1. Introduction

The Business Register in Japan, formally called the Establishment Frame Database, is developed by integrating the results of the Economic Census, various statistical surveys and administrative data sources. Moreover, the information on all establishments and enterprises is kept updated on a regular basis. In this content, the enhancement of the quality of the "Economic Census" is indispensable to enhance the quality of the "Business Register," because the main data source for the "Business Register" is the "Economic Census."

The "Economic Census" clarifies the condition of economic activity of establishments and enterprises as well as identifying the comprehensive industrial structure in Japan. This has been given the status as Fundamental Statistics based on the "Statistics Act" as the important statistical survey equivalent to the Population Census from the fact that it aims to develop the population information for various statistical surveys regarding establishments and enterprises.

In this paper, we will explain the efforts to enhance the quality of the "Economic Census for Business Activity in 2016 (the latest Economic Census)" from the perspective of the survey method and the aggregate procedure for the data.

2. Economic Census

The Economic Census given status as Fundamental Statistics in Japan was conducted for the first time in 2009 and has clarified the actual condition of economic activity for all establishments and enterprises in Japan. In Japan, statistical surveys on establishments and enterprises have been conducted since 1947. After several changes, at the end of the 2006 Establishment and Enterprise Census, the Economic Census began in 2009. By changing to the Economic Census, attempting to grasp more establishments and

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[1] Opinions presented in this paper are not necessarily the opinions of the Statistics Bureau of Japan due to the inclusion of the author's own comments.

enterprises, the Economic Census began to use administrative data sources[2] and survey mailing to head offices collectively[3]. This is why, strictly speaking, the data of establishments and enterprises are connectable in time series from 2009.

The Economic Census consists of two surveys: one is the "Economic Census for Business Frame" (hereinafter called "EC-BF") which is to clarify the basic structure of establishments and enterprises; in other words, it inquires as to "Address," "Name," "Number of employees" and so on. The other is the "Economic Census for Business Activity" (hereinafter called "EC-BA") which is to clarify the condition of economic activity of establishments and enterprises; in other words, it inquires as to "accounting matters such as the sales amount and expenses" and items which are more detailed than in the EC-BF. With these two, the "Economic Census" clarifies the condition of economic activity of establishments and enterprises, and grasps the inclusive industrial structure. These surveys are complete surveys of a five-year cycle[4], however, the enterprises and establishments falling under the following are excluded:
a. Establishments of individual proprietorships that fall under "Agriculture, Forestry and Fisheries"
b. Establishments that fall under "Domestic services" in "Living-related and Personal services and Amusement services"
c. Establishments that fall under "Foreign governments and International agencies in Japan" in "Services, n.e.c."

Individual proprietorships that fall under "Agriculture, Forestry and Fisheries" are grasped in "Census of Agriculture and Forestry" and "Fishery Census." In this way, they are excluded from the Economic Census due to redundancy in the survey. However, for corporations and organizations with business on a large scale, they are subject to the survey but only basic items are investigated from the perspective of the Economic Census having to grasp economic activity of all industries (a). The establishments of "Domestic services" are excluded due to difficulty to survey on "Live-in housekeepers" and "Domestic helpers visiting individual homes." However, "Private employment agency" and "Domestic help agency," etc. are subject to the survey (b). Establishments that fall under "Foreign governments and International agencies in Japan" are excluded to follow international practice (c). In addition, establishments of national and local public entities are excluded in EC-BA because 1. Establishments that can grasp economic activity on sales are limited to some local public enterprises, etc. and 2. Regarding the accounting matters of public enterprises, etc., they can acquire the information from administrative data sources based on the Local Public Enterprise Act and the Local Finance Act.

Results of the Economic Census are used for not only basic data of various administrative policies in government but also that of local industry promotion, activation of shopping districts and central urban areas by local government and academic research. Also, it is used as reference materials for the management strategy of private enterprises. Table 1 shows the utilization of the Economic Census.

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[2] The information from the administrative data sources is reflected in the list of establishments to be used for the survey by enumerators.
[3] "Survey mailing to head offices collectively" means the survey method in which we send the questionnaires to the head office including to the branch offices of the enterprises. And then, the head office responds including the responses of the branches by the internet or mail.
[4] As for the 2012 EC-BA, the Cabinet Office estimated the System of National Accounts by using the Economic Census for the first time, which is why the survey year was changed from 2011 to 2012. The 2012 EC-BA was originally going to be conducted in 2011.

Table 1: The utilization of the Economic Census

1. Utilization based on various Acts and Regulations, or for various Policy Planning		
	Business Register	Use for making the list of establishments to be used for conducting various statistical surveys.
	Local Tax Act	Use for liquidating local consumption tax.
	Small and Medium Enterprises Policy	Use it as the basic data of the various Small and Medium Enterprises (SMEs) policy, which are, for example, reference values for fund financing mediation business, system designs of the subsidy for capital investment, etc.
	Regional Revitalization Policy	Use it as basic data of regional revitalization policy, which are, for example, to support city centers and hilled rural areas.
	Demographic Policy	Use it as basic data of demographic policy, which are, for example, to consider measures for problem of depopulation and for promotion of the settlement.
	Employment Policy	Use for grasping trends in increase rate of the minimum wages based to the number of employees at establishments by fiscal year or by area. Use for labor standards policy, aggregating the number of establishments and employees by area.
	Disaster Prevention Policy	Use it as basic data of various demographic policies, which are, for example, to formulate a rural disaster prevention plan and to estimate the economic damage due to earthquake.
2. Utilization for System of National Accounts, Input-Output Table and Reports, etc.		
	System of National Accounts	Use the number of establishments of "Manufacturing" and "Wholesale and retail trade" due to estimated capital investment of individual proprietorships. Use the number of employees by industrial classification and by types of employment at the time of standard revision.
	Input-Output Table	Use it as basic data of Input-Output Table showing goods and services produced by a certain industry and presenting the results in a matrix (row and column) format.
	Reports, etc. written by government agencies	Use for calculating entry and exit rates of SMEs by industry and grasping trends of content markets, etc. in reports written by government agencies.
3. Utilization by Enterprises, Research Institutions, etc.		
	Enterprises	Use for grasping market trends by industry, estimating market scale, thinking of management strategy, research from the viewpoint of marketing, etc.
	Research Institutions	Use for analyzing changes in industry and enterprise structure related to economic growth in Japan, econometric analysis, impact on outsourcing workers, etc.

3. Efforts to enhance the quality of the EC-BA

Because the Economic Census is a complete survey, the issue of improving accuracy depends on how much non-sampling errors due to questionnaire not submitted, blank items, etc. can be reduced. In the 2016 EC-BA, there are 23 kinds of questionnaires[5] by type of management organization and by industry. It is difficult for the survey object to grasp their industry at each establishment and to fill in the accounting items in the questionnaire of their industry when their work is busy. For continued establishments, the questionnaires of industries grasped in the previous survey have been distributed, but small and medium enterprises (SMEs) with few accountants will be burdened with entries that will be done during their work. Therefore, in the 2016 EC-BA, from the rapid spread of the Information and

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[5] There were 4 kinds of questionnaires in the 2014 EC-BF. This difference is attributed to the fact that the EC-BF mainly focuses on the maintenance of the list of establishments, whereas the EC-BA is to survey the characteristics of each industry in detail including accounting matters.

Communication Technology (ICT), we introduced, for the first time, an online survey as one of the responding options for all establishments and enterprises. This is an attempt to prevent unanswered items, which contributed to enhancing the convenience and reducing the burden on respondents. In this chapter, we will explain the efforts to enhance the quality of the 2016 EC-BA from the perspective of the survey method and aggregate procedure for the data, compared with that of the 2012 EC-BA[6].

3.1 Efforts to enhance the quality of the survey method

There are two survey methods of the EC-BA which are the survey by enumerators and by direct mailing. The "survey by enumerators" in which enumerators appointed by the prefectural governor survey the establishments covers single-unit establishments (except for the category of "Pure holding companies," "Real estate-related fund management companies" and "Establishments with capital stock of 100 million yen or more") and new establishments. The "survey by direct mailing" in which MIC[7] or METI[8], Prefectural government and Municipalities survey the establishments covers enterprises with branches and single-unit establishments (in the category of "Pure holding companies," "Real estate-related fund management companies" and "Establishments with capital stock of 100 million yen or more"). Also, for enterprises not responded, MIC or METI, Prefectural government and Municipalities carried out reminder works based on their respective roles. We conducted the following as efforts to enhance the quality.

3.1.1 Coverage of survey by enumerators and by direct mailing

In the 2016 EC-BA, "Real estate-related fund management companies" and "Single-unit establishments with capital stock of 100 million yen or more" were changed to the survey directly by MIC and METI. This is because it is difficult to survey these companies in the survey by enumerators.[9]

3.1.2 Distribution of Questionnaires

As for distribution of questionnaires, enumerators distribute questionnaires to the establishments on the survey by enumerators. Then, in principle, they asked each establishment to prepare a response and submit it by the internet. Also, if the survey objects wished to submit by paper, the enumerators directly collected the answered paper questionnaires. In the survey by direct mailing, we conducted it with private enterprises contracted by government. They distributed questionnaires to head offices by mail because the responses were filled out at head offices, including branches, and collected it by the internet or mail. At

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[6] We compared with the 2012 EC-BA because there are differences in items and the survey objects between the EC-BF and the EC-BA. Also, in the EC-BA, the industrial classification is subdivided, compared with the EC-BF.

[7] Ministry of Internal Affairs and Communications

[8] Ministry of Economy, Trade and Industry

[9] In these companies, security is often rigid, such as refused visiting without making an appointment in advance. As for the "Real estate-related fund management companies," in many cases, the operating office is also engaged in real estate projects. For this reason, since the establishment of the real estate business is often opened in one section of the building of the head office, security is similarly rigid.

this time, there are not a few enterprises that responded on both the internet and by mail. In this case, we adopted the better responses as the answers. We tried to reduce the burden on respondents and to enhance the convenience by introducing an online survey as one of the responding options for all establishments and enterprises from the 2016 EC-BA.
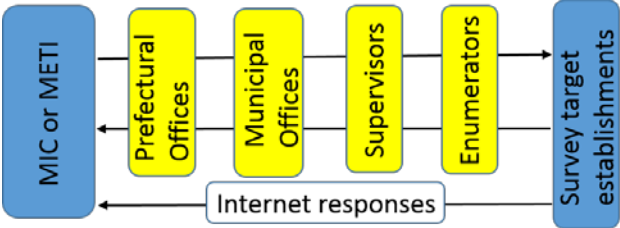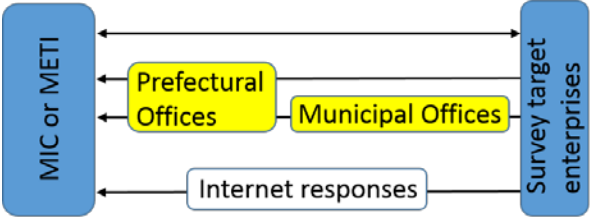
Figure 1: Survey by enumerators   Figure 2: Survey by direct mailing

3.1.3 Questionnaire

On the questionnaires, we attempted to reduce the burden on respondents by preparing a questionnaire dedicated to individual proprietorships which includes simplified survey items[10] in order to raise the collection rate of small-scale establishments from the viewpoint of advanced development of the population information. Also, we prepared questionnaires on nonprofit organizations (Political, Business and Cultural Organization, Religion) from the viewpoint of reducing the burden on respondents and conducting smooth survey. As for "Construction," "Service industries A" and "School education," we integrated these questionnaires because we do not grasp sales by each establishment in those industries. In addition, we reduced the burden on respondents by preprinting on the questionnaires the contents of items that are unlikely to be changed such as type of management organization, account closing month and so on, using the information obtained from the previous survey. When changes in preprint contents occurred, they were erased with double lines and corrected by the survey objects.

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[10] We deleted the survey items except for common items across all industries and items necessary to determine detailed industrial classification.

Table 2: Main changes in EC-BA

	2012 EC-BA	2016 EC-BA
Coverage of Survey	1. Survey by enumerators：Single-unit establishments（except for "Pure holding companies" and "Manufacturing establishments of a certain size or more") and New establishments 2. Survey by direct mailing：Enterprises with branches and Single-unit establishments ("Pure holding companies" and "Manufacturing establishments of a certain size or more")	1. Survey by enumerators：Single-unit establishments（except for "Pure holding companies," *"Real estate-related fund management companies" and "Establishments with capital stock of 100 million yen or more"*) and New establishments 2. Survey by direct mailing：Enterprises with branches and Single-unit establishments ("Pure holding companies," *"Real estate-related fund management companies" and "Establishments with capital stock of 100 million yen or more"*)
Online Survey	Not apply to the "survey by enumerators"	*Apply to the "survey by enumerators"* *Online response was possible at all establishments*
Type of Questionnaire	1. Survey by enumerators 【01】Single-unit establishment（Agriculture, Forestry, Fisheries ） 【02】Single-unit establishment（Mining, Quarrying, Stone and gravel) 【03】Single-unit establishment（Manufacturing) 【04】Single-unit establishment（Wholesale, Retail trade）(for individual proprietorships) 【05】Single-unit establishment（Wholesale, Retail trade）(for corporations or organizations) 【06】Single-unit establishment（Medical, Health care, Welfare) 【07】Single-unit establishment（School education) 【08】Single-unit establishment（Construction, Service industries A) 【09】Single-unit establishment（Cooperative association) 【10】Single-unit establishment（Service industries B）(for individual proprietorships) 【11】Single-unit establishment（Service industries B）(for corporations or organizations) 【12】Common across all industries (for new establishments and industry unknown) 2. Survey by direct mailing 【13】Enterprise 【14】Enterprise（School education) 【15】Enterprise（Construction, Service industries A) 【16】Establishment（Agriculture, Forestry, Fisheries) 【17】Establishment（Mining, Quarrying, Stone and gravel) 【18】Establishment（Manufacturing) 【19】Establishment（Wholesale, Retail trade) 【20】Establishment（Medical, Health care, Welfare) 【21】Establishment（School education) 【22】Establishment（Construction, Service industries A) 【23】Establishment（Cooperative association) 【24】Establishment（Service industries B)	1. Survey by enumerators 【01】*Individual proprietorship* 【02】Single-unit establishment（Agriculture, Forestry, Fisheries ） 【03】Single-unit establishment（Mining, Quarrying, Stone and gravel) 【04】Single-unit establishment（Manufacturing) 【05】Single-unit establishment（Wholesale, Retail trade) 【06】Single-unit establishment（Medical, Health care, Welfare) 【07】*Single-unit establishment (Construction, Service industries A, School education)* 【08】Single-unit establishment（Cooperative association) 【09】Single-unit establishment（Service industries B) 【10】*Single-unit establishment (Political, Business and Cultural Organization, Religion)* 【11】Common across all industries (for new establishments and industry unknown) 2. Survey by direct mailing 【12】Enterprise 【13】*Enterprise (Construction, Service industries A, School education)* 【14】*Organization (Political, Business and Cultural Organization, Religion)* 【15】Establishment（Agriculture, Forestry, Fisheries) 【16】Establishment（Mining, Quarrying, Stone and gravel) 【17】Establishment（Manufacturing) 【18】Establishment（Wholesale, Retail trade) 【19】Establishment（Medical, Health care, Welfare) 【20】*Establishment (Construction, Service industries A, School education)* 【21】Establishment（Cooperative association) 【22】Establishment（Service industries B) 【23】*Establishment (Political, Business and Cultural Organization, Religion)* ☆*Questionnaires that should be integrated were integrated. Moreover, questionnaires about "Individual proprietorship" and "Political, Business and Cultural Organization, Religion" were newly added.*
Preprint	・Name ・Phone number ・Address ・Main business contents ・Establishment date	・Name ・Phone number ・Address ・Main business contents ・Establishment date ・*Type of management organization* ・*Single-unit establishment, Head or Branch establishment* ・*Account closing month*

* Service industries A: Of the service-relarted industries, industries that grasped sales by enterprise unit

* Service industries B: Of the service-relarted industries, industries that grasped sales by establishment unit

3.2 Efforts to enhance the quality of the aggregate procedure for the data

The Economic Census is a complete survey aggregating about six million data, so non-sampled errors such as blank items on the questionnaires could have a significant impact on the result. In the EC-BA, high accuracy is required for the aggregation of the accounting items, but items not filled in will inevitably occur, even though obtaining answers from survey objects is the top priority. If we cannot

receive answers from the important enterprises with high sales, the results on sales will be underestimated. In particular, the influence when setting the area and industrial classification in detail is great. Therefore, in the 2016 EC-BA, the imputation or the confirmation was carried out as follows to grasp precisely the economic structure and scale in Japan regarding questionnaires not submitted and unanswered items.

3.2.1 Questionnaires not submitted

On the results of the survey by enumerators, in the case of questionnaires not being submitted from the establishments, we imputed name and address based on information of the list of establishments updated by enumerators.

3.2.2 Unanswered items

In the case of the missing values of main accounting items ("sales," "total expenses" and "total wages and salaries"), we imputed based on the cold-deck method, using values obtained from the 2012 EC-BA, the 2014 EC-BF[11] and the information on the internet of the respondents. After performing these imputations, we calculated the ratio of "sales" and "total expenses," "total expenses" and "total wages and salaries" by the divisions (industrial classification, management organization and number of regular employees) in which data were obtained from the 2012 EC-BA. And then we estimated the unanswered items by multiplying the ratio by the accounting item imputed by the cold-deck method. Even if any part of "sales," "total expenses" or "total wages and salaries" was missing, it was performed with the same procedure. In the 2012 EC-BA, when accounting items were surveyed for the first time, we could not acquire past information[12] for the imputation based on the cold-deck method.

Table 3: Imputation method of the missing values related to the accounting items in the EC-BA

	2012 EC-BA	2016 EC-BA
Cold-deck imputation	Nothing	Imputation by making use of the 2012 EC-BA, the 2014 EC-BF and the public information on the respondents.
Ratio imputation	As for the 2012 EC-BA, by industrial classification and management organization, we calculated the ratio of "sales" and "total expenses," "total expenses" and "total wages and salaries" using the values of answered questionnaires in this survey, and then estimated multiplying it by the answered values.	As for the 2016 EC-BA, by industrial classification, management organization and number of regular employees, we calculated the ratio of "sales" and "total expenses," "total expenses" and "total wages and salaries" using that of 2012, and then estimated multiplying it by the answered values. In addition, we used the method of "Classification And Reguression Tree" for division and "Interative Reweighted Least Squares" for the ratio.

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[11] It is impossible to impute "total expenses" and "total wages and salaries" by using the 2014 EC-BF because the survey does not include the data on these. Only sales are possible.

[12] In the 2012 EC-BA, regarding industrial classification and employees, we performed imputation by the cold-deck method because we had obtained the past information which was the 2009 EC-BF.

3.2.3 The confirmation by the administrative data sources, the corporate website and the calling to the survey objects

In the 2016 EC-BA, when there were the missing values such as items not filled in and the order errors such as the value's order being different from the past information (the 2012 EC-BA and the 2014 EC-BF), we confirmed by the administrative data sources, the corporate website and calling to the survey objects as follows.

3.2.3.1 EDINET

The administrative data source related to enterprises that is the most popular in Japan is EDINET (Electronic Disclosure for Investors' NETwork). EDINET is an "Electronic disclosure system relating to disclosure documents such as securities reports based on the Financial Instruments and Exchange Act" managed by the Financial Services Agency. It is a system developed for digitalizing a series of procedures from submission to public inspection with respect to disclosure documents such as securities reports on which financial statements, etc. are listed. The general public can also browse it.

3.2.3.2 Corporate Website

Recently, enterprises are introducing themselves on websites for public relations, so we can see their financial statements and securities reports there. In listed enterprises that shares their stocks, a securities report is obliged to be submitted to the Financial Services Agency after the end of each business year, so we can see it. In unlisted enterprises, though it is sometimes possible to confirm the accounting items such as sales on their website, in most cases, we will call the enterprises and confirm it.

The securities report is useful as a standard for checking accounting items, though there is no mention of the sales and number of employees for each branch establishment. Also, Regulation on Financial Statements, etc.[13], which are the rules for the enterprises writing financial statements, is described only as "in millions of yen or thousand yen" for units of monetary amounts, so the order of sales entered in the securities report is not unified in each enterprise and requires attention when our confirming. In the case of enterprises for which we found out only the total sales by the information from the corporate website and the securities report in non-network type industries[14], we prorated the total sales divided proportionally by the number of persons working at each their branch establishment in order to estimate sales of each branch establishment.

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[13] "Regulation on the Terminology, Forms, and Preparation Methods of Financial Statements (Law number: Ministry of Finance Order No. 59 of 1963)"
  Article 10-3 The amounts for the account titles and any other matters contained in Financial Statements are to be presented in units of million yen or thousand yen.
[14] Network type industries mean that we cannot grasp the sales on each establishment. That is why, in these industries, we do not show sales by establishment except for single-unit establishments. In Japan, the Network type industries include "Construction," "Electricity, Gas, Heat Supply and Water," "Transport and Postal Services," "Finance and Insurance," "Communications," "Broadcasting," "Video Picture Information, Sound Information, Character Information, Production and Distribution," "School Education," "Postal Services," "Political, Business and Cultural Organizations" and "Religion." Non-network type industries mean something except these.

3.2.3.3 Calling to the survey objects

When the value of the establishment was not able to be confirmed by the above, we called the survey object directly. The main reactions of the survey objects at that time were: 1. They responded after acknowledging the deficiencies of their answers, 2. They responded after confirming whether we actually conducted the Economic Census, and 3. They did not respond from the viewpoint of the protection of their information. For the enterprises that answered 2, many of them did not recognize that the Economic Census was an important survey whose answers are required by law. For the enterprises that answered 3, we persistently explained to them the purpose, significance and importance of the Economic Census. Also, surveyors are obliged to protect the survey information, and if there is any offender, penalties for that person are also set up. In addition, as for whether information management is thorough, we explained there has been no information leakage and urged them to answer. Still, when they refused to answer, we explained that this survey is covered by the reporting obligation on the Statistics Act, so if refusing the report or making a false report, there is a penalty that it is punishable with a fine of 500 thousand yen or less.

3.3 Treatment of consumption tax

In Japan, the consumption tax was raised from 5% to 8% on April 1, 2014, for the first time in 17 years. That is why, when compared with the results of the EC-BA (2012 and 2016), it is necessary to consider the influence of consumption tax. Also, in the 2012 EC-BA, the answers filled in by survey objects were aggregated as it was, regardless of whether the consumption tax was included or not[15]. In the 2016 EC-BA, "Guidelines about the handling of the consumption tax relating to sales" were formulated based on the matters pointed out[16] from the "Basic Plan concerning the development of official statistics (Cabinet Decision, March 25, 2014)." Therefore, we performed the aggregation of sales, etc. after the answers[17] excluded the consumption tax were changed to that included it.

4. The results of the efforts to enhance the quality

In the 2016 EC-BA, as mentioned above, we performed various efforts to enhance the quality. On June 28, 2018, we made public announcement of a final report related to the 2016 EC-BA. The results of the efforts to enhance the quality are as follows.

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[15] In principle, sales are to be filled in with consumption tax, but if it is difficult in terms of accounting process, it is also possible to be filled in without consumption tax.

[16] By the deliberation in the Statistical Commission, on the basis of trends related to raising the consumption tax rate, it was pointed out that there was a possibility that the statistical accuracy may be adversely affected if we made public announcement of the aggregate results mixing with and without the consumption tax.

[17] Regarding items on the questionnaires related to sales, it is possible to select whether including the consumption tax or not.

4.1 Response rate[18]

The response rate in the 2016 EC-BA was 89.0% in the survey by enumerators, rising by 1.3% points compared with that of 2012, and 92.1% in the survey by direct mailing, rising by 0.1% points. That of the survey by MIC or METI of the direct mailing was 96.3%, rising by 3.7% points. The rise in the response rate may be attributed to changing in the survey date. The survey date in the 2012 EC-BA was February 1, 2012, and it was just before due date of Final Return and account closing day, so there was a possibility that the enterprise side was too busy to fill out the questionnaires at that time. In the 2016 EC-BA, the survey date was June 1, 2016, and it was after the due date of Final Return and account closing day. Also, the great rise in the survey by MIC or METI may be attributed to sending the reminder widely to the large-scale enterprises.

Table 4: Response rates in the EC-BA

	2012 EC-BA	2016 EC-BA	Difference
Survey by enumerators	87.7%	89.0%	1.3%pt
Survey by direct mailing	92.0%	92.1%	0.1%pt
(of direct mailing) by MIC or METI	92.6%	96.3%	3.7%pt

4.2 Ratio of valid responses[19]

The ratio of valid responses in the 2016 EC-BA was 95.7% in the tabulation by the industrial classification, rising by 1.2% points compared with that of 2012, and 93.0% in the tabulation related to accounting matters, rising by 7.0% points. In particular, regarding the rise of 7.0% points in the tabulation related to accounting matters, it is thought that the influence by performing the cold-deck imputation from the past information was great.

Table 5: Ratios of valid responses in the EC-BA

	2012 EC-BA	2016 EC-BA	Difference
Tabulation by the industrial classification (Tabulation of establishments)	94.5%	95.7%	1.2%pt
Tabulation related to accounting matters (Tabulation of enterprises, etc)	86.0%	93.0%	7.0%pt

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[18] "Response rate" is calculated by the following:
Response rate (%) = Number of survey objects responded ÷ Number of survey objects × 100
"Number of survey objects" counted on all establishments grasped by enumerators at their survey area. Therefore, even when the industrial classification, etc. of the establishments are unknown, if the enumerators confirmed that the establishments were carrying out economic activities, they are included in the "Number of survey objects" (as the denominator of the calculation formula).
[19] In this paper, "valid responses" include imputed values. "Ratio of valid responses" is calculated by the following:
Ratio of valid responses (%) = Number of objects obtained valid responses ÷ Number of objects for aggregation × 100

4.3 Response rate by the internet[20]

The response rates by the internet in the 2016 EC-BA were 22.0% for the surveys both by enumerators and by direct mailing. In the survey by direct mailing, it was a rise of 13.9% points compared with that of 2012, due to accumulation of know-how from the previous survey and recommendation of responses by the internet.

Table 6: Response rates by the internet in the EC-BA

	2012 EC-BA	2016 EC-BA	Difference
Survey by enumerators	-	22.0%	-
Survey by direct mailing	8.1%	22.0%	13.9%pt

4.4 Ratio of establishments that did not respond industrial classification

In the 2016 EC-BA, the ratio of establishments that did not respond industrial classification was 4.3%, falling 1.2% points compared with that of 2012. This improvement is thought to be due to improved list of establishments by the continuous conducting of the Economic Census and due to improved convenience by introducing the online survey.

Table 7: Ratios of establishments that did not respond industrial classification in the EC-BA

	2012 EC-BA	2016 EC-BA	Difference
Tabulation of establishments	5.5%	4.3%	-1.2%pt

4.5 Influence on sales by imputation of the cold-deck method

By the final report in the 2016 EC-BA, sales in Japan were 1,625 trillion yen in 2015. Of which, sales imputed by the cold-deck method were 37 trillion yen. The ratio of the imputation by the cold-deck method to total sales was 2.3%.

Table 8: Percentage of imputation in sales in the 2016 EC-BA

	Sales (Trillion yen)	Imputation (Trillion yen)	Percentage of imputation in sales (%)
Tabulation of enterprises, etc.	1,625	37	2.3

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[20] "Response rate by the internet" is calculated by the following:
Response rate by the internet (%) = Number of survey objects responded by internet ÷ Number of survey objects responded × 100

5. For the next survey

The next EC-BA will be conducted in 2021. As a preliminary step, the EC-BF will be conducted in 2019 where we plan to conduct a survey drastically different from the conventional EC-BF. We call it the "New EC-BF." Originally, the EC-BA and the EC-BF have differed in character, and the EC-BF is a survey from the position of the maintenance of a list of establishments for the EC-BA. In the New EC-BF, making the position clearer, as one of the surveys to produce the economic structural statistics in the middle year of the EC-BA, we will survey the activity status (continued, new or closed establishments) of all establishments in Japan across all industries. Also, we are promoting the survey plan for the purpose of the development of the Business Register[21].

Under the circumstances, as the points of the survey plan in the New EC-BF, first of all, we put establishments derived from the "Corporation Number[22]" in the list of establishments. Up to now, establishments obtained from the "Commercial and Corporate Registration" and the "Labor Insurance" were additionally posted to the list in the previous survey results, and then the enumerators went to a field survey. From now on, in addition to establishments obtained from the Corporation Number, we try to cover all establishments throughout Japan in the New EC-BF.

Next, as to the efficiency of the survey method, we plan to perform 1. Leveling the survey period from 2 months to 10 months[23], 2. Continued establishments are confirmed only in terms of the activity status based on its appearance, etc., and newly grasping establishments where the questionnaires are distributed for the survey items other than activity status, 3. Use of the ICT in the survey area map and the list of establishments, and then aggregating all the information on the enumerator's tablet terminal.

As for the results of the New EC-BF, the Preliminary Reports will be published by the end of June 2020, and then the Final Reports by the end of December 2020.

On the other hand, the New EC-BF has the issue that the data are that of the 2016 EC-BA except for the newly grasped establishments because the questionnaires are distributed only to the newly grasped establishments. Therefore, these remained data will be updated by using the "Economic Conditions

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[21] The Economic Census is conducted by using the list of establishments from the Business Register.
[22] Based on the "Act on the Use of Numbers to Identify a Specific Individual in the Administrative Procedure" which took effect on May 24th, 2013, the National Tax Agency assigns a Corporate Number to each corporation, and after notifying the subject corporation, publishes the number with the trade name or name and address of head office or principal place of business. The Corporate Number is designated to: 1. Corporations which have been registered for incorporation under provisions of the Companies Act or other laws and regulations (corporations registered for incorporation); 2. National government organs; 3. Local public entities; and 4. Corporations other than those mentioned earlier (including foreign corporations) or associations or the like without juridical personality but with the duty to file and pay corporate and consumption taxes or to withhold income tax on salary and the like.
[23] The survey period (Jun. 2019 – Mar. 2020) is divided into five periods, and one period is two months. (See figure 3.)

Survey[24]" which is the economic structural statistics in the middle year of the EC-BA. Furthermore, by using the other statistics, we will try to publish the "Register Statistics" covering all industries at the same point in FY 2020.

Figure 3: Survey period in the New EC-BF

Survey Period	2019							2020		
	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
First Phase (Jun.-Jul.)	──────→									
Second Phase (Aug.-Sep.)			──────→							
Third Phase (Oct.-Nov.)					──────→					
Fourth Phase (Dec.-Jan.)							──────→			
Fifth Phase (Feb.-Mar.)									──────→	

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[24] The "Economic Conditions Survey (provisional name)" is aimed at clarifying the structure of value added, etc. of "Manufacturing" and "Service industries" and producing the economic structure statistics in the middle years of the EC-BA, provided for improving the accuracy of "System of National Accounts," and will be started from 2019. However, they are not subject to "Agriculture, Forestry, Fisheries," "Mining, Quarrying, Stone and gravel" and "Construction." That is why, in order to update these data, it is necessary to adopt a method such as using other statistics, etc. We are now considering it for the public announcement of the "Register Statistics" in FY 2020.