Analysis of credit guaranteed borrowers amid the COVID-19 pandemic

(Summary)

This paper attempts to reveal the characteristics and trends of borrowing covered by the Credit Guarantee System amid the COVID-19 pandemic, using anonymized data of the financial statements and credit profiles of corporate borrowers obtained from 62 member banks of the Regional Banks Association of Japan. The analysis suggests that prompt funding support using the Credit Guarantee System in times of emergency may have contributed to business continuation until corporate earnings were on a recovery track and to mitigating sharp deterioration of borrower classification. However, continuous analyses from various perspectives are necessary to further elucidate the effects of credit guaranteed borrowing while taking into account the repayment status of effectively interest-free and unsecured loans (so-called "zero-zero loans").

I. Introduction

The purpose of the Credit Guarantee System is to facilitate financing for small and medium-sized enterprises (SMEs) by having Credit Guarantee Corporations provide debt guarantees to SMEs when they borrow from financial institutions. The system has been used by private financial institutions to extend effectively interest-free and unsecured loans[1] during the COVID-19 pandemic, thereby supporting business operators' funding amid economic instability. Against this backdrop, SMEs' reliance on loans guaranteed under the Credit Guarantee System ("credit guaranteed loans") has increased in recent years, making it increasingly important to identify and analyze trends in credit guaranteed loans in order to assess trends in the financial system as a whole.

In this paper, the period from April 2020 to March 2021 is defined as the height of the COVID-19 pandemic, and firms who borrowed credit guaranteed loans during this period ("credit guaranteed borrowers") are analyzed in order to help assess the impact and the effectiveness of rapid liquidity

[1] https://www.meti.go.jp/press/2020/05/20200501008/20200501008.html

support provided in times of emergency. Specifically, using anonymized data of the financial statements and credit profiles of corporate borrowers obtained from 62 member banks of the Regional Banks Association of Japan ("regional banks"), credit guaranteed borrowers, who had business relationships with the banks as of March 2021, are classified into two categories, i.e., borrowers who had business relationships with the banks before March 2020 ("existing borrowers") and those who started business relationships with the banks after April 2020 ("new borrowers"), and their corporate attributes and sales trends are observed.[2] In addition, the comparison between credit guaranteed borrowers and borrowers who had not borrowed credit guarantee loans during the period (“other borrowers”) are examined to assess the impact of credit guaranteed loans on borrower classification.

II. Characteristics of credit guaranteed borrowers

Figures 1 and 2 show the proportion of credit guaranteed borrowers (existing borrowers and new borrowers) by their industry and size (amount of capital). These figures indicate that, among new borrowers, the proportion of service industry is high in terms of the industries, while the proportion of small firms is high in terms of size. Looking at the breakdown of the service industry, the proportion of the food and restaurant industry is relatively high. It suggests that, among firms that have not had transactional relationships with regional banks in the past, small firms in the food and restaurant industry in particular have received credit guaranteed loans during the COVID-19 pandemic.

[2]The number of existing borrowers in the sample is 214,389, and the number of new borrowers in the sample is 53,754.

Figure 1: Industry composition

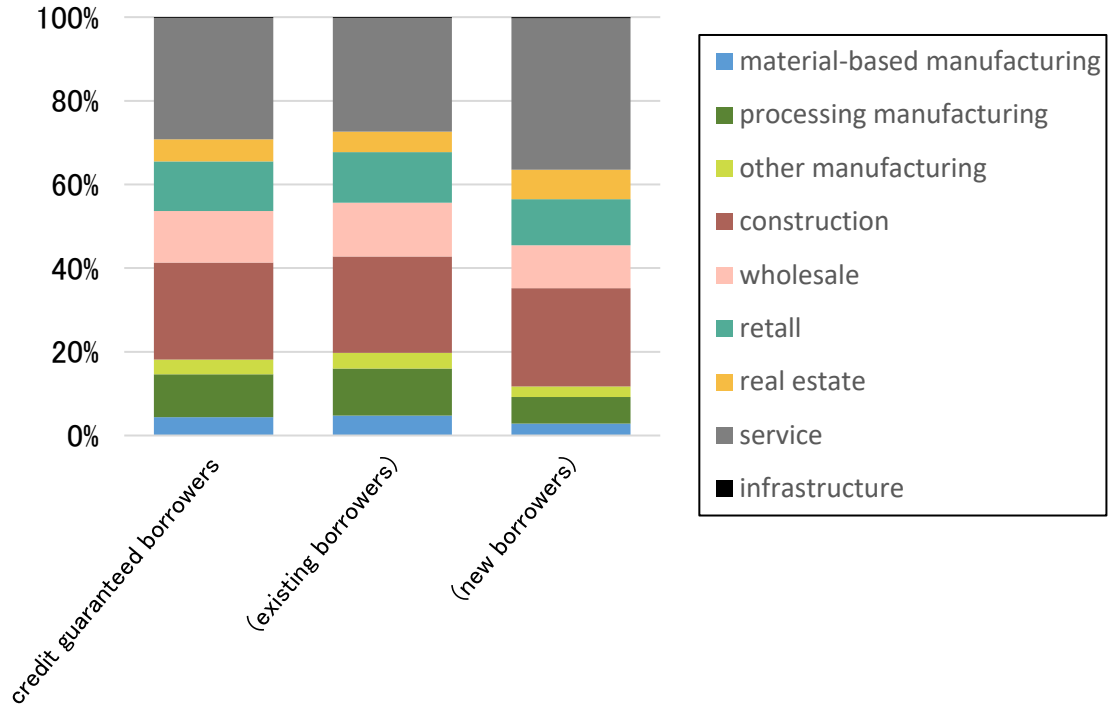


Figure 2: Size Composition (Amount of stated capital)

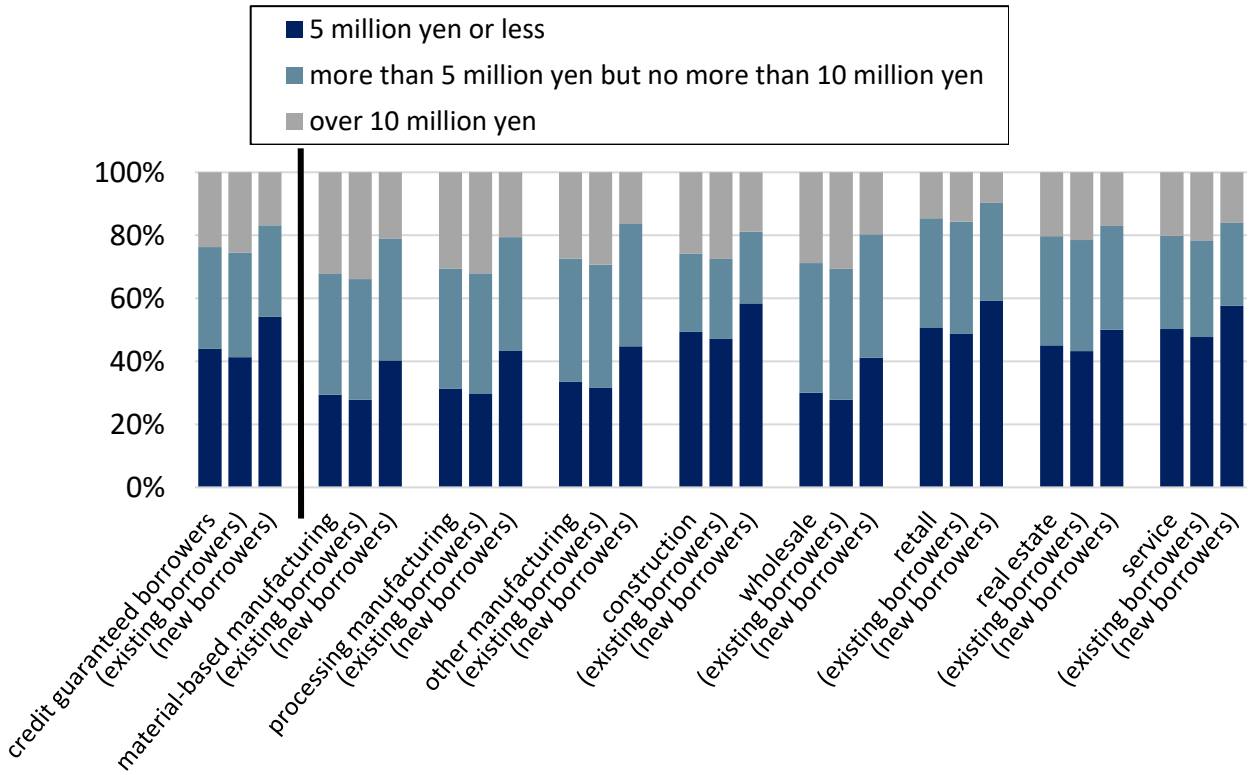
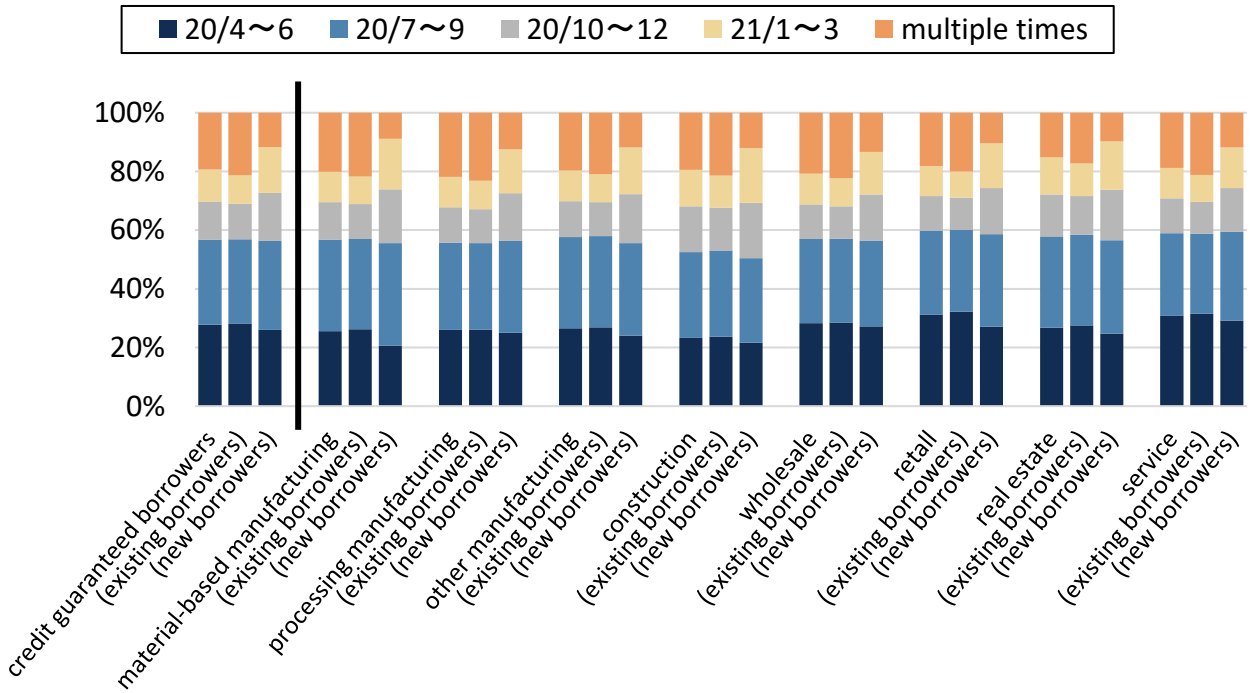


Figure 3 shows the timing of credit guaranteed loans by industry during the height of the COVID-19 pandemic, broken down into four sub-periods. A comparison between existing borrowers and new borrowers reveals that a high proportion of existing borrowers borrowed multiple times during the period, while a high proportion of new borrowers borrowed during the second half of the period (from October 2020 to March 2021). A closer look at existing borrowers who borrowed multiple times reveals that a high proportion of them took out their first credit guaranteed loan during the first half of the period (from April to September 2020) and took another credit guaranteed loan during the last quarter period (from January to March 2021).

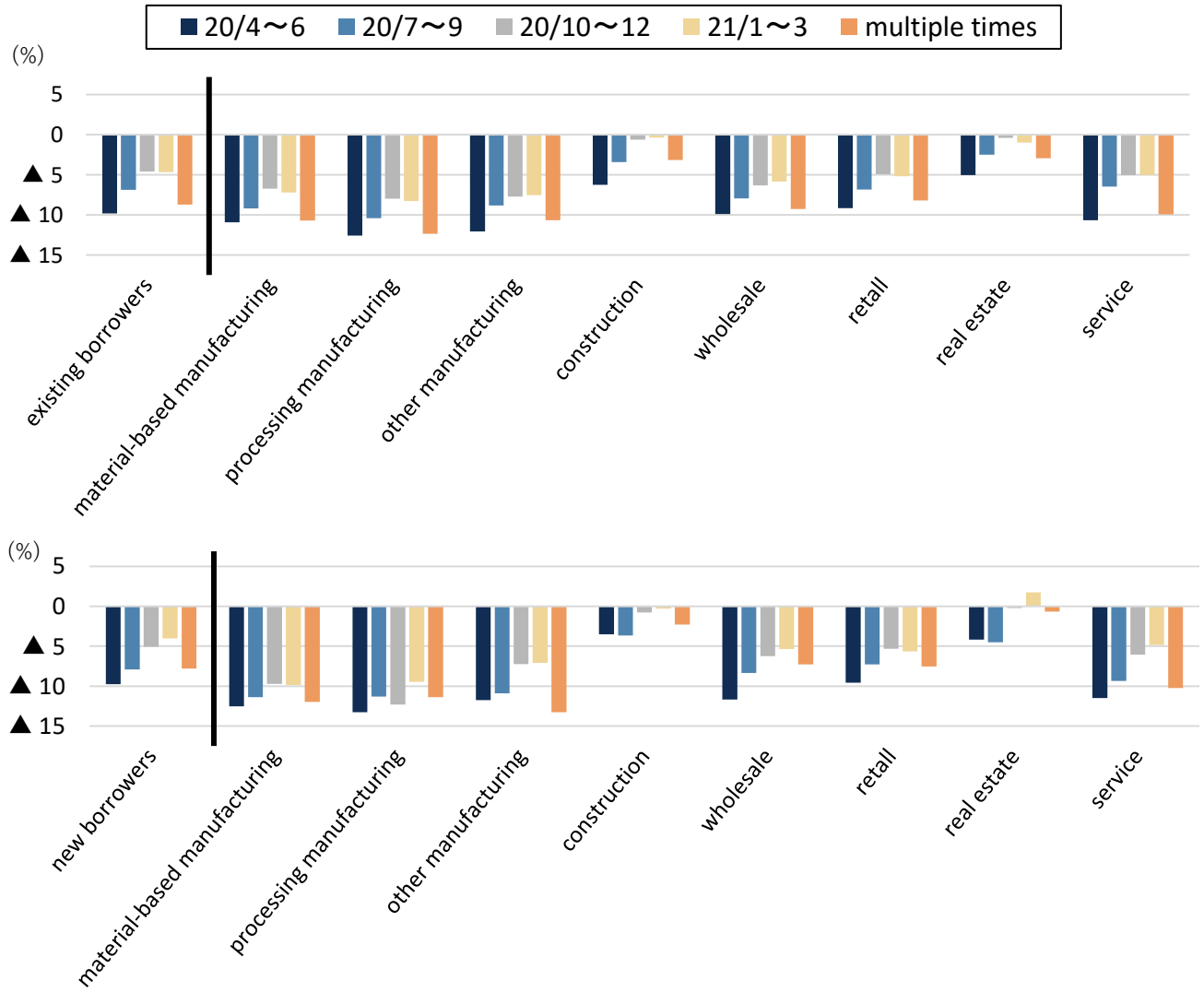
Figure 4 shows the year-on-year change in the current period sales rate (median) reported as of the end March 2021[3] by borrowing period and by industry. By borrowing period, the rate of change in the current period sales decreased significantly for borrowers who took loans in the first half of the period (from April to September 2020) or who used multiple credit guaranteed loans. By industry, the rate of change in the manufacturing sector has shown a significant decrease, while the rate of change in the construction and real estate sectors has shown a slight decrease.

Figure 3: Timing of credit guaranteed loans



[3]The latest current period sales data available in end-March 2021 reporting is used.

Figure 4: Rate of change (YoY) in the current period sales reported as of March 31, 2021
(median; top: existing borrowers, bottom: new borrowers)



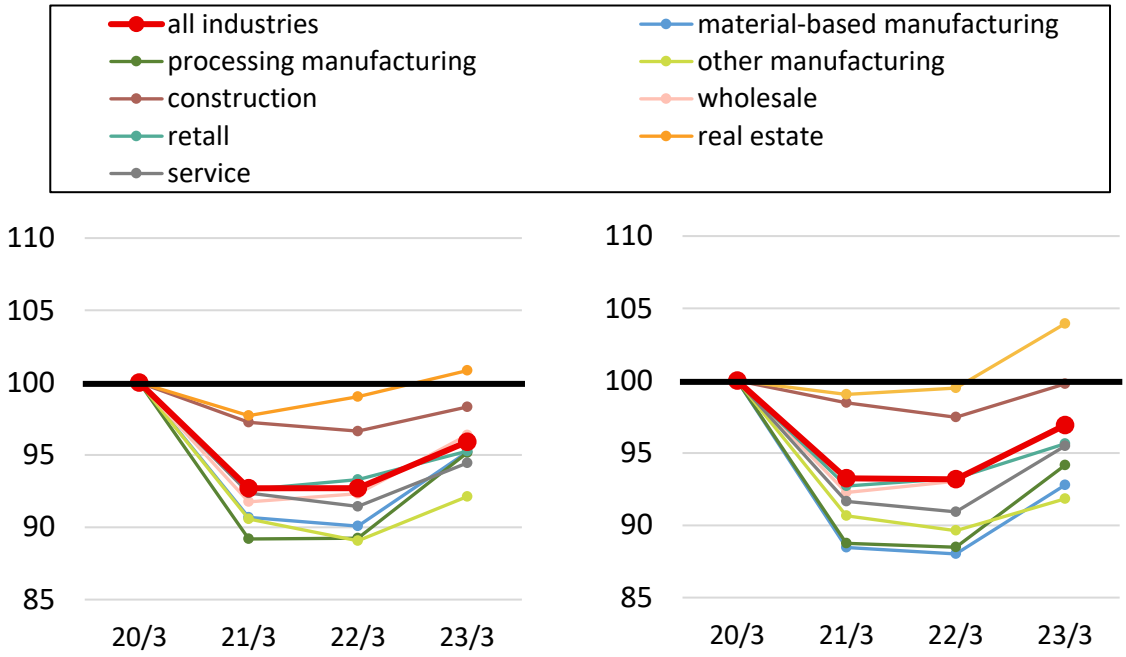
The above figures indicate that existing borrowers, who already had relationships with the regional banks, could consult the regional banks regarding working capital soon after the COVID-19 pandemic, making it easier for them to receive funding support in the form of effectively interest-free and unsecured loans. It is likely that those most affected by the COVID-19 pandemic were those that had borrowed multiple times, suggesting that these firms may have borrowed again before the application deadline for the effectively interest-free and unsecured loans at the end of March 2021. On the other hand, the proportion of new borrowers that had borrowed multiple times was smaller than that of

existing borrowers, while the proportion of new borrowers that had borrowed during the first half of the period was the same as that of the existing borrowers. In addition, the proportion of new borrowers that had borrowed during the second half of the period was larger, although the decrease in the current period sales rate (YoY) was comparatively small at the period. These suggest that, in light of the uncertain COVID-19 environment, a considerable number of new borrowers may have borrowed as a precautionary motivation in the second half of the period, immediately before the end of effectively interest-free and unsecured loans, while others who had hesitated to accept debt may have not borrowed until the second half of the period even though their performance deteriorated.

III. Trend in sales of credit guaranteed borrowers

Next, the effects of funding support provided by credit guaranteed loans during the height of the COVID-19 pandemic were examined by looking at the trends in sales of credit guaranteed borrowers. Figure 5 shows the trend of the current period sales (median) where the amount as of March 2020 (before the COVID-19 pandemic) is adjusted to 100. According to this figure, the current period sales decreased significantly in March 2021 as a whole, but the decline stopped in March 2022, and there are signs of recovery at the end of March 2023. This indicates that credit guaranteed loans during the height of the COVID-19 pandemic may have contributed to the business continuation until their sales return to a recovery track. On the other hand, looking at each sector, although the real estate sector had a limited impact from the COVID-19 pandemic and achieved recovery above pre-COVID-19 level at the end of March 2023, many other sectors did not recover to pre-COVID-19 levels. It suggests that a considerable number of borrowers are still in a severe condition due to external factors, such as geopolitical risks, labor shortages, soaring raw material costs, in addition to the prolonged impact of the COVID-19 pandemic.

Figure 5: Trend of the current period sales
(median, end of March 2020 = 100; left: existing borrowers, right: new borrowers)



IV. Impact on borrower classification

Finally, trends in borrower classifications of the credit guaranteed borrowers and other borrowers[4] are examined. The proportion of borrowers rated as "special attention" or higher ("normal," "needs attention," or "special attention"; hereafter defined as the "proportion of general borrowers") at the end of each March from 2020 to 2023 is used as an indicator.[5]

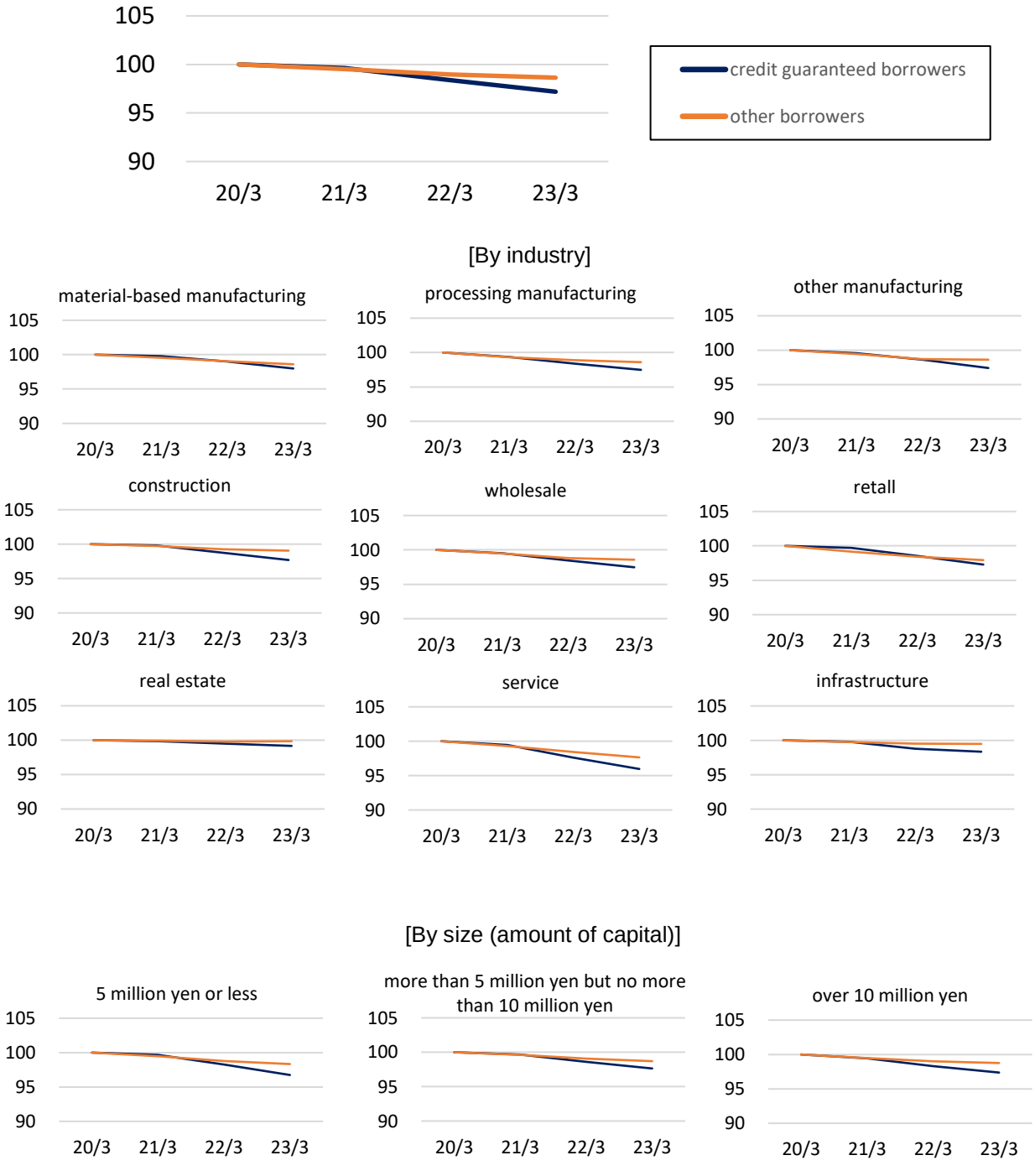
Figure 6 shows the trend of the proportion of general borrowers for both credit guaranteed borrowers and other borrowers by industry and size, where the ratio at the end of March 2020 is adjusted to 100. According to this figure, the proportion of general borrowers for credit guaranteed borrowers, which have presumably been strongly affected by COVID-19, remained at the same level as that of other borrowers at the end of March 2021. This trend is also observed in each industry and

[4]The number of borrowers that had business relationships with banks as of the end of March 2021 but did not borrow on credit guarantees during the COVID-19 pandemic (sample size: 357,033).

[5]The data obtained from regional banks used in this analysis classifies borrowers into six categories: "normal," "needs attention," "needs management," "in danger of default," "substantial default," and "default." The borrower categories used in this analysis use the same classification.

size, indicating that the rapid decrease in the proportion of general borrowers was not widespread in March 2021. On the other hand, as the impact of COVID-19 prolongs, the proportion of general borrowers as a whole has gradually decreased since the end of March 2022. Moreover, the decrease in the proportion of general borrowers to all credit guaranteed borrowers has been larger than that of other borrowers.

Figure 6: Trends of proportion of general borrowers (end of March, 2020 = 100)



To statistically examine the trends shown in Figure 6, an analysis on the impact of credit guaranteed loans on borrower classification is conducted. Specifically, the following logit model is used to estimate the aforementioned impact for the following three estimation periods: from the end of March 2020 to the end of March 2021, from the end of March 2021 to the end of March 2022, and from the end of March 2022 to the end of March 2023, while controlling corporate attributes and industry types.

$$log\frac{p_{i,t}}{1-p_{i,t}} = \beta_{0,t} + \beta_{1,t}Hosho\ Dummy_{i,t} + \beta_{2,t}Sales_{i,t} + \beta_{3,t}Equity\ Ratio_{i,t} + \beta_{4,t}Industry_{i,t} + \epsilon_{i,t}$$

The dependent variable $p_{i,t}$ denotes the probability that firm i's borrower classification is changed from "special attention" or higher at the beginning of each estimation period t to "in danger of bankruptcy" or lower at the end. The probability that a firm i's borrower classification stays at the same level is $(1-p_{i,t})$. The explanatory variable $Hosho\ Dummy_{i,t}$ is a binary variable where "1" indicates credit guaranteed borrowers and "0" indicates other borrowers at time t. In addition, the natural logarithm of the current period sales at the end of each fiscal year $Sales_{i,t}$, capital ratio[6] at the end of each period $Equity\ Ratio_{i,t}$, and industry dummies $Industry_{i,t}$ are used as control variables for corporate attributes and industry types. The coverage of the borrowers consists of those whose data are available as of the end of March 2021, however, for some borrowers who started transactions between April 2020 and March 2021, data as of end March 2020 is not available. To fill in this data gap, it is assumed that all borrowers who do not have data as of end March 2020 are classified as “special attention" or higher.[7]

Table 7 shows the estimation results of the above logit model for each estimation period. Statistically significant positive correlations for $Hosho\ Dummy_{i,t}$ are observed for the two periods: from the end of March 2021 to the end of March 2022, and from the end of March 2022 to the end of March 2023, indicating that the proportion of general borrowers to all credit guaranteed borrowers is lower in a statistically significant manner than that of other borrowers in these two periods, as can be seen in Figure 6. On the other hand, the estimated value for $Hosho\ Dummy_{i,t}$ from the end of March 2020 to the end of March 2021 is negative with statistical significance, despite the fact that Figure 6 shows the same level of proportion of general borrowers for both clusters. However, some samples from this estimation period may have been affected by the aforementioned assumption due to the data gap,

[6]Net worth divided by total asset (times 100).

[7]In general, it is not likely that banks start new transactions with the corporations that are classified as “in danger of default”,

and thus it would be appropriate to consider the results as reference values.

In addition, with regard to this logit model, there is a possibility of an endogeneity problem that firms that applied for credit guaranteed loans had difficulties in their financial soundness compared with firms that did not apply for those loans, which may lead to the deterioration of borrower classification. Therefore, it should be noted that it is appropriate to handle the results of this analysis as a statistical examination of the changes shown in Figure 6. Addressing the endogeneity problem remains as a future consideration.

Table 7: Results of logit estimation

estimation periods		20/3-21/3				21/3-22/3				22/3-23/3			
		Coefficient	Std.Error	z		Coefficient	Std.Error	z		Coefficient	Std.Error	z	
Constant		-3.78	0.19	-19.70	***	-3.79	0.18	-20.92	***	-4.26	0.21	-20.04	***
Credit guaranteed Dummy		-0.27	0.03	-8.72	***	0.20	0.03	7.20	***	0.35	0.03	11.23	***
Sales		-0.04	0.01	-4.37	***	-0.04	0.01	-5.15	***	-0.03	0.01	-2.74	**
Equity Ratio		-0.01	0.00	-59.72	***	-0.01	0.00	-68.87	***	-0.01	0.00	-59.39	***
Industry	*material-based manufacturing*	-0.17	0.11	-1.61		-0.15	0.10	-1.52		0.03	0.11	0.32	
	processing manufacturing	0.13	0.09	1.52		0.03	0.08	0.38		0.06	0.09	0.66	
	construction	-0.20	0.09	-2.38	*	-0.09	0.08	-1.19		0.06	0.09	0.65	
	wholesale	0.19	0.87	2.15	*	0.05	0.08	0.56		0.17	0.09	1.87	
	retall	0.03	0.09	0.34		0.00	0.08	0.01		0.08	0.09	0.82	
	real estate	-1.26	0.11	-11.42	***	-1.18	0.10	-11.32	***	-1.30	0.12	-10.53	***
	service	0.14	0.08	1.78		0.27	0.08	3.55	***	0.35	0.09	4.16	***
	infrastructure	-1.04	0.26	-3.95	***	-1.02	0.27	-3.79	***	-1.36	0.39	-3.52	***

***,** and * indicate significance at the 0.1%,1%,5% levels

Furthermore, there are other points to note when interpreting the graphs and estimation formulas shown in this paper. For example, during the COVID-19 pandemic, the FSA announced that the borrower classification could be maintained for borrowers who had been deemed normal before the pandemic based on the financial institutions' discretion.[8] However, the impact of this announcement has not been taken into account in this analysis. Moreover, due to data limitations, it is difficult to detect the cause of the changes in the sample size of the borrowers, i.e., whether the sample size changes come from bankruptcy or repayment is uncertain, which may have a non-negligible impact on the estimation. Therefore, the results of this analysis should be interpreted with caution.

[8]Financial Services Agency, "Cash Flow Support in Light of the Decision on the Second Supplementary Budget for Fiscal 2020 (Request)" (Japanese Only)
https://www.fsa.go.jp/news/r1/ginkou/20200527_2yousei.html

V. Conclusion

In this analysis, the characteristics and trends of credit guaranteed loans by regional banks amid the COVID-19 pandemic were identified, and the impact of such loans on borrower classification was analyzed by comparing this impact with that of firms that have not applied for credit guaranteed loans. The results suggest that swift and large-scale liquidity support using the Credit Guarantee System during the COVID-19 pandemic may have contributed to firms' business continuity until sales are on a recovery track and preventing a sharp deterioration in borrower classification. On the other hand, there has been only a limited proportion of firms whose sales have recovered to pre-COVID-19 levels and borrower classification has been deteriorating, albeit moderately. With these in mind, further analyses need to be conducted from various perspectives to examine the impact of credit guaranteed loans during the COVID-19 pandemic, while the repayment of effectively interest-free and unsecured loans will proceed.