

Addition of Sample Enterprises to the *Tankan*

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Research and Statistics Department

Bank of Japan

The Bank of Japan has decided to add 2 enterprises to the *Tankan* (Short-Term Economic Survey of Enterprises in Japan) sample from the March 2021 survey.

As a result, the total number of sample enterprises for the March 2021 survey will be 9,852 (including 204 financial institutions, 162 business consultants & pure holding companies and 597 sample enterprises in the Survey on Overseas Business Activities).¹

To prevent a decrease in the number of sample enterprises—due to bankruptcies, mergers, and other factors—from causing a decline in the statistical accuracy of the *Tankan*, the Bank examines the statistical accuracy once a year and adds new sample enterprises if necessary. Moreover, in the case that a non-core enterprise which was not selected as a sample enterprise at the time of the spin-off, but which now has an impact above a certain level on the estimate of the population total in the *Tankan*, the Bank may incorporate it into the sample enterprise to capture the whole picture of the pre-existing sample enterprise even though some time has passed since the spin-off.²

Details of the examination for the statistical accuracy of *Tankan* are as follows.³

1. Sample Distribution

In the *Tankan*, the population is determined as private enterprises with capital of 20 million yen or more (excluding “financial institutions” and “business consultants & pure holding companies”). The population is classified into 389 strata by industry, enterprise size and sales for the estimation of the population total.⁴ The Bank examined whether there is a statistically significant difference in these strata between the sample and population distributions.⁵ The result showed that there was no stratum in which the

¹ 597 sample enterprises in the Survey on Overseas Business Activities includes the 589 sample enterprises of the *Tankan* and the Survey of Business Consultants & Pure Holding Companies.

² For details of the statistical accuracy of the *Tankan*, please refer to "[Explanation of the *Tankan* \(Short-Term Economic Survey of Enterprises in Japan\)](#)," May 2020.

³ This examination was carried out using the sample enterprises after the most recent survey in December 2020.

⁴ In the *Tankan*, the Bank places the restriction on selecting sample enterprises in order to limit disturbance to the estimates due to an idiosyncratic factor of a sample enterprise: the sampling ratio of each stratum is maintained at 0.5 percent or more. The Bank verified that there was no stratum with sampling ratio of less than 0.5%, along with the examination of the statistical accuracy on the above.

⁵ The "test of the goodness of fit" using chi-square distribution is used in the regular examination.

sample distribution was deemed to deviate from the population distribution.⁶

2. Standard Error Ratios

The Bank examined the standard error ratio of sales⁷ in manufacturing and nonmanufacturing for each enterprise size in the *Tankan*. The results showed that the standard error ratios remained within the criteria—3% or less for manufacturing and 5% or less for nonmanufacturing—as listed in the table below.⁸

Standard Error Ratios of Sales

		Large Enterprises	Medium-Sized Enterprises	Small Enterprises
Manufacturing	Actual	0.7%	1.8%	1.8%
	Criterion	3.0% or less		
Nonmanufacturing	Actual	1.2%	2.2%	1.7%
	Criterion	5.0% or less		

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This method tests the null hypothesis, H_0 : "There is no significant difference between the sample and population distributions." When the hypothesis is statistically rejected, the sample distributions are deemed to deviate from the population distributions.

⁶ The Bank also examined whether there is a statistically significant difference in the strata between the sample and population distributions in the Survey of Financial Institutions, the Survey of Business Consultants & Pure Holding Companies and the Survey on Overseas Business Activities. (In the Survey of Financial Institutions, the population is determined as financial institutions with 10 employees or more and then classified into 23 strata by sector and the number of employees. In the Survey of Business Consultants & Pure Holding Companies, the population is determined as private enterprises that are "business consultants & pure holding companies" with capital of 20 million yen or more and then classified into 3 strata by sales. In the Survey on Overseas Business Activities, the population is determined as private parent enterprises excluding "financial institutions", with capital of 1 billion yen or more, at the top of a consolidated business group with sales to overseas external customers or overseas subsidiaries/branches, and then classified into 73 strata by sector and total sales.) The result showed that there was no stratum in which the sample distribution was deemed to deviate from the population distribution.

⁷ Standard error ratio shows how accurate an estimate of the survey population mean is. It is calculated by dividing the standard deviation of the sample mean by the survey population mean.

⁸ The Bank also examined the standard error ratios of fixed and software investment (excluding land purchasing expenses) for overall financial institutions in the Survey of Financial Institutions, and total sales for both manufacturing and nonmanufacturing on Overseas Business Activities. The result showed that the standard error ratios were 6.3% (in the Survey of Financial Institutions), 1.5% (for manufacturing on Overseas Business Activities) and 3.8% (for nonmanufacturing on Overseas Business Activities). They were within the criterion, 10%.