March 2, 2018

Research and Statistics Department

Bank of Japan

Regular Revision of the *Tankan* Sample Enterprises

1. Background

The *Tankan* (Short-Term Economic Survey of Enterprises in Japan) conducted by the Bank of Japan uses a sample survey framework and extracts sample enterprises from the population of private enterprises (excluding financial institutions) with a capital of 20 million yen or more.

In order to capture economic conditions accurately, the Bank regularly revises the *Tankan* sample enterprises according to its information on the sample population. Today, the Bank released the results of the revision of sample enterprises based on the most up-to-date information on the population (comprising approximately 220,000 enterprises), taken from the 2014 *Economic Census for Business Frame* conducted by the Ministry of Internal Affairs and Communications.

2. Outline

In this revision of the sample enterprises, a new sampling method was utilized.[1] Specifically, the Bank has introduced stratified sampling based on sales instead of number of employees, as used previously. In simple terms, the Bank changed the criterion for subdividing the population of enterprises into multiple groups (strata) from number of employees to sales. Estimate of population total is calculated in each stratum. The new sampling method is intended to achieve both improved statistical accuracy and reduced total burden on survey respondents.

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[1] For more details on the new sampling method, refer to "Revision of the Sample Design of the *Tankan* Using the *Economic Census* of Japan" (September 23, 2016, Research and Statistics Department, Bank of Japan).

As a result of the revision, for all six main categories by industry and enterprise size, the standard error ratio of sales has decreased, especially in nonmanufacturing, for which the errors are less than half of those before the revision for all enterprise sizes, indicating a significant improvement in statistical accuracy (Figure 1). In addition, the number of sample enterprises was greatly decreased, from 11,126 in the previous regular revision in March 2015, to 10,020 in the current revision, which is a significant reduction in the total burden on survey respondents.

The Bank will conduct the *Tankan* survey based on the latest revision of sample enterprises starting with the March 2018 survey scheduled to be released on April 2 and 3.[2]

The revision of the sample enterprises will induce discontinuities between data of the December 2017 survey and those of the March 2018 survey. To address this issue, the Bank also conducted a preliminary survey using the revised sample enterprises in December 2017 in order to determine the sizes of differences due to discontinuities caused by the revision.

The results of the comparison between the pre- and post-revision figures for the December 2017 survey are shown in Figure 3, Figure 4, and "Data comparison between pre- and post-revision of the *Tankan* in the December 2017 Survey" released on March 2, 2018 by the Research and Statistics Department.

3.   Release data of the March 2018 Survey

In the "Summary" of the March 2018 survey, the Bank uses post-revision data for the December 2017 survey in the comparison between the December 2017 and March 2018 surveys. For details of figures that will be cited in other release materials on the December

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[2] For the number of sample enterprises by industry and size, refer to Figure 2. Apart from the revision of the *Tankan* sample enterprises, the Bank conducted a regular revision of the survey on financial institutions and the total number of institutions was changed to 210.

2017 survey, refer to the following table.

As mentioned above, there are two slightly different data sets for the December 2017 survey. The Bank has designated the post-revision data as reference figures.

Release materials			Data
Outline			The post-revision figures will be cited.
Summary	Tables		
	Graphs	Long-Term Time-Series Data	The pre-revision figures of the December 2017 survey will be connected to the post-revision figures of the March 2018 survey.
		Developments of Fixed Investment including Land Purchasing Expenses	For fiscal 2017, the pre- and post-revision figures will not be connected directly. Instead, the graphs will be presented with two lines: one for the pre-revision figures through the December 2017 survey and the other for the post-revision figures from the same survey.
Summary of "Inflation Outlook of Enterprises"			The post-revision figures will be cited.
Figures by Industry			Pre-revision figures will be used through the December 2017 survey, and post-revision figures will be used starting from the March 2018 survey.
The Comprehensive Data Set			
BOJ Time-Series Data Search			

Figure 1

Standard Error Ratio of Sales (Population Estimates)
for Six Main Categories by Industry and Enterprise Size

	Manufacturing			Nonmanufacturing		
	Large Enterprises	Medium-sized Enterprises	Small Enterprises	Large Enterprises	Medium-sized Enterprises	Small Enterprises
Pre-revision	1.0%	2.7%	2.5%	3.0%	4.6%	3.9%
Post-revision	0.7%	1.7%	1.8%	1.2%	2.2%	1.6%

Note: The pre-revision figures above are the same as the data in the previous regular revision of sample enterprises in March 2015.

<Summary of the New Sampling Method>

The Bank has introduced stratified sampling based on sales instead of number of employees, as used previously. As a result, the standard error ratio of total sales has decreased remarkably.

Capital
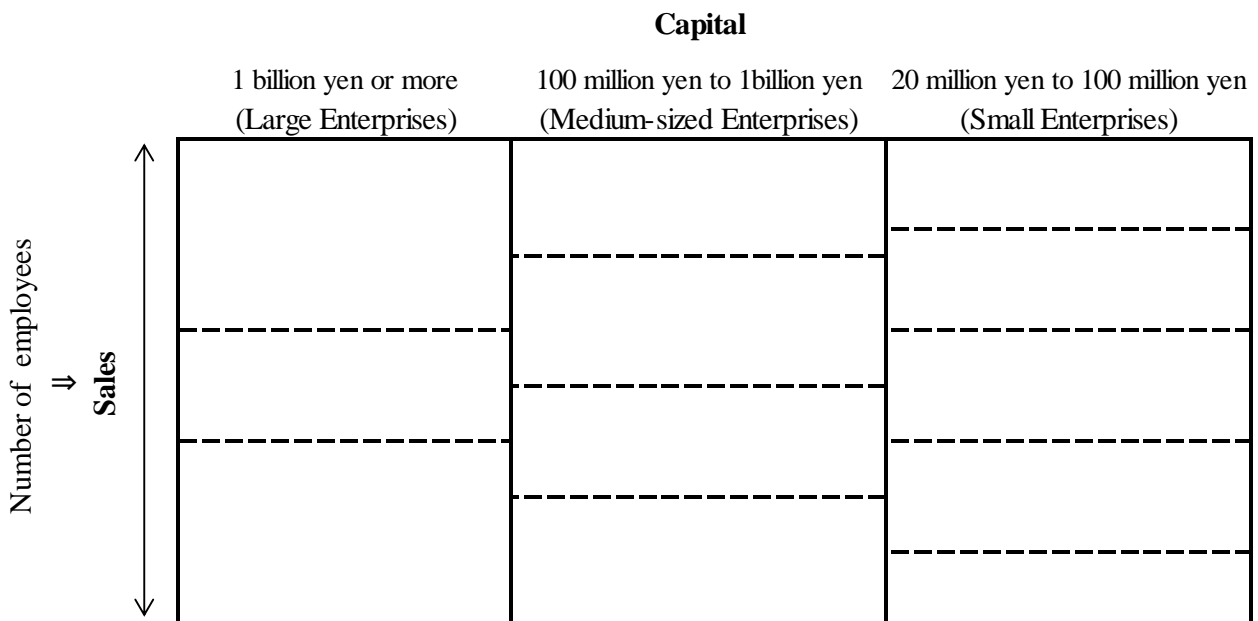
Note: Each small rectangle, bounded by both thick and dotted lines, represents a stratum.

Figure 2

Population Size and Number of Sample Enterprises by Industry and Enterprise Size: March 2018 Survey

Industry	All Enterprises		Large Enterprises		Medium-sized Enterprises		Small Enterprises	
	Population	Sample	Population	Sample	Population	Sample	Population	Sample
All Industries	**218,793**	**10,020**	**4,775**	**1,933**	**21,617**	**2,817**	**192,401**	**5,270**
Manufacturing	**46,832**	**4,110**	**1,985**	**1,013**	**5,799**	**1,064**	**39,048**	**2,033**
Textiles	2,575	237	53	37	188	53	2,334	147
Lumber & Wood products	1,888	126	23	17	128	29	1,737	80
Pulp & Paper	1,314	129	38	27	151	37	1,125	65
Chemicals	2,416	358	320	133	574	73	1,525	152
Petroleum & Coal products	234	101	21	16	29	19	184	66
Ceramics, Stone & Clay	2,953	194	87	43	301	55	2,565	96
Iron & Steel	1,291	225	76	42	234	52	981	131
Nonferrous metals	846	183	77	34	161	45	608	104
Food & Beverages	6,510	393	202	94	770	121	5,538	178
Processed metals	4,785	251	74	38	412	64	4,299	149
General-purpose machinery	1,915	169	81	46	236	46	1,598	77
Production machinery	4,376	294	160	86	428	63	3,788	145
Business oriented machinery	1,434	199	86	38	215	50	1,133	111
Electrical machinery	4,704	506	322	163	820	145	3,562	198
Shipbuilding, Heavy machinery & Other transportation machinery	655	172	40	29	72	41	543	102
Motor vehicles	1,694	272	169	109	316	80	1,209	83
Other manufacturing	7,242	301	156	61	767	91	6,319	149
Nonmanufacturing	**171,961**	**5,910**	**2,790**	**920**	**15,818**	**1,753**	**153,353**	**3,237**
Construction	50,544	1,008	246	118	1,642	154	48,656	736
Real estate	17,412	436	339	72	1,978	141	15,095	223
Goods rental & Leasing	1,890	274	71	33	255	101	1,564	140
Wholesaling	31,458	982	559	140	3,500	298	27,399	544
Retailing	17,765	698	311	128	1,569	186	15,885	384
Transport & Postal activities	12,042	606	298	121	1,229	202	10,515	283
Communications	298	74	39	15	77	24	182	35
Information services	5,632	244	196	68	1,176	92	4,260	84
Other information communication	3,163	205	225	33	832	96	2,106	76
Electric & Gas utilities	451	165	83	41	204	84	164	40
Services for businesses	14,420	478	155	41	1,404	141	12,861	296
Services for individuals	9,303	391	123	53	1,190	118	7,990	220
Accommodation, Eating & Drinking services	7,264	293	135	48	741	104	6,388	141
Mining & Quarrying of stone and gravel	319	56	10	9	21	12	288	35

Note: Enterprise size is defined by amount of capital. Enterprises with a capital of 1 billion yen or more are "Large Enterprises," those with a capital of 100 million yen to less than 1 billion yen are "Medium-sized Enterprises," and those with a capital of 20 million yen to less than 100 million yen are "Small Enterprises."

Figure 3

Comparison Between Pre- and Post-Revision:

Main Results from the Preliminary Survey (December 2017 Survey)

Business Conditions (December 2017 Survey)   ("Favorable" minus "Unfavorable," % points)

		Diffusion Index (Actual)		B - A
		Pre-revision (A)	Post-revision (B)	
All Enterprises	All Industries	16	16	0
Large Enterprises	Manufacturing	25	26	1
	Nonmanufacturing	23	25	2
Medium-sized Enterprises	Manufacturing	19	20	1
	Nonmanufacturing	20	20	0
Small Enterprises	Manufacturing	15	15	0
	Nonmanufacturing	9	9	0

Sales   (%, % points)

		Year-to-year Percent Change (fiscal 2017)		B - A
		Pre-revision (A)	Post-revision (B)	
All Enterprises	All Industries	3.0	3.1	0.1
Large Enterprises	Manufacturing	3.9	4.1	0.2
	Nonmanufacturing	3.8	4.2	0.4
Medium-sized Enterprises	Manufacturing	4.4	4.0	▲ 0.4
	Nonmanufacturing	2.5	2.2	▲ 0.3
Small Enterprises	Manufacturing	2.5	2.1	▲ 0.4
	Nonmanufacturing	1.4	0.9	▲ 0.5

Current Profits   (%, % points)

		Year-to-year Percent Change (fiscal 2017)		B - A
		Pre-revision (A)	Post-revision (B)	
All Enterprises	All Industries	5.2	4.3	▲ 0.9
Large Enterprises	Manufacturing	15.0	15.2	0.2
	Nonmanufacturing	4.9	3.1	▲ 1.8
Medium-sized Enterprises	Manufacturing	4.2	1.0	▲ 3.2
	Nonmanufacturing	▲ 2.2	▲ 2.6	▲ 0.4
Small Enterprises	Manufacturing	0.7	1.9	1.2
	Nonmanufacturing	▲ 6.0	▲ 8.4	▲ 2.4

Fixed Investment including Land Purchasing Expenses   (%, % points)

		Year-to-year Percent Change (fiscal 2017)		B - A
		Pre-revision (A)	Post-revision (B)	
All Enterprises	All Industries	6.3	4.4	▲ 1.9
Large Enterprises	Manufacturing	10.2	10.7	0.5
	Nonmanufacturing	5.8	4.0	▲ 1.8
Medium-sized Enterprises	Manufacturing	15.3	17.4	2.1
	Nonmanufacturing	21.1	5.2	▲ 15.9
Small Enterprises	Manufacturing	4.4	0.5	▲ 3.9
	Nonmanufacturing	▲ 10.6	▲ 9.6	1.0

Figure 4

Comparison Between Pre- and Post-Revision:

Results of "Inflation Outlook of Enterprises" from the Preliminary Survey

(December 2017 Survey)

Output Prices (%, % points)

			The Average of Enterprises' Inflation Outlook		B - A
			Pre-revision (A)	Post-revision (B)	
All Enterprises	All Industries	1 year ahead	0.6	0.6	0.0
		3 years ahead	1.1	1.1	0.0
		5 years ahead	1.3	1.3	0.0
Large Enterprises	Manufacturing	1 year ahead	0.0	0.0	0.0
		3 years ahead	▲ 0.4	▲ 0.4	0.0
		5 years ahead	▲ 0.5	▲ 0.6	▲ 0.1
	Nonmanu-facturing	1 year ahead	0.6	0.5	▲ 0.1
		3 years ahead	1.2	1.2	0.0
		5 years ahead	1.3	1.3	0.0
Small Enterprises	Manufacturing	1 year ahead	0.8	0.8	0.0
		3 years ahead	1.3	1.3	0.0
		5 years ahead	1.5	1.5	0.0
	Nonmanu-facturing	1 year ahead	0.7	0.7	0.0
		3 years ahead	1.6	1.6	0.0
		5 years ahead	2.1	2.0	▲ 0.1

General Prices (%, % points)

			The Average of Enterprises' Inflation Outlook		B - A
			Pre-revision (A)	Post-revision (B)	
All Enterprises	All Industries	1 year ahead	0.8	0.8	0.0
		3 years ahead	1.1	1.1	0.0
		5 years ahead	1.1	1.1	0.0
Large Enterprises	Manufacturing	1 year ahead	0.6	0.6	0.0
		3 years ahead	0.8	0.8	0.0
		5 years ahead	0.8	0.8	0.0
	Nonmanu-facturing	1 year ahead	0.6	0.6	0.0
		3 years ahead	0.9	0.9	0.0
		5 years ahead	0.8	0.8	0.0
Small Enterprises	Manufacturing	1 year ahead	0.9	0.9	0.0
		3 years ahead	1.2	1.2	0.0
		5 years ahead	1.2	1.2	0.0
	Nonmanu-facturing	1 year ahead	0.9	0.9	0.0
		3 years ahead	1.2	1.2	0.0
		5 years ahead	1.3	1.3	0.0

Error Ratio of Sales by Industry and Enterprise Size

Industry	Large Enterprises		Medium-sized Enterprises		Small Enterprises	
	Pre-revision	Post-revision	Pre-revision	Post-revision	Pre-revision	Post-revision
Textiles	2.2%	6.8%	9.5%	6.2%	8.9%	4.2%
Lumber & Wood products	4.9%	5.6%	9.4%	8.6%	9.3%	7.6%
Pulp & Paper	5.8%	1.3%	9.1%	8.1%	9.6%	7.5%
Chemicals	4.4%	1.6%	8.7%	4.4%	8.4%	8.0%
Petroleum & Coal products	3.1%	2.5%	8.8%	9.4%	8.7%	2.8%
Ceramics, Stone & Clay	5.4%	1.6%	8.3%	4.6%	9.0%	4.6%
Iron & Steel	2.3%	1.2%	9.3%	3.7%	8.9%	3.7%
Nonferrous metals	8.4%	5.7%	9.6%	4.2%	9.0%	7.2%
Food & Beverages	5.1%	1.7%	7.7%	3.1%	7.9%	4.7%
Processed metals	3.2%	1.7%	9.7%	6.5%	8.3%	5.7%
General-purpose machinery	2.4%	1.7%	7.7%	4.7%	7.3%	6.1%
Production machinery	4.4%	3.1%	9.2%	8.8%	9.2%	5.3%
Business oriented machinery	2.8%	6.8%	10.5%	6.9%	9.2%	9.3%
Electrical machinery	2.0%	2.8%	8.1%	6.9%	9.4%	9.3%
Shipbuilding, Heavy machinery & Other transportation machinery	1.7%	1.1%	10.2%	7.3%	9.2%	3.6%
Motor vehicles	1.4%	0.9%	6.9%	3.6%	7.1%	3.3%
Other manufacturing	3.5%	1.7%	10.1%	5.1%	7.6%	4.2%
Construction	2.6%	1.1%	5.0%	2.3%	4.1%	2.8%
Real estate	9.5%	5.9%	13.4%	4.2%	14.4%	4.0%
Goods rental & Leasing	11.1%	4.4%	11.1%	9.1%	9.7%	6.1%
Wholesaling	7.1%	2.1%	9.5%	4.8%	9.5%	3.8%
Retailing	4.4%	3.0%	9.3%	3.5%	6.7%	3.1%
Transport & Postal activities	6.3%	5.1%	7.2%	7.2%	8.3%	2.8%
Communications	7.9%	6.6%	10.2%	3.3%	9.2%	9.3%
Information services	5.3%	4.7%	8.4%	3.3%	9.4%	6.6%
Other information communication	9.1%	6.7%	7.1%	5.2%	9.3%	3.8%
Electric & Gas utilities	1.5%	0.8%	7.5%	4.0%	8.2%	6.5%
Services for businesses	7.2%	3.1%	9.0%	3.5%	9.0%	3.0%
Services for individuals	9.3%	1.6%	10.3%	3.5%	10.9%	3.3%
Accommodations, Eating & Drinking services	8.1%	3.1%	9.0%	8.0%	8.8%	4.6%
Mining & Quarrying of stone and gravel	24.0%	0.6%	22.5%	9.5%	18.2%	10.3%

Note: The pre-revision figures above are the same as the data in the previous regular revision of sample enterprises in March 2015.

Population Size and Number of Sample Enterprises by Industry and Enterprise Size

	Population		Sample Enterprises		Standard Error Ratio	
	Pre-revision	Post-revision	Pre-revision	Post-revision	Pre-revision	Post-revision
Financial Institutions	743	2,862	196	210	2.1%	6.2%
Banks	138	137	75	77		
Financial institutions for cooperative organizations	275	420	37	40		
Financial products transaction dealers	218	389	31	29		
Insurance companies	94	1,539	39	42		
Non-deposit money corporations	18	377	14	22		

Notes 1: In the survey of financial institutions, the Bank sets a target of 10 percent or less on the standard error ratio of fixed and software investment (excluding land purchasing expenses) for overall financial institutions.

2: The classification name "Financial institutions for cooperative organizations" is being used from the March 2018 survey, instead of "*Shinkin* banks and other financial institutions for small businesses," as used previously.