

The Romania 2023 World Bank Enterprise Survey Implementation Report

I. Introduction

This document provides information on the World Bank Enterprise Surveys (WBES) implemented in Romania between April 2023 and January 2024. The WBES collect both objective data based on firms' day-to-day experiences, and perceptions of enterprises regarding the business environment in which they operate. The WBES currently cover over 207,000 firms in 158 countries with a total of 333 surveys since 2006. The WBES are also used to build a panel of enterprise data that will make it possible to track changes in the business environment over time.¹

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-response and the appropriate use of the sampling weights.

II. Sampling Structure

The WBES 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.² 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 WBES typically use three levels of stratification: industry classification, establishment size, and subnational region (used in combination). Starting in 2022, the WBES bases the industry classification on ISIC Rev. 4 (with earlier surveys using ISIC Rev. 3.1).³ For regional coverage within a country, the WBES has national coverage.

¹ A "panel interview" refers to an interview with a business that was also interviewed in the previous WBES.

² 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.

³ The WBES universe includes: all manufacturing (ISIC 4.0 codes 10-33), services (ISIC 4.0 codes 41-43, 45-47, 49-56, 58, 61, 62, 69-75, 79, 95). Details on sectoral coverage and the WBES universe of inference can be found in the *Enterprise Surveys Manual and Guide* (p. 4).

II.1 Stratification Categories

The Romania 2023 WBES uses the following stratification categories:

- **Industry: 7 categories:**
 1. Food (code 10 of ISIC 4.0)
 2. Garments (code 14 of ISIC 4.0)
 3. Fabricated Metal Products (code 25 of ISIC 4.0)
 4. Other manufacturing (codes 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33 of ISIC 4.0)
 5. Construction (codes 41-43 of ISIC 4.0)
 6. Retail (code 47 of ISIC 4.0)
 7. Other Services (codes 45-46, 49-56, 58, 61, 62, 69, 70, 71, 72, 73, 74, 75, 79, 95 of ISIC 4.0)
- **Size: 3 categories:**
 1. Small (5 to 19 employees),
 2. Medium (20 to 99 employees),
 3. Large (100 or more employees)
- **Region: 8 categories (NUTS 2 codes):**
 1. North West (RO11)
 2. Centre (RO12)
 3. North East (RO21)
 4. South East (RO22)
 5. South Mutenia (RO31)
 6. Bucharest-Ilfov (RO32)
 7. South West Oltenia (RO41)
 8. West (RO42)

Industry strata for the manufacturing sector were selected by their contribution to total value added, to employment and to total number of establishments, using UNIDO INSTAT 4, available as of summer 2022.

The strata for the services sector were selected by contribution to total number of establishments.

II.2 Universe

The universe of inference includes all formal (i.e., registered) private sector businesses (with at least 1% private ownership) and with at least 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 the case of Romania, registration was with National Registrar. 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 Romania 2023 WBES, the universe table, shown in Table 1 below, was obtained from National Institute of Statistics.

II.3 Sampling Frame

The WBES 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 WBES 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 WBES in the country.

The Sampling Frame for the Romania 2023 WBES was constructed from the following sources (see counts of establishments in the frame in Table 2). The Panel Sampling Frame was constructed using information on all the establishments that participated in the Romania 2019 WBES. The Fresh Sampling Frame, i.e., list of establishments that are in the WBES universe and that have not participated in the Romania 2019 WBES, was obtained from National Institute of Statistics.

For every WBES, 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 WBES 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.⁴ 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*.⁵ The original survey design for the Romania 2023 WBES is given in Table 3.

⁴ 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.

⁵ 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

The detailed information on the WBES methodology and data collection is provided in the Enterprise Surveys Manual and Guide. The interviews for the Romania 2023 WBES were conducted between April 2023 and January 2024. The interviews were conducted in Romanian. For monetary variables, the currency was Romanian leu.

III.1 Questionnaire

The standard WBES questionnaire covers several topics regarding the business environment and business performance. These topics include general firm characteristics, infrastructure, 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*.

The questionnaire implemented in the Romania 2023 WBES included additional questions tailored for the Business Ready Report covering infrastructure, trade, government regulations, finance, and labor. other.

III.2 Contractor

The fieldwork for the Romania 2023 WBES was implemented by Kapa Research (main contractor) in collaboration with Brennan Group (sub-contractor). 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 WBES, 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 WBES with the total number of contacted establishments in the frame. In other words:

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

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 Romania 2023 WBES and across its stratification levels.

III.5 Achieved Sample

Tables 6 and 7 provide count of the WBES interviews collected for each stratification cell, i.e., broken down by industry, establishment size, and region. Table 6 reports full sample, while Table 7 shows counts of only panel interviews.

III.6 Sampling Weights

Since the WBES 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 WBES, 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 WBES sampling weights are calculated are given in the *Sampling Note*.

For the Romania 2023 WBES, the following strata were combined due to lack of completed interviews in the corresponding subset of strata: medium, and large firms were combined in South West Oltenia for Fabricated Metal Products.

Three versions of sampling weights are calculated, depending on the assumptions that determine eligibility of establishments to be counted towards the WBES 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 Romania 2023 WBES 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 WBES 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.⁶ The WBES, 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.

Table 11 provides item response rates for several key variables, broken down across the stratification levels.

III.8 Database Structure

The WBES 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 WBES 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 WBES 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 WBES datafiles contain many standard variables. The variable *d1a2_v4* denotes the main activity of the establishment, as obtained during the WBES 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 variable *panel* identifies panel establishments, i.e., those that participated in the Romania 2019 WBES. The combination of *a4a*, *a2*, *a6a*, and *panel* forms stratum of each establishment, which is contained in variable *strata*.

⁶ The WBES 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.

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 WBES 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.

IV. Useful Links

The users of the WBES 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 WBES global questionnaires are available at:
<https://www.enterprisesurveys.org/en/methodology>
- 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 WBES databases and detailed information about each is available here:
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/methodology/DataDetails.xls>
- The description of the WBES indicators is available at:
<https://www.enterprisesurveys.org/content/dam/enterprisesurveys/documents/Indicator-Description.pdf>

Fact Sheet

Source of Universe Table	National Institute of Statistics
Source of Sampling Frame	National Institute of Statistics
Stratification sectors	<ol style="list-style-type: none"> 1. Food 2. Garments 3. Fabricated Metal Products 4. Other manufacturing 5. Construction 6. Retail 7. Other Services
Stratification sizes	<ol style="list-style-type: none"> 1. Small (5 to 19 employees), 2. Medium (20 to 99 employees), 3. Large (100 or more employees)
Stratification regions	<ol style="list-style-type: none"> 1. North West (RO11) 2. Centre (RO12) 3. North East (RO21) 4. South East (RO22) 5. South Mutenia (RO31) 6. Bucharest-Ilfov (RO32) 7. South West Oltenia (RO41) 8. West (RO42)
Contractor	Kapa Research (main contractor) Brennan Group (sub-contractor)
Fieldwork dates	April 2023 – January 2024
Interview languages	Romanian
Survey software	Survey Solution
Currency for nominal variables	Romanian leu
Reference fiscal year	2022 (947 obs.)
Sample Size	Total: 947 Fresh: 653 Panel: 294
Survey response rates	Yield: 19.0% Response rate: 42.5% Frame quality: 44.6%
Item response rates	d2: 99.8% n2a: 98.7% l1: 99.9% all TFP vars.: 72.4%
Additional topics covered in the questionnaire	
Additional surveys available (if any)	

Tables

Table 1: Romania 2023 WBES Universe

		Food	Garments	Fabricated Metal Products	Other Manufacturing	Retail	Construction	Other Services	Grand Total
North West	Small (5-19)	366	90	279	1026	1374	2321	4445	12592
North West	Medium (20-99)	103	63	116	400	210	412	933	
North West	Large (100 or more)	30	19	23	168	14	61	139	
Centre	Small (5-19)	493	105	321	1352	1800	2473	5052	14928
Centre	Medium (20-99)	178	74	145	595	214	486	1063	
Centre	Large (100 or more)	48	28	31	268	28	48	126	
North East	Small (5-19)	343	115	187	1001	1693	1868	3837	11510
North East	Medium (20-99)	155	67	45	362	266	420	792	
North East	Large (100 or more)	46	40	7	100	25	60	81	
South East	Small (5-19)	336	124	184	742	1538	1586	3316	10113
South East	Medium (20-99)	113	92	84	282	225	400	770	
South East	Large (100 or more)	29	23	17	77	22	50	103	
South Mutenia	Small (5-19)	328	165	216	751	1755	2059	3445	11220
South Mutenia	Medium (20-99)	133	115	103	322	258	417	727	
South Mutenia	Large (100 or more)	43	29	32	154	26	47	95	
Bucharest-Ilfov	Small (5-19)	291	111	217	970	1850	3112	8253	20208
Bucharest-Ilfov	Medium (20-99)	111	56	90	434	352	857	2455	
Bucharest-Ilfov	Large (100 or more)	52	13	12	159	124	126	563	
South West Oltenia	Small (5-19)	284	110	102	499	1097	1132	2294	6858
South West Oltenia	Medium (20-99)	75	64	54	160	163	230	408	
South West Oltenia	Large (100 or more)	19	10	8	63	17	30	39	
West	Small (5-19)	306	44	198	595	1087	1434	2995	8575
West	Medium (20-99)	103	43	83	313	139	240	630	
West	Large (100 or more)	13	7	16	186	16	21	106	
		3,998	1,607	2,570	10,979	14,293	19,890	42,667	96,004

Source: National Institute of Statistics

Table 2: Romania 2023 WBES Sample Frame (Fresh and Panel Combined)

		Food	Garments	Fabricated Metal Products	Other Manufacturing	Retail	Construction	Other Services	Grand Total
North West	Small (5-19)	366	90	279	1026	1374	2321	4445	12592
North West	Medium (20-99)	103	63	116	400	210	412	933	
North West	Large (100 or more)	30	19	23	168	14	61	139	
Centre	Small (5-19)	493	105	321	1352	1800	2473	5052	14928
Centre	Medium (20-99)	178	74	145	595	214	486	1063	
Centre	Large (100 or more)	48	28	31	268	28	48	126	
North East	Small (5-19)	343	115	187	1001	1693	1868	3837	11510
North East	Medium (20-99)	155	67	45	362	266	420	792	
North East	Large (100 or more)	46	40	7	100	25	60	81	
South East	Small (5-19)	336	124	184	742	1538	1586	3316	10113
South East	Medium (20-99)	113	92	84	282	225	400	770	
South East	Large (100 or more)	29	23	17	77	22	50	103	
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South Mutenia	Medium (20-99)	133	115	103	322	258	417	727	
South Mutenia	Large (100 or more)	43	29	32	154	26	47	95	
Bucharest-Ilfov	Small (5-19)	291	111	217	970	1850	3112	8253	20208
Bucharest-Ilfov	Medium (20-99)	111	56	90	434	352	857	2455	
Bucharest-Ilfov	Large (100 or more)	52	13	12	159	124	126	563	
South West Oltenia	Small (5-19)	284	110	102	499	1097	1132	2294	6858
South West Oltenia	Medium (20-99)	75	64	54	160	163	230	408	
South West Oltenia	Large (100 or more)	19	10	8	63	17	30	39	
West	Small (5-19)	306	44	198	595	1087	1434	2995	8575
West	Medium (20-99)	103	43	83	313	139	240	630	
West	Large (100 or more)	13	7	16	186	16	21	106	
		3,998	1,607	2,570	10,979	14,293	19,890	42,667	96,004

Source: National Institute of Statistics

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

		Food	Garments	Fabricated Metal Products	Other Manufacturing	Retail	Construction	Other Services	Grand Total
North West	Small (5-19)	5	5	6	6	6	12	10	120
North West	Medium (20-99)	6	7	6	8	4	2	4	
North West	Large (100 or more)	6	4	6	6	3	3	5	
Centre	Small (5-19)	5	3	5	9	8	11	11	120
Centre	Medium (20-99)	5	5	5	7	4	5	5	
Centre	Large (100 or more)	6	5	5	5	4	4	3	
North East	Small (5-19)	5	5	5	10	7	8	10	120
North East	Medium (20-99)	5	6	7	7	6	2	6	
North East	Large (100 or more)	6	7	2	5	5	4	2	
South East	Small (5-19)	7	7	7	4	5	7	9	120
South East	Medium (20-99)	7	9	9	6	2	4	4	
South East	Large (100 or more)	7	5	5	5	4	3	4	
South Mutenia	Small (5-19)	5	4	5	7	11	8	10	120
South Mutenia	Medium (20-99)	5	5	6	5	5	4	5	
South Mutenia	Large (100 or more)	7	6	6	5	4	3	4	
Bucharest-Ilfov	Small (5-19)	6	4	6	4	11	11	21	120
Bucharest-Ilfov	Medium (20-99)	5	3	5	4	4	2	9	
Bucharest-Ilfov	Large (100 or more)	5	3	2	4	4	4	3	
South West Oltenia	Small (5-19)	7	5	9	7	7	4	10	120
South West Oltenia	Medium (20-99)	5	7	9	6	5	3	5	
South West Oltenia	Large (100 or more)	6	3	3	6	4	4	5	
West	Small (5-19)	9	4	7	7	9	4	10	120
West	Medium (20-99)	6	6	9	6	5	4	4	
West	Large (100 or more)	4	2	5	6	5	4	4	
		140	120	140	145	132	120	163	960

Table 4: Response Outcomes

		Totals	Rates relative to total contacted
Overall	Contacts available in frame	96,004	
	Issued	5,363	
Screening phase	Contacted	4,992	
	Eligibles	1,995	40.0%
	Screener refusals	211	4.2%
	Assumed eligibles	2,226	44.6%
	Ineligible + out of target	287	5.7%
	Unobtainables	2,499	50.1%
Interview phase (only if eligible)	Interview refusals	1,005	20.1%
	Complete interviews	947	19.0%

Table 5: Survey Yield Rates

		Yield	Survey response rate	Frame quality
Panel	Fresh	15.6%	39.2%	39.9%
	Panel	36.1%	52.6%	68.7%
Size	Small (5-19)	20.6%	45.3%	45.4%
	Medium (20-99)	19.2%	45.6%	42.1%
	Large (100+)	16.7%	36.1%	46.2%
Region	North West	18.3%	46.4%	39.5%
	Centre	26.1%	48.9%	53.4%
	North East	23.1%	50.0%	46.3%
	South East	19.9%	42.6%	46.6%
	South Mutenia	16.0%	39.8%	40.2%
	Bucharest-Ilfov	14.2%	37.8%	37.5%
	South West Oltenia	19.9%	39.3%	50.7%
	West	17.7%	36.8%	48.0%
	Food	20.4%	45.0%	45.3%
	Garments	15.5%	43.9%	35.4%
Sector	Fabricated Metal Products	25.1%	45.9%	54.7%
	Other Manufacturing	20.7%	41.2%	50.2%
	Construction	17.7%	42.7%	41.4%
	Retail	20.8%	40.8%	51.1%
	Other Services	16.8%	40.3%	41.7%
Overall	Romania 2023	19.0%	42.5%	44.6%

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

Table 6: Achieved Total Sample (Fresh and Panel Combined)

		Food	Garments	Fabricated Metal Products	Other Manufacturing	Retail	Construction	Other Services	Grand Total
North West	Small (5-19)	4	3	6	5	4	11	12	122
North West	Medium (20-99)	5	5	9	5	6	4	13	
North West	Large (100 or more)	4	5	4	7	2	4	4	
Centre	Small (5-19)	5	6	4	12	12	13	14	130
Centre	Medium (20-99)	4	5	4	7	4	4	4	
Centre	Large (100 or more)	4	4	7	5	5	3	4	
North East	Small (5-19)	8	6	3	8	7	12	14	137
North East	Medium (20-99)	5	5	6	8	4	2	4	
North East	Large (100 or more)	6	10	2	6	5	10	6	
South East	Small (5-19)	7	5	9	4	4	8	8	116
South East	Medium (20-99)	5	8	11	5	3	3	6	
South East	Large (100 or more)	5	3	3	3	3	8	5	
South Mutenia	Small (5-19)	4	3	5	3	8	7	11	113
South Mutenia	Medium (20-99)	8	7	7	5	5	5	5	
South Mutenia	Large (100 or more)	6	4	5	4	4	4	3	
Bucharest-Ilfov	Small (5-19)	4	3	6	4	4	9	27	110
Bucharest-Ilfov	Medium (20-99)	4	2	6	6	5	1	9	
Bucharest-Ilfov	Large (100 or more)	3	2	3	4	3	4	1	
South West Oltenia	Small (5-19)	8	5	10	4	4	3	9	112
South West Oltenia	Medium (20-99)	6	7	6	7	8	4	4	
South West Oltenia	Large (100 or more)	5	3	0	5	2	8	4	
West	Small (5-19)	4	4	6	4	5	3	7	107
West	Medium (20-99)	5	10	7	5	3	4	8	
West	Large (100 or more)	2	3	1	10	3	3	10	
		121	118	130	136	113	137	192	947

Table 7: Achieved Panel Sample

		Food	Garments	Fabricated Metal Products	Other Manufacturing	Retail	Construction	Other Services	Grand Total
North West	Small (5-19)	1	0	2	3	2	1	2	33
North West	Medium (20-99)	2	1	6	3	2	0	0	
North West	Large (100 or more)	2	0	1	3	0	0	2	
Centre	Small (5-19)	2	0	2	7	4	0	1	39
Centre	Medium (20-99)	2	1	1	5	1	3	2	
Centre	Large (100 or more)	1	1	1	3	0	1	1	
North East	Small (5-19)	2	0	0	6	3	2	3	48
North East	Medium (20-99)	2	0	5	6	4	0	2	
North East	Large (100 or more)	4	1	0	3	2	3	0	
South East	Small (5-19)	1	1	5	2	1	4	3	32
South East	Medium (20-99)	2	0	4	3	0	1	0	
South East	Large (100 or more)	1	0	0	2	1	0	1	
South Mutenia	Small (5-19)	2	1	0	2	3	1	5	40
South Mutenia	Medium (20-99)	3	0	5	1	3	2	0	
South Mutenia	Large (100 or more)	3	0	2	3	2	1	1	
Bucharest-Ilfov	Small (5-19)	2	0	0	2	1	2	3	28
Bucharest-Ilfov	Medium (20-99)	2	0	2	4	2	0	3	
Bucharest-Ilfov	Large (100 or more)	1	0	0	2	2	0	0	
South West Oltenia	Small (5-19)	6	0	7	2	2	1	4	45
South West Oltenia	Medium (20-99)	1	0	4	5	4	1	1	
South West Oltenia	Large (100 or more)	3	1	0	3	0	0	0	
West	Small (5-19)	1	0	4	2	3	0	2	29
West	Medium (20-99)	3	0	4	4	1	2	0	
West	Large (100 or more)	0	0	0	2	0	0	1	
		49	7	55	78	43	25	37	294

Table 8: Weak Universe Estimates

		Food	Garments	Fabricated Metal Products	Other Manufacturing	Retail	Construction	Other Services	Grand Total
North West	Small (5-19)	334	80	256	952	1283	2118	4157	11749
North West	Medium (20-99)	97	58	110	383	202	388	899	
North West	Large (100 or more)	28	17	22	161	13	57	134	
Centre	Small (5-19)	467	97	306	1303	1745	2343	4905	14467
Centre	Medium (20-99)	174	71	142	591	214	475	1064	
Centre	Large (100 or more)	47	27	30	266	28	47	126	
North East	Small (5-19)	327	107	179	970	1650	1779	3745	11196
North East	Medium (20-99)	152	64	44	361	252	412	797	
North East	Large (100 or more)	45	38	7	100	25	59	82	
South East	Small (5-19)	314	113	173	705	1470	1481	3174	9662
South East	Medium (20-99)	109	87	81	276	222	385	760	
South East	Large (100 or more)	28	22	16	75	22	48	102	
South Mutenia	Small (5-19)	301	148	199	701	1649	1890	3241	10527
South Mutenia	Medium (20-99)	126	106	98	310	250	395	705	
South Mutenia	Large (100 or more)	41	27	30	148	25	45	92	
Bucharest-Ilfov	Small (5-19)	263	98	197	893	1713	2815	7652	18761
Bucharest-Ilfov	Medium (20-99)	103	51	84	412	336	799	2346	
Bucharest-Ilfov	Large (100 or more)	49	12	11	151	118	118	539	
South West Oltenia	Small (5-19)	263	100	95	471	1041	1050	2181	6503
South West Oltenia	Medium (20-99)	72	60	0	156	160	220	400	
South West Oltenia	Large (100 or more)	18	9	0	61	17	29	38	
South West Oltenia	Medium and Large (20+)	0	0	62	0	0	0	0	
West	Small (5-19)	288	41	187	570	1047	1350	2890	8263
West	Medium (20-99)	100	41	81	309	138	233	627	
West	Large (100 or more)	13	7	16	184	16	20	106	
		3,758	1,481	2,428	10,508	13,635	18,556	40,762	91,129

Table 9: Median Universe Estimates

		Food	Garments	Fabricated Metal Products	Other Manufacturing	Retail	Construction	Other Services	Grand Total
North West	Small (5-19)	136	29	125	402	582	852	1621	4637
North West	Medium (20-99)	32	17	44	131	75	127	285	
North West	Large (100 or more)	12	6	11	69	6	23	53	
Centre	Small (5-19)	252	46	196	727	1045	1245	2526	7555
Centre	Medium (20-99)	76	27	74	268	104	205	445	
Centre	Large (100 or more)	26	13	20	150	17	25	66	
North East	Small (5-19)	142	41	93	436	796	761	1552	4721
North East	Medium (20-99)	54	20	19	132	108	143	269	
North East	Large (100 or more)	20	15	4	46	12	26	34	
South East	Small (5-19)	154	49	101	357	798	714	1482	4572
South East	Medium (20-99)	43	30	39	114	98	151	288	
South East	Large (100 or more)	14	9	10	39	12	23	48	
South Mutenia	Small (5-19)	118	51	93	283	715	727	1208	3991
South Mutenia	Medium (20-99)	40	30	37	102	88	123	214	
South Mutenia	Large (100 or more)	16	9	14	61	11	17	35	
Bucharest-Ilfov	Small (5-19)	96	32	86	337	694	1013	2667	6501
Bucharest-Ilfov	Medium (20-99)	31	13	30	127	111	234	665	
Bucharest-Ilfov	Large (100 or more)	18	4	5	58	49	43	190	
South West Oltenia	Small (5-19)	132	44	57	244	579	518	1043	3177
South West Oltenia	Medium (20-99)	29	21	0	66	72	88	156	
South West Oltenia	Large (100 or more)	9	4	0	32	9	14	19	
South West Oltenia	Medium and Large (20+)	0	0	38	0	0	0	0	
West	Small (5-19)	142	18	110	291	574	657	1362	3953
West	Medium (20-99)	40	14	39	128	62	92	240	
West	Large (100 or more)	6	3	9	95	9	10	50	
		1,639	546	1,251	4,694	6,626	7,832	16,518	39,107

Table 10: Strict Universe Estimates

		Food	Garments	Fabricated Metal Products	Other Manufacturing	Retail	Construction	Other Services	Grand Total
North West	Small (5-19)	113	23	105	361	524	720	1414	4107
North West	Medium (20-99)	29	15	40	127	72	116	268	
North West	Large (100 or more)	11	6	10	70	6	23	53	
Centre	Small (5-19)	168	30	134	527	760	850	1780	5415
Centre	Medium (20-99)	55	19	55	210	82	151	339	
Centre	Large (100 or more)	19	10	15	124	14	20	53	
North East	Small (5-19)	111	31	74	369	677	608	1280	3946
North East	Medium (20-99)	45	17	16	121	89	124	239	
North East	Large (100 or more)	18	13	3	44	12	23	32	
South East	Small (5-19)	107	33	72	271	609	511	1095	3433
South East	Medium (20-99)	33	22	30	93	81	116	230	
South East	Large (100 or more)	11	7	8	33	10	19	40	
South Mutenia	Small (5-19)	95	41	77	249	632	603	1034	3472
South Mutenia	Medium (20-99)	35	26	33	97	84	110	197	
South Mutenia	Large (100 or more)	15	8	14	61	11	16	34	
Bucharest-Ilfov	Small (5-19)	79	25	72	299	619	847	2304	5729
Bucharest-Ilfov	Medium (20-99)	27	12	27	121	106	211	619	
Bucharest-Ilfov	Large (100 or more)	17	4	5	58	49	41	187	
South West Oltenia	Small (5-19)	102	34	45	206	490	412	855	2637
South West Oltenia	Medium (20-99)	24	18	0	60	66	76	138	
South West Oltenia	Large (100 or more)	8	4	0	31	9	13	17	
South West Oltenia	Medium and Large (20+)	0	0	30	0	0	0	0	
West	Small (5-19)	122	15	97	271	537	576	1234	3642
West	Medium (20-99)	37	13	37	129	62	87	235	
West	Large (100 or more)	6	3	9	101	9	10	52	
		1,286	428	1,010	4,033	5,613	6,282	13,729	32,381

Table 11: Item Response Rates

	Screener/Interview	d2	l1	n2a	all TFP variables
Panel	Fresh	99.8%	99.8%	98.9%	69.8%
	Panel	99.7%	100.0%	98.3%	76.9%
Size	Small (5-19)	100.0%	100.0%	99.7%	74.6%
	Medium (20-99)	100.0%	99.7%	97.8%	69.3%
	Large (100+)	99.2%	100.0%	98.3%	74.0%
Region	North West	100.0%	100.0%	99.3%	78.3%
	Centre	100.0%	100.0%	98.2%	69.6%
	North East	100.0%	100.0%	99.3%	52.9%
	South East	100.0%	100.0%	99.1%	68.2%
	South Mutenia	99.1%	100.0%	99.1%	90.0%
	Bucharest-Ilfov	100.0%	100.0%	100.0%	88.0%
	South West Oltenia	100.0%	99.1%	99.1%	79.7%
	West	99.1%	100.0%	95.4%	56.7%
	Food	100.0%	99.2%	99.2%	73.0%
	Garments	100.0%	100.0%	100.0%	70.6%
Sector	Fabricated Metal Products	100.0%	100.0%	100.0%	72.6%
	Other Manufacturing	99.4%	100.0%	97.0%	73.1%
	Construction	100.0%	100.0%	99.3%	N/A
	Retail	100.0%	100.0%	99.1%	N/A
	Other Services	99.5%	100.0%	98.0%	N/A
	Overall	99.8%	99.9%	98.7%	72.4%
	Romania 2023	99.8%	99.9%	98.7%	72.4%

Notes: the rates are calculated as follows. The number of responses with informative content in the respective variable (or combination of variables in the case of TFP) is divided by the same number plus the number of responses that are "don't know" (code -9) or refusal (code -8).