

The Taiwan, China 2024 World Bank Enterprise Survey Implementation Report

I. Introduction

This document provides information on the World Bank Enterprise Surveys (WBES) implemented in Taiwan, China between February 2024 and February 2025. 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 220,000 firms in 159 countries with a total of 360 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 Taiwan, China 2024 WBES uses the following stratification categories:

- **Industry: 5 categories:**
 - Manufacturing
 - Within services: Retail, Wholesale, Construction, and Other Services
- **Size: 3 categories:** Small (5 to 19 employees), Medium (20 to 99 employees), Large (100 or more employees)
- **Region: 3 categories:** Northern, Central, and Southern and Eastern

Industry strata were selected by their contribution to total number of establishments, using the establishment data from National Statistics and Industrial and Service Census from Ministry of Economic Affairs. The manufacturing sectors represent 30% of the whole ES universe. The services sectors stratified separately represent 67% of the total number of establishments in the services sector, and 47% of the whole ES universe.

Region strata of the Taiwan, China 2024 WBES were selected based on administrative divisions, with some territories grouped together to achieve minimum required precision of estimates at the level of each stratification region. In particular, Northern includes Taipei, New Taipei, Keelung, Taoyuan, Hsinchu, and Yilan; Central includes Miaoli, Taichung, Changhua, Nantou, and Yunlin; and Southern and Eastern includes Chiayi, Tainan, Kaohsiung, Pingtung, Penghu, Taitung, and Hualien.

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 Taiwan, China, a business is defined as registered if it is registered with 營業執照申請機構 (Business License Application Organization). 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 Taiwan, China 2024 WBES, the universe table, shown in Table 1 below, was obtained from two sources: the establishment data from National Statistics, and the Industrial and Service Census from Ministry of Economic Affairs. The former was last updated in 2023 whereas the latter was last updated in 2021. The establishment data has the complete count of all establishments located within the geographical boundaries of the country. We cross-validate the counts with the corresponding data from Industrial and Service Census.

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 Taiwan, China 2024 WBES was purchased from Dun & Bradstreet (D&B) (see counts of establishments in the frame in Table 2). Ipsos Taiwan verified this list through publicly available sources for some business organizations to update the purchased sampling frame as much as possible.

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 Taiwan, China 2024 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 Taiwan, China 2024 WBES were conducted between February 2024 and February 2025. The interviews were conducted in Mandarin. For monetary variables, the currency was New Taiwan Dollar (NTD).

The Taiwan, China 2024 WBES faced major challenges in screening and recruiting respondents. The fieldwork team had to resort to sending paper invitation letters to all eligible

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>

businesses before performing face-to-face screenings and recruitments which delayed fieldwork. Due to the challenges in recruiting respondents, the Taiwan, China 2024 WBES has to also make compromises on the meeting the desired survey design.

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, trade, 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 Taiwan, China 2024 WBES was implemented by Ipsos Taiwan. 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 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 Taiwan, China 2024 WBES and across its stratification levels.

III.5 Achieved Sample

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

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*.

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 Taiwan, China 2024 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 7-9 report estimated universe based on the respective assumption.

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

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 10 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.⁷

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 Taiwan, China 2024 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

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.

⁷ Note that the sampling weights may vary within *strata* for panel establishments due to the procedure used for projecting the universe from the previous round of the survey.

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	Establishment data from National Statistics (2023) and Industrial and Service Census from Ministry of Economic Affairs (2021)
Source of Sampling Frame	Dun & Bradstreet (D&B)
Levels of Universe Table and Sampling Frame	Universe Table: Establishment-level Sampling Frame: Establishment-level
Registration agency	營業執照申請機構 (Business License Application Organization)
Stratification sectors	Manufacturing; Retail ;Wholesale; Construction; Other Services
Stratification sizes	Small (5 to 19 employees), Medium (20 to 99 employees), Large (100+ employees)
Stratification regions	Northern (comprising of Taipei, New Taipei, Keelung, Taoyuan, Hsinchu, and Yilan); Central (comprising of Miaoli, Taichung, Changhua, Nantou, and Yunlin); and Southern and Eastern (comprising of Chiayi, Tainan, Kaohsiung, Pingtung, Penghu, Taitung, and Hualien)
Contractor	Ipsos Taiwan
Fieldwork dates	February 2024 – February 2025
Interview languages	Chinese Mandarin
Survey software	Survey Solutions
Currency for nominal variables	New Taiwan Dollar (NTD)
Reference fiscal year	2023 (503 obs.) and 2024 (109 obs.)
VAT Applicable	YES
Additional definitions	“Consumption Tax” was referred to as “加值型營業稅”. “Occupancy Permit” was referred to as “房屋占有許可證”. For the capital city (a3b), Taipei was entered; for the main business city (a3c), Taipei was entered.
Sample Size	Total: 612
Survey response rates	Yield: 3.2% Response rate: 5.9% Frame quality: 54.7%
Item response rates	d2: 97.1% n2a: 91.3% 11: 100.0% all TFP vars.: 74.1%
Additional topics covered in the questionnaire	
Additional surveys available (if any)	

Tables

Table 1: Taiwan, China 2024 WBES Universe

		Manufacturing	Retail	Wholesale	Construction	Other services	Grand Total
Northern	Small (5-19)	21686	14554	29755	11665	25704	128724
Northern	Medium (20-99)	8159	1442	4112	1565	6070	
Northern	Large (100+)	1969	330	630	123	960	
Central	Small (5-19)	19095	6394	11909	6351	9551	64500
Central	Medium (20-99)	5942	437	1100	567	1591	
Central	Large (100+)	1255	48	60	26	174	
Southern and Eastern	Small (5-19)	11308	6914	10585	7319	10861	57042
Southern and Eastern	Medium (20-99)	4304	483	1002	818	1976	
Southern and Eastern	Large (100+)	1076	76	31	50	239	
		74794	30678	59184	28484	57126	250266

Source: National Statistics (2023) (Establishment-level)

Table 2: Taiwan, China 2024 WBES Sample Frame

		Manufacturing	Retail	Wholesale	Construction	Other services	Grand Total
Northern	Small (5-19)	873	595	1711	514	1051	9727
Northern	Medium (20-99)	1025	305	365	326	376	
Northern	Large (100+)	1054	330	630	118	454	
Central	Small (5-19)	1044	272	718	192	224	5520
Central	Medium (20-99)	886	161	344	135	154	
Central	Large (100+)	1255	19	60	14	42	
Southern and Eastern	Small (5-19)	572	271	616	210	345	4068
Southern and Eastern	Medium (20-99)	552	88	309	74	199	
Southern and Eastern	Large (100+)	720	22	31	12	47	
		7,981	2,063	4,784	1,595	2,892	19,315

Source: Dun & Bradstreet (D&B) (Establishment-level)

Table 3: Original Survey Design

		Manufacturing	Retail	Wholesale	Construction	Other services	Grand Total
Northern	Small (5-19)	4	25	25	25	25	253
Northern	Medium (20-99)	23	14	4	25	18	
Northern	Large (100+)	24	10	21	4	6	
Central	Small (5-19)	4	25	12	11	25	170
Central	Medium (20-99)	8	10	6	11	6	
Central	Large (100+)	17	5	11	14	5	
Southern and Eastern	Small (5-19)	11	18	20	11	25	177
Southern and Eastern	Medium (20-99)	11	8	10	10	6	
Southern and Eastern	Large (100+)	18	5	11	9	4	
		120	120	120	120	120	600

Table 4: Response Outcomes

		Totals	Rates relative to total contacted
Overall	Contacts available in frame	19,315	
	Issued	18,858	
	Contacted	18,835	
Screening phase	Eligibles	1,403	7.4%
	Screener refusals	8,107	43.0%
	Assumed eligibles	10,310	54.7%
	Ineligible + out of target	793	4.2%
	Unobtainables	2,767	14.7%
Interview phase	Interview refusals	447	2.4%
(only if eligible)	Complete interviews	612	3.2%

Table 5: Survey Yield Rates

	Stratification	Yield	Survey response rate	Frame quality
Panel	Fresh	3.2%	5.9%	54.7%
	Panel	#N/A	#N/A	#N/A
Size	Small (5-19)	2.5%	4.9%	52.2%
	Medium (20-99)	3.5%	6.3%	55.0%
	Large (100+)	4.3%	7.3%	59.2%
Region	Northern	3.5%	6.2%	55.9%
	Central	2.8%	5.0%	55.9%
	Southern and Eastern	3.4%	6.7%	50.2%
Sector	Manufacturing	3.8%	6.5%	58.1%
	Retail	3.4%	6.5%	52.1%
	Wholesale	2.6%	5.0%	51.9%
	Construction	2.6%	4.7%	54.4%
	Other services	3.1%	5.9%	52.0%
Overall	Taiwan, China 2024	3.2%	5.9%	54.7%

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

Table 6: Achieved Total Sample

		Manufacturing	Retail	Wholesale	Construction	Other services	Grand Total
Northern	Small (5-19)	29	16	26	11	32	334
Northern	Medium (20-99)	39	13	14	11	16	
Northern	Large (100+)	71	15	24	6	11	
Central	Small (5-19)	33	4	15	2	7	151
Central	Medium (20-99)	31	5	7	5	3	
Central	Large (100+)	32	0	4	0	3	
Southern and Eastern	Small (5-19)	10	11	16	1	12	127
Southern and Eastern	Medium (20-99)	18	6	8	3	1	
Southern and Eastern	Large (100+)	35	0	2	2	2	
		298	70	116	41	87	612

Table 7: Weak Universe Estimates

		Manufacturing	Retail	Wholesale	Construction	Other services	Grand Total
Northern	Small (5-19)	14284	9646	19127	7981	18069	86014
Northern	Medium (20-99)	5356	953	2634	1067	4253	
Northern	Large (100+)	1313	203	360	85	683	
Central	Small (5-19)	12021	4051	7317	4153	6417	40883
Central	Medium (20-99)	3728	276	674	370	1065	
Central	Large (100+)	671	0	22	0	118	
Southern and Eastern	Small (5-19)	7154	4402	6535	4810	7333	36639
Southern and Eastern	Medium (20-99)	2714	306	617	536	1330	
Southern and Eastern	Large (100+)	689	0	18	33	163	
		47930	19836	37304	19034	39432	163536

Table 8: Median Universe Estimates

		Manufacturing	Retail	Wholesale	Construction	Other services	Grand Total
Northern	Small (5-19)	12251	7367	15017	6173	13001	68126
Northern	Medium (20-99)	4864	770	2190	874	3240	
Northern	Large (100+)	1263	174	317	74	551	
Central	Small (5-19)	10797	3240	6016	3364	4835	34581
Central	Medium (20-99)	3546	234	586	317	850	
Central	Large (100+)	676	0	21	0	100	
Southern and Eastern	Small (5-19)	5736	3143	4797	3477	4933	27,242
Southern and Eastern	Medium (20-99)	2304	232	479	410	947	
Southern and Eastern	Large (100+)	620	0	15	27	123	
		42055	15159	29438	14715	28581	129949

Table 9: Strict Universe Estimates

		Manufacturing	Retail	Wholesale	Construction	Other services	Grand Total
Northern	Small (5-19)	1690	933	1683	703	1293	8353
Northern	Medium (20-99)	791	115	290	117	380	
Northern	Large (100+)	211	27	43	10	67	
Central	Small (5-19)	1339	369	606	344	432	3956
Central	Medium (20-99)	519	31	70	38	90	
Central	Large (100+)	102	0	4	0	11	
Southern and Eastern	Small (5-19)	898	452	610	450	557	3833
Southern and Eastern	Medium (20-99)	425	39	72	63	126	
Southern and Eastern	Large (100+)	118	0	2	4	17	
		6093	1966	3381	1730	2973	16142

Table 10: Item Response Rates

	Screener/Interview	d2	l1	n2a	all TFP variables
Panel	Fresh	97.1%	100.0%	91.3%	74.1%
	Panel	#N/A	#N/A	#N/A	#N/A
Size	Small (5-19)	97.6%	100.0%	94.0%	81.0%
	Medium (20-99)	96.8%	100.0%	93.5%	78.1%
	Large (100+)	96.6%	100.0%	85.3%	66.7%
Region	Northern	98.2%	100.0%	91.6%	72.1%
	Central	95.4%	100.0%	90.7%	76.9%
	Southern and Eastern	96.1%	100.0%	91.3%	73.9%
Sector	Manufacturing	97.1%	100.0%	90.1%	74.1%
	Retail	98.4%	100.0%	96.7%	#N/A
	Wholesale	96.3%	100.0%	91.7%	#N/A
	Construction	100.0%	100.0%	91.2%	#N/A
	Other services	95.8%	100.0%	91.6%	#N/A
Overall	Taiwan, China 2024	97.1%	100.0%	91.3%	74.1%

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).