ENTERPRISE SURVEYS

WORLD BANK GROUP

The Estonia 2023 World Bank Enterprise Survey
Implementation Report

I. Introduction

This document provides information on the World Bank Enterprise Surveys (WBES) implemented in Estonia between May and October 2023. 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.

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[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 Estonia 2023 WBES uses the following stratification categories:

- **Industry: 3 categories**:
  1. All Manufacturing sectors (Section C of ISIC 4.0).
  2. Retail (Code 47 of ISIC 4.0)
  3. Other Services (Codes 41-43, 45-46, 49-56, 58, 61, 62, 69-75, 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: 3 categories (NUTS 3 Codes)**:
  1. North (EE001)
  2. Western (EE004), Central (EE006), and Northeastern (EE007)
  3. South (EE008).

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 Estonia, registration was with Centre of Registers and Information Systems (RIK). 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 Estonia 2023 WBES, the universe table, shown in Table 1 below, was obtained from Centre of Registers and Information Systems (RIK).

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 Estonia 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 Estonia 2019 WBES. The Fresh Sampling Frame, i.e., list of establishments that are in the WBES universe and

that have not participated in the Estonia 2019 WBES, was obtained mainly from Centre of Registers and Information Systems (RIK).

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 Estonia 2023 WBES is given in Table 3.

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 Estonia 2023 WBES were conducted between May and October 2023. The interviews were conducted in the following languages: Estonian and Russian. For monetary variables, the currency was Euro.

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*.

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[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

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

III.2 Contractor

The fieldwork for the Estonia 2023 WBES was implemented by Kapa Research (main contractor) in collaboration with B&B Research (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:

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

which can rewritten as follows:

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

Table 5 provides these measures for the Estonia 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 Estonia 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 Western, Central, Northeastern for (i) Retail and (ii) Other Services.

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 Estonia 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:

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[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.

- 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 Estonia 2019 WBES. The combination of *a4a, a2*, *a6a,* and *panel* 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 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	Centre of Registers and Information Systems (RIK)
Source of Sampling Frame	Centre of Registers and Information Systems (RIK)
Stratification sectors	1. Manufacturing 2. Retail 3. Other Services
Stratification sizes	1. Small (5 to 19 employees) 2. Medium (20 to 99 employees) 3. Large (100 or more employees)
Stratification regions	1. North (EE001) 2. Western (EE004), Central (EE006), Northeastern (EE007) 3. South (EE008)
Contractor	Kapa Research (main contractor) B&B Research (sub-contractor)
Fieldwork dates	May – October 2023
Interview languages	Estonian and Russian
Survey software	Survey Solution
Currency for nominal variables	Euro
Reference fiscal year	2022 (349 obs.) 2023 (2 obs.)
Sample Size	Total: 351 Fresh: 210 Panel: 141
Survey response rates	Yield: 22.2% Response rate: 51.4%
Item response rates	d2: 100% n2a: 100% l1: 100% all TFP vars.: 62.8%

Tables

Table 1: Estonia 2023 WBES Universe

		Manufacturing	Retail	Other Services	Grand Total
North	Small (5-19)	674	438	3301	**5746**
North	Medium (20-99)	311	108	687	
North	Large (100 or more)	78	28	121	
Western, Central, Northeastern	Small (5-19)	352	216	1345	**2477**
Western, Central, Northeastern	Medium (20-99)	218	43	231	
Western, Central, Northeastern	Large (100 or more)	58	2	12	
South	Small (5-19)	344	157	1153	**2171**
South	Medium (20-99)	196	32	224	
South	Large (100 or more)	42	9	14	
		2,273	**1,033**	**7,088**	**10,394**

Source: Centre of Registers and Information Systems (RIK)

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

		Manufacturing	Retail	Other Services	Grand Total
North	Small (5-19)	674	438	3301	**5746**
North	Medium (20-99)	311	108	687	
North	Large (100 or more)	78	28	121	
Western, Central, Northeastern	Small (5-19)	352	216	1345	**2477**
Western, Central, Northeastern	Medium (20-99)	218	43	231	
Western, Central, Northeastern	Large (100 or more)	58	2	12	
South	Small (5-19)	344	157	1153	**2171**
South	Medium (20-99)	196	32	224	
South	Large (100 or more)	42	9	14	
		2,273	**1,033**	**7,088**	**10,394**

Source: Centre of Registers and Information Systems (RIK)

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

		Manufacturing	Retail	Other Services	Grand Total
North	Small (5-19)	7	5	31	**120**
North	Medium (20-99)	5	11	7	
North	Large (100 or more)	23	10	21	
Western, Central, Northeastern	Small (5-19)	5	29	14	**120**
Western, Central, Northeastern	Medium (20-99)	19	15	14	
Western, Central, Northeastern	Large (100 or more)	19	1	4	
South	Small (5-19)	5	25	19	**120**
South	Medium (20-99)	23	11	15	
South	Large (100 or more)	14	3	5	
		120	**110**	**130**	**360**

Table 4: Response Outcomes

		Totals	Rates relative to total contacted
Overall	Contacts available in frame	10,394	
	Issued	1,721	
	Contacted	1,579	
Screening phase	Eligibles	645	40.8%
	Screener refusals	37	2.3%
	Assumed eligibles	683	43.3%
	Ineligible + out of target	51	3.2%
	Unobtainables	846	53.6%
Interview phase	Interview refusals	284	18.0%
(only if eligible)	Complete interviews	351	22.2%

Table 5: Survey Yield Rates

	Stratification	Yield	Survey response rate	Frame quality
Panel	Fresh	17.2%	43.9%	39.2%
	Panel	39.2%	68.8%	56.9%
Size	Small (5-19)	22.0%	49.2%	44.8%
	Medium (20-99)	22.8%	49.2%	46.3%
	Large (100+)	21.8%	61.3%	35.5%
Region	North	20.9%	52.8%	39.6%
	Western, Central, Northeastern	21.2%	46.6%	45.5%
	South	24.9%	55.6%	44.9%
Sector	Manufacturing	23.2%	51.3%	45.2%
	Retail	20.4%	45.5%	44.7%
	Other Services	22.8%	56.3%	40.6%
Overall	Estonia 2023	22.2%	51.4%	43.3%

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

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

		Manufacturing	Retail	Other Services	Grand Total
North	Small (5-19)	9	6	28	**114**
North	Medium (20-99)	7	6	13	
North	Large (100 or more)	17	6	22	
Western, Central, Northeastern	Small (5-19)	6	25	19	**117**
Western, Central, Northeastern	Medium (20-99)	23	9	21	
Western, Central, Northeastern	Large (100 or more)	14	0	0	
South	Small (5-19)	7	33	17	**120**
South	Medium (20-99)	27	5	14	
South	Large (100 or more)	10	2	5	
		120	**92**	**139**	**351**

Table 7: Achieved Panel Sample

		Manufacturing	Retail	Other Services	Grand Total
North	Small (5-19)	3	2	9	**37**
North	Medium (20-99)	5	2	6	
North	Large (100 or more)	4	3	3	
Western, Central, Northeastern	Small (5-19)	2	14	9	**53**
Western, Central, Northeastern	Medium (20-99)	9	5	8	
Western, Central, Northeastern	Large (100 or more)	6	0	0	
South	Small (5-19)	3	5	10	**51**
South	Medium (20-99)	20	2	8	
South	Large (100 or more)	2	1	0	
		54	**34**	**53**	**141**

Table 8: Weak Universe Estimates

		Manufacturing	Retail	Other Services	Grand Total
North	Small (5-19)	662	432	3234	**5643**
North	Medium (20-99)	308	107	679	
North	Large (100 or more)	76	27	117	
Western, Central, Northeastern	Small (5-19)	341	210	1301	**2399**
Western, Central, Northeastern	Medium (20-99)	213	0	0	
Western, Central, Northeastern	Large (100 or more)	56	0	0	
Western, Central, Northeastern	Medium and Large (20+)	0	43	233	
South	Small (5-19)	341	156	1138	**2150**
South	Medium (20-99)	196	32	223	
South	Large (100 or more)	41	9	14	
		2234	**1018**	**6939**	**10191**

Table 9: Median Universe Estimates

		Manufacturing	Retail	Other Services	Grand Total
North	Small (5-19)	268	178	1171	**2091**
North	Medium (20-99)	123	44	242	
North	Large (100 or more)	24	9	34	
Western, Central, Northeastern	Small (5-19)	163	102	556	**1048**
Western, Central, Northeastern	Medium (20-99)	100	0	0	
Western, Central, Northeastern	Large (100 or more)	21	0	0	
Western, Central, Northeastern	Medium and Large (20+)	0	19	87	
South	Small (5-19)	155	72	463	**905**
South	Medium (20-99)	88	15	89	
South	Large (100 or more)	15	3	5	
		956	**442**	**2646**	**4044**

Table 10: Strict Universe Estimates

		Manufacturing	Retail	Other Services	Grand Total
North	Small (5-19)	223	145	994	**1765**
North	Medium (20-99)	103	36	206	
North	Large (100 or more)	21	8	30	
Western, Central, Northeastern	Small (5-19)	154	94	534	**1001**
Western, Central, Northeastern	Medium (20-99)	95	0	0	
Western, Central, Northeastern	Large (100 or more)	21	0	0	
Western, Central, Northeastern	Medium and Large (20+)	0	18	86	
South	Small (5-19)	151	69	460	**892**
South	Medium (20-99)	86	14	89	
South	Large (100 or more)	15	3	5	
		868	**386**	**2404**	**3658**

Table 11: Item Response Rates

	Screener/Interview	d2	l1	n2a	all TFP variables
Panel	Fresh	100.0%	100.0%	100.0%	64.0%
	Panel	100.0%	100.0%	100.0%	61.1%
Size	Small (5-19)	100.0%	100.0%	100.0%	84.6%
	Medium (20-99)	100.0%	100.0%	100.0%	51.7%
	Large (100+)	100.0%	100.0%	100.0%	65.1%
Region	North	100.0%	100.0%	100.0%	77.1%
	Western, Central, Northeastern	100.0%	100.0%	100.0%	56.5%
	South	100.0%	100.0%	100.0%	58.3%
Sector	Manufacturing	100.0%	100.0%	100.0%	62.8%
	Retail	100.0%	100.0%	100.0%	N/A
	Other Services	100.0%	100.0%	100.0%	N/A
Overall	Estonia 2023	100.0%	100.0%	100.0%	62.8%

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).