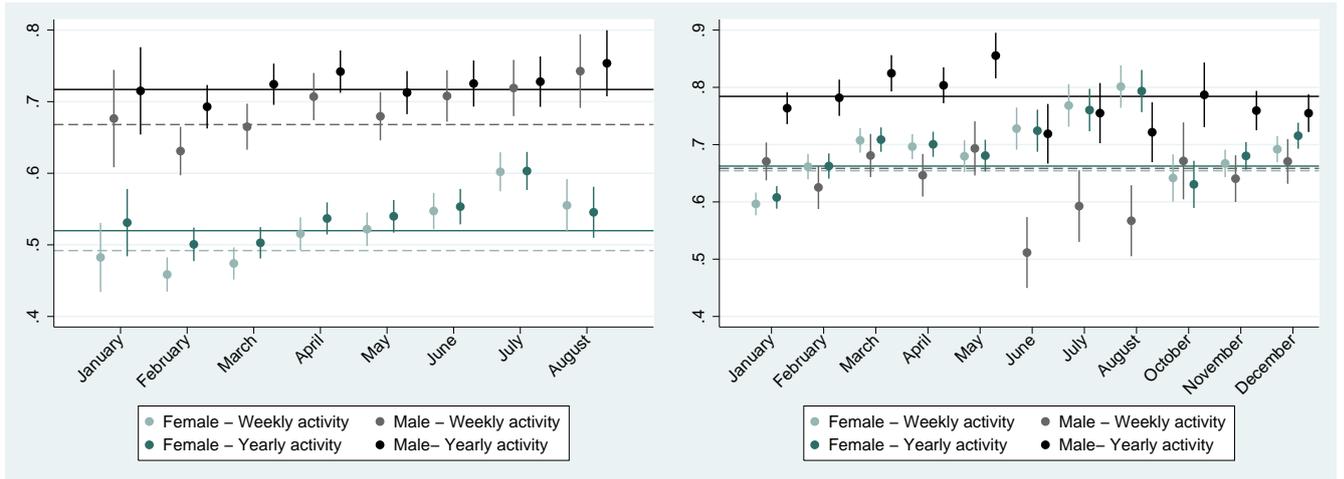
Robust standard errors in brackets. Significance levels : * 0.10 ** 0.05 *** 0.01

All regressions are weighted. Regressions for Senegal are weighted so that each survey contributes equally to the estimation whatever the size of the initial sample interviewed.

Note that unlike the previous analyses, we do not control for the month of interview and for marital status because the information is not available for all these surveys.

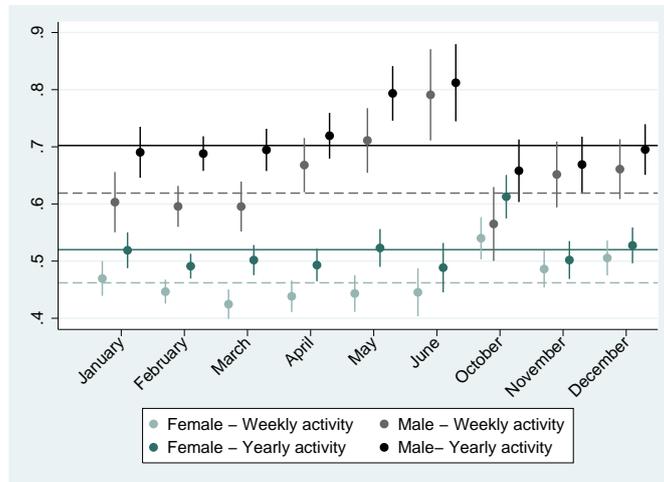
Surveys: ML EMEP 2001, ML EMCES 1994, SN ESP 2001, SN ESAM 2001 (2 rounds).

Figure 2: Employment rates by month of interview



(a) Cameroon from 1976 to 2011

(b) Mali from 1976 to 2011



(c) Senegal from 1976 to 2011

Plain lines represent the average employment rate throughout the year. Dashed lines show the average employment rate for the past week reference period.

Appendices

Table A1: Characteristics of surveys in Cameroon

Year	Survey Acronym	Survey	Sample size	Field work period	Wording* <i>W=Work, O=Occupation</i>	Type of Labor Module** <i>S=Short, L=Long</i>	Reference periods*** <i>C=Currently, W=Week, M=Month Y=Year, N= No reference period</i>
1976	CM RGPH	General Census of Population and Housing	7 385 858	04/1976	O	S	W
1983	CM EBC	Budget Consumption Survey	31 047	09/1983-09/1984	O	S	W
1987	CM RGPH	General Census of Population and Housing	8 883 609	04/1987	O	S	W
1991	CM DHS	Demographic and Health Survey	4 685	03/1991-10/1991	<i>W^c, O^d</i>	S	<i>C^c, N^d</i>
1996	CM ECAM1	Cameroon Household Survey	10 325	02/1996-04/1996	W	L: R	W,Y
1998	CM DHS	Demographic and Health Survey	8 063	01/1998- 07/1998	W	L: R	C,Y
2000	CM MICS	Multiple Indicator Cluster Survey ¹	5 069	07/2000-08/2000	O	L : W	N
2001	CM ECAM2	Cameroon Household Survey	56 443	09-2001-12/2001	W	L: D(ea), R	M,Y
2004	CM DHS	Demographic and Health Survey	15 936	02/2004-08/2004	W	L: R	C,Y
2005	CM EESI	Survey on Employment and Informal Sector	38 599	05/2005-07/2005	W	L: D(ea, job)	W,N
2006	CM MICS	Multiple Indicator Cluster Survey ¹	9 408	05/2006-06/2006	O	L : W	N
2007	CM ECAM3	Cameroon Household Survey	51 836	09/2007-12/2007	W	L: D(ea, job), R	W,M,Y
2010	CM EESI	Survey on Employment and Informal Sector	13 002	05/2010-07/2010	W	L: D(ea, job)	W,M,N
2011	CM DHS	Demographic and Health Survey	22 617	01/2011-08/2011	W	L: D(absence), R	W,Y,N

* Work questions (W) refer to yes/no questions about work or economic activity (e.g. "Did you work last week?"). Occupation questions (O) are questions which expect occupational status as answers (e.g. "What is your main occupation?" or "What is your type of activity?", those questions implying responses such as "in employment, unemployed, retired, pupil or student, housewife, etc.").

** Short labor modules have only one question to determine labor force status of respondents. Long labor modules contain a series of additional questions aiming at identifying employed individuals. d= detailed modules with questions (s) on whether the individual worked during the past week (ea) on a list of economic activities and (job) on reasons from being absent from work or questions on having a job despite not working during the reference week ; w= labor modules with at least one question about "occupation" and one question about "work"; r= labor modules with at least two questions with two different reference periods; o=other type of labor module

*** Reference period is the period over which employment is measured in the survey.

¹ Employment data are only available for women.

² Refers to "work out of the field" and not work in general.

^a for the non agricultural sector, ^b for the agricultural sector.

^c for women and ^d for men.

Source: MIMADEM Database, 14 surveys in Cameroon.

Table A2: Characteristics of surveys in Mali

Year	Survey Acronym	Survey	Sample size	Field work period	Wording* <i>W=Work, O=Occupation</i>	Type of Labor Module** <i>S=Short, L=Long</i>	Reference periods*** <i>C=Currently, W=Week, M=Month, Y=Year, N= No reference period</i>
1976	ML RGPB	General Census of Population and Housing	6 338 217	12/1976	O	S	Y
1987	ML RGPB	General Census of Population and Housing	7 871 842	04/1987	O	S	M ^a , Y ^b
1987	ML DHS	Demographic and Health Survey	4 191	03/1987-08/1987	W ²	S	N
1994	ML EMCES	Survey of the economic and social situation in Mali	83 046	-	O,W	L: R, W	Y, W, M
1995	ML DHS	Demographic and Health Survey	12 178	11/1995-05/1996	W	L: R	C, Y
1998	ML RGPB	General Census of Population and Housing	9 810 637	04/1998	O	S	M ^a , Y ^b
2001	ML DHS	Demographic and Health Survey	16 254	01/2001-05/2001	W	L: R	C, Y
2001	ML EMEP/QUID	Poverty Evaluation Survey of Mali	86 086	01/2001-12/2001	O, W	L: W	C, W
2003	ML ELIM	Integrated Limited Household Survey	41 480	12/2003-02/2004	W	L: D(absence)	W
2004	ML EPAM	Permanent Household Survey	24 759	-	W	L: D(ea, job), R	W, M, N
2006	ML ELIM	Integrated Limited Household Survey	40 810	06/2006-11/2006	W	L: D(ea, job)	W, N, Y
2006	ML DHS	Demographic and Health Survey	18 790	04/2006-12/2006	W	L: R	C, Y
2007	ML EPAM	Permanent Household Survey	17 439	-	W	L: D(ea, job), R	M, W, N
2010	ML EPAM	Permanent Household Survey	18 637	08/2010 -10/2010	W	L: D(ea, job), R	M, W, N
2012	ML DHS	Demographic and Health Survey	14 823	11/2012-02/2013	W	L: D(absence), R	W, N, Y

* Work questions (W) refer to yes/no questions about work or economic activity (e.g. "Did you work last week?"). Occupation questions (O) are questions which expect occupational status as answers (e.g. "What is your main occupation?" or "What is your type of activity?"), those questions implying responses such as "in employment, unemployed, retired, pupil or student, housewife, etc.").

** Short labor modules have only one question to determine labor force status of respondents. Long labor modules contain a series of additional questions aiming at identifying employed individuals. d= detailed modules with questions (s) on whether the individual worked during the past week (ea) on a list of economic activities and (job) on reasons from being absent from work or questions on having a job despite not working during the reference week ; w= labor modules with at least one question about "occupation" and one question about "work"; r= labor modules with at least two questions with two different reference periods; o=other type of labor module

*** Reference period is the period over which employment is measured in the survey.

¹ Employment data are only available for women.

² Refers to "work out of the field" and not work in general.

^a for the non agricultural sector, ^b for the agricultural sector.

^c for women and ^d for men.

Source: MIMADEM Database, 15 surveys in Mali.

Table A3: Characteristics of surveys in Senegal

Year	Survey Acronym	Survey	Sample size	Field work period	Wording* <i>W=Work, O=Occupation</i>	Type of Labor Module** <i>S=Short, L=Long</i>	Reference periods*** <i>C=Currently, W=Week, M=Month Y=Year, N= No reference period</i>
1976	SN RGPH	General Census of Population and Housing	504 651	04/1976	O	S	Y ³
1988	SN RGPH	General Census of Population and Housing	719 421	05-1988-06/1988	O	S	Y
1986	SN DHS	Demographic and Health Survey ¹	4 415	04/1986-09/1986	W ²	S	C
1991	SN ESP	Priority Survey	85 249	10/1991-01/1992	W, O	L: R, W	W, Y
1992	SN DHS	Demographic and Health Survey	7 746	11/1992-08/1993	W ^c , O ^d	S	C ^e , N ^d
1993	SN EMUS	Survey on Migration and Urbanization in Senegal	65 602	05/1993-10/1993	O	S	N
1994	SN ESAM1	Senegalese Household Survey	32 544	-	W	S	Y
1997	SN DHS	Demographic and Health Survey	12 899	01/1997-05/1997	O	S	N
2001	SN ESAM2	Senegalese Household Survey (2 rounds)	64 531	-	W, O	L: R, W	W, Y
2002	SN RGPH	General Census of Population and Housing	1 000 708	12/2002-12/2002	O	S	Y
2005	SN DHS	Demographic and Health Survey	18 363	01/2005-06/2005	W	L: R	C, Y
2005	SN ENTE	National Child Labour Survey	35 024	04/2005-06-2005	W	L: D(ea, absence), R	W, Y
2005	SN ESPS	Priority Survey	123 543	12/2005-04-2006	W	S	W
2009	SN MRHS	Migration and Remittances Household Survey	17 878	10/2009-11/2009	O	S	C
2010	SN DHS	Demographic and Health Survey	20 617	10/2010-04/2011	W	L: D(absence), R	W, Y, N

* Work questions (W) refer to yes/no questions about work or economic activity (e.g. "Did you work last week?"). Occupation questions (O) are questions which expect occupational status as answers (e.g. "What is your main occupation?" or "What is your type of activity?", those questions implying responses such as "in employment, unemployed, retired, pupil or student, housewife, etc.").

** Short labor modules have only one question to determine labor force status of respondents. Long labor modules contain a series of additional questions aiming at identifying employed individuals. d= detailed modules with questions (s) on whether the individual worked during the past week (ea) on a list of economic activities and (job) on reasons from being absent from work or questions on having a job despite not working during the reference week ; w= labor modules with at least one question about "occupation" and one question about "work"; r= labor modules with at least two questions with two different reference periods; o=other type of labor module

*** Reference period is the period over which employment is measured in the survey.

¹ Employment data are only available for women.

² Refers to "work out of the field" and not work in general.

³ The reference period was 6 months, it was reclassified in 1 year because it was the only survey with this reference period.

^a for the non agricultural sector, ^b for the agricultural sector.

^c for women and ^d for men.

Source: MIMADEM Database, 15 surveys in Senegal.

Table A4: Type of questions and wording : some examples

Type of questions	Question	Survey
Closed questions	<i>“Did you work last week, at least one hour?”</i>	ML ELIM 2006
	<i>“Did you do any economic activity in the last 12 months?”</i>	CM ECAM1 1996
List questions	Example of a list of economic activities	ML EPAM 2004
	<i>“Even though you did not do any (paid) work last week, did you do any of the following activities, inside or outside your home ?</i> 1. <i>Work in a personal business</i> 2. <i>Make a product for sale</i> 3. <i>Do something at home for pay</i> 4. <i>Render a service for money or a benefit in kind</i> 5. <i>Help in the family business</i> 6. <i>Apprenticeship with/without pay</i> 7. <i>As a working student</i> 8. <i>Working for another family</i> 9. <i>Build own house</i> 10. <i>Any other paid activity”</i>	
	Example of a list of occupational status	ML EMEP 2001
	<i>“What is your current occupation, your situation regarding employment?”</i> 1. <i>Employed</i> 2. <i>Look for a job</i> 3. <i>Student</i> 4. <i>Retired</i> 5. <i>Annuitant</i> 6. <i>Housewife</i> 7. <i>Other inactive</i>	
Wording	Question	Survey
Work	<i>“Did you work during the last week, at least one hour?”</i>	ML EPAM 2007
Economic activity	<i>“Did (Name) perform an economic activity in the last 12 months?”</i>	CM ECAM2 2001
Job	<i>“Although you did not work last week, do you have a job ?”</i>	ML EPAM 2004
Occupation	<i>“What is your current occupation, your situation regarding employment?”</i> 1. <i>Work</i> 2. <i>Doesn't work</i> 2a. <i>Look for a job</i> 2b. <i>Student</i> 2c. <i>Retired</i> 2d. <i>Annuitant</i> 2e. <i>Housewife</i> 2f. <i>Other inactive</i>	ML EMEP 2001
Type of activity	<i>“Type of activity”</i> 1. <i>Employed</i> 2. <i>Unemployed</i> 3. <i>Not in labour force</i>	ML RGPB 1987
Detail of questions	Question	Survey
Simple question	<i>“Are you currently working?”</i>	CM EDS 1998 (for men)
	<i>“During the past month from (...) to (...) what [Name] was doing most of the time ?”</i>	ML RGPB 1998
Detailed questions	<i>“Since last (day of the week) did you do any work for :</i> 1. <i>Payment in cash</i> 2. <i>In-kind payment</i> 3. <i>Your own account</i> 4. <i>Your own business</i> 5. <i>A family member without payment</i> 6. <i>No ”</i>	SN ENTE 2005
	<i>“During the past four weeks, did (Name) work at least one hour, for his/her own account, as wage-earning worker or not, apprentice or unpaid family worker ?”</i>	CM ECAM 2007
	<i>“Apart from your domestic work, are you currently working? As you know, some women take up jobs for which they are paid in cash or kind. Others sell things, have a small business or work on the family farm or in the family business. Are you currently doing any of these things or any other work? ”</i>	CM EDS 1998 (for women)

Source: MIMADEM Database, 44 surveys conducted in Cameroon, Mali and Senegal from 1976 to 2012.

Table A5: The wording in survey questionnaires

	Number of surveys with the wording			Total Questions
	Frequency of the wording(%)			
	[1976-1990]]1990-2000]]2000-2012]	
“Work”*	2	8	21	31
	22.2%	66.7%	91.3%	70.5%
“Occupation”**	7	7	5	19
	77.8%	58.3%	21.7%	43.2%
Economic activities (list)***	0	0	8	8
			34.8%	18.2%
Job****	0	0	7	7
			30.4%	15.9%
Other wording	0	1	2	2
Number of surveys	9	12	23	44

* Refer to “Yes/no” questions with the keywords “work” or “economic activity” ** Refer to List questions with the keywords “occupation” or “type of activity” *** Refer to questions with a list of economic activities **** Refer to questions with “job”

% represents the share of surveys using this wording during a specific decade.

Note that one survey can contain several questions, and thus several wordings, so the total questions using a given wording is different of the number of surveys.

Source: MIMADEM Database, 44 surveys conducted in Cameroon, Mali and Senegal from 1976 to 2012.

Table A6: The type of labor modules in questionnaires

	Number of surveys	Frequency (%)
<i>Length of labor modules:</i>		
- Short : Single question	18	40.9
- Long : Several questions	26	59.1
Number of surveys	44	100.0
<i>Type of long labor modules :</i>		
- Several reference periods	19	73.1
- Occupation and work	7	23.1
- Detailed Module*	13	50.0
Number of surveys	26	

* "Detailed modules" refers to modules with complementary questions on economic activities and/or having a job and/or ask if the individual was absent from work during reference period if he declared he did not work during the reference period. Source: MIMADEM Database, 44 surveys conducted in Cameroon, Mali and Senegal from 1976 to 2012. For more details, see Tables [A1](#), [A2](#) and [A3](#) in Appendix.

Table A7: The reference periods used in questionnaires

Reference periods	Number of surveys	Frequency (%)
1 week	22	50.0
Currently	11	0.25
1 month	9	20.4
1 year	20	45.5
No reference period specified	19	43.2
Number of surveys	44	

Note that a survey can use several reference periods.

Source: MIMADEM Database, 44 surveys conducted in Cameroon, Mali and Senegal from 1976 to 2012. For more details, see Tables [A1](#), [A2](#) and [A3](#) in Appendix.

Table A8: Employment rates produced by simple questions and detailed labor modules by survey, gender and area of residence

	Single question	Detailed module	Difference		Difference Women		Difference Men		Difference Urban		Difference Rural	
			ppts	% ¹								
CM ECAM 2003	0.695	0.743	-0.048 *** [0.000]	-6.9 %	-0.055 *** [0.000]	-8.6 %	-0.040 *** [0.000]	-5.3 %	-0.051 *** [0.000]	-8.1 %	-0.038 *** [0.000]	-4.4 %
CM EESI 2005	0.578	0.657	-0.079 *** [0.000]	-13.7 %	-0.091 *** [0.000]	-18.3 %	-0.066 *** [0.000]	-9.9 %	-0.078 *** [0.000]	-15.1 %	-0.080 *** [0.000]	-11.9 %
CM EESI 2010	0.619	0.688	-0.069 *** [0.000]	-11.1 %	-0.074 *** [0.000]	-13.7 %	-0.063 *** [0.000]	-9.0 %	-0.067 *** [0.000]	-12.1 %	-0.071 *** [0.000]	-9.9 %
ML EPAM 2004	0.466	0.539	-0.073 *** [0.000]	-15.7 %	-0.069 *** [0.000]	-20.6 %	-0.078 *** [0.000]	-12.2 %	-0.035 *** [0.000]	-7.7 %	-0.088 *** [0.000]	-18.7 %
ML ELIM 2006	0.668	0.706	-0.037 *** [0.000]	-5.5 %	-0.038 *** [0.000]	-6.4 %	-0.036 *** [0.000]	-4.8 %	-0.034 *** [0.000]	-7.0 %	-0.039 *** [0.000]	-5.1 %
ML EPAM 2007	0.673	0.702	-0.029 *** [0.000]	-4.3 %	-0.033 *** [0.000]	-5.4 %	-0.024 *** [0.000]	-3.2 %	-0.027 *** [0.000]	-5.3 %	-0.030 *** [0.000]	-3.9 %
ML EPAM 2010	0.594	0.615	-0.021 *** [0.000]	-3.5 %	-0.023 *** [0.000]	-5.3 %	-0.019 *** [0.000]	-2.4 %	-0.029 *** [0.000]	-6.2 %	-0.018 *** [0.000]	-2.8 %
SN ENTE 2005	0.461	0.513	-0.052 *** [0.000]	-11.3 %	-0.056 *** [0.000]	-16.8 %	-0.046 *** [0.000]	-7.3 %	-0.034 *** [0.000]	-7.5 %	-0.064 *** [0.000]	-13.7 %

Employment rates are calculated for the population aged 15-49 years. p-values in brackets. Source: MIMADEM. Authors' calculation.
¹ % are differences expressed as % of initial employment rate produced by the first simple question.

Table A9: Economic activities performed despite not working during last week for respondents who declared they were not working during the past week

	Cameroon				Mali			
	Urban		Rural		Urban		Rural	
	Female	Male	Female	Male	Female	Male	Female	Male
Work in a personal business	14.8	8.4	5.8	7.4	17.0	29.1	12.5	27.9
Make a product for sale	7.5	2.2	2.9	0.6	30.8	11.7	29.2	5.2
Do something at home for pay	4.9	0.7	1.0	0.1	28.3	15.1	16.0	4.4
Render a service for money or a benefit in kind	4.2	10.7	0.4	3.7	3.3	7.1	1.1	4.7
Help in the family business	39.9	29.0	69.2	66.1	6.1	1.7	21.6	33.0
Apprenticeship with/without pay	23.0	32.2	15.5	13.2	1.0	8.9	1.7	2.5
As a working student	0.1	5.1	1.7	1.2	0.0	4.6	1.1	1.1
Working for another family	2.5	5.0	1.1	2.9	4.0	0.0	2.0	7.9
Any other paid activity	3.0	6.8	2.5	4.9	9.4	21.8	14.8	13.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

	Senegal			
	Urban		Rural	
	Female	Male	Female	Male
Cultivate or harvest agricultural products, fish,etc.	0.0	38.1	64.6	92.6
Prepare food, clothes or handicraft for selling	31.5	0.0	26.0	0.0
Sell products, newspapers, food or agricultural products	49.1	0.0	0.0	0.0
Wash, iron, clean, repair tools or equipments for other with pay in kind or in cash	9.7	0.0	0.0	0.0
Wash cars, polish shoes	0.0	0.0	0.0	0.0
Take care of domestic animals	0.0	45.4	0.0	7.4
Transport goods to market or other related activities	0.0	0.0	0.0	0.0
Construction and maintenance of buildings, house, cars	0.0	0.0	0.0	0.0
Other similar activity	9.7	16.5	9.4	0.0
Total	100.0	100.0	100.0	100.0

The population considered is the non employed population during the past week aged 15-49 years.

Results for Senegal are presented apart from those for Cameroon and Mali because the questionnaire differs in the list of activities

We don't have the repartition by activities for CM ECAM3 2007, we only know is the respondent perform one activity but we don't know which one.

Source: CM EESI 2005 CM EESI 2010 , ML ELIM 2006, ML EPAM 2004, ML EPAM 2007, ML EPAM 2010, SN ENTE 2005.

Table A10: Employment rates produced by short and long reference periods by survey, gender and area of residence

	Week	Year	Difference		Difference Women		Difference Men		Difference Urban		Difference Rural	
			ppts	% ¹								
CM ECAM1 1996	0.505	0.545	-0.040 *** [0.000]	-7.9%	-0.035 *** [0.000]	-7.9%	-0.046 *** [0.000]	-8.1%	-0.039 *** [0.000]	-9.4%	-0.042 *** [0.000]	-6.2%
CM ECAM3 2007	0.695	0.809	-0.114 *** [0.000]	-16.4%	-0.120 *** [0.000]	-18.7%	-0.108 *** [0.000]	-14.4%	-0.130 *** [0.000]	-20.8%	-0.076 *** [0.000]	-8.8%
CM EDS 1998	0.666	0.704	-0.038 *** [0.000]	-5.7%	-0.036 *** [0.000]	-5.6%	-0.042 *** [0.000]	-5.9%	-0.056 *** [0.000]	-10.4%	-0.019 *** [0.000]	-2.4%
CM EDS 2004	0.625	0.660	-0.035 *** [0.000]	-5.6%	-0.033 *** [0.000]	-5.6%	-0.039 *** [0.000]	-5.6%	-0.047 *** [0.000]	-9.0%	-0.023 *** [0.000]	-3.2%
CM EDS 2011	0.671	0.739	-0.067 *** [0.000]	-10.0%	-0.056 *** [0.000]	-8.9%	-0.095 *** [0.000]	-12.2%	-0.068 *** [0.000]	-11.2%	-0.067 *** [0.000]	-9.1%
ML EDS 1995	0.580	0.607	-0.027 *** [0.000]	-4.7%	-0.014 *** [0.000]	-2.6%	-0.086 *** [0.000]	-11.1%	-0.022 *** [0.000]	-4.1%	-0.029 *** [0.000]	-4.8%
ML EDS 2001	0.654	0.687	-0.033 *** [0.000]	-5.0%	-0.015 *** [0.000]	-2.4%	-0.112 *** [0.000]	-14.2%	-0.034 *** [0.000]	-5.6%	-0.033 *** [0.000]	-4.9%
ML EDS 2006	0.586	0.619	-0.032 *** [0.000]	-5.5%	-0.016 *** [0.000]	-2.8%	-0.097 *** [0.000]	-15.4%	-0.026 *** [0.000]	-4.8%	-0.036 *** [0.000]	-5.9%
ML EDS 2012	0.549	0.597	-0.048 *** [0.000]	-8.7%	-0.052 *** [0.000]	-12.2%	-0.036 *** [0.000]	-4.1%	-0.049 *** [0.000]	-9.3%	-0.048 *** [0.000]	-8.6%
SN EDS 2005	0.409	0.487	-0.078 *** [0.000]	-19.1%	-0.071 *** [0.000]	-19.8%	-0.110 *** [0.000]	-17.5%	-0.039 *** [0.000]	-8.7%	-0.109 *** [0.000]	-24.4%
SN EDS 2010	0.458	0.535	-0.078 *** [0.000]	-17.0%	-0.072 *** [0.000]	-19.6%	-0.100 *** [0.000]	-12.8%	-0.059 *** [0.000]	-12.2%	-0.090 *** [0.000]	-20.5%
SN ENTE 2005	0.461	0.688	-0.227 *** [0.000]	-49.2%	-0.255 *** [0.000]	-76.6%	-0.191 *** [0.000]	-30.5%	-0.104 *** [0.000]	-16.6%	-0.313 *** [0.000]	-49.9%

Employment rates are calculated for the population aged 15-49 years. p-values in brackets. Source: MIMADEM. Authors' calculation.
¹ % are differences expressed as % of employment rate produced by the short reference period (week).

Table A11: All year, seasonal or occasional economic activity by country and percentage of those who worked during last year but not during last week (YNW)(15-49 years old)

	Cameroon				Mali				Senegal			
	Female		Male		Female		Male		Female		Male	
	Structure	%YNW										
<i>Urban Area</i>												
All year	62.1	3.7	67.5	2.2	67.0	2.9	76.0	3.5	69.8	4.1	73.8	2.0
Seasonal	17.2	18.5	12.3	38.1	16.3	5.9	17.0	20.0	15.1	20.5	15.6	40.1
Occasional	20.8	17.1	20.2	22.5	16.6	9.4	6.9	28.2	15.1	20.7	10.6	28.0
Total	100.0		100.0		100.0		100.0		100.0		100.0	
<i>Rural Area</i>												
All year	42.7	1.9	58.7	2.0	30.6	3.1	39.1	1.5	38.3	6.3	47.0	1.1
Seasonal	40.8	6.3	30.9	15.7	57.7	3.9	57.9	12.5	51.2	34.6	46.0	21.8
Occasional	16.5	9.9	10.3	20.7	11.7	5.9	3.0	11.4	10.5	15.8	7.1	16.0
Total	100.0		100.0		100.0		100.0		100.0		100.0	

Source: CM EDS 1998, CM EDS 2004, CM EDS 2011, ML EDS 1995, ML EDS 2001, ML EDS 2006, ML EDS 2012, SN EDS 2005, SN EDS 2010

Table A12: Employment rates produced by questions on “occupation” and “work” by survey, sex and area of residence

	Occupation	Work	Difference		Difference Women		Difference Men		Difference Urban		Difference Rural	
			ppts	% ¹								
ML EMEP 20011	0.562	0.799	-0.237 *** [0.000]	-42.17%	-0.400 *** [0.000]	-108.70%	-0.054 *** [0.000]	-6.91%	-0.159 *** [0.000]	-34.72%	-0.281 *** [0.101]	-45.18%
ML EMCES 1994	0.673	0.695	-0.022 *** [0.000]	-3.27%	-0.059 *** [0.000]	-10.02%	0.018 *** [0.000]	2.35% ***	-0.043 *** [0.000]	-8.38%	0.003 *** [0.101]	0.34%
SN ESP 1991	0.579	0.552	0.027 *** [0.000]	4.66%	0.026 *** [0.000]	5.41%	0.028 *** [0.000]	4.03%	0.016 *** [0.000]	3.69%	0.044 *** [0.000]	5.45%
SN ESAM2 2001	0.609	0.382	0.227 *** [0.000]	37.27%	0.239 *** [0.000]	47.33%	0.213 *** [0.000]	28.94%	0.067 *** [0.000]	14.44%	0.397 *** [0.000]	52.03%
SN ESAM2 2001	0.615	0.511	0.104 *** [0.000]	16.91%	0.122 *** [0.000]	23.78%	0.083 *** [0.000]	11.22%	0.051 *** [0.000]	10.90%	0.161 *** [0.000]	20.91%

Employment rates are calculated for the population aged 15-49 years. p-values in brackets. Authors' calculation.

¹ % are differences expressed as % of employment rate produced by the short reference period (week).

¹ ML EMEP 2001 uses a short reference period for both wordings and respondents do not answer the “work” question if they declare they are employed. The other surveys (ML EMCES 1994, SN ESP 1991, SN ESAM2 2001) have a question on “occupation” that relates to a long reference period and a question on “work” with a short reference periods, both are asked independently (there is no screening question).

Table A13: Incidence of work during the last week (WLW) by occupational status and contribution to the gap in employment rates between “occupation” and “work” questions

	Urban						Mali						Rural					
	Female			Male			Female			Male			Female			Male		
	Structure	% WLW	Contribution to the gap (%)	Structure	% WLW	Contribution to the gap (%)	Structure	% WLW	Contribution to the gap (%)	Structure	% WLW	Contribution to the gap (%)	Structure	% WLW	Contribution to the gap (%)	Structure	% WLW	Contribution to the gap (%)
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Employed	30.6			60.7			41.3			90.5								
Looking for a job	8.9	10.1	4.1	14.3	24.1	54.7	0.6	31.7	0.4	1.8	36.3	15.9						
Student	13.1	10.1	6.0	21.5	8.6	29.3	1.6	48.7	1.6	5.2	35.8	45.3						
Housewife	44.5	43.3	87.9	0.9	40.1	5.7	54.9	84.7	96.7	1.3	82.4	26.0						
Other inactive	3.0	14.5	2.0	2.6	24.8	10.2	1.5	42.8	1.3	1.3	40.6	12.8						
Total	100.0		100.0	100.0		100.0	100.0		100.0	100.0		100.0						

The population considered is aged 15-49 years.

“Other inactive” category is composed of retired, annuitants and other inactive individuals.

(1) represents the composition by occupational status of the population which is not currently occupied.

(2) represents the percentage of individuals who nevertheless worked during the past seven days by occupational status.

(3) represents the contribution to the difference in employment rates observed between the “occupation” and the work question.

Source: ML EMEP 2001. Authors' calculation.

Table A14: Summary of the effects of questionnaire characteristics on employment rates - Within-surveys results

Average effect on employment rate (in ppts)	Cameroon	Mali	Senegal
- Detailed labor module :			
Economic activities	3.3***	1.8***	0.2***
Has a job (versus simple)	6.8***	3.0***	4.5***
- Reference period (Long versus Short)	6.2***	5.0***	9.6***
- Wording (Occupation versus work)		- 23.4***	
- Combined Wording + Reference period (Work+ short vs Occupation + Long)		-0.9***	4.5***
Female employment rate sensitivity compared to male one			
- Detailed labor module			
Economic activities	+	0	0
Has a job	+	+	+
- Reference period	-	-	-
- Wording		+	
- Combined Wording + Reference period		+	0
Female workers: probability of inconsistencies across survey instruments compared to male workers			
- Detailed labor module			
Economic activities	+	+	0
Has a job	+	+	+
- Reference period	0	-	+
- Wording		+	
- Combined Wording + Reference period		+	+

Source: Report of results.