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Determinants of Transaction-based Lending to SMEs in Japan: Borrower Characteristic Evidences from the MHRI Survey

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Summary

1. The financial turmoil during the "lost decade" in the 1990s spurred intense debate on whether traditional relationship lending in Japan, as is characterized by the close ties between the "main bank" and firms, had been working effectively. Amid such concerns, several transaction–based lending technologies that are based mainly on quantitative and verifiable "hard" information have been expanding in Japan.
2. By utilizing a unique set of survey data, this paper seeks to shed light on the recent developments of transaction–based lending, namely, credit scoring lending, collateralized loan/bond obligations (CLO/CBOs), asset–based lending (ABL), and syndicated loans, in Japan. The survey reveals that these lending technologies have been gradually spreading among Japanese firms, especially among small–and–medium sized enterprises (SMEs).
3. Although the lending technologies we have surveyed share the common feature in that their credit decisions are mainly based on hard information, they are not homogeneous. We find following borrower characteristics that influence the use of different lending technologies.
4. First, we find that the use rates of credit scoring lending and CLO/CBOs are higher among smaller firms; the use rate of syndicated loans is higher among larger firms; and the use rate of ABL falls in the middle. We attribute these findings to the fact that each lending technology has distinct screening and monitoring procedures and thus there are substantial differences among the four lending technologies regarding the extent to which the financing constraints due to economies of scale in screening and monitoring activities are resolved.
5. Second, we find that riskier and more financially constrained firms tend to use credit scoring lending, CLO/CBOs, and ABL. In contrast, syndicated loans are more likely to be used by low–risk

firms with strong financial conditions. We also find that the users of syndicated loans are more likely to have audited financial statements than the non–users.

6. Finally, we have mixed evidence regarding the relationship between relationship lending and transaction–based lending. Consistent with the theories arguing relationship lending and transaction–based lending are substitutes, the users of CLO/CBOs, ABL, and syndicated loans have transactions with a larger number of banks than the non–users do. On the other hand, we find that the users of CLO/CBOs weigh the intimate contacts with relationship managers more than their non–users do, and that the users of ABL and syndicated loans weigh more on the other relationship–enhancing elements than their non–users. These suggest that transaction–based lending and relationship lending are complements. We shall explore this issue as well as other relevant topics in future research.

1. Introduction

After the "lost decade" during the 1990s, the Japanese economy has been sustaining a long–lived, albeit modest, pace of growth. At the same time, bank lending to small–and–medium sized enterprises (SMEs), which experienced turmoil in the late 1990s, has picked up since 2006. The recent increase of bank lending to SMEs has been accompanied with the development of "transaction–based lending."

Traditionally, corporate financing in Japan has been characterized by the dominance of close bank–firm ties, so called the "main–bank system." In the realm of small business financing, it has been argued that lending decisions by the main bank have been based not only on quantitative and verifiable "hard" information, such as financial statement data, but also on qualitative and unverifiable "soft" information, such as the characteristics of the business owner,

morale of the employees, and so on. The lending technology based on soft information is referred to as relationship lending in corporate finance literature.

However, the financial turmoil during the lost decade spurred intense debate on whether traditional relationship lending in Japan had been working effectively. Amid such concerns, several transaction–based lending technologies based mainly on hard information have been expanding in Japan.

By utilizing a unique set of survey data, this paper seeks to shed light on the recent developments of these relatively new transaction–based lending technologies in Japan. We conducted a "Questionnaire Survey on New Borrowing Instruments" in August – September 2006, in which questionnaires were sent to 3,000 firms that are members of Mizuho Research Institute's (hereinafter MHRI) corporate membership services. As shown below, most of the questionnaire respondents were SMEs. The lending technologies we have surveyed are credit scoring lending, collateralized loan/bond obligations (CLO/CBOs), asset–based lending (ABL), and syndicated–loans.

As emphasized by Berger and Udell (2006), although these transaction–based lending technologies to SMEs share the common feature in that their credit decisions are mainly based on hard information, they are not homogeneous. There may be significant differences among them that makes one transaction–based lending technology suitable for particular small businesses, but not for other small businesses with different characteristics. As far as we know, however, there is little systematic research that compares the use of different transaction–based lending technologies in Japan. Our paper tries to fill this gap by linking the firms' willingness to borrow by a new lending technology with the firms' characteristics.

Prior research that is closely related to this paper is Uchida, Udell, and Yamori (2006). They investigate the possible complementarities among relationship lending, financial statement lending, real estate lending, and other fixed asset lending in Japan, by constructing lending technology indices that are based on the

borrowers' perceptions on the factors that influence their main banks' lending decisions. Uchida, Udell, and Yamori (2006) find that the complementarity is particularly strong between financial statement lending and other lending technologies, and that real estate lending and relationship lending are mutually incompatible. The main differences between our work and Uchida, Udell, and Yamori are that (i) rather than constructing lending indices, we directly ask borrowing firms whether they use a particular transaction–based lending technology, and that (ii) we focus on credit scoring lending and asset–based lending as well as syndicated loans, a typical financial statement lending scheme in Japan. On the other hand, we do not include real estate lending and other fixed–asset lending in our scope.

The paper is organized as follows. Section 2 overviews the recent development of transaction–based lending technologies in Japan. Section 3 outlines our survey design and highlights some basic results. Section 4 investigates the borrower characteristics that determine the use of credit scoring lending, CLO/CBOs, ABL, and syndicated–loans. Section 5 summarizes our findings.

2. Recent Developments of Transaction–based Lending to SMEs in Japan

Small businesses are widely viewed as the foundation of job creation and the engine of economic growth. Nonetheless, many small businesses face financing difficulties due to the following two reasons.

First, it is difficult for creditors to access the creditworthiness of small business borrowers due to the lack of credible information about them. Small firms are typically more opaque in terms of information than large firms because they do not have audited financial statements to verify their financial conditions. The

asymmetric information problem between lenders and borrowers then yields a concern for the *adverse selection* problem before loans are provided, under which riskier firms are much more willing to borrow because creditors cannot differentiate the terms of loan contracts based on the riskiness of borrowers. There are also concerns regarding the *moral hazard* problem after loans are made, under which borrowers invest funds to riskier projects or places more weight upon increasing costs or dividends rather than repaying the debts. These sorts of "agency costs" are inherent in any form of debt contract, but are particularly acute in lending to small businesses whose information opacity is most severe.

Financial intermediaries are producing relevant information regarding borrowers' prospects of debt repayment via screening and monitoring, and thus mitigate the adverse selection problem and moral hazard problem. However, financing difficulties arise in the realm of small business lending because screening and monitoring costs are essentially fixed and thus create economies of scale in the borrowing amount.

To address these difficulties that small businesses encounter, financial institutions use a number of different lending technologies. The lending technology is distinguished by a unique combination of the primary source of information, screening and underwriting policies/procedures, loan contract structure, and monitoring mechanisms (Berger and Udell 2002; 2006). Drawing upon Berger and Udell and other relevant literature as well as specific lending features in Japan, **Chart 1** summarizes the lending technologies we have surveyed (Note 1).

For one, relationship lending has been developed as a traditional type of lending technology for small businesses. Under relationship lending, financial institutions invest in obtaining customer–specific "soft" information, often uneasily verified and thus proprietary in nature. Through multiple interactions with the same customer over time and/or across products, financial institutions reduce the transaction costs (per unit) of small business loans.

Chart 1: Outlook on lending technologies to SMEs

	Primary source of information	Screening & underwriting policies	Structure of the loan contract	Monitoring Strategies
Relationship Lending	Soft info	Cash flow (as judged by the loan officer)	• intertemporal smoothing of interest rates • often with collateral	Via direct contracts by the loan officer
Financial Statement Lending	Hard info (reliable financial statements)	Cash flow (as reflected in strong financial performance, such as EBITDA)	• covenants • loan interest rates based on credit risks • often with collateral	Via covenants
Credit Scoring Lending	Hard info (characteristics of the owner & small business)	Credit Score (calculated by the quantitative model)	• loan interest rates based on credit risks • often without collateral	Via early warning system
Asset-Based Lending	Hard info (liquidation value of collateral)	Collateral value (e.g. loan-to-value ratio)	• loan interest rates based on LTV • always with collateral	Intensive monitoring of collateral values

Source: Authors' own interpretation based on Berger and Udell (2006) and interviews with bankers

On the other hand, transactions–based lending has also been spreading in Japan recently. Below, we have outlined the development of four transactions–based lending technologies to SMEs that we have surveyed.

(1) Small Business Credit Scoring

Credit scoring is a lending technology that determines whether or not to approve a loan application as well as the loan contract terms on the basis of a "credit score" of a prospective borrower. The credit score is computed by a statistical model in which hard information such as the financial conditions and the characteristics of the SME and its representative are used.

The distinguishing characteristic of small business credit scoring, in comparison with other transaction–based lending technologies

such as financial statement lending and asset–based lending, is that it recognizes loans as portfolio. While financial statement lending and asset–based lending judge credit risks with respect to each loan on a temporal basis, credit scoring determines creditworthiness on the basis of the average performance of the overall portfolio.

By using statistical methods and recognizing loans as portfolio, it can automate the screening and monitoring activities by lenders to a certain degree. This can significantly reduce the screening and monitoring costs of the small business loans for lenders and thus mitigate the financing difficulties of small businesses.

Credit scoring can also avoid uneven credit decisions by loan officers that are inherent in traditional relationship lending, and thus ensures the objectivity and consistency of the loan screening process. Because the credit scoring model seeks to numerically evaluate the creditworthiness of small businesses, it can also be applied to set loan contract terms, such as lending interest rates, proportionately to credit risks, and may increase the availability of credit for risky marginal firms without tangible assets to be pledged as collateral. Moreover, credit scoring technology is useful in enhancing the securitization of small business loans such as collateralized loan obligations (CLOs) that requires objective analysis of the credit risks of the small business loan portfolio.

In Japan, Tokyo Tomin Bank began to use credit scoring in 1998, setting off a rapid proliferation of the lending technique through its usage by major banks and other regional banks. **Chart 2** shows the number of regional financial institutions adopting credit scoring technology, and the number and the amount of loans originated. According to **Chart 2**, credit scoring loans originated by regional financial institutions have soared from roughly 0.4 trillion yen in FY2002 to 2.6 trillion yen in FY2005. The rate of credit scoring usage in terms of business categories was 89% among regional banks and 18% among credit cooperatives. This is consistent with the nature of credit scoring loans which is well–suited for larger banks with a larger number of loan applications that can be managed as a portfolio (Note 2).

Chart 2: Development of credit scoring lending by regional financial institutions

	Regional financial institutions					Number of transactions	Amount of loans originated (billion yen)
		Regional banks	Second tier regional banks	Shinkin banks	Credit cooperatives		
FY2002 (ratio)	117 (19%)	34 (52%)	26 (52%)	47 (15%)	10 (6%)	58,621	392.1
FY2003 (ratio)	188 (31%)	43 (66%)	36 (72%)	88 (29%)	21 (12%)	136,015	1,088.6
FY2004 (ratio)	269 (46%)	58 (89%)	43 (90%)	136 (46%)	32 (18%)	191,682	1,886.7
FY2005 (ratio)	n. a.	n. a.	n. a.	n. a.	n. a.	250,127	2,629.3

Notes: The figures in parentheses indicate the ratio of the number of banks conducting credit scoring to the number of total banks in each category.
Source: Financial Services Agency

It should be noted that, so far, most small business credit scoring models are based on the hard information of the business (SME) itself in Japan. As such, roughly one–third of Japanese banks exclude proprietorship (whose financial statements are poorly documented in general) from eligible borrowers of credit scoring loans (Ono, 2005). This is in sharp contrast to the situation in the United States where small business credit scoring such as Fair Isaac's Small Business Scoring Services is primarily based on the personal data of the owners of small businesses, obtained from consumer credit bureaus (Berger and Frame, 2007). In Japan, most commercial banks are in short supply of data on consumer credit history, and the lack of information sharing system among different consumer credit bureaus prevents banks from using consumer information for the credit scoring model.

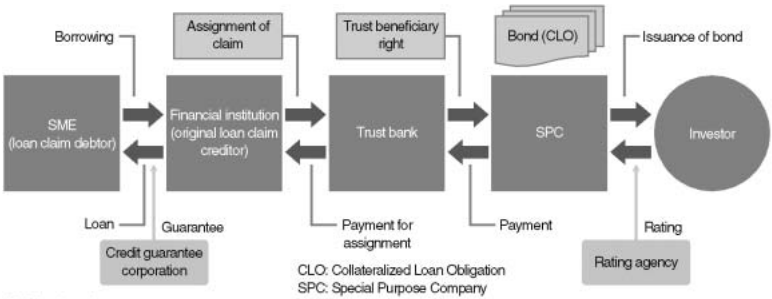
(2) Collateralized loan/bond obligation (CLO/CBO)

Collateralized loan/bond obligation (CLO/CBO) is one form of securitization that converts a portfolio of individual loans/bonds into a security that will be sold to third–party investors.

In the United States where the market for CLO/CBO has developed significantly since the 1990s, existing loans and bonds are packaged into securities to be sold to investors. Thus, securitizations of loans and bonds are not directly linked to the new funding for businesses. Moreover, securitization of small business loans has been modest, because there have been several impediments to the development of the securitization market, such as the lack of uniform standards for underwriting and loan documentation and the limited record of the historical loan loss rates. Indeed, most of the securitized small business loans were the guaranteed portions of loans originated under the Small Business Administration's 7(a) Loan Guaranty Program that did not involve the credit risk and informational impediments (FRB, 2002).

In contrast, securitization of SME loans and bonds in Japan mostly involve the origination of new loans and bonds that utilize the credit scoring technique. In many cases, local governments take the initiative to enhance the securitization of small business loans and bonds. The first example of such local government–led securitization was Tokyo Metro–Government CLO of Small and Medium–sized BIZ Loans in 2000, in which ¥69.4 billion CLOs, backed by small business loans to 1,715 SMEs in Tokyo, were issued (**Chart 3**). Since then, Tokyo Metro–Government has been continuously conducting government–supported CLO/CBOs every year. The CLOs issued in the first two years were also backed by public credit guarantees, but the more recent CLO/CBOs did not require any public guarantee and collateral. By March 2007, 14,600 SMEs in Tokyo obtained new funding that amounted to ¥660 billion under the Tokyo government–led CLO/CBOs.

Chart 3: CLO backing SME loans in Tokyo



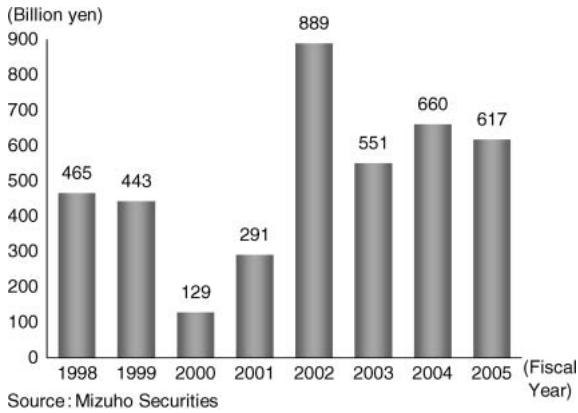
CLO issuing scheme
1) Financial institution lends to SME, and assigns loan claim trust bank.
2) Trust bank assigns trust beneficiary right to SPC.
3) SPC issues bond (CLO) secured by trust beneficiary right for sale to investors.
4) Loan from financial institution to SME guaranteed by Credit Guarantee Corporation of Tokyo. As a result, investment can be attracted more easily by, for example, obtaining ratings for bond.

Source: Tokyo Metropolitan Government website.

As the securities are sold to third party investors, the issuance of small business CLO/CBOs requires transparent underwriting policies of the original loans/bonds. In the cases of local governments–led CLO/CBOs in Japan, the minimum eligibility requirements regarding the financial conditions of borrowing SMEs are usually set. In addition, because the performance of securities sold to third–party investors is based on the credit risks of the small business loans portfolio, credit scoring models such as the Credit Risk Database (the most popular SME risk database developed at the initiative of Small and Medium Enterprise Agency) also play a significant role in originating the CLO/CBOs. As such, the CLO/CBOs address the informational–opacity problem and the high screening and monitoring costs of small business loans as the credit scoring lending does.

There are no official figures for the market size of CLO/CBOs in Japan. Mizuho Securities estimates that the CLO/CBOs issued in 2005 surpassed ¥600 billion, and that the cumulative issuance amount since 1998 was roughly ¥4 trillion (**Chart 4** (Note 3)).

Chart 4: Issuance amount of CLO/CBO



Source: Mizuho Securities

(3) Asset–based Lending

Asset–based lending (ABL) establishes credit lines, usually for working capital purposes, on the basis of the collateral value of short–term liquid assets such as accounts receivable and inventories. The amount of credit line is usually set below the value of collateral that are subject to frequent assessments so that the loan–to–value (LTV) ratio always remains below 1. Thus, ABL addresses the problems stemming from the information asymmetry of SME by focusing on a subset of a small business's assets, rather than the opaque business itself.

Note, however, that the use of collateral itself does not distinguish ABL from other lending technologies (Berger and Udell, 2006). Although accounts receivable and inventories have seldom been pledged as collateral in Japan until recently, they have been associated frequently with other lending technologies such as relationship lending as a secondary source of repayment in, for example, the United States. That is, ABL is distinguished by the primary foundations of the lending decisions: the collateral value in ABL and the overall creditworthiness of the borrowing firm in, say, relationship lending.

As such, ABL has flourished in the United States in the 1990s as

the lending technologies suitable for firms that are slightly sub–prime in terms of cash flow and leverage but nevertheless have high quality short–term assets; for example, accounts receivable to government agencies. Several empirical studies for the US found that finance companies, main providers of asset–based lending, serve observably riskier borrowers than commercial banks do, and may charge higher interest rates (Carey, Post, and Sharpe, 1998; Haynes, 2005).

Because the borrowers are risky, the lender monitors and manages the collateralized assets, as well as the business condition of the borrower, stringently and frequently. Typically, the value of collateral is evaluated daily or weekly for accounts receivable and weekly or monthly for inventories. Unlike credit scoring lending, asset–based lending requires labor–intensive screening and monitoring, and is thus suited for mid–sized firms with a certain amount of loan demand.

In Japan, accounts receivable comprise 16.3% of SMEs' assets and inventories comprise 8.7% in 2005. Nevertheless, accounts receivable and inventories have been rarely used as collateral for not only ABL but also for conventional (relationship–based) bank loans. The most popular type of collateral in the financing of SMEs in Japan is real estate, and financial assets such as deposits, shares, and commercial bills are the second most common form of collateral (Ono and Uesugi, 2005).

There are several reasons for the non–use of accounts receivable and inventories as collateral. For one, the lack of a registration system that is similar to the UCC (Uniform Commercial Code) filing system in the U.S. prevented Japan's banks from using these assets as collateral, because, without such registration system, creditors could not verify whether the assets they took as collateral had been already pledged to other creditors or not.

Amid these concerns, the Japanese government set up a registration system for accounts receivable in 1998 to facilitate SME financing that did not depend upon real estate as collateral. The registration system was revised in 2005 to include inventories as well

as future accounts receivable.

According to the Financial Services Agency, the amount of ABL originated by regional financial institutions was about ¥200 billion in 2005, whereas the number of loans was 23,585 (Note 4) (**Chart 5**). However, many of them seemed to use account receivable–backed loan guarantee program that started in 2001, in which 90% of the credit extended was guaranteed by the public Credit Guarantee Corporation. As shown by **Chart 5**, the number of ABL backed by inventories is very small so far.

Chart 5: Development of ABL by regional financial institutions

	Regional financial institutions					Number of transactions	Amount of loans originated (billion yen)
		Regional banks	Second tier regional banks	Shinkin banks	Credit cooperatives		
FY2002 (ratio)	174 (28%)	46 (71%)	26 (51%)	88 (28%)	14 (7%)	4,462	48.3
FY2003 (ratio)	247 (41%)	53 (82%)	29 (58%)	141 (46%)	24 (13%)	10,098	110.2
FY2004 (ratio)	307 (52%)	59 (91%)	40 (83%)	175 (59%)	33 (19%)	19,000	173.7
FY2005 (ratio)	n. a.	n. a.	n. a.	n. a.	n. a.	23,585 [27]	199.8 [4.7]

Notes: 1. The figures in parentheses ( ) indicate the ratio of the number of banks conducting asset-based lending to the number of total banks in each category.
2. The figures in parentheses [ ] refer to lending backed by inventories.
Source: Financial Services Agency

(4) Syndicated loans (as financial statement lending)

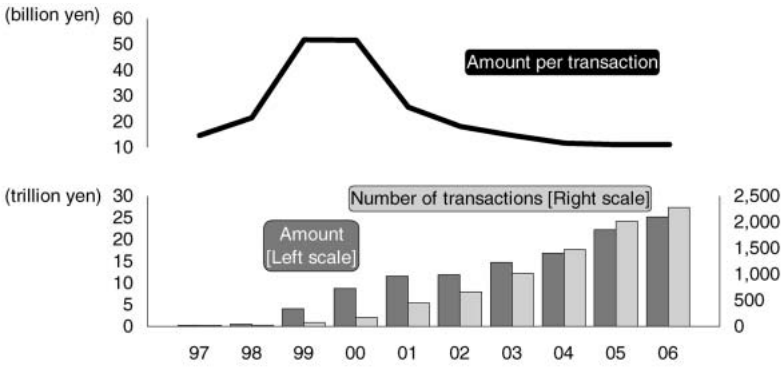
A syndicated loan is a loan whereby more than two lenders jointly make a loan to a borrower. The loan is based upon the same contract in which the same contract terms apply for all participating lenders. A syndicated loan typically involves elements of relationship lending and transaction–based lending, in the sense that the lead arranger bank screens and monitors the borrower in a relationship–like context, but then distributes some portions of a loan to other participant banks in a capital–market–like setting (Dennis and

Mullineaux, 2000).

The lending decisions of syndicated loans are mostly based on hard information such as financial statements and credit ratings, because the lead bank, which is often the traditional main bank, needs to clearly inform the creditworthiness of the borrowing firms to participating banks. Regarding a syndicated loan, it is usually the case to set financial covenants that a borrowing firm should maintain during the period of the loan in order to protect creditors' rights. Hence, a syndicated loan is a typical form of financial statement lending that is best suited for firms with a high degree of transparency, for example, with certified audited financial statements, and strong financial conditions.

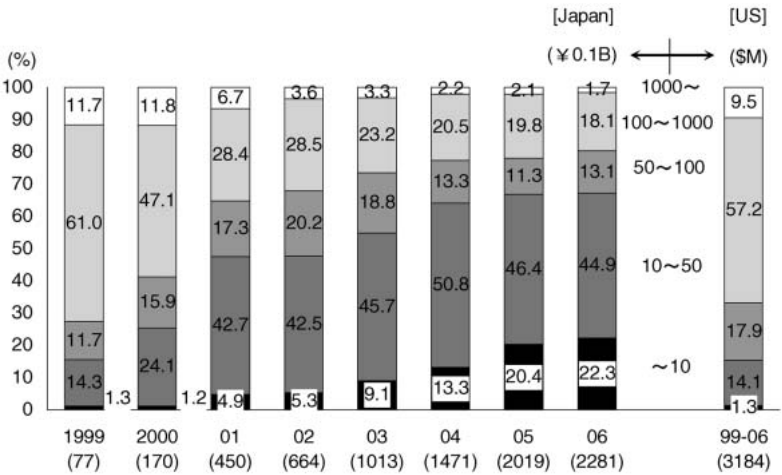
Syndicated loans have been increasing rapidly in Japan since 1999 (**Chart 6**). Although syndicated loans are mainly targeted for large firms, they are gradually spreading among SMEs in Japan, as indicated by the decline in the average amount per transaction in **Chart 6**. The spread of syndicated loans among SMEs in comparison with the other developed countries is also evident from **Chart 7**, which shows the relative share of syndicated loans based on the amount of loans originated from 1999 to 2005. As shown in the right–end bar, the loans whose amounts exceed $100 million account for over 60% of syndicated loans originated in the United States. The share of loans under $10 million is only 1.3%. In contrast, the largest portion of syndicated loans in Japan is ¥1–5 billion (roughly put, $10–50 million), and the share of loans under ¥1 billion has been rapidly increasing recently.

Chart 6: Expansion of syndicated loan markets in Japan



Source: Thomson Financial

Chart 7: The share of syndicated loans by loan amounts originated



Note: Figures in parentheses indicate the number of loans originated per year
Source: Thomson Financial

3. The Use of Transaction–based Lending by Japanese Businesses

(1) Survey design

The "MHRI Questionnaire Survey on New Borrowing Instruments (*MHRI Survey*, hereinafter)" was conducted in August–September 2006. Of the questionnaires sent by mail to 3,000 non–financial firms which are members of MHRI's corporate membership services, we received responses from 1,004 firms. In terms of the size of businesses, the breakdown of the respondents is: 700 small firms (the share of respondents is 69.7%) whose capital size is less than ¥100 million, 201 medium–sized firms (20.0%) with capital size ¥100 million – ¥1 billion, and 103 large firms (10.3%) with capital size equal to and over ¥1 billion (Note 5). Regarding industrial classification, wholesales firms (261; 26.0%), manufacturing firms (260; 25.9%), construction firms (162; 16.1%), and services firms (147; 14.6%) occupy considerable shares. Finally, in terms of regional distribution, 435 (43.3%) of our respondents are located in Tokyo prefecture, and 115 (11.5%) firms are in the South Kanto area, metropolitan prefectures around Tokyo. This reflects the fact that the Mizuho Financial Group has its business foundation in the Tokyo Metropolitan area. As we shall notice shortly, this may bias our survey results regarding the use of CLO/CBOs to some extent.

In our survey questionnaire, we define each of the lending technologies as follows.

- Credit scoring lending: a quick & easy–processing loan utilizing a credit database and a statistical model. In general, a borrowing firm need not pledge collateral and third party guarantees.
- CLO/CBO: a security backed by a pool of loans or bonds. Although borrowing firms need to satisfy several financial conditions to be eligible for the loans/bonds pool, they can obtain long–term financing without collateral.
- ABL: a loan with business collateral other than real estate, such

as accounts receivable, inventories, and equipment.

- Syndicated loan: a loan whereby a group of banks jointly make a loan to a borrower with the same loan contract terms, under the arrangement of a lead bank.

Note that the definition of ABL is broader than the definition in the previous section. We do so because a borrowing firm cannot know whether the lending decision by the lender is mainly based on the collateral value or its overall creditworthiness. As a result, however, many of the borrowers that pledge accounts receivable and inventories as a "supplemental collateral," in the sense that the lending decisions are mainly based on the overall creditworthiness of borrowers and/or the collateral value of real estate, and that lenders use accounts receivable and inventories as an inferior source of repayment, seems to be counted as users of ABL in our survey. We also include equipment as the collateral of ABL.

(2) The current use of transaction–based lending technologies by Japan's businesses

Respondent firms were asked whether they "have used," "haven't used but interested in" or "haven't used and not interested in" each borrowing instrument. The use rates of transaction–based lending instruments were 5.5% for credit scoring, 14.3% for CLO/CBOs, 7.4% for ABL, and 11.9% for syndicated loans, respectively. The ratios of the firms that have not used but are interested ("potential" use rates hereinafter) were 16.4% for credit scoring, 8.2% for CLO/CBOs, 22.0% for ABL, and 22.2% for syndicated loans, respectively.

The relatively high use rate of CLO/CBOs may be due to a sample bias of our survey in that over 40% of our survey respondents were located in Tokyo prefecture, an area where local government–sponsored CLO/CBOs have been issued most aggressively.

As we noticed above, the use rate of ABL may be higher than the actual figure, reflecting the fact that we adopt the broad definition of ABL in our survey. Among 74 users of ABL in the survey, 54 firms pledge accounts receivable, and 14 firms pledge equipments. The

number of borrowers that pledge inventories as collateral is only 3 (Note 6).

In light of the fact that roughly 10–20% respondents of our survey are "potential" users of transaction–based lending technologies, the potential demands for these loans seem to be quite large. Because we also asked respondent firms the desired amount to be financed using each lending technology, we can estimate the potential aggregate demand for each lending technology in Japan by multiplying the potential use rate, amounts to be financed, and the number of firms (See Appendix for the detail of our estimation). The potential market size for syndicated loans whose financing amounts are relatively large is ¥60 trillion, and the market sizes for the rest of the lending technologies are ¥10–20 trillion (**Chart 8**).

Chart 8: The estimated potential demands for transaction–based lending

(Trillion yen)

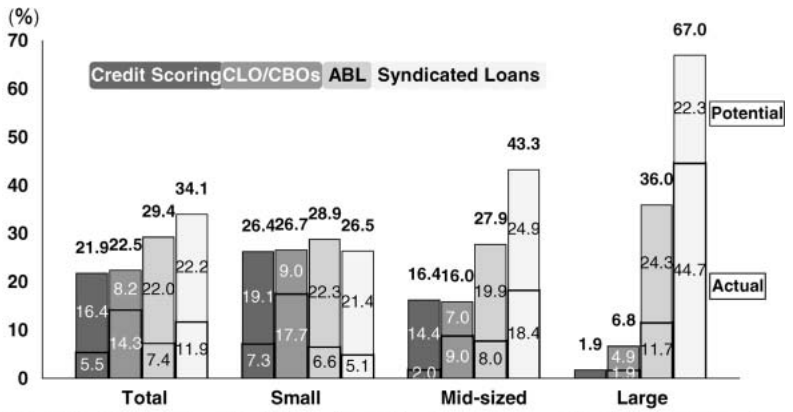
	Small Enterprises	Medium-sized Enterprises	Large Enterprises	Total
Credit Scoring Lending	13.0	0.2	0.0	13.2
CLO/CBOs	16.0	0.4	0.1	16.5
Asset-Based Lending	18.2	0.4	0.1	18.7
Syndicated Loans	19.7	16.3	22.3	58.3

Note: The estimation method is described in the Appendix.
Source: MHRI Survey, Statistics Bureau of the Ministry of Internal Affairs and Communications, *Establishment and Enterprise Census of Japan 2004*

There are significant divergences in the actual and potential use rates among different lending technologies, depending on the size of businesses (**Chart 9**). As for credit scoring lending and CLO/CBOs, the actual and potential use rates are higher among small businesses, whereas the use rates for syndicated loans increase as

the firm size grows larger. As for the ABL, the difference of use rates in terms of business size is relatively small.

Chart 9: The actual and potential use rates of transaction–based lending, by the size of businesses



Note: "Actual" refers to the ratio of firms using each lending technology, "Potential" refers to the ratio of firms that are not currently using, but interested in each lending technology.
Source: MHRI Survey

We asked the actual and potential users of each lending technology the desired amounts to be financed (**Chart 10**). As expected from the results in **Chart 9**, the amounts for the credit scoring are the smallest in which more than half of the respondents claim the desired financing amount is less than ¥50 million. Similarly, the desired amounts for CLO/CBOs are relatively smaller, but larger than those for credit scoring, possibly reflecting the fact that CLO/CBOs are mainly used for long–term financing. In contrast, the desired financing amounts for syndicated loans are very large: the share of respondents whose desired amounts are ¥100 million–¥1 billion is 42.7% and the share for ¥1–10 billion is 34.5%, whereas the share for less than ¥100 million is merely 12.9%. The distribution of desired financing amount places ABL in the middle of credit scoring and syndicated loans.

Chart 10: The distribution of desired financing amount for transaction–based lending technologies

(%)

	Less than ¥10 million	¥10-30 m.	¥30-50 m.	¥50-100 m.	¥100 m. and over
Credit Scoring Lending	11.9	25.4	21.6	22.2	14.1
CLO/CBOs	0.4	9.7	17.3	33.2	34.1
Asset-Based Lending	5.8	15.6	12.5	17.3	42.4
Syndicated Loans	12.9				83.6

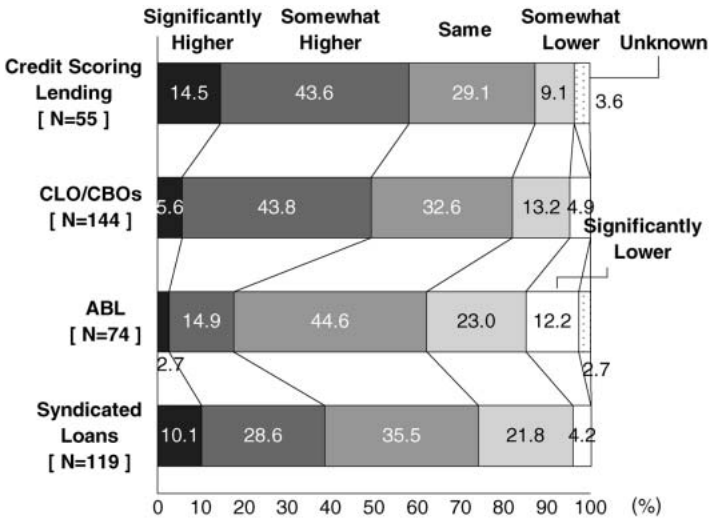
Note: The distribution among actual and potential users of each lending technology.
Source: MHRI Survey

As aforementioned, financing difficulties for SMEs stem, for one, from the fact that screening and monitoring costs incurred by the lender are essentially fixed and thus create economies of scale in the borrowing amount. The divergences in the financing amount for different lending technologies above imply that the extent to which the financing constraints due to economies of scale being resolved differs substantially across the four transaction–based lending technologies.

In our survey, we also asked the interest rates of transaction–based lending technologies in comparison with traditional bank loans (**Chart 11**). With the exception of ABL, the number of firms replying that interest rates of new lending technologies are "somewhat higher" and "substantially higher" than traditional loans exceeds that of firms replying "somewhat lower" and "substantially lower" (**Chart 11**). Separately, we also asked the most important factor in the borrowers' financing decisions (Note 7). The actual and potential use rates of transaction–based lending technologies are relatively higher among borrowers that put emphasis on "availability" and "stability", and lower for borrowers

that attach importance on "funding costs." In sum, borrowers who want to secure the availability and/or stability of financing are more inclined to use transaction–based lending technologies, albeit at higher costs.

Chart 11: The lending interest rates of transaction–based lending in comparison with traditional bank lending



Note: The lending interest rate of each lending technology in comparison with traditional bank loans
Source: MHRI Survey

4. The Determinants of the Use of Transaction–based Lending

In the previous section, we saw that transaction–based lending technologies are gradually spreading among Japanese firms, including SMEs. We also saw that there seems to be significant

differences in terms of borrowing firms' characteristics among the four transaction–based lending technologies. In this section, we systematically explore the borrower characteristics that determine the use of a particular transaction–based lending technology. Specifically, for each transaction–based lending, we compare the mean of several variables listed below for the (actual and potential) users and non–users (Note 8).

(1) Borrower characteristic variables

The borrower characteristic variables we analyze can be grouped into three classes: size, financial characteristics, and banking relationship. The summary statistics of these variables are shown in **Chart 12**.

Chart 12: Summary Statistics

	N	Mean	Median	Std. Dev.	Min	Max
Panel A: Size						
SALES	1,004	18,884	2,233	101,112	12	1,851,170
CAPITAL	1,001	1,566	50	16,437	2	468,941
Panel B: Financial Characteristics						
SCORE	997	56.0	55.0	7.2	36.0	86.0
SALESGROWTH	996	6.74	1.31	31.98	-71.11	518.56
PROFIT	882	1.63	0.94	4.29	-36.31	53.09
FINPOSITION	1,004	1.70	2.00	0.64	1.00	3.00
LOANDEMAND	1,004	1.83	2.00	0.65	1.00	3.00
AUDIT	1,004	0.18	0.00	0.39	0.00	1.00
Panel C: Banking Relationship						
NBANKS	1,004	5.17	5.00	2.48	1.00	10.00
FINADVICE	1,004	3.84	4.00	1.02	1.00	5.00
INDUSTRY	1,004	3.55	4.00	0.98	1.00	5.00
SCOPE	1,004	3.62	4.00	1.01	1.00	5.00
CONTACT	1,004	4.10	4.00	0.82	1.00	5.00
LOCATION	1,004	3.08	3.00	1.08	1.00	5.00
WEBSITE	1,004	2.74	3.00	1.03	1.00	5.00

Note: *SALES* and *CAPITAL* are in million yen. *SCORE* ranges from 0 to 100 points. *SALESGROWTH* and *PROFIT* are in percentages. Other variables are index variables as explained in the text, except *NBANKS* (the number of banks with transactions).

Source: MHRI Survey

As mentioned in the previous section, the size of the borrower is likely to be an important determinant of the use of a particular

transaction–based lending scheme, because there seem to be significant differences among lending technologies we surveyed in dealing with the problem stemming from the economies of scale in screening and monitoring activities. In our analyses, the size of the borrower is approximated by *SALES* (annual sales, in million yen) and *CAPITAL* (capital size, in million yen). The average sizes of *SALES* and *CAPITAL* of our sample are ¥18.9 billion and ¥1.6 billion, respectively. We should note that the difference between mean and median and the standard deviation of these variables are fairly large, indicating that the distribution of our sample firms is skewed.

The financial characteristics of the borrowing firms can also be important determinants, because the lending decisions of transaction–based lending technologies are based on different primary sources of information, as shown in **Chart 1**.

As a proxy variable for the riskiness of the borrower, we use *SCORE* (TEIKOKU DATABANK Credit Score) that ranges from 0 to 100 points, with a higher number implying a lower credit risk. The score consists of several elements such as years in business, capital structure, size, profitability, financial position, management ability, skill of the employee, and so on. The score is constructed to be normally distributed with the "average" firm scoring 50 points. The average *SCORE* of our sample is 56, indicating our sample firms are "better" (lower–risk) on average.

As risk measures, we also use *SALESGROWTH* (annual sales growth in the most recent year), *PROFIT* (profit to sales ratio in the most recent year), in which larger values imply lower risks. *SALESGROWTH* may also capture the loan demands of a firm for working capital purposes. The strength of loan demands is also approximated by the ternary index variables constructed from the MHRI Survey. The variable *FINPOSITION* is the judgment of firms' general financing position, and takes the value of 1 (easy), 2 (neither easy nor tight), or 3 (tight). The variable *LOANDEMAND* is the firms' intention whether to decrease (1), to remain the same (2), or to increase (3) borrowing and/or other outside financing. As shown in the previous section, the actual and potential use rates of

transaction–based lending technologies are higher among borrowers that put emphasis on the "availability" and "stability" in their borrowing decisions. Then, it may well be the case that the use rates of these lending technologies are higher among borrowers with larger financing needs.

Finally, we would expect that a borrower with a high degree of transparency regarding its overall creditworthiness is more likely to use syndicated loans, in which the lender's credit decision is based mainly on the financial statements of a borrowing firm. We construct the binary dummy variable *AUDIT* that represents whether the financial statements of the borrowing firm are audited or not.

The borrowers' relationship with its main bank may also play a role in determining the use of transaction–based lending. To investigate the issue, we use the number of banks with which a firm has transactions, *NBANKS*, which is taken from TEIKOKU DATABANK database (Note 9). We interpret that the larger the number of banks, the less intimate relationship it has with its main bank. Transaction with many banks may contribute to a greater use of transaction–based lending technologies, as long as relationship lending and transaction–based lending technologies are substitutes (Note 10). In addition, we use the answers to the following question in our survey: "On a scale of one–to–five where 5 means very important and 1 means not important, how important to you is each of the following elements in evaluating the bank?" The elements we asked respondents to rate are: *LOCATION* (convenient location), *CONTACT* (frequent / easy access to relationship manager), *FINADVICE* (management and financial advices on your business), *INDUSTRY* (knowledge on the industry and region you belong to), *SCOPE* (provision of wide range of financial services), and *WEBSITE* (convenient website). We attribute *LOCATION* and *CONTACT* as essential ingredients of relationship lending.

(2) Mean–difference tests between users and non–users

This section investigates the borrower characteristics that determine the use of transaction–based lending. For the variables

listed above, we conduct the mean–difference tests between "users" and non–users of transaction–based lending technologies. Here, "users" include potential users (firms that haven't used a transaction–based lending but are interested in it) as well as actual users. The results are shown in **Chart 13**.

a. Borrower size

Regarding the borrower's size (**Chart 13**, Panel A), we find that the *SALES* of credit scoring users and CLO/CBO users are significantly smaller than their non–users. In contrast, the *SALES* of syndicated loan users are significantly larger than the non–users. The mean of *SALES* for ABL users is slightly larger than its non–users, although the difference is statistically insignificant. The mean–difference tests for *CAPITAL* provide similar results to those of *SALES*, albeit weaker statistical significances.

These findings confirm that, among the transaction–based lending we have surveyed, credit scoring lending (and the CLO/CBOs that make use of the credit scoring) is the most effective lending technology in dealing with the problem associated with the economy of scale in screening and monitoring activities. By using statistical methods and making credit decisions based on the performance of loan portfolio rather than the performance of individual loans, credit scoring can significantly reduce the screening costs of small business loans. Indeed, the bank survey evidence in Ono (2005) shows that the average operational cost of credit scoring loans is approximately half of conventional bank loans. Ono (2005) also finds that the median value of the lending cap for credit scoring loans by Japan's regional banks is ¥30 million, a fairly small amount.

In contrast, syndicated loans usually require the borrowers to have reliable financial statements. Hence, it is best suited for large firms. As for ABL, because the values of collateralized assets such as accounts receivable and inventories are so volatile, it is labor–intensive work for the lender to screen and monitor these assets. Thus, although the potential demands for ABL among SMEs

Chart 13: Mean–difference test: actual & potential user vs. non–user

CREDIT SCORING

	user	non-user	diff.	
	Panel A: Size			
SALES	4,486.5	22,944.9	-18,458.4	***
CAPITAL	108.9	2,020.3	-1,911.4	*
	Panel B: Financial Characteristics			
SCORE	52.63	57.11	-4.48	***
SALESGROWTH	6.31	6.99	-0.68	
PROFIT	1.04	1.79	-0.75	**
FINPOSITION	1.93	1.63	0.30	***
LOANDEMAND	1.94	1.80	0.14	***
AUDIT	0.15	0.19	-0.04	*
	Panel C: Banking Relationship			
NBANKS	5.20	5.16	0.04	
FINADVICE	3.91	3.82	0.09	
INDUSTRY	3.54	3.55	-0.01	
SCOPE	3.63	3.61	0.01	
CONTACT	4.14	4.10	0.04	
LOCATION	2.90	3.13	-0.24	***
WEBSITE	2.77	2.73	0.04	
No. of observations	220	760		

CLO/CBO

	user	non-user	diff.	
	Panel A: Size			
SALES	5,445.3	22,921.7	-17,476.3	**
CAPITAL	199.3	2,019.4	-1,820.1	*
	Panel B: Financial Characteristics			
SCORE	54.01	56.74	-2.73	***
SALESGROWTH	8.89	6.04	2.85	
PROFIT	0.77	1.89	-1.12	***
FINPOSITION	1.75	1.68	0.07	*
LOANDEMAND	1.94	1.80	0.14	***
AUDIT	0.14	0.20	-0.06	**
	Panel C: Banking Relationship			
NBANKS	5.69	5.04	0.65	***
FINADVICE	3.86	3.84	0.03	
INDUSTRY	3.58	3.54	0.04	
SCOPE	3.67	3.61	0.06	
CONTACT	4.22	4.07	0.15	***
LOCATION	3.00	3.11	-0.12	*
WEBSITE	2.77	2.73	0.04	
No. of observations	226	750		

ABL

	user	non-user	diff.	
	Panel A: Size			
SALES	24,535.8	16,274.9	8,261.0	
CAPITAL	1,113.9	1,790.3	-676.4	
	Panel B: Financial Characteristics			
SCORE	55.11	56.52	-1.41	***
SALESGROWTH	7.92	6.14	1.78	
PROFIT	1.19	1.85	-0.66	**
FINPOSITION	1.78	1.66	0.12	***
LOANDEMAND	1.93	1.79	0.13	***
AUDIT	0.22	0.17	0.05	**
	Panel C: Banking Relationship			
NBANKS	5.66	4.97	0.69	***
FINADVICE	3.89	3.82	0.08	
INDUSTRY	3.64	3.51	0.13	**
SCOPE	3.70	3.58	0.12	**
CONTACT	4.10	4.10	0.00	
LOCATION	3.01	3.12	-0.11	*
WEBSITE	2.71	2.76	-0.05	
No. of observations	295	687		

SYNDICATED LOANS

	user	non-user	diff.	
	Panel A: Size			
SALES	37,668.0	8,686.7	28,981.3	***
CAPITAL	3,922.4	332.3	3,590.1	***
	Panel B: Financial Characteristics			
SCORE	57.79	55.19	2.60	***
SALESGROWTH	8.60	6.13	2.47	
PROFIT	1.48	1.75	-0.27	
FINPOSITION	1.70	1.68	0.02	
LOANDEMAND	1.88	1.81	0.07	*
AUDIT	0.24	0.15	0.08	***
	Panel C: Banking Relationship			
NBANKS	6.38	4.53	1.85	***
FINADVICE	4.01	3.74	0.28	***
INDUSTRY	3.73	3.45	0.28	***
SCOPE	3.77	3.53	0.23	***
CONTACT	4.14	4.08	0.07	
LOCATION	2.89	3.19	-0.30	***
WEBSITE	2.70	2.76	-0.06	
No. of observations	342	637		

Note: "users" include both actual and potential users. ***, **, and * denote statistically significant at the 0.01, 0.05, and 0.10, respectively. Number of observations differ slightly depending on the variables, and we report the case for *SALES*.

Source: MHRI Survey

may be large, it is quite difficult to apply this lending technology to small firms so far. For example, one Japanese bank claims that the loan amount of ABL should be at least in the order of 100 million yen so as to compensate for the monitoring costs of collateralized assets (*Kindai–Sales*, March 1, 2007).

b. Financial Characteristics

In terms of financial characteristics (**Chart 13**, Panel B), we find that the users of credit scoring, CLO/CBOs, and ABL are riskier than their non–users, as indicated by the statistically significant mean differences in *SCORE* variable. Among the users of these three lending technologies, the mean of *SCORE* variable is the lowest for the users of credit scoring lending. This suggests that, by managing the credit risk of loans as portfolio, lenders can extend loans to riskier firms to some extent. The fact that relatively riskier firms use ABL is consistent with prior US evidence that observably riskier borrowers tend to use ABL via finance companies (Carey, Post, and Sharpe, 1998; Haynes, 2005).

On the contrary, the mean values of *SCORE* for syndicated loans indicate that users of syndicated loans are less risky than non–users. This is consistent with the argument that financial statement lending is well–suited for firms with strong financial conditions. In addition, the mean–difference in *AUDIT* variable reveals that syndicated loans are also suited for firms with a high degree of transparency. We should note, however, that this can be explained, at least partially, by the fact that relatively larger firms (whose financial statements are likely to be audited) tend to use syndicated loans more frequently.

The mean–differences for *PROFIT* are similar to those of *SCORES*, but the difference is insignificant for syndicated loans. We do not find any relationship with respect to *SALESGROWTH* variable.

Finally, we find that financially constrained borrowers, as indicated by *FINPOSITION*, and borrowers with larger loan demand, as shown by *LOANDEMAND*, are more likely to use credit scoring, CLO/CBOs, and ABL. We do not find, however, such relationship

for syndicated loans.

c. Banking relationship

The final group of variables of our interests is banking relationship (**Chart 13**, Panel C). Consistent with the theories arguing relationship lending and transaction–based lending are substitutes, we find that *NBANKS* are significantly larger among the users than the non–users of CLO/CBOs, ABL, and syndicated loans. The mean–difference for credit scoring lending is insignificant, but we should note that this may be because of the fact that smaller firms with smaller *NBANKS* are more likely to use credit scoring. Similarly, the large mean–difference in *NBANKS* for syndicated loans may be partly due to the tendency that larger firms are more likely to use syndicated loans.

We attribute *CONTACT* and *LOCATION* as essential elements of relationship lending. Although the levels of statistical significance differ across the four lending technologies, we find users of transaction–based lending weigh less on *LOCATION* than the non–users in general. This also suggests that relationship lending and transaction–based lending are substitutes. However, with respect to *CONTACT*, we find little difference between the users and the non–users except for CLO/CBOs, in which the users evaluate the frequent access to relationship managers more than the non–users. Moreover, for ABL and syndicated loans, we also find that the users weigh more on *FINADVICE*, *INDUSTRY*, and *SCOPE*, the variables somewhat related to relationship lending. Contrary to what we find in *NBANKS* and *LOCATION*, these suggest that transaction–based lending and relationship lending are complements (Note 11).

Overall, without further investigation that controls for the multiple factors influencing the use of each lending technology, we cannot determine whether relationship lending and transaction–based lending are complements or substitutes in Japan at this stage.

5. Conclusion

Based on the "Questionnaire Survey on New Borrowing Instruments" conducted by MHRI in August – September 2006, this paper seeks to shed light on the recent development of transaction–based lending, namely, credit scoring lending, CLO/CBOs, ABL, and syndicated loans, in Japan. The survey reveals that these lending technologies have been gradually spreading among Japanese firms, especially among SMEs, recently.

Although the lending technologies we have surveyed share the common feature in that their credit decisions are mainly based on quantitative and verifiable "hard" information, they are not homogeneous. We find following borrower characteristics that influence the use of different lending technologies.

First, we find that the size of firms matters for the use of a particular lending scheme. The use rates of credit scoring lending and CLO/CBOs are higher among smaller firms; the use rate of syndicated loans is higher among larger firms; and the use rate of ABL falls in the middle. We attribute these findings to the fact that each lending technology has distinct screening and monitoring procedures. Because credit scoring lending (and CLO/CBOs that make use of credit scoring techniques) uses statistical models and recognizes loans as portfolio, it can automate the screening and monitoring activities of an individual loan to a certain degree. Thus, it is the most effective lending technology to fulfill the loan demands of small firms. A syndicated loan is typical financial statement lending in Japan that requires transparent financial statements, and is best suited for large firms. ABL requires the lender to monitor and manage the collateralized assets stringently and frequently. In order to compensate for these labor–intensive activities, minimum threshold loan amounts are frequently set and only above mid–sized firms are eligible for ABL.

Second, we find that riskier and more financially constrained firms tend to use credit scoring lending, CLO/CBOs, and ABL. In

contrast, syndicated loans are more likely to be used by low–risk firms with strong financial conditions. We also find that the users of syndicated loans are more likely to have audited financial statements than the non–users.

Finally, we have mixed evidence regarding the relationship between relationship lending and transaction–based lending. Consistent with the theories arguing relationship lending and transaction–based lending are substitutes, the users of CLO/CBOs, ABL, and syndicated loans have transactions with a larger number of banks than the non–users do. On the other hand, we find that the users of CLO/CBOs weigh the intimate contacts with relationship managers more than their non–users do, and that the users of ABL and syndicated loans weigh more on the other relationship–enhancing elements than their non–users. These suggest that transaction–based lending and relationship lending are complements. Without further investigation, we cannot determine how relationship lending and transaction–based lending are related at this stage. We shall address this issue as well as other relevant topics in future research.

Appendix

This appendix outlines the procedures for estimating the potential demand for transaction–based lending in Japan (**Chart 8**). As an example, we illustrate the case for CLO/CBOs (**Chart 14**). The potential demand for the other lending technologies is estimated in similar fashion.

We first count the number of small, medium, and large companies (row (1) of Chart A). The figures do not include sole proprietors, and are taken from the Statistics Bureau of the Ministry of Internal Affairs and Communications, *Establishment and Enterprise Census of Japan, 2004*. We also exclude companies having fewer than

10 employees for syndicated loans, because these firms are too small to obtain external–funds via syndicated loans.

Then, we estimate the number of potential user companies of CLO/CBOs (row (3)) by multiplying the number of companies in each size category (row (1)) and the potential use rate of the MHRI Survey. The total potential users of CLO/CBOs are distributed as in row (5), using the distribution of desired financing amount for CLO/CBOs in the survey (row (4)). For example, the number of small businesses that would potentially obtain "¥10–¥30 million" is 15,943 firms (135,112×11.8%).

Finally, we estimate the amount of potential loan demand by multiplying the number of companies in each loan amount category and the median value of each category. In the previous example, we assume that 15,943 firms will obtain ¥20 million via CLO/CBOs so that the resulting potential demand is calculated as 15,943×¥20 million=¥318.9 billion. Although they are quite arbitrary, we set the upper borrowing limit as ¥300 million for small businesses and ¥10 billion for medium–sized businesses. As for loan amount categories that do not have upper ceilings, we use the lower bound figures. For instance, we assume that the loan demand for every firm whose desired financing amounts using CLO/CBOs are equal to or over ¥500 million is ¥500 million. As an exception, however, the potential demand for syndicated loans of large businesses whose desired financing amounts are equal to or over ¥100 billion is assumed to be ¥200 billion, because the actual amount of syndicated loans for large businesses often exceeds several hundreds of billion yen.

Chart 14: Estimation of potential demand for CLO/CBOs

		Small	Medium	Large
(1) Number of companies [Source: MIC, Establishment and Enterprise Census of Japan 2004]		1,501,249	22,544	5,823
(2) Potential use rate of CLO/CBOs (*) [Source: MHRI Survey]		9.0%	7.0%	4.9%
(3) Number of potential user companies of CLO/CBOs [(1)*(2)]		135,112	1,578	285
(4) Distribution of desired financing amount for CLO/CBOs [Source: MHRI Survey]	Less than ¥10 m.	0.5%	0.0%	0.0%
	¥10-30 m.	11.8%	0.0%	0.0%
	¥30-50 m.	19.8%	6.3%	0.0%
	¥50-100 m.	34.8%	31.3%	0.0%
	¥100-500 m	25.7%	46.9%	42.9%
	¥500 m. and over	1.6%	12.5%	57.1%
(5) Numbers of potential user companies of CLO/CBOs, distributed by the desired financing amount [(3)*(4)]	Less than ¥10 m.	676	0	0
	¥10-30 m.	15,943	0	0
	¥30-50 m.	26,752	99	0
	¥50-100 m.	47,019	494	0
	¥100-500 m	34,724	740	122
	¥500 m. and over	2,162	197	163
(6) The amount of potential demand for CLO/CBOs, in billion yen [median value*(5)]	Less than ¥10 m.	3.4	0.0	0.0
	¥10-30 m.	318.9	0.0	0.0
	¥30-50 m.	1,070.1	4.0	0.0
	¥50-100 m.	3,526.4	37.0	0.0
	¥100-500 m	10,417.2	222.0	36.7
	¥500 m. and over (**)	648.5	98.6	81.5
	Total	15,984.5	361.7	118.2

Note: (*) Potential users refer to those who are currently not using CLO/CBOs, but interested in them.
(**) For small enterprises, upper borrowing limit of ¥300 million applies.

Source: MHRI Survey, Statistics Bureau of Ministry of Internal Affairs and Communications, *Establishment and Enterprise Census of Japan 2004*

* * * * * * * * * *

Notes:

1 CLO/CBO is not included in **Chart 1**, as its fundamental features are mostly the same as credit scoring lending. Berger and Udell (2006) propose to include factoring, fixed–asset lending, leasing, and trade credit to have a more complete conceptual framework for the analysis of SME financing.

2 The figures for larger banks such as city banks are not publicly available, but they are obviously the most intensive suppliers of small business credit scoring loans. The Nikkei (May 14, 2005) reports that Japan's 5 mega–banks originated 5,660 billion yens credit scoring loans in FY2004.
3 The figures in **Chart 4** include CLO/CBOs backed by the loans to (bonds issued by) large firms as well.
4 Again, the figures for large city banks are not publicly available.
5 The definitions of small, medium–sized, and large firms here are for convenience. Under Japan's Small and Medium Enterprise Basic Law, the term "small and medium enterprise (SME)" refers in general to enterprises with capital of not in excess of 300 million yen or 300 or fewer regular employees, and sole proprietorships with 300 or fewer employees. The accurate definition of SMEs differs depending upon industries. Prior to the amendment of SME Basic Law in 1999, the criterion for SME with respect to capital size was 100 million yen.
6 On the other hand, among 221 potential users of ABL, 74 (33.5%) firms say they intend to make use of inventories as the collateral of ABL.
7 The borrowers were asked to choose one of the following factors that is most important in their financing decisions: "quickness (able to finance quickly when needed)," "stability (able to finance stably)," "funding cost (able to finance cheaply, including commissions and fees)," "availability (able to finance the needed amount)," and "less collateral requirement (able to finance with less collateral and personal guarantees requirement)."
8 A more comprehensive regression analyses will be conducted in the forthcoming issue of *Mizuho Soken Ronshu* (Mizuho Research Review, in Japanese).
9 The variable *NBANKS* has a caveat in that the maximum number of banks is reported as 10, even if a firm has transactions with more than 10 banks.
10 Whether relationship lending and transaction–based lending are complements or substitutes is a matter of interest by itself, as we will explore shortly.
11 Uchida, Udell, and Yamori (2006) also find complementarity between relationship lending and financial statement lending.

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