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## What kinds of credit associations favor introducing new financial technology?\*

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### <Abstract>

Since 2003, the Financial Services Agency has set relationship banking enhancement program as an important strategic task to improve the functions of regional financial institutions. In this enhancement program, the FSA recommended that regional financial institutions introduce new financial products such as collateralized loan obligations (CLOs) and collateralized bond obligations (CBOs). However, this was left up to each institution's discretion rather than being mandatory. This resulted in a large difference in the introduction of new products. Therefore, this paper has analyzed what kinds of credit associations favorably increased the use of new financial products. As a result, it has been confirmed that the larger their lending shares and management scale, and the better their business conditions are, the more positively they work on the introduction of new products. Considering the fact that relationships between financial institutions and enterprises tend to be fixed in Japan, this means that medium and small enterprises will have restrictions on the financial products they can use depending on the situation of their main banks.

### <Key words>

Small businesses, New financial products, Relationship banking, Credit associations, Japan.

### <JEL classifications>

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## 1. Introduction

Since 2003, the Financial Services Agency (FSA) has promoted feature enhancements of relationship banking, targeting regional financial institutions. This was done to improve the profitability of regional financial institutions as they have suffered from bad loans. The program covered a wide area, but one of the most important aspects was to help regional financial institutions become familiar with new financial products and offer them to medium-to-small enterprises that required these products. More specifically, these products included start-up support funding products, funding with a scoring model, funding with a syndicated loan, and securitization products (including CLOs and CBOs).

However, it was left to each institution's discretion to deal with these new products, so the effort put forth in the four years since March 2003 varies greatly. The purpose of this paper is to analyze what factors caused such a difference. In Japan, there are two different kinds of regional financial institutions, banks and credit associations (Shinkin Bank in Japanese), and they have organizational differences as banks are stock companies and credit associations are cooperative financial institutions. In addition, generally speaking, banks are larger in size than credit associations. Most banks have been introducing new financial products before the commencement of the relationship banking feature enhancement program by the FSA. For this reason, it would be more interesting to study smaller credit associations to find out the cause of the variation. Therefore, this paper focuses on how credit associations introduced new financial products<sup>1</sup>.

The structure of this paper is as follows: Section 2 summarizes the situation of how credit associations introduced new financial products between 2003 and 2007; Section 3 explains the data used in the analysis; Section 4 reports the results; and Section 5 concludes the paper.

## 2. The Disclosure Situation of the Relationship Banking Results

In the relationship banking feature enhancement program introduced by the FSA, (1) start-up

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<sup>1</sup> Based on questionnaire-type research by the U.S. Federal Reserve, Mach and Wolken (2006) analyzed the level of usage of financial products by medium to small enterprises in the United States. However, analysis for detailed categorization of loan products has not been performed. Yamori(2009) analyzed the utilization of Japanese small businesses based on his own questioner result.

support funding, (2) credit scoring loans, (3) syndicated loans, and (4) CLOs (collateralized loan obligations) were listed as essential features. Thus, we decided to analyze these four new financial products. The situation of features introduction in the industry as a whole is shown in Table 1.

Unfortunately, there is no database that discloses individual financial institution's figures together, so we searched the Web sites of all 287 credit associations that existed as of the end of March 2007 when the four-year feature enhancement program concluded to find relevant figures. As a result, we were not able to find relevant data for 107 credit associations (about 40%) on their Web sites.

It is unlikely that had they actually completed the recommendation by the FSA they did not disclose the data, so we safely assumed that the credit associations that did not disclosed any data had not taken up such project<sup>2</sup>. Thus, we can interpret the disclosure as a proxy variable for whether they have participated in this project or not.

However, even among credit associations that have disclosed the data, there are those that only disclosed either one of the number of items or the amount of money, and those that disclosed both. Taking the possibility that there is a difference between them, we will consider two patterns in the following analysis. Firstly, credit associations in which the number of items and amount of money are both disclosed are considered as "working on the project," and credit associations in which nothing is disclosed are considered as "not working on the project." This is Case 1. Credit associations that disclosed either one of the items and the amount of money are excluded intentionally from the Case 1 analysis. Next, in Case 2, if a credit association disclosed at least one of the number of items or amount of money, it is regarded as "working on the project," and those that did not disclose anything is regarded as "not working on the project."

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<sup>2</sup> Spiegel and Yamori (2006) analyzed optional disclosure of bad debt of credit associations and it was discovered that disadvantageous information tends not to be disclosed.

Table 1. Relational banking action program of credit associations (number of cases)

	2003–2004	2005–2006	Total
Funding using start-up support funding products	2,667	5,865	8,532
Funding using scoring model products	73,041	110,632	183,673
Participating syndicated loan	776	1,645	2,421
Debt liquidation, securitization (including CLOs and CBOs)	738	2,209	2,947

(Source: “Credit association participation through old and new action program period” [released on July 12, 2007], The National Association of Shinkin Banks)

### 3. Method of Analysis

This paper verifies the attitude of the credit associations towards new financial products using logit model analysis. More specifically, logit analysis is performed on each of the four main items above to verify the factors that caused differences in attitudes towards new financial products.

As possible factors, this paper considers the following variables. First, the bad loan ratio change (BLRCHG) will be adopted as an indicator reflecting the health of the institution. The value derived by subtracting the value in 2003 from the value in 2006 is used as the change. It is possible that the better their health, the more they can afford to initiate something new, but it is also possible that the better the health, the more conservative they become and more negative about trying something new.

As an indicator reflecting profitability, the change in interest rate on loans (IRLCHG) has been adopted, and the value derived by subtracting the value in 2003 from the value in 2006 is used as well. Note that the interest rate on loans is calculated by dividing the interest on loans and discounts with the outstanding balance. If certain management vitality is required to deal with new financial products, it can be assumed that credit associations with improving profitability are more willing to introduce such products. On the other hand, it can also be said that if high profitability has already been achieved with conventional products, they will have little incentive to introduce new products.

Next, the overhead cost rate (OHCR) is adopted as an indicator that reflects influences on costs associated with introducing new financial products. Note that the overhead cost rate is defined by dividing the operating cost with ordinary revenue. Participating in a syndicated loan is not so costly,

although the profitability is low. The higher the overhead costs a financial institution has, the more attractive these new low-cost financial products will be. Thus, it is possible that credit associations with high overhead costs are favorable to introducing some kinds of new financial products.

In addition, the market share of lending per prefecture (MSLPP) will be adopted as an indicator that reflects differences in each competitive environment. The higher the share they have in the lending market, the more difficult it is to improve their share with existing products, so they need to use new products<sup>3</sup>. On the other hand, credit associations with a low share might have a stronger motive in taking customers from other financial institutions using new products. Credit associations have a geographically-limited business infrastructure compared to regional banks, so it is fair to define their degree of competition based on prefectures.

Finally, their size might affect their attitude toward introduction. Here, a logarithm of total assets (LAST) is adopted. If the introduction of new financial products is associated with large fixed costs, the economies of scale will become important, so larger credit associations will be more favorable. On the other hand, the larger the organization is, the less flexible it will be, so they might be negative to new introduction.

Apart from two variables measuring changes, the values are all as of the end of FY 2006 (i.e., March 31, 2007). The financial data of credit associations is taken from the “National Credit Association Financial Statements” by Kin-yu Tosho Consultant Corporation. The outstanding balances of loaned money per prefecture used to calculate lending market share are taken from “Finance Map 2007” (Monthly Finance Journal’s Special Issue) by Nikkin Co.

#### 4. Results of the Analysis

Table 2 summarizes the analysis results of logit model regressions<sup>4</sup>. The dependent variables are dummy variables, with 0 set for the credit associations that have not introduced new financial products and 1 set for those that have. The number of the former is 103 for both Case 1 and Case 2.

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<sup>3</sup> Boot (2000) reports that the impact that the level of competition in loan market gives on relationship banking is not obvious due to other conflicting factors.

<sup>4</sup> Correlation coefficient between explanation variables was the highest between loaned money share in each prefecture (MSLPP) and logarithm of total assets (LAST) for both estimate models. However, including factors between other variables, all correlation coefficients were absolute values below 0.5, so it was concluded that there is no problem of multicollinearity.

Beginning with start-up support funding, the case that targets credit associations that disclose data for both the number of items and amount of money (referred to as “Case 1”) has a 10% significant positive coefficient for the interest rate of loan change (IRLCHC). We can see that those who succeed in improving the interest rate of loan pricing tend to use start-up support funding. In addition, both with Case 1 and the Case 2, where credit associations disclose at least one of the number of items or amount of money, the values for market share of lending per prefecture (MSLPP) and the logarithm of total assets (LAST) are significantly positive. This means that credit associations with a high market share of lending and large management scale are willing to use start-up support funding. However, both cases have low determination coefficients, indicating that credit associations that participate in start-up support funding have diverse attributes.

As for syndicated loans, Case 1 has a significantly positive coefficient for the overhead cost rate (OHCR). This indicates that credit associations with relatively high overhead costs are eager to participate in syndicated loans. In addition, although they are not significant, the coefficients for the bad loan ratio change (BLRCHG) are negative for both cases, meaning that credit associations with advancing bad loan disposal tend to participate in syndicated loans. The coefficients for market share of lending per prefecture (MSLPP) and the logarithm of total assets (LAST) are significantly positive here.

Scoring model loan is a category that many credit associations started to deal with, but among the explanatory variables, only the market share of lending (MSLPP) and the logarithm of total assets (LAST) have significant coefficients. In addition, on the contrary to the syndicated loans, the coefficient for the bad loan ratio change (BLRCHG) is positive for both cases.

Finally, as for CLOs (collateralized loan obligations), both cases have a significant positive coefficients for the bad loan ratio change (BLRCHG), on the contrary to start-up support funding and syndicated loans. As securitization is one of the method to off-balance band loans, credit associations with an increasing bad loan ratio are working on off-balancing through CLO. Apart from this, the interest rate of loan change (IRLCHG), market share of lending per prefecture (MSLPP), and the logarithm of total assets (LAST) are significantly positive. Interestingly, the expected model for CLOs—the item with fewest credit association working on it—has the highest determination coefficient. CLOs is a task that requires a complicated scheme (such as a special-purpose company to assign loans), and has few credit associations that are working on it, so

those who are working on it have similar attributes, resulting in such values.

As discussed above, whether significant or not, the coefficients of the interest rate of loan change (IRLCHG) and overhead costs rate (OHCR) are positive, indicating that credit associations with improved interest rates of loan pricing and high overhead cost rates are likely to introduce new finance products. In addition, coefficients for the market share of lending (MSLPP) and logarithm of total assets (LAST) are significantly positive, revealing that credit associations with stronger market power and larger management scale are favorable to introducing new financial products<sup>5</sup>.

## 5 Conclusions

This paper analyzed differences in attitudes of financial institutions towards new financial products. Credit associations with improved pricing for interest rates of lending and high overhead cost rates are more likely to introduce new financial products. In addition, those with larger market power and management scale are also positive toward introducing new products.

In Japan, the relationship between enterprises and financial associations tend to be fixed. This means that enterprises will not actually be able to use new financial products unless the financial institutions they work with are willing to provide. The smaller the enterprise scale is, the more they tend to deal with smaller or weaker financial institutions, which are likely to provide less new financial products. Therefore, it can be said that smaller companies are deprived of opportunities to use new financial products.

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<sup>5</sup> Multinomial logit regression was also performed to verify the differences among characteristics in each item; however, due to factors such as extreme reduction in the number of samples, we could not achieve satisfactory analysis result.

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Table 2. Introducing new financial products (logit regression)

	Start-Up Support Funding				Syndicated Loans			
	Case 1		Case 2		Case 1		Case 2	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Constant term	-6.4776 **	2.8600	-6.3930 **	2.6498	-17.4481 ***	4.2312	-15.5407 ***	3.7578
BLRCHG	-0.0076	0.0562	0.0048	0.0537	-0.0105	0.0739	-0.0102	0.0656
IRLCHG	1.2394 *	0.0718	1.0498	0.0672	0.8373	0.0918	1.0844	0.0849
OHCR	1.1064	1.9936	0.9927	1.8623	4.9208 *	2.7526	3.5130	2.3794
MSLPP	14.6301 *	8.4594	15.9503 *	8.2299	17.7206 *	9.2937	18.9041 **	8.8389
LAST	0.4429 **	0.1855	0.4630 ***	0.1739	1.0661 ***	0.2623	1.0170 ***	0.2385
Scaled R-squared	0.0934		0.0914		0.2259		0.2347	
Log likelihood	-127.709		-145.859		-78.946		-101.019	
Number of samples	198		227		153		180	
(positive values)	95		124		50		77	

	Credit Scoring						CLOs (Collateralized Loan Obligations)					
	Case 1			Case 2			Case 1			Case 2		
	Coefficient		Standard error	Coefficient		Standard error	Coefficient		Standard error	Coefficient		Standard error
Constant term	-10.7215	***	3.6418	-11.5676	***	3.6099	-27.1881	***	5.9907	-29.0228	***	5.6725
BLRCHG	0.0410		0.0658	0.0379		0.0643	0.1929	*	0.1109	0.1968	*	0.1027
IRLCHG	0.8545		0.0753	0.9899		0.0749	1.5621		0.1102	1.7067		0.1076
OHCR	2.6155		2.3156	2.5657		2.2951	7.4706	**	3.6406	7.8843	**	3.3276
MSLPP	23.1054	**	9.6153	23.1608	**	9.6291	32.1546	**	13.1317	20.9758	*	11.7407
LAST	0.6706	***	0.2344	0.7453	***	0.2317	1.6780	***	0.3671	1.8474	***	0.3543
Scaled R-squared	0.1584			0.1780			0.3421			0.3602		
Log likelihood	-99.390			-101.778			-49.218			-58.150		
Number of samples	169			174			134			143		
(positive values)	66			71			31			40		

(Note: \*\*\*, \*\*, \* indicate significance level of 1%, 5%, and 10% respectively.)