

The Central African Republic 2023 Micro, Enterprise Survey Implementation Report

I. Introduction

This document provides information on the Enterprise Surveys of Micro Firms (ESM) implemented in the Central African Republic between January 2023 and June 2023. The ESM collect both objective data based on firms' day-to-day experiences and perceptions of enterprises regarding the business environment in which they operate. The primary objectives of the ESM are to: i) understand the demographics of the micro-enterprises in the covered cities, ii) describe the environment within which these enterprises operate, and iii) enable data analysis based on the samples that are representative at each city level.

This report describes the sampling design of the survey, the data set structure as well as additional information that may be useful when using the data, such as information on survey non-responses and the appropriate use of the sampling weights.

II. Sampling Structure

The ESM use stratified random sampling, where the population of establishments is first separated into non-overlapping groups, called strata, and then respondents are selected through simple random sampling from each stratum. The detailed methodology is provided in the Sampling Note.¹ Stratified random sampling has several advantages over simple random sampling. In particular, it:

- produces unbiased estimates of the whole population or universe of inference, as well as at the levels of stratification;
- ensures representativeness by including observations in all of those categories;
- produces more precise estimates for a given sample size or budget allocation, and
- may reduce implementation costs by splitting the population into convenient subdivisions.

The ESM typically use three levels of stratification: industry classification, establishment size, and subnational region (used in combination). Starting in 2022, the ESM bases the industry classification on ISIC Rev. 4 (with earlier surveys using ISIC Rev. 3.1).² For regional coverage within a country, the ESM has national coverage.

¹ The Sampling Note is available at: https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Sampling_Note-Consolidated-2-16-22.pdf. For further methodological background see, Richard L. Scheaffer; Mendenhall, W.; Lyman, R., "Elementary Survey Sampling", Fifth Edition, 1996.

² The ESM universe includes: all manufacturing (ISIC 4.0 codes 10-32), services (ISIC 4.0 codes 33, 41-43, 45-47, 49-56, 58, 61, 62, 69-75, 79, 95). Details on sectoral coverage and the ESM universe of inference can be found in the *Enterprise Surveys Manual and Guide* (p. 4).

II.1 Stratification Categories

The Central African Republic 2023 ESM uses the following stratification categories:

- **Industry: 3 categories:**
 - Manufacturing
 - Services
 - Unknown
- **Size: 1 category:** Micro (1 to 4 employees)
- **Region: 2 categories:** Bangui and Berberati

Sectoral stratification was determined such that both the manufacturing and the services sector meet the minimum criteria of representativeness at the 7.5% margin of error and 90% confidence interval.

Regional strata of the Central African Republic 2023 WBES were selected based on the administrative boundaries of countries two largest cities and their surrounding regions: Bangui and Berberati. More specifically, for Bangui and surrounding areas, the survey covers the city proper and the following surrounding prefectures: Lobaye, Ombelle M'poko, Kemo, Ouaham and Nana-Gribizi Préfecture. Similarly, for Berberati and the surrounding area, the coverage includes the city proper and the following additional prefectures: Mambere Kadei, Nana Mambere, Sangha Mbaéré and Ouham-Pendé. The survey was restricted to these two areas primarily due to security and logistical challenges in other parts of the country. However, the areas covered in this survey account for over 98% of formal businesses operating in the country, based on a consolidated list of formal businesses obtained from Guichet Unique de formalité des Entreprises (GUFE) and the Caisse Nationale de Sécurité Sociale. The geographic distribution is shown in Figure 1 below.

II.2 Universe

The universe of inference includes all formal (i.e., registered) private sector businesses (with at least 1% private ownership) and with less than five employees. In terms of sectoral criteria, all manufacturing businesses (ISIC Rev 4. codes 10-33) are eligible; for services businesses, those corresponding to the ISIC Rev 4 codes 41-43, 45-47, 49-53, 55-56, 58, 61-62, 69-75, 79, and 95 are included in the Enterprise Surveys. Cooperatives and collectives are excluded from the Enterprise Surveys. All eligible establishments must be registered with the registration agency. In terms of sectoral criteria, all manufacturing businesses (ISIC Rev 4. codes 10-33) are eligible; for services businesses, those corresponding to the ISIC Rev 4 codes 41-43, 45-47, 49-53, 55-56, 58, 61-62, 69-75, 79, and 95 are included in the Enterprise Surveys. Cooperatives and collectives are excluded from the Enterprise Surveys. All eligible establishments must be registered with the registration agency. In the case of the Central African Republic, registration was from the Guichet Unique de formalité des Entreprises (GUFE). The universe table is the total number of eligible establishments, and the table is partitioned by the stratification groups (industry classification, establishment size, and subnational region) in a country.

For the Central African Republic 2023 WBES, the universe table, shown in Table 1 below, was generated by consolidating list of businesses obtained from Guichet Unique de formalité des Entreprises (GUFE) and Caisse Nationale de Sécurité Sociale. The sub-set corresponding to the standard ES universe was used. The completeness of the Universe Table (and the Sampling Frame) was checked and updated by TNS RMS Senegal.

II.3 Sampling Frame

The ESM requires the most complete and up-to-date Sampling Frame, the list of eligible establishments with information on industry classification, size, address, and other contact information that will be used to randomly select the sample. In countries where a previous round of the ESM exists, the Sampling Frame also includes the Panel Sampling Frame, which provides information about all the establishments that participated in the previous round of the ESM in the country.

The Sampling Frame for the Central African Republic 2023 ESM was generated by consolidating list of businesses obtained from Guichet Unique de formalité des Entreprises (GUFE) and Caisse Nationale de Sécurité Sociale. TNS RMS Senegal verified and updated this list with lists through publicly available sources for some business organizations to try to update the census data as much as possible, while avoiding introducing duplicates as much as possible.

For every ESM, necessary measures are taken to ensure the quality of the frame; however, the sample frames are not immune to the typical problems found in establishment surveys: positive rates of non-eligibility, repetition, non-existent units, etc. Given the impact that non-eligible units included in the sample universe may have on the results, eligibility adjustments may be needed when computing the appropriate sampling weights for individual observations (if and only if the weights are computed the sampling frame that is also the universe). Table 4 reports response outcomes.

II.4 Sample Design

The ESM sample design, i.e., target number of interviews in each combination of stratification categories (cells), is generated using the two primary criteria: 1) minimize the difference from the purely proportional sample within each cell; and 2) achieve a sufficient sample size by stratification category to allow for estimates of a given level of precision.³ Additional information on the criteria for determining the sample size by stratification category is given in the *Sampling Note*, and additional information on the sample design is given in the *Enterprise Surveys Manual and Guide*.⁴ The original survey design for the Central African Republic 2023 ESM is given in Table 3.

³ Additional constraints are also considered in the design stage. These are generally practical and include, for example, having a sufficient number of available contacts in the sample.

⁴ The *Enterprise Surveys Manual and Guide* is available at:

<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Enterprise-Surveys-Manual-and-Guide.pdf>

III. Data Collection

Detailed information on the ESM methodology and data collection is provided in the Enterprise Surveys Manual and Guide. The interviews for the Central African Republic 2023 ESM were conducted between January 2023 and June 2023. The interviews were conducted in the following languages: English and French. For monetary variables, the currency was CFA Franc.

III.1 Questionnaire

The standard ESM questionnaire covers several topics regarding the business environment and business performance. These topics include general firm characteristics, sales, and supplies, management practices, competition, innovation, capacity, land and permits, finance, business-government relations, exposure to bribery, labor, and performance. Information about the general structure of the questionnaire is available in the *Enterprise Surveys Manual and Guide*.

III.2 Contractor

The fieldwork for the Central African Republic 2023 ESM was implemented by TNS RMS Senegal through their subcontract, Pongsong Research Consulting (PORECO) S.A.R.L.. The selection for the implementing agency followed the standard World Bank procurement practices that are described in more detail in the Enterprise Surveys Manual and Guide.

III.3 Sampling and screening

Samples are drawn by the Enterprise Surveys team in batches, following the stratification and sample design. The contractor conducted a thorough screening process before scheduling the ES interviews. Results of the screening are provided using the eligibility and status codes as listed in Table 4. In cases of unit non-response (either a refusal or an inability to obtain an interview after exhaustive attempts), the contractor proceeded with the contact that appeared next in the list drawn in the respective cell. The process of sampling and screening is described in more detail in the *Enterprise Surveys Manual and Guide*.

III.4 Survey response

In all surveys, including the ESM, some respondents choose not to participate. The Enterprise Analysis team and the contractor take all necessary measures to boost participation, through various methods of recruitment. The proper management of the screening process and sample replacement ensures that the resulting sample remains random.

The main measure of survey participation is the yield, which is the ratio of the total number of achieved interviews to the total number of contacted establishments. There are two main elements that boost yields. First is the survey participation rate, measured as the share of establishments that participated among those that can be assumed to have been eligible. The second element is the quality of frame. If only a small fraction of the contacted establishments is actually eligible to participate in the survey, then the sampling frame is far from ideal. This quality is measured by the ratio of the total number of establishments that can be assumed to be eligible for the ESM with the total number of contacted establishments in the frame. In other words:

$$Yield = Survey\ response\ rate * Rate\ of\ quality\ of\ the\ frame$$

which can be rewritten as follows:

$$\frac{\text{Total interviewed}}{\text{Total contacted}} = \frac{\text{Total interviewed}}{\text{Assumed eligible}} * \frac{\text{Assumed eligible}}{\text{Total contacted}}$$

Table 5 provides these measures for the Central African Republic 2023 ESM and across its stratification levels.

III.5 Achieved Sample

Table 6 provides count of the ESM interviews collected for each stratification cell, i.e., broken down by industry, establishment size, and region.

III.6 Sampling Weights

Since the ESM uses stratified random sampling, individual observations should be properly weighted when making inferences about the population, since unweighted estimates are biased unless sample sizes are proportional to the size of each stratum. For each ESM, special care is given to correctly compute sampling weights. Whenever the Universe is used to draw the sample (i.e., Sampling Frame is the same as the Universe) it is imperative to accurately adjust the universe within each stratum to account for the presence of ineligible establishments (e.g., the firm discontinued businesses, or is deemed ineligible due to its business activity or having fewer than five employees). Proper treatment of panel establishments is also crucial. Details about how the ESM sampling weights are calculated are given in the *Sampling Note*.

Three versions of sampling weights are calculated, depending on the assumptions that determine eligibility of establishments to be counted towards the ESM universe. These assumptions are called weak, medium, and strong; and are defined as given in the table below. Prevalence of each of these outcomes for the Central African Republic 2023 ESM is given in Table 4. All indicators and analysis conducted by the Enterprise Surveys team use the sampling weights based on the median assumption. Tables 8-10 report estimated universe based on the respective assumption.

Assumption	Eligibility codes for inclusion in the ESM universe
Strict	1,2,3,4,16
Median	1,2,3,4,16,10,11,13
Weak	1,2,3,4,16,10,11,13,91,92,93,94,12

For descriptions of each eligibility code, see Table 4.

III.7 Item response rates

Item response rate must be differentiated from survey response rates. The latter refers to participation in the survey itself (see Section III.4) whereas the former refers to the absence of

responses to specific survey questions.⁵ The ESM, as any survey, suffer from item non-response; and different strategies are used by the data collection team to address this. In particular:

- For sensitive questions, such as on corruption or tax evasion, enumerators were instructed to collect the refusal to respond (-8) as a separate response category from don't know (-9).
- Establishments with incomplete information were re-contacted to fill gaps.

III.8 Database Structure

The ESM datafiles are organized in ways that reflect the corresponding questionnaire. The variables that are standard across countries have the first letter in their name correspond to the questionnaire section where the variable belongs in the questionnaire, i.e., *a1* denotes section A. All variables are numeric with the exception of those variables with an “x” at the end of their names. The suffix “x” denotes that the variable is alpha-numeric.

The ESM datafiles contain two establishment identifiers, *idstd* and *id*. The former is a global unique identifier of each establishment, while the latter is unique identifier within each survey. The variable *idstd* can be used to match the ESM establishment one-to-one across databases. The variables *wweak*, *wmedian*, and *wstrong* corresponding to sampling weights based on, respectively, weak, median, and strong assumptions about eligibility (see Section III.6). The variable *strata* corresponds to the stratum of each observation.

Additionally, the ESM datafiles contain many standard variables. The variable *d1a2_v4* denotes the main activity of the establishment, as obtained during the ESM interview, coded in the four-digit ISIC Rev. 4. Users should note that this activity may differ from the industry classification given in the Sampling Frame, *a4a*. Users are generally advised to use industry categories based on the realized information in *d1a2_v4*. Additional sampling information is contained in variables *a2* (region) and *a6a* (size). The combination of *a4a*, *a2*, and *a6a* forms stratum of each establishment, which is contained in variable *strata*.

The last complete fiscal year for each establishment is contained in variables *a20m* (last month of last complete fiscal year) and *a20y* (last complete fiscal year).

Note that when an entry in the ESM database is empty, this means that the question was not asked to the corresponding respondent. This happens when the question is deemed inapplicable, due to skip patterns or other reasons. In cases when the question was posed, some entry is provided, including don't know, which is an example of item non-response.

⁵ The ESM questionnaire is organized so that there is always some entry in the database when the question was posed. An empty entry means that the question was not asked to the corresponding respondent, typically, due to skip patterns, or lack of applicability of that question in general.

IV. Useful Links

The users of the ESM data may find the following links useful:

- *Sampling Note* is available at:
https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Sampling_Note-Consolidated-2-16-22.pdf
- The *Enterprise Surveys Manual and Guide* is available at:
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/Enterprise-Surveys-Manual-and-Guide.pdf>
- The projects that are currently being implemented by the Enterprise Surveys team are available at: <https://www.enterprisesurveys.org/en/methodology/current-projects>
- The list of all Enterprise Survey databases and detailed information about each is available here:
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/DataDetails.xls>

Fact Sheet

Source of Universe Table	Guichet Unique de formalité des Entreprises (GUFE)
Source of Sampling Frame	Guichet Unique de formalité des Entreprises (GUFE)
Stratification sectors	Manufacturing, Services, and Unknown
Stratification sizes	Micro (1 to 4 employees)
Stratification regions	Bangui and Berberati
Contractor	TNS RMS Senegal with sub-contractor Pongsong Research Consulting (PORECO) S.A.R.L.
Fieldwork dates	January 2023 – June 2023
Interview languages	English and French
Survey software	Survey Solutions
Currency for nominal variables	Franc CFA
Reference fiscal year	2023 (219 obs.)
Sample Size	Total: 219
Survey response rates	Yield: 65.5% Response rate: 84.2% Frame quality: 77.9%
Item response rates	d2: 84.0% n2a: 100.0% 11: 100.0 %
Additional topics covered in the questionnaire	Micro-related questions
Additional surveys available (if any)	Informal Sector Enterprise Survey covering two cities (Bangui and Berberati) and Micro Enterprise Survey, covering the same regions

Tables

Table 1: Central African Republic 2023 ESM Universe

		Manufacturing	Services	Unknown	Grand Total
Bangui	Micro (1-4)	385	7782	158	8,460
Berberati	Micro (1-4)	20	112	3	
		405	7,894	161	8,460

Source: Consolidated frame based on list of businesses obtained from Guichet Unique de formalité des Entreprises (GUFE) and Caisse Nationale de Sécurité Sociale

Table 2: Central African Republic 2023 ESM Universe Sample Frame

		Manufacturing	Services	Unknown	Grand Total
Bangui	Micro (1-4)	385	7782	158	8,460
Berberati	Micro (1-4)	20	112	3	
		405	7,894	161	8,460

Source: Consolidated frame based on list of businesses obtained from Guichet Unique de formalité des Entreprises (GUFE) and Caisse Nationale de Sécurité Sociale

Table 3: Original Survey Design (Fresh and Panel Combined)

		Manufacturing	Services	Unknown	Grand Total
Bangui	Micro (1-4)	48	70	32	200
Berberati	Micro (1-4)	7	41	2	
		55	111	34	200

Table 4: Response Outcomes

		Totals	Rates relative to total contacted
Overall	Contacts available in frame	8,460	
	Issued	585	
	Contacted	472	
Screening phase	Eligibles	295	62.5%
	Screenener refusals	0	0.0%
	Assumed eligibles	328	69.5%
	Ineligible + out of target	55	11.7%
	Unobtainable	122	25.8%
Interview phase (only if eligible)	Interview refusals	33	7.0%
	Complete interviews	219	46.4%

Table 5: Survey Yield Rates

		Yield	Survey response rate	Frame quality
Panel	Fresh	46.4%	66.8%	69.5%
	Size	46.4%	66.8%	69.5%
Region	Bangui	49.1%	67.2%	73.1%
	Berberati	38.9%	65.3%	59.5%
Sector	Manufacturing	44.5%	63.1%	70.6%
	Services	54.2%	67.2%	80.6%
	Unknown	42.4%	73.6%	57.6%
Overall	Central African Republic 2023	46.4%	66.8%	69.5%

Notes: the rates are calculated as defined in Section III.4

Table 6: Achieved Total Sample

		Manufacturing	Services	Unknown	Grand Total
Bangui	Micro (1-4)	47	84	39	219
Berberati	Micro (1-4)	6	43	0	
		53	127	39	219

Table 7: Weak Universe Estimates

		Manufacturing	Services	Unknown	Unknown and Services	Grand Total
Bangui	Micro (1-4)	363	7243	145	0	7854
Berberati	Micro (1-4)	17	0	0	85	
		380	7243	145	85	7854

Table 8: Median Universe Estimates

		Manufacturing	Services	Unknown	Unknown and Services	Grand Total
Bangui	Micro (1-4)	286	6604	96	0	7059
Berberati	Micro (1-4)	12	0	0	61	
		298	6604	96	61	7059

Table 9: Strict Universe Estimates

		Manufacturing	Services	Unknown	Unknown and Services	Grand Total
Bangui	Micro (1-4)	259	6519	89	0	6922
Berberati	Micro (1-4)	10	0	0	45	
		269	6519	89	45	6922

Figure 1: Geographic Distribution of Firms in ES Micro Universe
