FSA Analytical Notes

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Loans Extended to Newly-founded Companies

(Summary)

This paper analyzes the status of newly-founded companies and loans extended to them using bank lending detail data collected by the Common Data Platform and corporate information data. The analysis confirms a positive correlation between newly-founded rates and the proportion of the working-age population. It also reveals that loans to newly-founded companies are primarily directed toward Tokyo-based entities and the real estate sector, while regional urban centers such as Fukuoka also exhibit relatively strong lending activity. After controlling for industry type and financial characteristics—while the analysis may be subject to selection bias and other limitations—it was found that being a newly-founded company does not significantly affect loan conditions such as interest rates or loan maturity.

I. Introduction

Since the FSA launched of the Common Data Platform[1] (hereinafter referred to as “Common DP”) in phases, the FSA has been analyzing banks' lending practices from a various perspectives, such as geographic locations and financial conditions of borrowers. This paper focuses on the incorporation date of companies to examine the recent trends of newly-founded companies and attributes of loans of which terms were extended by banks[2]. The detailed dataset of the loans used in this analysis reflects the status as of September 30, 2023. Identification of newly-founded companies[3] relies on the corporate information published on the National Tax Agency’s corporate number portal (hereinafter referred to as “NTA Corporate Number Information”).

[1] For more information on Common DP, see the FSA ”Progress in Common Data Platform and Next Steps.”
[2] Banks in this analysis includes major banks and regional banks. “Major banks” in this report refers to 9 banks: Mizuho Bank (including Mizuho Trust & Banking), MUFG bank, SMBC, Sumitomo Mitsui Trust Bank, Resona Bank, Aozora Bank, and SBI Shinsei Bank. In addition, “regional banks” refers to regional bank I and regional bank II, where “regional bank I” refers to Saitama Resona Bank and members of the Association of Regional Banks and “regional banks II” refers to members of the Second Association of Regional Banks.
[3] To focus the analysis on domestic corporations outside the public sector, entities such as national and local governments, foreign companies, and unincorporated associations are excluded. Specifically, only corporations classified under the “300” series in the corporate number information are included in the analysis. Sole proprietors are excluded.

In this report, Section 2 provides an overview of newly-founded companies based on publicly available information. Section 3 examines the characteristics of loans extended to newly-founded companies using loan detail data and related sources. Finally, Section 4 analyzes whether being a newly-founded company influences the loan conditions provided by regional banks.

This analysis may offer insights into bank-lending trends toward so-called startup companies. Readers should, however, note that the newly-founded companies in this paper include a wide variety of entities—not only startups but also firms established through large corporate investments or holding company restructurings, special- purpose vehicles (SPVs) set up via investment schemes, and sole proprietors who incorporated. Consequently, this study does not exclusively capture the establishment of so-called- startup enterprises due to the limitation of available dataset.

II. Overview of newly-founded companies

In this section, we analyze the status of newly-founded companies at both the national and prefectural levels. The definitions of the indicators used to measure the status of newly-founded companies are as follows (see also Figure 1):

- “Number of newly-founded companies”: The count of entities that received a corporate number each fiscal year based on the NTA Corporate Number Information. The prefecture of registration is determined by the domestic address recorded in that information.
- “Number of closed companies”: The count of entities whose registration record was marked as closed in each fiscal year, based on the NTA Corporate Number Information.
- “Number of existing companies[4]”: The number of companies that filed corporate tax returns in the previous fiscal year.
- “Estimated number of exiting companies”: Calculated as the sum of the number of existing companies each year and the number of newly-founded companies in that year, minus the number of existing companies in the following year.
- “Newly founded rate”, “closed rate”, and “estimated exit rate”: Each expressed as a percentage of the number of existing companies.

[4] Corporate tax–filing company data were obtained from the National Tax Agency’s Statistical Yearbook. Although it would also be possible to use the number of corporations existing at the beginning of each fiscal year as the denominator for calculating the newly founded rate, the NTA Corporate Number Information includes dormant entities. Using that denominator could lead to an underestimation of the newly founded rate. Therefore, the analysis adopts the number of corporations that filed tax returns, which more accurately reflects the active corporate population.

Since corporate activities often cease and shift to liquidation proceedings before the corresponding registry entries are officially closed, closure of a registration record may occur several years after they exited the market. Consequently, using the registry “closed date” alone to indicate corporate exit may misrepresent the actual timing of the exit. For this reason, both “closed rate” and the “estimated exit rate” are referred to in order to more accurately capture the process of corporate exit.

Figure 1: Definition of indicators regarding foundation and closure of companies

	Definition	Source
(i) Number of newly founded companies	The count of entities that received a corporate number each fiscal year based on the NTA Corporate Number Information. (*1)	NTA Corporate Number Information
(ii) Number of closed companies	The number of entities whose registration record was marked as closed in each fiscal year	NTA Corporate Number Information
(iii) Number of existing companies	The number of companies that filed corporate tax returns in the previous fiscal year. (*2)	NTA statistical annual report
(iv) Estimated number of exiting companies	Calculated as the sum of the number of existing companies each year and the number of newly founded companies in that year, minus the number of existing companies in the following year	NTA Corporate Number Information NTA statistical annual report
(v) Newly founded rate	(i) ÷ (iii)	-
(vi) Closed rate	(ii) ÷ (iii)	-
(vii) Estimated exit rate	(iv) ÷ (iii)	-

(*1) Corporations classified under the “300” series in the NTA corporate number information

(*2) Total number of corporations filing tax returns in the NTA statistical annual report, excluding the number of associations and foundations without legal personality

Figure 2 illustrates trends of newly-founded companies, closed companies, and estimated exiting companies nationwide from FY 2016 to FY 2023. The number of newly-founded companies in FY 2023 reached 155,000, marking an 18 % increase compared to FY 2016. As of the latest period, the newly-founded rate stands at 5.0 %, while the estimated exit rate is 2.8 %.

Figure 2: Trends of newly-founded/closed/estimated exiting companies

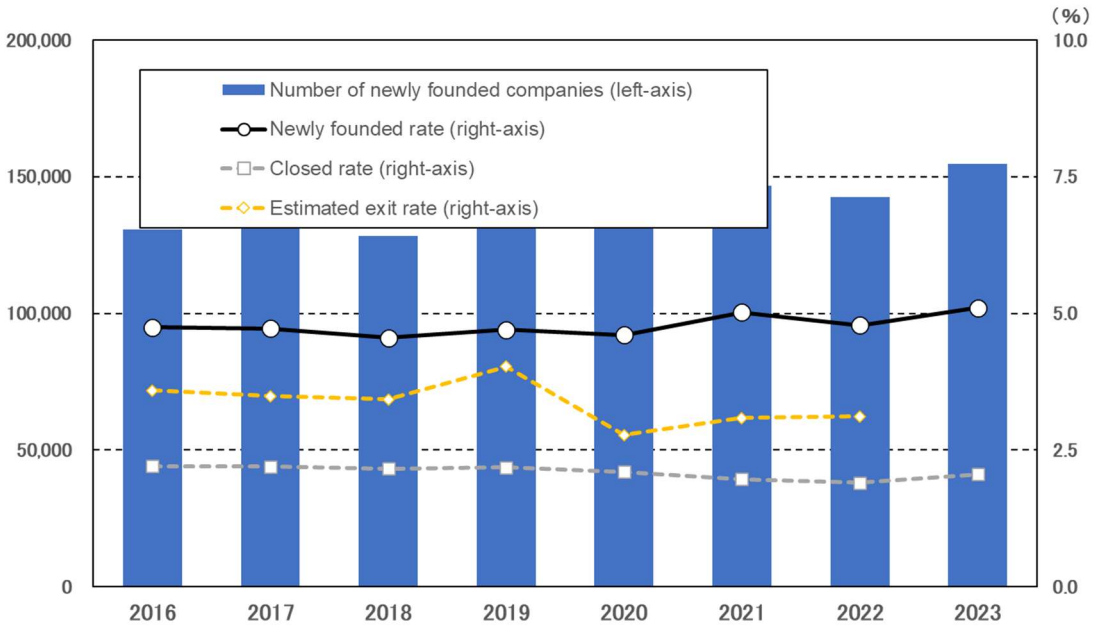
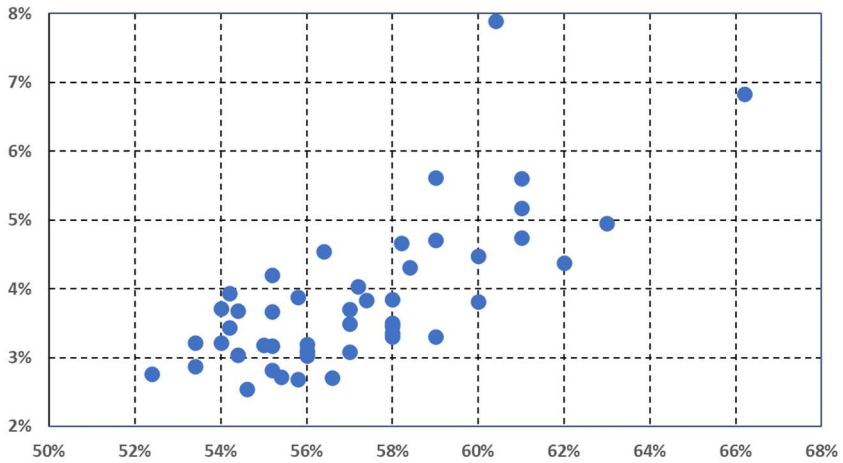


Figure 3 shows the relationship between the working-age population share and the newly-founded rate across prefectures. Prefectural newly-founded rates range from approximately 2.5% to 8.0%. The trend indicates that prefectures with higher working-age population shares also tend to have higher newly-founded rates. The correlation coefficient between these two variables is 0.72.

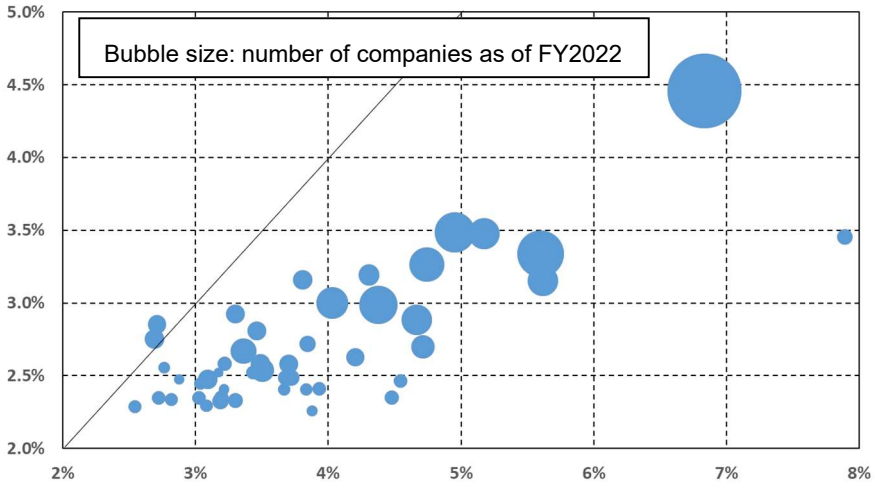
Figure 3: Working-age population share (X-axis) and the newly-founded company rate (Y-axis) across prefectures (FY2019-2023 average)



From the perspective of regional economic regeneration, it is important to assess corporate exit alongside new company foundation (see BOX 1). Figure 4 depicts the relationship between newly-

founded rate and estimated exit rate across prefectures. It shows that prefectures with higher newly-founded rates also tend to have higher estimated exit rates, with a correlation coefficient of 0.76. In prefectures with lower working-age population shares (i.e., more aging), both rates tend to be low, and in some cases the estimated exit rate exceeds the newly-founded rate. It is suggested that prefectures with higher working-age population shares may be undergoing greater corporate turnover.

Figure 4: Newly-founded rate (X-axis) and estimated exit rate (Y-axis) across prefectures (FY2019-2023 average)

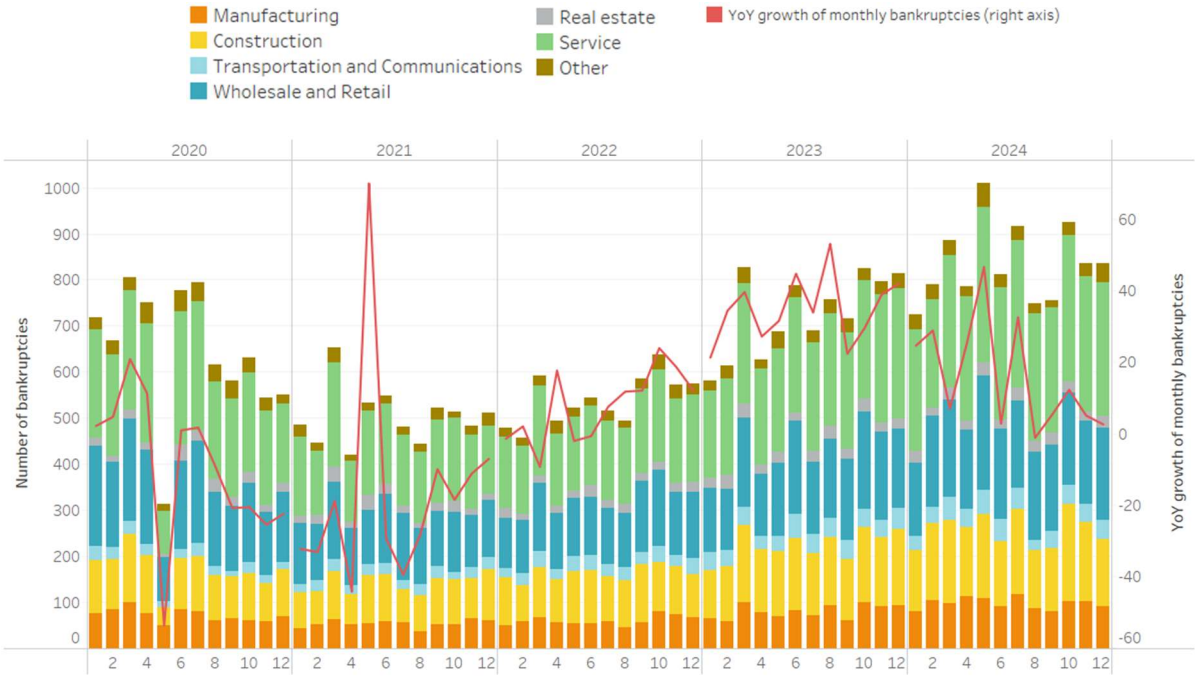


BOX 1: Trends in corporate bankruptcy

For stable economic growth, it is essential not only for individual firms to enhance productivity, but also for economic renewal to proceed through the entry of high-productivity firms and exit of low-productivity ones. However, if a company exits abruptly through bankruptcy, it may adversely affect the health of financial institutions. This box examines trends in corporate bankruptcies and the status of loan preservation by financial institutions to those bankrupt borrowers.

Overall trends in bankruptcy statistics [5] show that year-over-year growth of monthly bankruptcies slowed down from August 2023; however, the number of companies that went bankrupt tends to rise due to factors such as high prices and labor shortages (Figure 5). Looking at the cause of the bankrupt, labor shortages (staff shortages, and business failures linked to executives' illness or death) are increasing (Figure 6). Regarding the size of corporate debts in bankruptcies, small debt cases (under ¥50 million) remain the majority; however, larger debts cases are also increasing (Figure 7).

Figure 5: Number of bankruptcies[6]



[5] This analysis is based on bankruptcy data compiled from Teikoku Databank, Ltd. For the purposes of this BOX, a case is classified as a "bankruptcy" if it meets any one of the following six criteria recognized by Teikoku Databank and included in its bankruptcy data: (1) Suspension of bank transactions following two instances of dishonored bills (bank transaction suspension), (2) Internal liquidation (when the company's representative acknowledges bankruptcy), (3) Filing an application for commencement of corporate reorganization under the Corporate Reorganization Law, (4) Filing for commencement of proceedings under the Civil Rehabilitation Law, (5) Filing for commencement of bankruptcy proceedings, and (6) Filing for commencement of special liquidation.

[6] From January 2019 to December 2024.

Figure 6: Cause of bankruptcies[7]

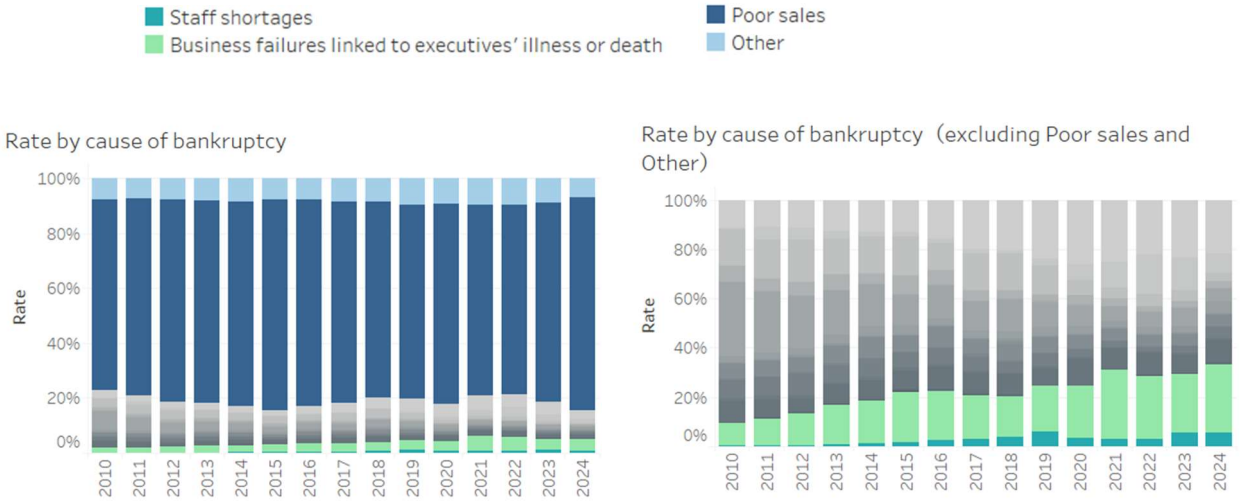
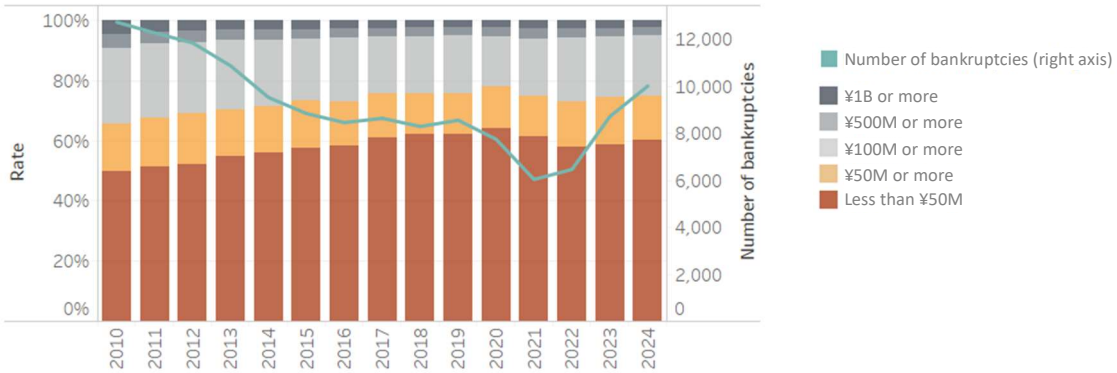


Figure 7: Size of corporate debts in bankruptcies



Next, to capture the impact of corporate bankruptcies on resilience of banks, loan detail data[8] are used to assess lending to "bankrupt firms". Bankrupt firms in this BOX are defined as those classified as non-bankrupt (i.e., borrower classification "in danger of bankruptcy" or higher) as of the end of September 2023, but reclassified as bankrupt (i.e., borrower classification "de facto bankrupt" [9] or "bankrupt") by the end of March 2024. As of September 2023, the outstanding loan balance to these bankrupt firms stood at approximately ¥150 billion, spread across 2,151 companies (1,912 after adjusting deduplication). This represents only 0.06 % of the total

[7] Since multiple responses are allowed for bankruptcy causes, counts overlap (approximately 20% overlap across the entire aggregation period). In addition, the gray areas represent causes such as declining exports, difficulty in collecting accounts receivable, competition from developing countries during order execution, poor business performance, reckless management, other business plan failures, and fires or other disasters.

[8] In this BOX, data from 62 regional banks—including both regional banks I and II but excluding Saitama Resona Bank—were compiled based on the availability of collateral-related information as of September 2023 and March 2024. It is important to note that the Common DP only began full operation from March 2025, and the dataset used here reflects efforts in progress to improve data accuracy. As such, interpretations should accommodate a reasonable margin of uncertainty

[9] "De facto bankrupt" borrowers refer to firms that have not experienced formal legal bankruptcy, yet are suffering severe financial distress (e.g., large bad assets or liabilities far exceeding their repayment capacity), in a prolonged state of substantial capital deficiency, facing no realistic prospect of recovery.

corporate loan balance for the analyzed banks (Figure 8).

On the other hand, examining the distribution of borrower classifications reveals that, as of the end of September 2023, approximately 34% of the outstanding loan balance (46% of the number of bankrupt firms) had been categorized as “normal” or “needs attention”. The coverage ratio—i.e., the portion of loans covered by collateral or provisions—for these normal and needs attention borrowers is relatively low, at around 55%, compared with borrowers already classified as in danger of bankrupt or worse. Accordingly, should any large-sized loans under normal or needs attention suddenly be downgraded to a worse classification, this could adversely affect the financial institutions’ overall soundness.

Figure 8: Loan balances and number of loans to bankrupt firms by borrower classification

	23/9					24/3				
	loan per lender (million yen)	loan (billion yen)	loan rate	number of lender	number rate	loan per lender (million yen)	loan (billion yen)	loan rate	number of lender	number rate
Normal	37.0	12.7	8.0%	342	15.9%					
Needs attention	63.4	41.4	26.2%	652	30.3%					
In danger of bankruptcy	89.6	103.7	65.8%	1,157	53.8%					
De facto bankrupt						55.7	96.5	75.8%	1,732	80.5%
Bankrupt						73.7	30.9	24.2%	419	19.5%
Total	73.3	157.7	100.0%	2,151	100.0%	59.2	127.4	100.0%	2,151	100.0%

Given that most recent bankruptcies involve firms with relatively small debt levels, and that loans to firms which later go bankrupt account for only about 0.06% of analyzed banks’ total corporate lending, the impact on overall bank soundness appears limited. However, there are cases where borrowers previously categorized as normal or needs attention to suddenly went bankrupt, signaling potential risk.

It should be noted that the currently available data from the Common DP are limited. Consequently, the analysis presented here covers a restricted set of banks and time periods. Ongoing efforts to improve data accuracy are underway, with full-scale data collection set to begin from March 2025. Continuous monitoring will be essential—particularly in assessing how issues such as labor shortages, nationwide wage increases, and rising interest rates may affect corporate bankruptcies and bank soundness.

III. Trends in loans extended to newly-founded companies

In the previous section, public information was used to outline national trends in newly-founded and exiting companies. This section augments that overview with detailed analysis based on lending data

collected via the Common DP from major banks and regional banks.

In this section, a “newly-founded company” is defined as an entity whose corporate number was assigned within the past five years from the analysis reference date. The status of lending to such newly-founded companies is examined from two perspectives: the borrowers’ perspective (i.e., the newly-founded companies themselves) and the lenders’ perspective (i.e., the banks providing the loans). To accurately aggregate numbers of newly-founded companies, arrangements to consider deduplication were performed (see BOX 2).

BOX 2: Methodology of adjusting duplications in loan detail data

Since the lending details in the Common DP are maintained at the loan-level, it is possible to comprehensively track multiple loans extended to the same company by different banks along with their respective loan characteristics. However, if aggregation is performed without adjusting duplication, the same corporate borrower may be counted multiple times.

For example (as illustrated in Figure 9), consider company X, who receives loans from one major bank (Bank A) and two regional banks (Bank B and Bank C). When counting the number of firms with bank borrowings without name matching, Company X’s loans from Bank A, Bank B, and Bank C are each counted as separate, resulting in a total of 3 borrowers, however, they should be recorded as 1. Therefore, adjustments of corporate deduplication are performed as follows: (i) calculate the number of banks lending to each corporation, (ii) assign the reciprocal of that number as the allocation weight, and (iii) apply this weight to the counts to remove duplications. For example, when examining overall lending by bank (major banks and regional banks combined), loans to Company X from Banks A, B, and C each receive a weight of ⅓, totaling 1 (⅓ + ⅓ + ⅓), effectively eliminating double counting. If aggregating by bank type, the weights are allocated proportionally: major banks contribute ⅓ (from Bank A) and regional banks contribute ⅔ (from Banks B and C; each ⅓). In the same example, when considering “major banks only”, Bank A is allocated the weight 1 since only Bank A lends to Company X. Similarly, when considering “regional banks only”, with two lenders (Banks B and C), each loan receives a weight of 1/2, summing to 1 again.

As such, the reported counts of borrowing companies—whether under overall lending, major banks, or regional banks—are all derived from adjusted entity counts based on corporate number

matching. Moreover, when aggregating by borrower attributes (e.g., industry, debtor class, cross-border status), the same allocated (fractional) counts are used, ensuring all duplicates are eliminated.

Figure 9: Duplication adjustments (example)

Company Name	Region	Bank Name	Bank Type	Industry	Debtor Classification	Cross-Border	Number of Lending Bank	Weighted Number		
								Both	Major Bank	Regional Bank
X Co.	O Pref.	A Bank	Major Bank	Manufacturing	Normal	Major Bank	3	1/3	1	0
X Co.	O Pref.	B Bank	Regional Bank	Manufacturing	Needs Special Attention	Within-Prefecture	3	1/3	0	1/2
X Co.	O Pref.	C Bank	Regional Bank	Manufacturing	Normal	Cross-Border	3	1/3	0	1/2
Y Co.	P Pref.	A Bank	Major Bank	Retail	Needs Attention	Major Bank	2	1/2	1	0
Y Co.	P Pref.	C Bank	Regional Bank	Other Services	Normal	Cross-Border	2	1/2	0	1

1. Borrowings by newly-founded companies

Based on the definition in this section—“newly-founded companies” being those assigned a corporate number within the past five years as of September 30, 2023—there were 710,000 such companies nationwide. Of these, 83,000 (11.5 %) had outstanding bank loans, totaling ¥22 trillion.

Figure 10 breaks down newly-founded companies with bank borrowings by bank type: when counted by company numbers, about 90% of newly-founded companies with borrowings had loans from regional banks. In contrast, looking at loan amounts, roughly 60% came from major banks

Figure 10: Newly-founded companies with bank borrowings

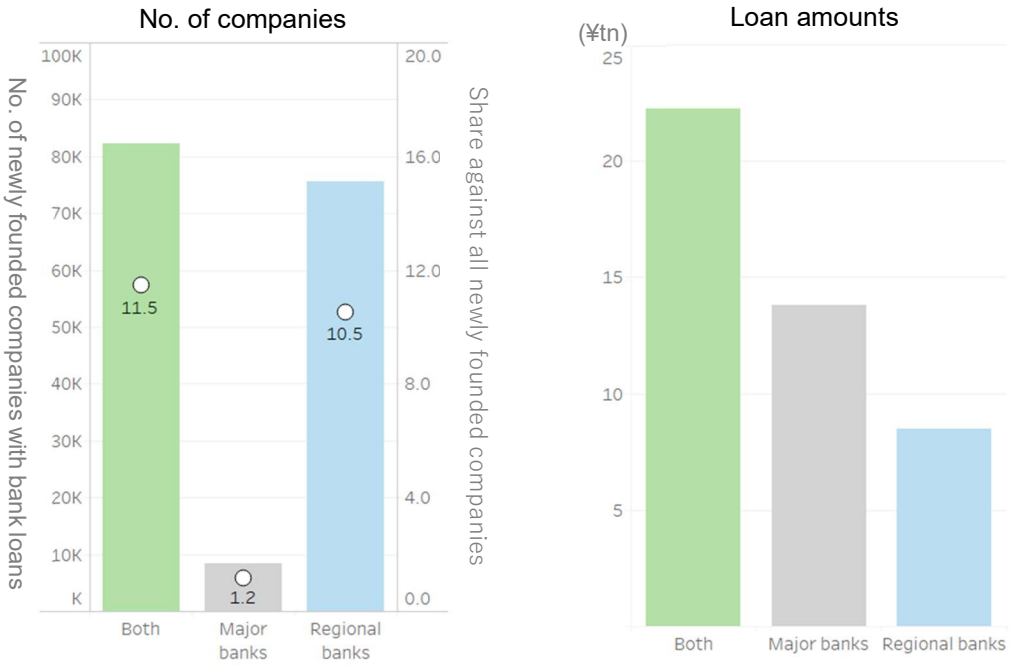
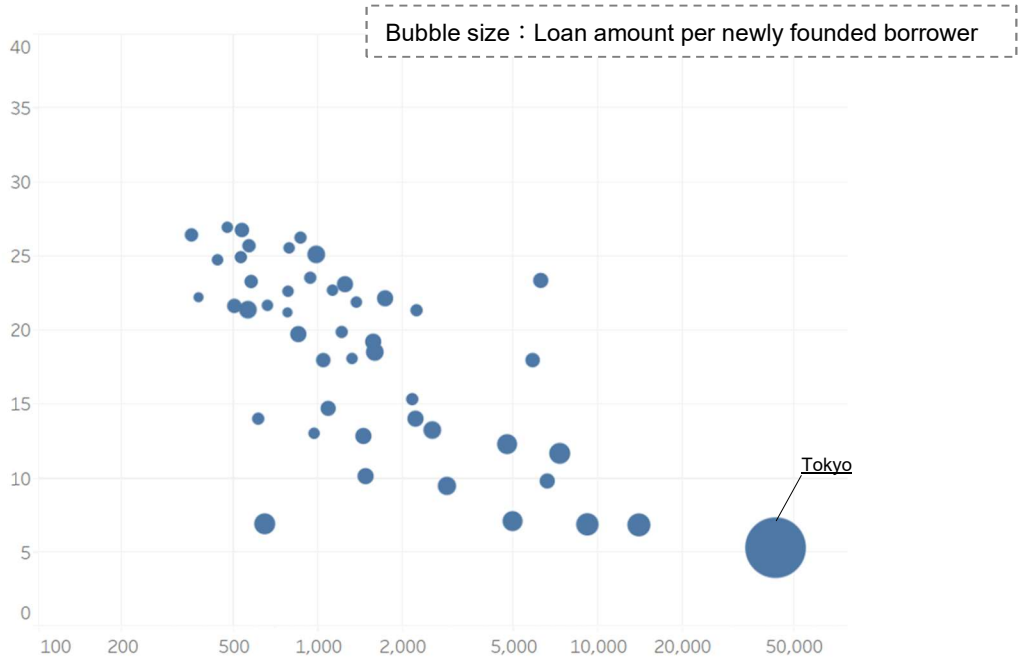


Figure 11 illustrates the relationship between the annual number[10] of newly-founded companies and the share of those companies with bank loans (hereinafter, “newly-founded borrowers”) by prefecture. The data reveals that prefectures with higher numbers of annual new foundation tend to exhibit lower proportions of newly-founded borrowers. Additionally, the average bank loan amount per newly-founded borrower is significantly higher in Tokyo compared to other prefectures.

It should be noted that this analysis excludes lending from government-affiliated financial institutions, credit associations (shinkin banks), and credit cooperatives (shinkumi banks). Therefore, in prefectures showing lower proportions of newly-founded borrowers, funding might still be provided by these alternative financial channels.

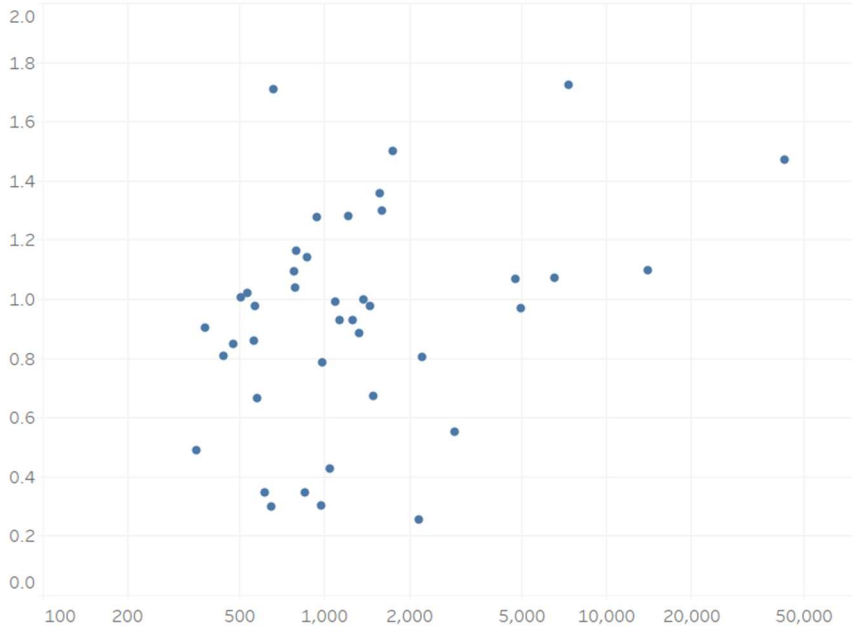
Figure 11: Number of newly-founded companies against the share of newly-founded borrowers
X-axis: Annual number of newly-founded companies (logarithm of 18/10 to 23/9 average)
Y-axis: Share of newly-founded borrowers (%)



[10] The number of newly-founded companies has been converted to the common logarithm.

Figure 12 shows, by prefecture, the relationship between the annual number of newly-founded companies and the number of newly-founded borrowers per regional bank employee[11]. It is suggested that in prefectures with a large annual number of newly-founded companies (4000 or more), the number of newly-founded borrowers per regional bank employee generally exceeded 1, indicating a relatively high level of engagement with newly-founded companies. However, there is substantial variation across banks in this metric, highlighting that regional banks differ significantly in their commitment to lending to newly-founded companies.

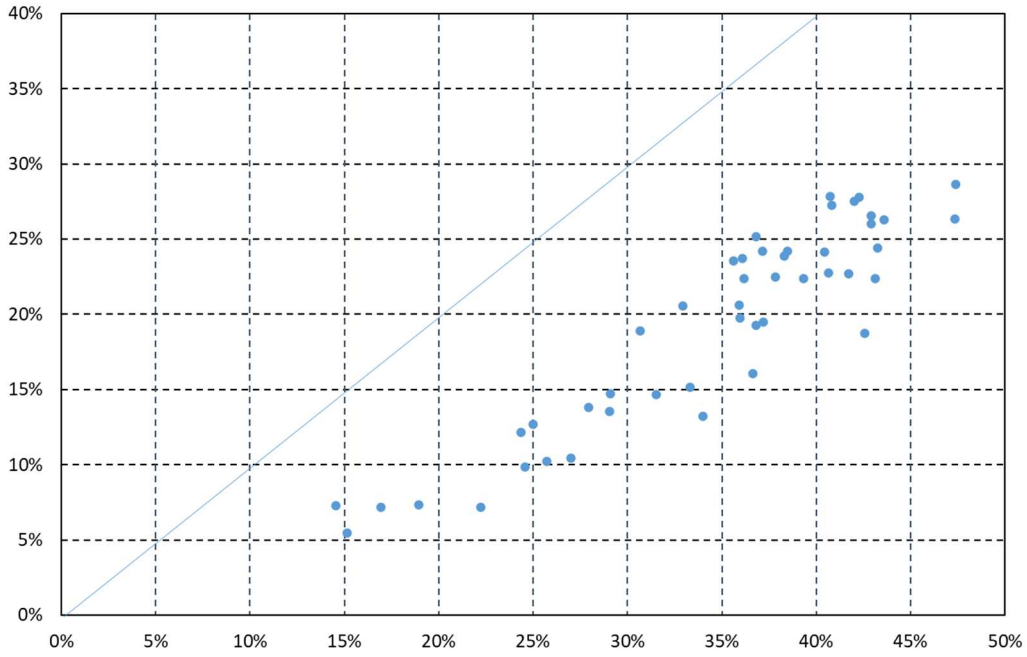
Figure 12: Number of newly-founded companies against number of regional bank employees
X: Annual number of newly-founded companies
Y: Number of newly-founded borrowers per regional bank employee (logarithm of 18/10 to 23/9 average)



[11] The number of newly-founded borrowers per regional bank employee is calculated based on the prefecture where the regional bank's head office is located.

Figure 13 presents the relationship between two metrics, i.e., the proportion of all domestic borrowers (both existing and newly-founded) and the proportion of newly-founded borrowers, by prefecture. In every prefecture, the newly-founded companies' share is below the 45° line, indicating that existing companies have a higher likelihood of holding bank loans compared to newly-founded ones.

Figure 13: Proportion of companies with bank loans by prefecture
X: All companies, Y: Newly-founded companies



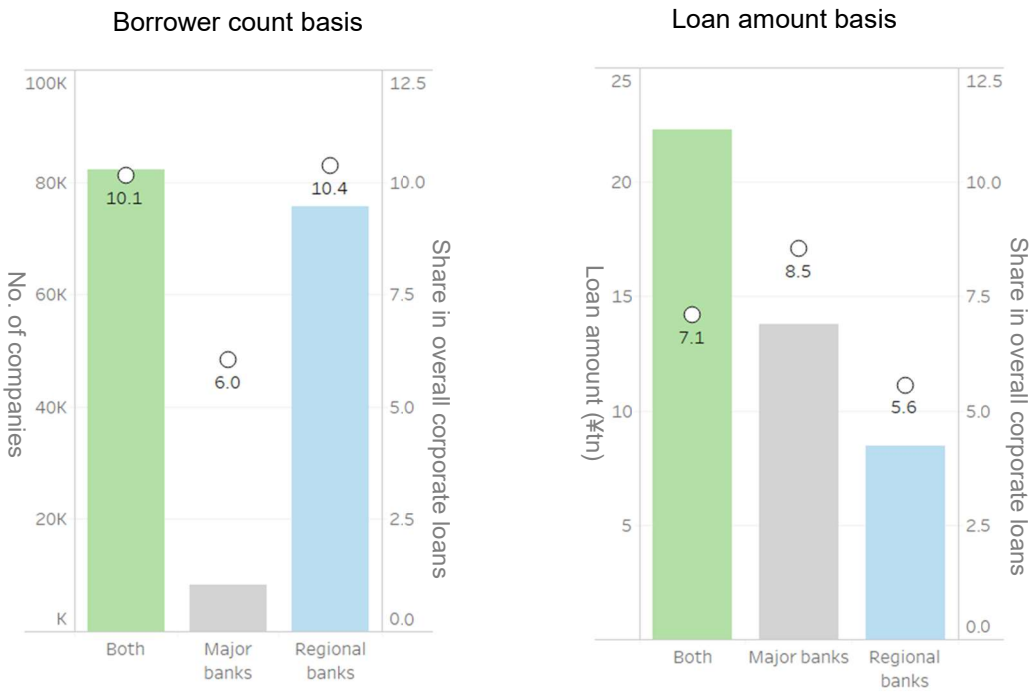
2. Lending to newly-founded companies

In this sub-section, we analyze the status of bank lending to newly-founded companies from following six perspectives: (i) bank type, (ii) corporate location (prefecture-level analysis), (iii) industry, (iv) borrower classification (i.e., credit ratings), (v) total borrowing amount (loan size tiers), and (vi) cross-border characteristics (i.e., within the prefecture or not). The analysis will compare lending to newly-founded companies against total corporate lending (including existing companies) using both borrower-count metrics and loan-amount metrics, aiming at a detailed understanding of distinctive financing patterns.

(i) By bank type[12]

Figure 14 shows the overview of lending to newly-founded companies by bank type. By number of borrowing companies, the proportions of lending to newly-founded companies in overall corporate lending are 6.0% for major banks and 10.4% for regional banks. By loan amount, that of major banks are 8.5% and that of regional banks are 5.6%.

Figure 14: Loans to newly-founded companies by bank type

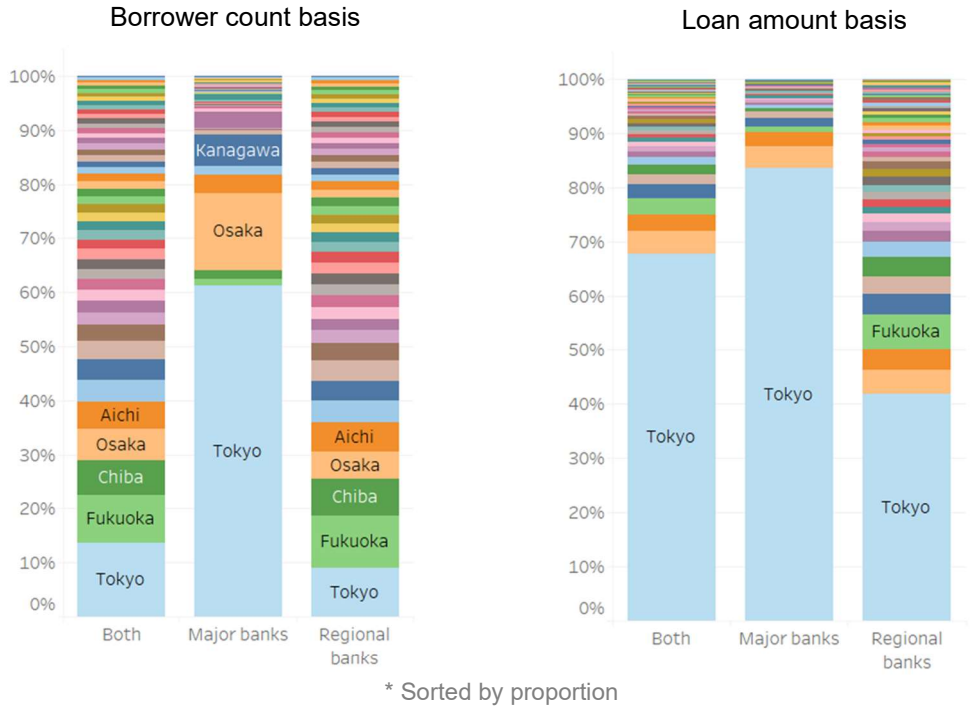


[12] Bank types are major banks and regional banks (regional bank I and regional bank II).

(ii) By corporate location

Figure 15 shows the prefectural shares of loans to newly-founded companies based on the location of borrowers. On a borrower-count basis, major banks have a share in Tokyo that exceeds the combined total of all other prefectures, whereas regional banks display a more evenly distributed share across prefectures, with Fukuoka exceeding Tokyo. On a loan-amount basis, both major banks and regional banks show the highest share in Tokyo, although the difference between Tokyo's share on a borrower-count basis versus a loan-amount basis is particularly pronounced among regional banks.

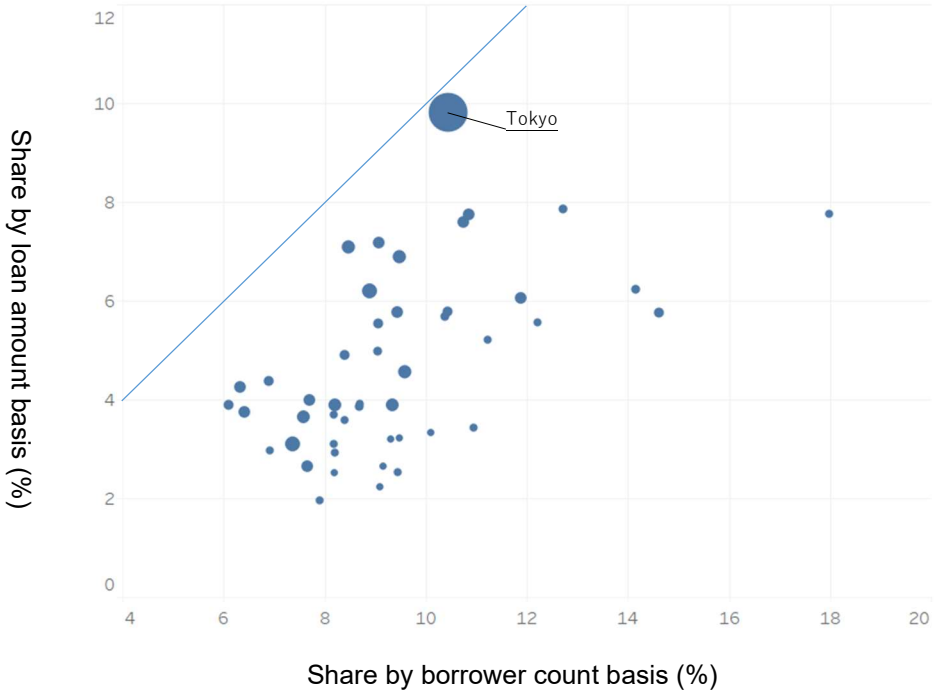
Figure 15: Share by borrower location



* Sorted by proportion

Figure 16 shows, the relationship between the share of lending to newly-founded companies in total corporate lending by prefecture. The share ranges between 6 to 18% by borrower count basis and 2 to 10% by loan amount basis. In all prefectures, the share by number of companies is higher than the share by loan amount. This is likely because individual loans to newly-founded companies tend to be smaller than those to existing companies. However, for major banks, as discussed later, loans to newly-founded companies tend to have higher average loan amounts per company compared to existing companies; consequently, in Tokyo—where major bank lending shares are high—the shares by number and by amount are closer in value.

Figure 16: Share of loans to newly-founded companies in all corporate loans

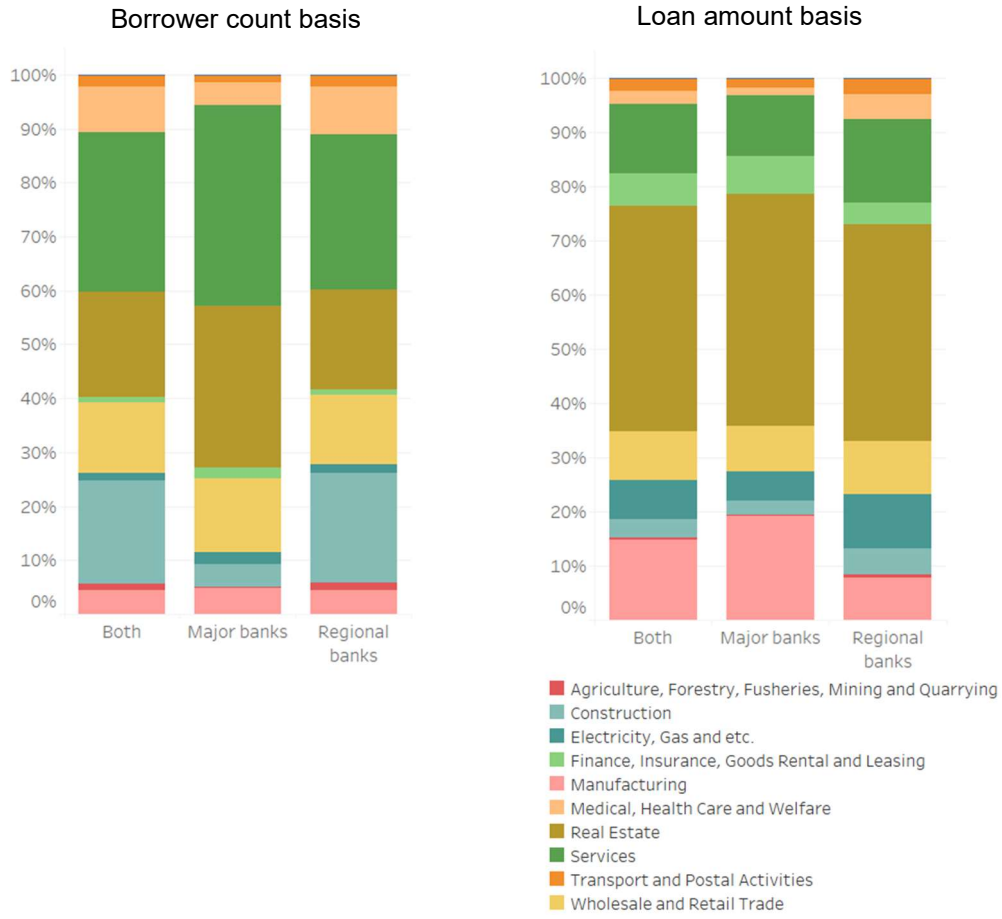


Share of lending to newly founded companies in all corporate lending
= loan amount to newly founded companies / all corporate loan amount
Bubble size: Loan amount per newly founded company

(iii) **By industry**[13]

Figure 17 shows the loan share by industry for newly-founded companies. Service, construction, and real estate sectors have high shares by borrower count basis, and real estate, manufacturing, and service sectors record the largest shares by loan amount basis. Service sector accounts for about 30 % by borrower count but only around 10 % by loan amount, in contrast, real estate sector is roughly 20 % by borrower count but around 40 % by loan amount. These sectoral differences reflect the distinct characteristics of corporate entities in each industry.

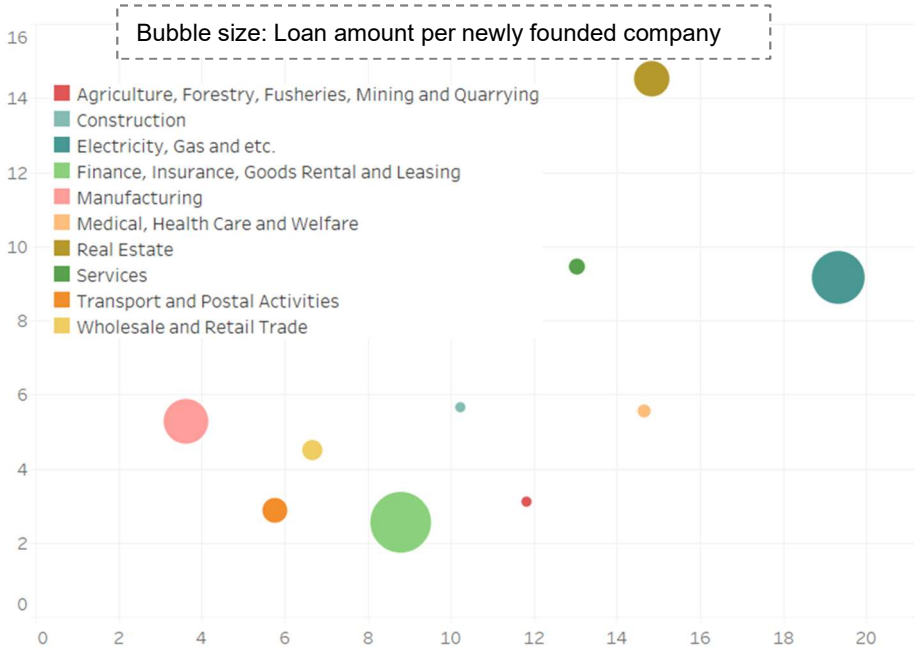
Figure 17: Share by industry



[13] Corporate industries are classified into ten categories based on the Bank of Japan's statistical classifications: "manufacturing," "agriculture, forestry, fisheries, mining and quarrying," "construction," "transport and postal activities," "electricity, gas and etc.," "wholesale and retail trade," "finance, insurance, goods rental and leasing," "real estate," "services," and "medical, healthcare and welfare."

Figure 18 shows the relationship between the share of loans to newly-founded companies in total corporate loans. The size of each bubble represents the average loan amount per newly-founded borrowers. The real estate, electricity gas and etc., and service industries are located in the upper right of the figure, indicating that the share of lending to newly-founded companies in these industries is relatively high within total loans. Additionally, in manufacturing and real estate, the shares by number of companies and loan amount are nearly equal, implying that the average loan size per newly-founded borrower is similar to that for existing borrowers. Looking at the average loan size per newly-founded borrower, the order from largest to smallest is: finance, insurance, goods rental and leasing, electricity, gas and etc., manufacturing, real estate.

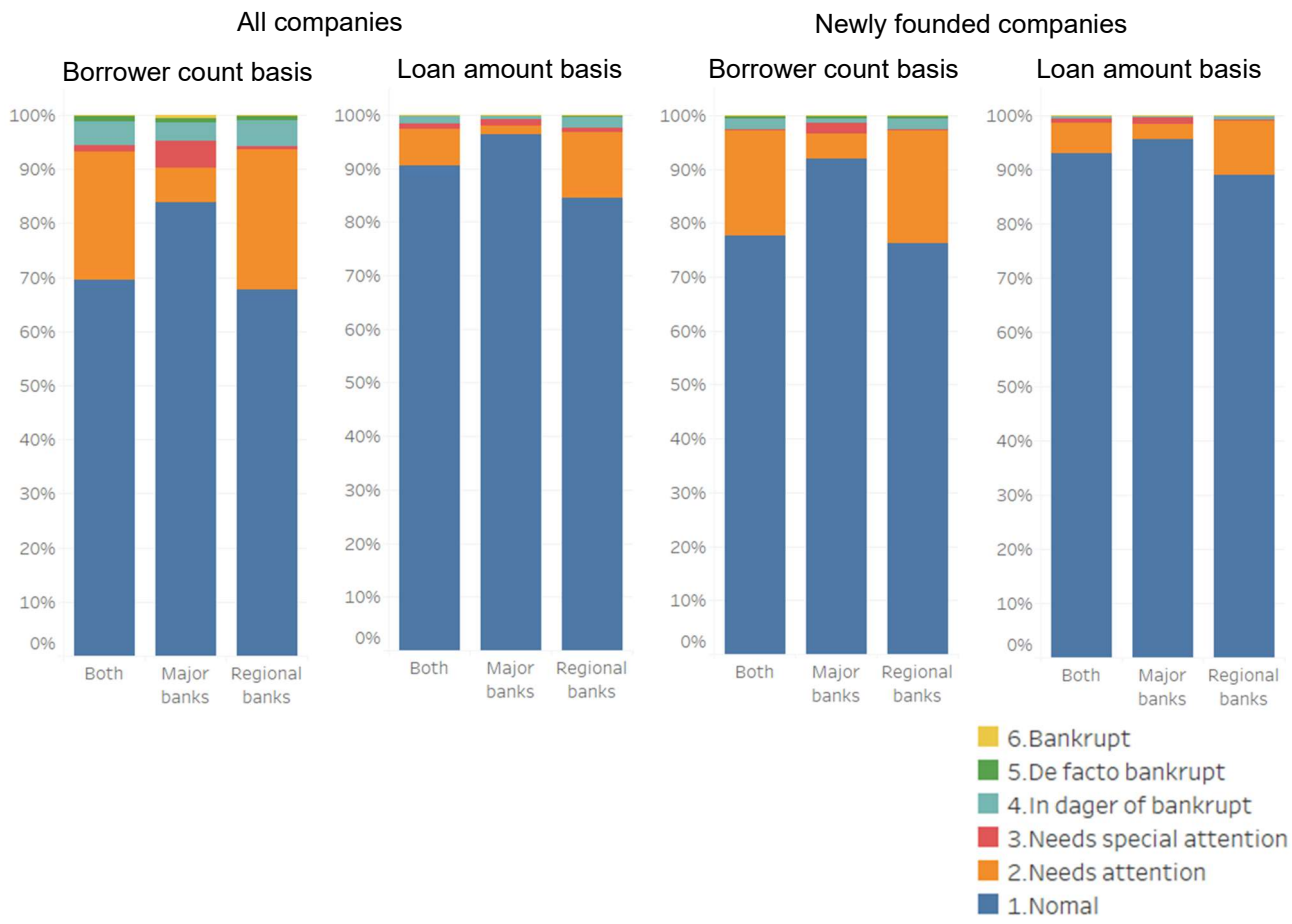
Figure 18: Share of loans to newly-founded companies
X: Borrower count basis
Y: Loan amount basis



(iv) By borrower classification[14]

Figure 19 shows the shares by borrower classification for all corporate loans and for loans to newly-founded companies, respectively. On both borrower count and loan amount bases, newly-founded borrowers exhibit higher proportions in the “normal” category compared to overall corporate loans. Notably, within regional banks’ loans to newly-founded companies, loans classified as “needs attention” or worse represent 24% by borrower count and 11% by loan amount, indicating that regional banks also provide financing to borrowers with a certain degree of credit risk.

Figure 19: Share by borrower classification



[14] Borrower classification: normal, needs attention, needs special attention, in danger of bankruptcy, de facto bankrupt, bankrupt.

Figure 20 shows, for all corporate loans and for newly-founded company loans separately, the average loan amount per borrower. In the case of major banks, the average loan amount per newly-founded borrower is larger than that for all companies, across all borrower classifications. In particular, for “needs attention” borrowers, the average loan size to newly-founded borrowers is approximately three times that of the average for all borrowers. By contrast, at regional banks, the average loan amount per newly-founded borrower is only about 50 % of that for all borrowers, across all borrower classifications. However, it should be noted that the newly-founded borrowers include a wide variety of cases—including firms established through large corporate investments or holding-company restructurings, SPCs, and incorporated sole proprietors—and this diversity may be influencing the average loan amounts observed.

Figure 20: Average loan amount per borrower (¥mn)

All borrowers

	Both	Major banks	Regional banks
Nomal	506	1,335	262
Needs attention	113	291	101
Needs special attention or below	149	246	105

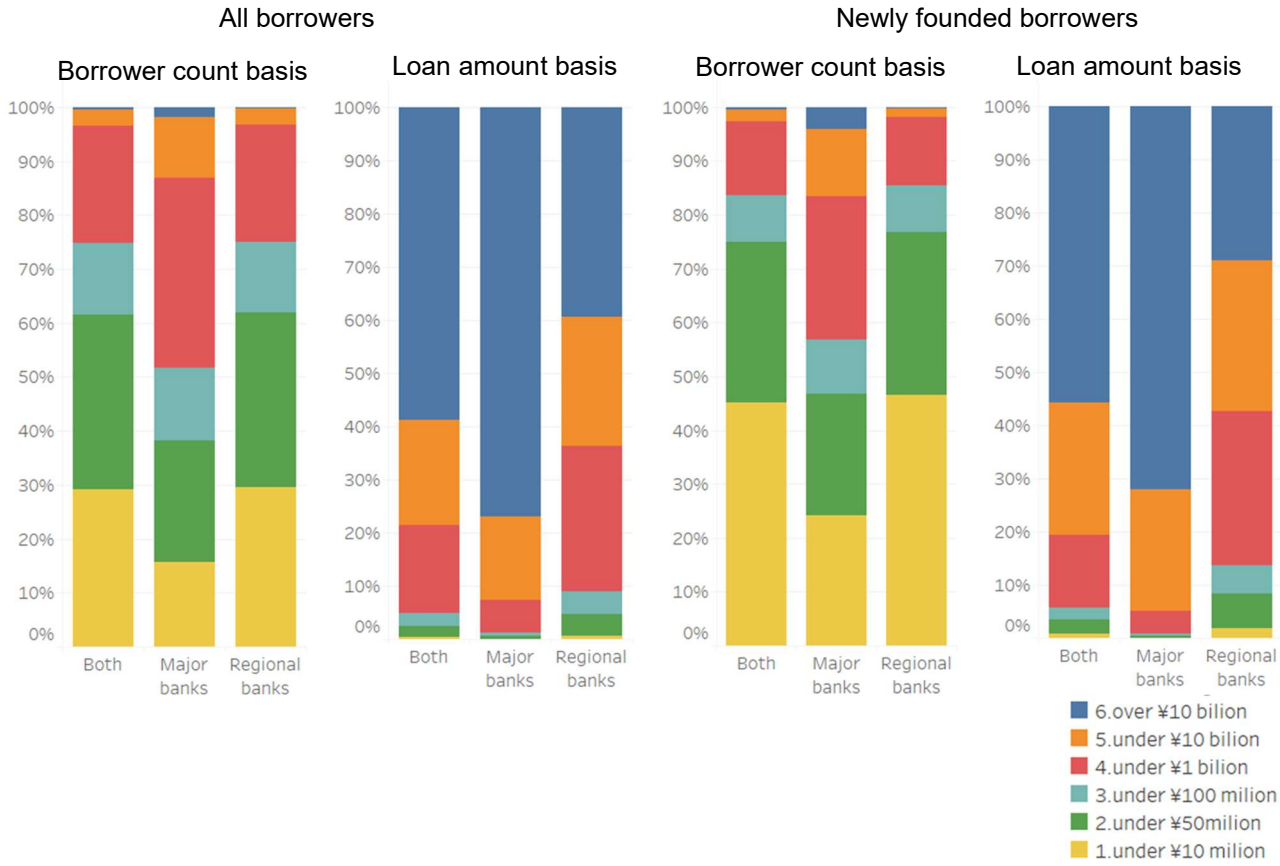
Newly founded borrowers

	Both	Major banks	Regional banks
Nomal	328	1,712	132
Needs attention	79	1,059	54
Needs special attention or below	123	722	39

(v) By total borrowing amount (loan size tiers)[15]

Figure 21 shows, for both all corporate lending and lending to newly-founded companies, the distribution of loans across total borrowing amount (loan size) tiers. At regional banks, in both borrower-count and loan-amount basis, loans to newly-founded companies are skewed toward smaller tiers, compared to all corporate lending. On the other hand, at major banks, loans to newly-founded companies show a higher share within the large-tier categories (over ¥10 billion) for both borrower counts and loan amounts.

Figure 21: Share by total borrowing amount



[15] Total borrowing amount tiers are classified into six categories based on the total amount a company has borrowed from banks: (1) up to ¥10 million, (2) over ¥10 million up to ¥50 million, (3) over ¥50 million up to ¥100 million, (4) over ¥100 million up to ¥1 billion, (5) over ¥1 billion up to ¥10 billion, and (6) over ¥10 billion. These tiers serve as a proxy indicator for company size and characteristics.

The proportion of guarantees provided by banks appears to vary according to the size of the borrower. Figure 22 shows, for both all borrowers and for newly-founded borrowers, the coverage ratio by high-quality guarantees[16] across total borrowing amount tiers. Here, “coverage ratio” refers to the ratio of guaranteed loan amount to total loan amount. Both major banks and regional banks exhibit higher coverage ratio for smaller borrowing tiers. This trend holds true for both all borrowers and newly-founded borrowers. Additionally, for newly-founded borrowers, the coverage ratio is higher in the smallest borrowing category (under ¥10 million) and lower in tiers above ¥50 million, compared to all borrowers.

Figure 22: Coverage ratio by high-quality guarantees

All borrowers

	Both	Major banks	Regional banks
1.under ¥10 milion	67.09	62.00	67.60
2.under ¥50milion	58.29	51.30	59.19
3.under ¥100 milion	45.04	40.21	45.84
4.under ¥1 bilion	16.77	11.34	18.09
5.under ¥10 bilion	2.62	2.25	2.87
6.over ¥10 bilion	1.21	1.36	0.88

Newly founded borrowers

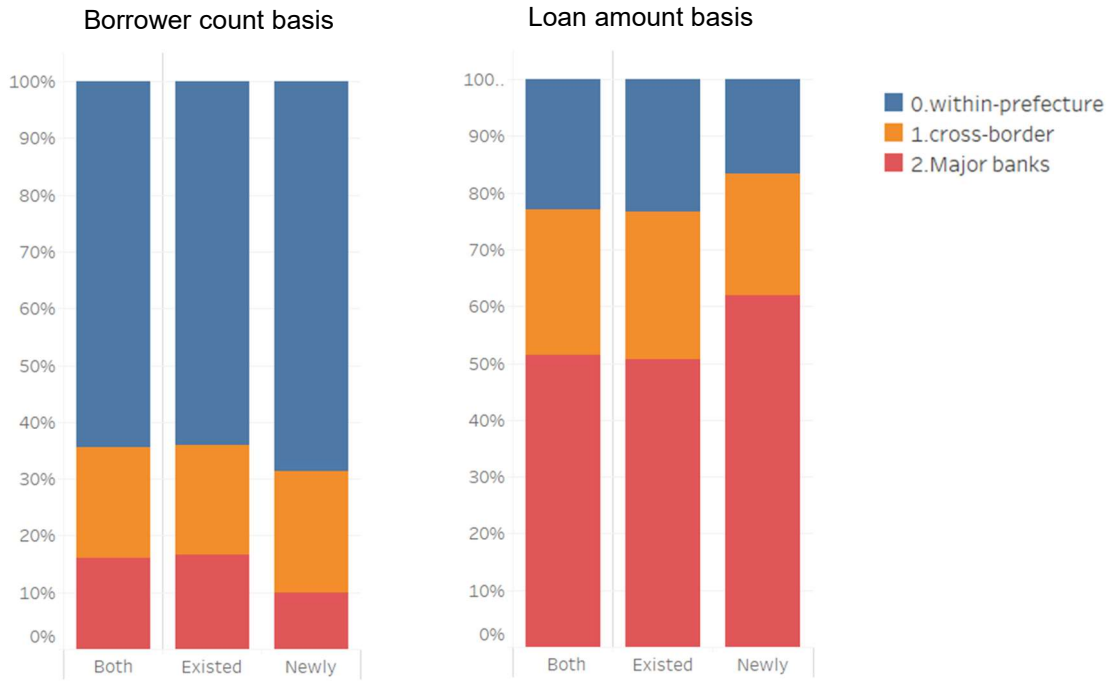
	Both	Major banks	Regional banks
1.under ¥10 milion	76.52	74.46	76.65
2.under ¥50milion	53.47	51.99	53.59
3.under ¥100 milion	22.49	23.87	22.32
4.under ¥1 bilion	4.14	3.08	4.40
5.under ¥10 bilion	1.69	2.37	0.81
6.over ¥10 bilion	0.49	0.54	0.29

[16] “High-quality guarantees” are defined as those meeting any of the following six criteria: (1) guarantees provided by public credit guarantee institutions, such as Credit Guarantee Corporations (CGCs) backed by local or national government support, (2) guarantees provided by financial institutions (e.g., bank-provided internal guarantees), (3) guarantees issued by organizations jointly established by multiple financial institutions (e.g., consortium guarantee agencies), (4) guarantees from agencies jointly set up by local governments and financial institutions, (5) guarantees under loss-compensation agreements with local governments, where performance reliability is extremely high, and (6) guarantees from private corporations, provided they meet specific conditions—typically firms that are listed (or OTC with dividends), possess sufficient guarantee capacity, and employ a formal guarantee agreement.

(vi) By Cross-border characteristics[17]

Figure 23 presents loan share by prefecture-wise cross-border characteristics. Looking at borrower count basis, regional banks' loans within the same prefecture (labeled as "within-prefecture") have the largest share, accounting for approximately 70% of both newly-founded and existing borrowers. Next is regional banks' cross-prefecture lending, followed by major banks, which have the smallest share. On a loan-amount basis, for both newly-founded and existing borrowers, the ranking of shares from largest to smallest is: major banks, regional banks' cross-prefecture lending, and within-prefecture lending. There is no significant difference in the cross-border share of regional banks between lending to existing versus newly-founded borrowers.

Figure 23: Share by cross-border characteristics



[17] Cross-border characteristics refer to the three categories of "within-prefecture," "cross-border," and "major banks." Cross-border characteristics by regional banks are defined by the prefecture where their head offices are located.

Regarding the share of cross-border lending by regional banks, the ratio is particularly high for the finance, insurance, goods rental and leasing sector, as well as for the electricity, gas and etc. sectors (see Figure 24). By prefecture, the share is markedly higher for loans extended to corporations located in Tokyo (see Figure 25). Moreover, in many prefectures, the share of cross-border lending is higher when measured by loan amount rather than by the number of borrowers, indicating that the average loan size per borrower is larger for cross-border loans compared to loans within the same prefecture.

Figure 24: Share by cross-border characteristics by industry

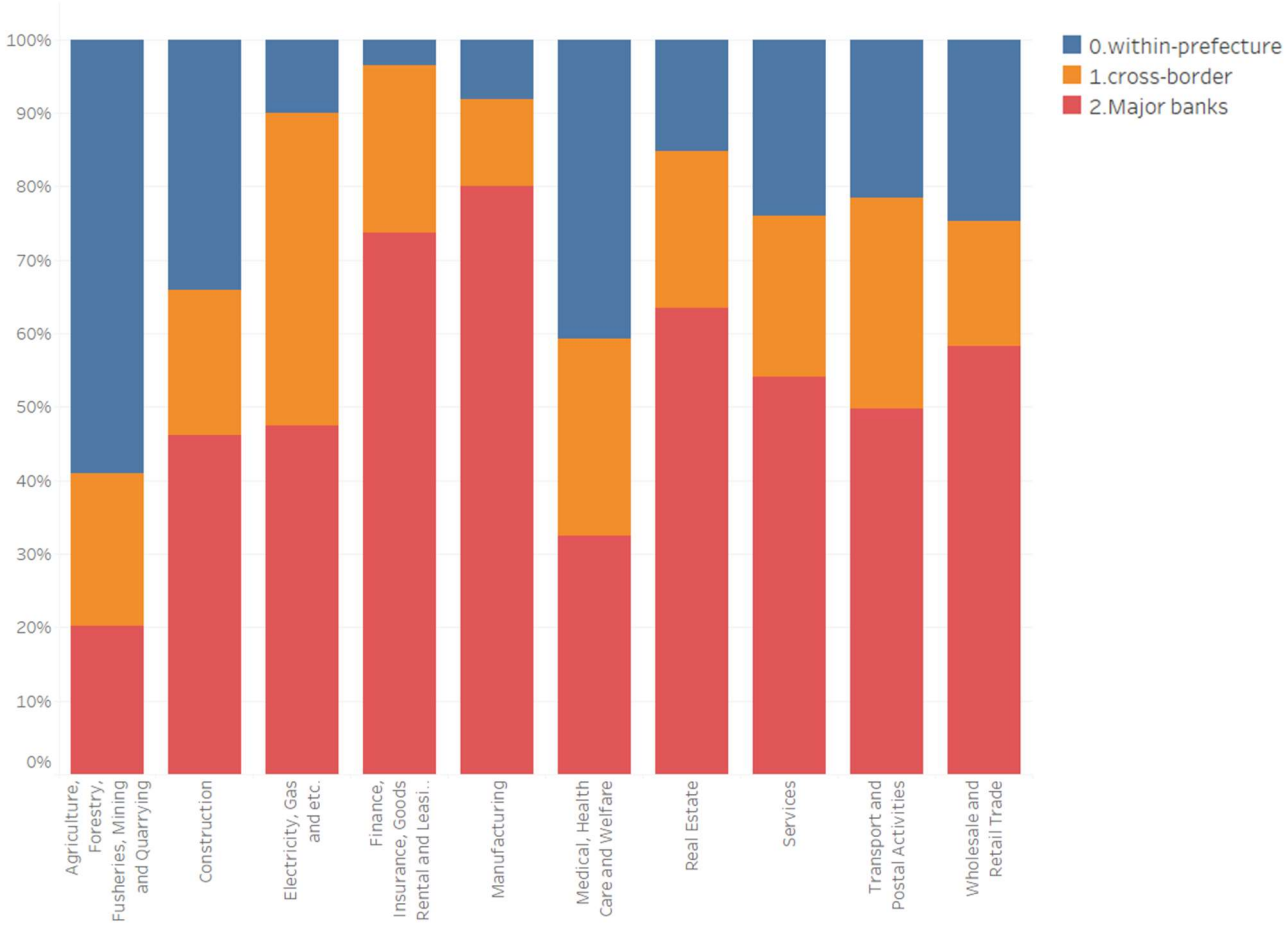
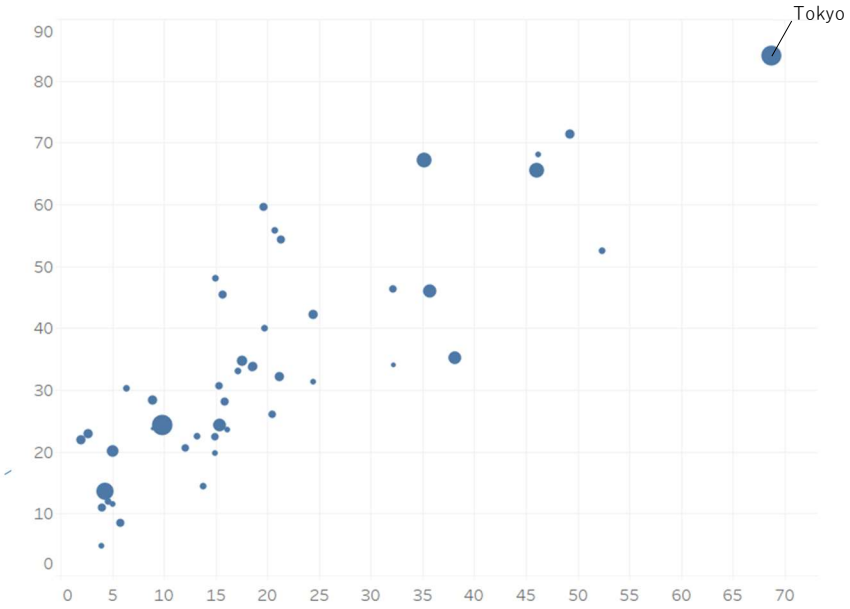


Figure 25: Share of cross-border loans by prefecture
X: By borrower count basis (%)
Y: By loan amount basis (%)



IV. Statistical analysis on loan conditions to newly-founded companies

In this section, regression analyses are conducted for regional banks to assess differences in loan conditions between newly-founded borrowers and existing borrowers. Central to the analysis are loan-level data from the Common DP, supplemented by the NTA corporate number information to identify newly-founded companies.

Three dependent variables are examined sequentially through regression: (1) loan interest rate, (2) loan duration, and (3) a binary indicator of whether the loan is backed by a credit guarantee association ("credit guaranteed loans"). The common explanatory variable across all models is a newly-founded-company flag—a binary variable[18] set to 1 if the company received its corporate number less than five years prior to the analysis date.

To ensure accurate results, it is important to control for other factors that may influence loan conditions, for example: (1) macro-level bank-wide factors (e.g., interest rate shifts, economic cycles), (2) loan-specific characteristics (e.g., initial principal, loan type), (3) borrower-level attributes (e.g., industry, financial performance indicators, credit rating, and location), and (4) lender-specific

[18] A variable which can take two states, i.e., 0 or 1.

differences (e.g., bank's cost efficiency). To neutralize factor (1), the analysis focuses on loans originated within the 12 months leading up to September 30, 2023, effectively stabilizing against recent macro environmental changes−including COVID-19[19] and recent interest rate hike. To control for factors 2, 3, and 4, suitable variables are chosen respectively.

1. Loan interest rate

In this sub-section, the analysis is conducted under the hypothesis: "Newly-founded companies with limited corporate history may face higher interest rates at loan execution, even under identical conditions and financial status."

The variables and data used are as previously described, with control variables set to eliminate the effects of loan-level factors (e.g., initial principal, loan purpose), borrower-level factors (e.g., industry sector, borrower classification), lender-level factors and bank-specific characteristics (via bank dummy variables). Additionally, because banks differ in whether they include credit guarantee association fees in the loan interest rate or report them separately as fees, a flag variable indicating if a loan is credit guaranteed loan was created. This variable was then combined with the bank dummy to control for potential variation arising from how such fees are recorded.

Figure 26 shows the data used, definition of variables, and regression results.

[19] Effectively interest-free and unsecured loans by private financial institutions are provided from May 1, 2020, to March 31, 2021, as the emergency measures to cope with COVID-19.

Figure 26: List of variables and regression results

Target data		Common Data Platform data (Regional bank I)	Loans executed between the reference date (end of September 2023) and one year prior (October 1, 2022), with no missing data for any variable, and for which a company number can be assigned.
Dependent variable		Loan interest rate	Loans with the interest rate of 0 is not eligible. The unit is %.
Explanatory variable		Newly-Founded Companies Flag	A binary where newly-founded companies are represented by 1 and existing companies by 0.
Control variables	Loans	Log of initial principal	The base of the log is 10.
		Loan purpose※	Loan purpose such as commercial bills, loan agreements and etc..
		Type of interest rate※	Variable/Fixed/No Setting
		Bank + Credit Guarantee Association※	Dummy variables that cross the dummy variables for banks and the presence of a credit guarantee association.
		Long-term Flag	A binary where the loan term is 366 days or more is represented by 1.
	Companies	Industry sector※	Industry classification set by Bank of Japan.
		Company location※	By prefecture.
		Company scale※	Large / Mid-sized / Small and Medium-sized / Others
		Borrower classification※	Normal / Needs attention / Needs special attention / In danger of bankrupt / De facto bankrupt / Bankrupt
		Cross-border Flag	Binary where the lending to a company located in a prefecture different from the bank's head office is represented by 1.
		Log of sales	The base of the log is 10.
		Parent Company Flag	A binary where there is a registration of core companies and it is not oneself is represented by 1.

※ indicates that it is a dummy variable.

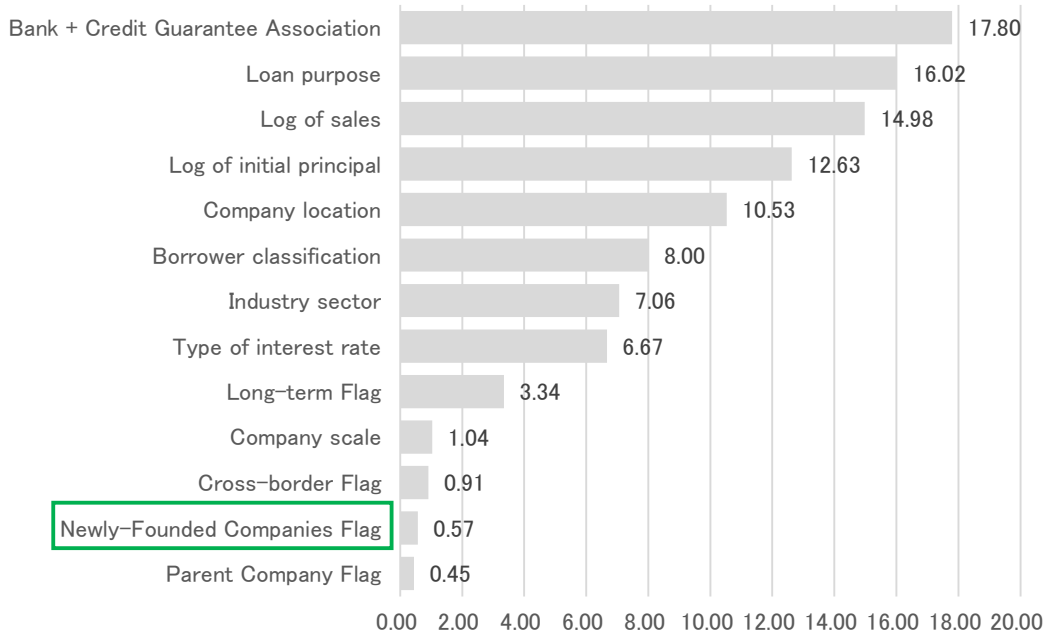
		Variable	Coefficient (%pt)
Dependent variable		Loan interest rate	Constant 4.53
Explanatory variable		Newly-Founded Companies Flag	+0.043 (p-value:0)
Control variables	Loans	Log of initial principal	-0.231
		Loan purpose※	-0.634 ～ +0.954
		Type of interest rate※	-0.055 ～ +0.040
		Bank + Credit Guarantee Association※	-0.098 ～ +1.060
		Long-term flag	+0.036
	Companies	Industry sector※	-0.523 ～ +1.085
		Company location※	-0.563 ～ +0.132
		Company scale※	-0.158 ～ +0.172
		Borrower classification※	+0.417 ～ +1.085
		Cross-border Flag	-0.045
		Log of sales	-0.221
		Parent Company Flag	-0.166

No. Observations:	503,268
Df Residuals:	503,029
Df Model:	238
Adj. R-squared:	0.3400

The regression analysis reveals that, even after controlling for various factors such as initial loan amount, industry, financial health[20], and bank-specific characteristics, loans to newly-founded companies carry interest rates that are on average +0.043 percentage points[21] higher than those to existing companies. While this positive coefficient suggests a slight premium, its magnitude is small, indicating no strong practical impact—i.e., being a newly-founded company does not significantly affect loan interest rates in actual lending conditions.

In addition, to further examine above results, the same hypothesis was tested by using machine learning technique. The adopted model is CatBoost (see BOX 3), known for its strengths in handling categorical variables such as location and borrower classification, its ability to construct high-accuracy models while preventing overfitting, and other advantages[22]. The calculated feature importances[23] are shown in Figure 27. With the total importance of all variables normalized to 100, the importance of the newly-founded company flag is 0.57, indicating that even in this model, being a newly-founded company has minimal impact on determining the loan interest rate.

Figure 27: Feature Importance derived from CatBoost



[20] While additional control variables related to a firm's financial condition—such as presence of losses, ROA, working capital turnover, or cash ratio—might be considered, a multiple regression including these variables resulted in their coefficients being nearly zero. Moreover, including these variables did not materially alter the coefficients of the key variable (newly founded company flag) or other control variables when sales was already included as a control. This outcome suggests that the borrower classification, used as a control variable, effectively encapsulates these financial metrics, providing greater explanatory power regarding loan interest rates.

[21] Regression indicates that even when focusing solely on loans to companies with revenue under ¥1 billion—or limiting the analysis to regional banks with total lending under ¥100 million—the interest rate difference for newly founded companies remains essentially unchanged: approximately +0.040 percentage points for the former case, and +0.061 percentage points for the latter.

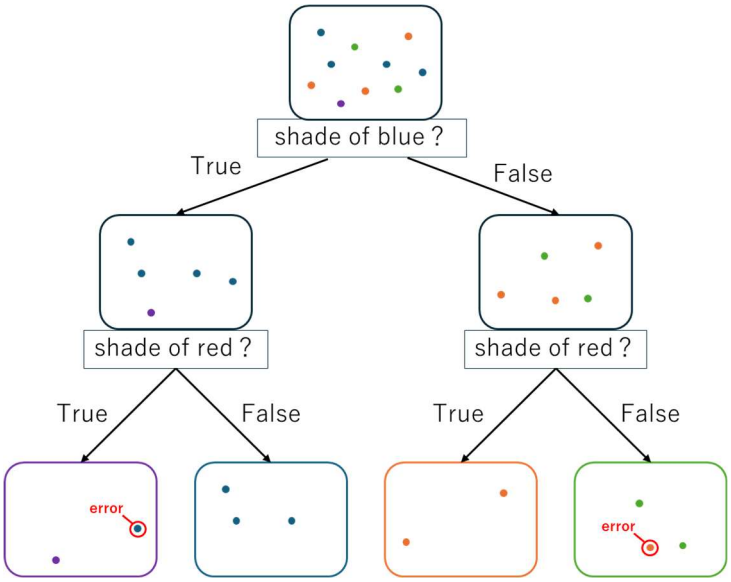
[22] Prokhorenkova, Liudmila, et al. "CatBoost: unbiased boosting with categorical features." Advances in neural information processing systems 31 (2018).

[23] Feature importance measures how much changing a feature's value affects the model's prediction on average.

BOX 3: Overview of CatBoost

CatBoost is a type of gradient boosting algorithm—an ensemble method applied to decision trees using gradient descent, similar to XGBoost and LightGBM. Specifically, it starts by constructing a decision tree (see Figure 28) using suitable conditional splits for each variable (e.g., "$if\ x_1 > \chi_1$ then ⋯ else ⋯"), where the split point χ_1 is often initialized using the feature's mean. The predicted values (including errors) from that tree are then used to train the next tree, and this process is repeated to generate the final prediction. Note that the methods for constructing decision trees and the optimization procedures during training differ among XGBoost, LightGBM, and CatBoost.

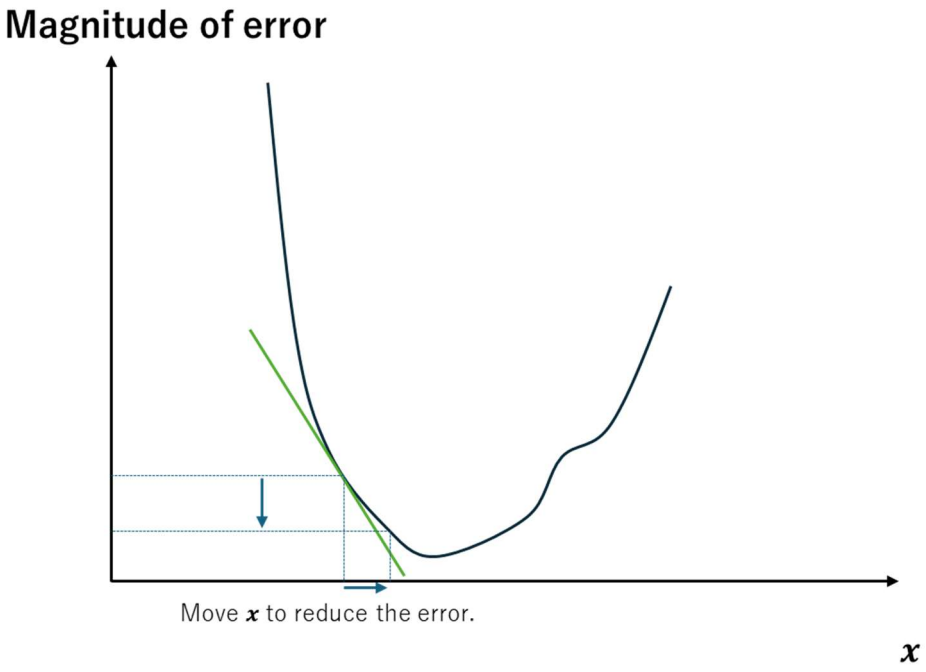
Figure 28: Image of decision tree



[Gradient descent]

One of the goals of machine learning algorithms is to make accurate predictions. A widely used measure of prediction accuracy is the "magnitude of error". One method to reduce this error is gradient descent. Specifically, when $x_1 = \chi_1$, the algorithm computes the slope of the error with respect to χ_1, and repeatedly updates χ_1 in the direction that reduces the error, gradually bringing the error closer to zero.

Figure 29: Image of gradient descent



[Boosting]

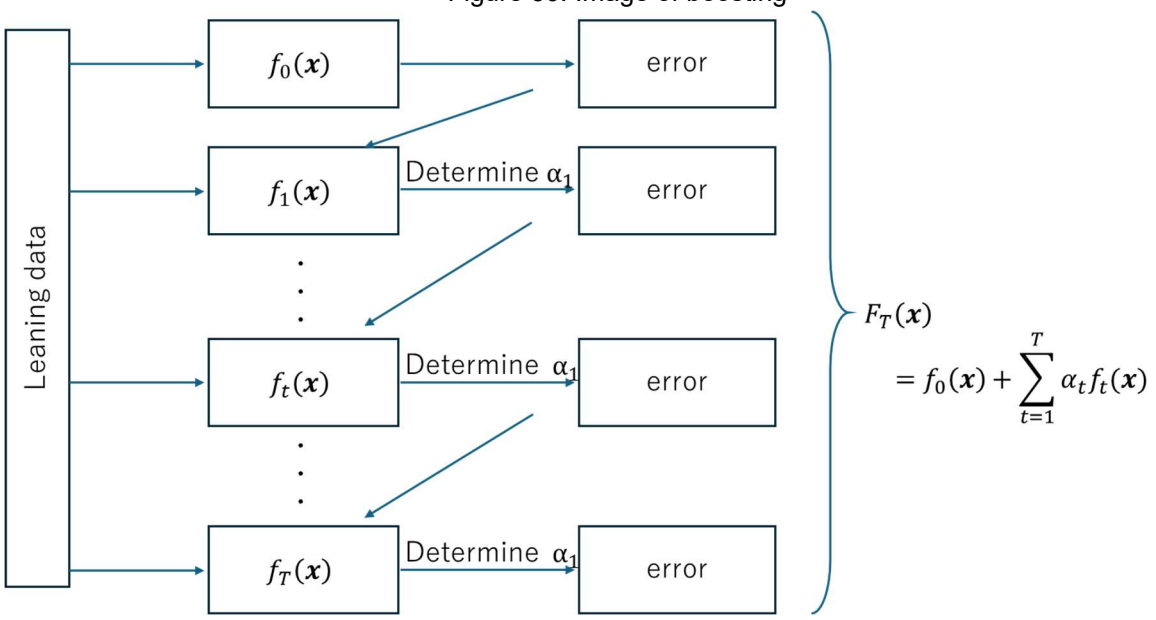
When simplifying the machine learning process, it involves creating a model using training data, predicting and comparing results to actual data for evaluation, recreating the model based on that evaluation, and repeating the prediction and evaluation cycle. Boosting refers to a method where, in each iteration, the model specifically focuses on learning from data points where the prediction error was large, building a new model repeatedly.

Expressed mathematically, the model after the T-th update $F_T(\boldsymbol{x})$ is:

$$F_T(\boldsymbol{x}) = f_0(\boldsymbol{x}) + \sum_{t=1}^{T} \alpha_t f_t(\boldsymbol{x})$$

where $f_0(\boldsymbol{x})$ is the initial model (such as the mean value model), and $f_t(\boldsymbol{x})$ is the model trained in the t-th iteration, which focuses on the data points that $F_t(\boldsymbol{x})$ previously mispredicted. The coefficient α_t in the t-th learning iteration is determined using gradient descent so as to minimize the error.

Figure 30: Image of boosting



BOX 4: Impact of companies with no financial data

In the analysis presented in the main section, companies without financial data are excluded from the sample. However, within newly-founded companies, there are some entities with no financial information—such as those within one year of receiving their corporate number. To estimate the loan interest rate level for borrowers lacking financial data, regression analyses were conducted under two scenarios: including and excluding sales (the available financial control variable). Newly-founded companies were separately defined as those within 5 years, 3 years, and 1 year of corporate number issuance. All other regression conditions remained consistent with those in Figure 26. The coefficients for the key explanatory variable from these regressions are shown in Figure 31. The results without controlling for sales show that the coefficient on the newly-founded-company flag is essentially the same across all definitions (within 1 year, 3 years, and 5 years). From this result, it can be inferred that excluding companies with no financial information—due to recent corporate number issuance—does not substantially affect the evaluation of the analysis results.

Figure 31: Coefficients for loan interest rate

Definition of newly-founded companies		Less than 5 years	Less than 3 years	Less than 1 year
Use of sales as a control variable	×	0.1746	0.1759	0.1583
	○	0.0434	0.0099	—

2. Loan maturity

In this sub-section, in order to examine the hypothesis that "the loan maturity may differ between newly-founded companies and existing ones even under identical conditions in terms of environment and financial status," a regression analysis was conducted using loan maturity as the dependent variable. Figure 32 below presents the data used, descriptions of each variable, and the regression results.

Figure 32: List of data used, variables and estimation results

Target data		Common Data Platform data (Regional bank I)	Loans executed between the reference date (end of September 2023) and one year prior (October 1, 2022), with no missing data for any variable, and for which a company number can be assigned.
Dependent variable		Loan term	The unit is years. lending days/365.25
Explanatory variable		Newly-Founded Companies Flag	A binary where newly-founded companies are represented by 1 and existing companies by 0.
Control variables	Loans	Log of initial principal	The base of the log is 10.
		Loan purpose※	Loan purpose such as commercial bills, loan agreements and etc..
		Type of interest rate※	Variable/Fixed/No Setting
		Bank + Credit Guarantee Association※	Dummy variables that cross the dummy variables for banks and the presence of a credit guarantee association.
	Companies	Industry sector※	Industry classification set by Bank of Japan.
		Company location※	By prefecture.
		Company scale※	Large / Mid-sized / Small and Medium-sized / Others
		Borrower classification※	Normal / Needs attention / Needs special attention / In danger of bankrupt / De facto bankrupt / Bankrupt
		Cross-border Flag	Binary where the lending to a company located in a prefecture different from the bank's head office is represented by 1.
		Log of sales	The base of the log is 10.
		Parent Company Flag	A binary where there is a registration of core companies and it is not oneself is represented by 1.

※ indicates that it is a dummy variable.

		Variable	Coefficient (years)
Dependent variable		Loan term	Constant 4.634
Explanatory variable		Newly-Founded Companies Flag	+0.251 (p-value:0)
Control variables	Loans	Log of initial principal	+1.647
		Loan purpose※	-6.288 ～ +16.120
		Type of interest rate※	-0.552 ～ +0.539
		Bank + Credit Guarantee Association※	-2.999 ～ +2.625
	Companies	Industry sector※	-3.701 ～ +7.473
		Company location※	-1.195 ～ +0.749
		Company scale※	-0.332 ～ +0.152
		Borrower classification※	+0.512 ～ +0.062
		Cross-border Flag	-0.041
		Log of sales	-1.077
		Parent Company Flag	-0.039

No. Observations:	503,268
Df Residuals:	503,030
Df Model:	237
Adj. R-squared:	0.5440

According to the regression results, being a newly-founded company is positively associated with a loan maturity extension of +0.251 years (approximately 3 months). Compared to the weighted average loan maturity of 5.34 years—calculated based on loan amounts for the credit agreements executed between October 2023 and September 2024, which is the target of this analysis—this extension is relatively short, suggesting that the overall impact is limited. This outcome may reflect that, under a low-interest rate environment, longer-term borrowing imposes a relatively low burden, and that the extended maturity corresponds to the demand for liquidity by newly-founded companies in a market characterized by an ample supply of funds. On the other hand, since banks typically hold less credit information on newly-founded companies than on existing ones, it is also plausible that they are less inclined to offer long-term loans to such borrowers. In this light, the finding of longer loan maturities for newly-founded companies, albeit by a short period (approximately 3 months), appears to contradict expectations.

To gain a deeper understanding of the factors influencing lending to newly-founded companies, it would be beneficial to enhance the analysis through the accumulation of further data and engagement with financial institutions, taking into account both macro-level and entity-specific factors that were not incorporated in the present analysis.

3. Credit guaranteed loans

In sub-section 1, the analysis on loan interest rates controlled for the effect of credit guarantee-backed loans through the use of control variables. However, in lending to newly-founded companies—where banks have limited information to assess creditworthiness—it is possible that banks address the cost arising from this information asymmetry not through adjustments to loan interest rates or maturities, but rather through the use of credit guarantees provided by credit guarantee corporations.

In this sub-section, the likelihood that loans to newly-founded companies are credit-guaranteed compared to loans to existing companies are examined, using a logistic regression analysis. This analysis is conducted on a restricted dataset consisting only of loans that are eligible for credit guarantee support, namely those extended to small and medium-sized enterprises (SMEs) and under applicable loan categories.

Figure 33 below presents the data used, descriptions of each variable, and the regression results.

Figure 33: List of data used and variables, and estimation results

Target data		Common Data Platform data（Regional bank I）	Loans executed between the reference date (end of September 2023) and one year prior (October 1, 2022), with no missing data for any variable, for which a company number can be assigned, and loans to company size and loan categories that are eligible for the Guarantee Association system.
Dependent variable		Credit Guarantee Association Flag	A binary where loans backed by a Guarantee Association are represented by 1 and those not backed are represented by 0.
Explanatory variable		Newly-Founded Companies Flag	A binary where newly-founded companies are represented by 1 and existing companies by 0.
Control variables	Loans	Log of initial principal	The base of the log is 10.
		Loan purpose※	Loan purpose such as commercial bills, loan agreements and etc..
		Type of interest rate※	Variable/Fixed/No Setting
		Bank※	By bank.
	Companies	Industry sector※	Industry classification set by the Bank of Japan.
		Company location※	By prefecture.
		Borrower classification※	Normal / Needs attention / Needs special attention / In danger of bankrupt / De facto bankrupt / Bankrupt
		Cross-border Flag	Binary where the lending to a company located in a prefecture different from the bank's head office is represented by 1.
		Log of sales	The base of the log is 10.
		Parent Company Flag	A binary where there is a registration of core companies and it is not oneself is represented by 1.

※ indicates that it is a dummy variable.

		Variable	Marginal Effect
Dependent variable		Credit Guarantee Association Flag	
Explanatory variable		Newly-Founded Companies Flag	+0.021 (p-value:0)
Control variables	Loans	Log of initial principal	-0.051
		Loan purpose※	-0.580 ～ +0.0076
		Type of interest rate※	-0.173 ～ +0.004
		Bank※	-0.224 ～ +0.211
	Companies	Industry sector※	-32.492 ～ +0.010
		Company location※	-1.195 ～ +0.749
		Borrower classification※	-0.052 ～ +0.205
		Cross-border Flag	-0.057
		Log of sales	-0.090
		Parent Company Flag	-0.085

No. Observations:	368,451
Df Residuals:	368,283
Df Model:	167

In sub-sections 1 and 2, linear models were employed for the analysis, allowing for a straightforward interpretation of the coefficients of explanatory and control variables as the marginal change in the dependent variable resulting from a one-unit change in each respective variable. In contrast, the logistic regression model used in this sub-section is a nonlinear model, and such interpretations are not directly applicable[24]. Accordingly, the marginal effects, which provide average estimates of change, was examined. Specifically, the marginal effect is calculated as the average of the estimated changes for each of the 368,451 records used in this analysis[25].

As a result, the analysis indicates that being a newly-founded company increases the probability of receiving a credit guarantee-backed loan by an average of +2.1 percentage points. However, given that the overall share of credit guarantee-backed loans among the target credit records in this analysis is 43.1%, this finding suggests that the association between being a newly-founded company and the likelihood of receiving a guaranteed loan is relatively small.

4. Consideration

Based on the analysis of differences between loans extended by regional banks to newly-founded companies and to existing companies—in terms of loan interest rates, maturities, and the use of credit guarantees—no substantial differences were observed when controlling for factors such as debtor

[24] In contrast to linear models, which assume a constant slope across all values, logistic regression models are nonlinear and exhibit varying slopes at different points along the curve.
[25] In this analysis, the marginal effects were calculated by estimating the change at each individual record and then taking the average across all records. However, an alternative approach is to calculate the marginal effect based on the change at the mean values of the explanatory and control variables across the entire dataset.

classification, industry, prefecture of location, and annual sales. In other words, whether or not a company is newly-founded does not appear to be a primary factor in banks' determination of lending conditions, suggesting that newly-founded companies are not subject to additional borrowing costs at the time of loan origination. That said, this result should be interpreted with caution for the following reasons:

(i) This analysis is based solely on post-loan-execution data, and therefore does not account for potential selection bias arising from the loan approval process;

(ii) Among newly-founded companies, there may be borrowers who are classified as being in good standing (i.e., rated "normal" for borrower classification) if, for example, their initial losses are modest, or their business performance does not deviate significantly from the original plan. This suggests that being a newly-founded company may have unique implications for borrower classification; and

(iii) The analysis was conducted using loan execution data from the one-year period preceding the reference date of end-September 2023, during which the low-interest rate environment persisted.

In light of the above considerations, continued efforts to collect and accumulate data—along with conducting further analyses, such as time-series analyses—will be essential to gain a more accurate understanding of the actual lending practices.

V. Conclusion

In this paper, we examined the status of newly-founded companies and the banks' lending practices toward such companies by using loan-level data obtained from the Common DP combined with the NTA corporate number information and other sources. Regression analyses to investigate whether there are differences in loan conditions between newly-founded and existing companies at regional banks are also conducted.

The results of this analysis indicate a positive correlation between the prefecture-level newly-founded rate and the proportion of the working-age population, as well as between the newly-founded rate and the estimated exit rate. These findings suggest that in prefectures with a higher proportion of the working-age population, there may be a more active turnover of corporations. At the same time, attention should be paid to the fact that in some prefectures, the estimated exit rate exceeds the newly-founded rate.

The analysis also revealed certain characteristics of lending to newly-founded companies, such as a higher concentration of such loans to companies located in Tokyo and to those engaged in the

real estate sector. Furthermore, regression analyses examining the differences in lending conditions between newly-founded and existing companies at regional banks showed that being a newly-founded company does not have a significant impact on loan interest rates, loan maturities, or the likelihood of receiving a credit guarantee-backed loan.

It should be noted that the definition of newly-founded companies in this paper encompasses a wide range of entities, not limited to so-called startups, and that the analysis may be subject to selection bias and other limitations. Furthermore, support for newly-founded companies includes not only debt financing such as loans, but also a variety of funding methods including equity financing. In addition, non-financial support—such as business matching services and digital transformation (DX) assistance provided by banks—also plays a significant role. Therefore, the scope of this paper represents only one aspect of the broader support ecosystem available to newly-founded companies.

The FSA will continue to collect and accumulate loan-level data and other relevant information, and will utilize such data to conduct analyses and assessments from various perspectives. Through these efforts, the FSA aims to deepen its understanding of banks' lending attitudes and the functioning of financial intermediation, while also striving to enhance its understanding of attributes of newly-founded companies.