NIBM WORKING PAPER SERIES

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Naveen Kumar K
V S Kaveri
Narul Shah

Working Paper
(WP45/2024)

NATIONAL INSTITUTE OF BANK MANAGEMENT
Pune, Maharashtra, 411048
INDIA
May 2024

Citation Guideline:

Naveen Kumar K, V S Kaveri and Narul Shah (2024), "Digital Cash Flow Lending to MSMEs: Concepts and Models". NIBM Working Paper Series WP 45/May.

https://www.nibmindia.org/static/working_paper/NIBM_WP45_NKVSNS.pdf

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NIBM Working Paper No. 45
May 2024

ABSTRACT

The transformative potential of cash flow-based lending (CFBL) in addressing the working capital needs of Micro, Small, and Medium Enterprises (MSMEs). The research paper investigates the concept and process of CFBL, emphasizing its importance for MSMEs in accessing timely financing solutions. It analyzes why the adoption of CFBL is crucial for MSMEs, considering their unique financial circumstances and challenges. Additionally, the paper examines various digital lending models tailored specifically to MSMEs, along with the intricacies of credit underwriting for digital lending platforms. It further explores the types of CFBL lending products available to MSMEs and delineates the procedural aspects involved in CFBL transactions. Through selected case studies, the paper highlights the role of software services in facilitating CFBL processes. Ultimately, it elucidates the essential elements of CFBL and outlines its integration into the digital landscape, offering valuable insights for policymakers, financial institutions, and MSMEs seeking to optimize financing strategies

Naveen Kumar K (Corresponding Author)
naveen@nibmindia.org

V S Kaveri
vskaveri@gmail.com

Narul Shah
narulshah06@gmail.com

Digital Cash Flow Lending to MSMEs: Concepts and Models

1. Introduction

Currently, Cash Flow Based Lending (CFBL) under a digital mode for financing working capital (WC) to Micro, Small, and Medium Enterprises (MSMEs) is widely talked about in the background of inadequate supply of institutional credit to them. The credit supply gap in the MSME sector seems to be huge and, the Expert Committee, appointed by Reserve Bank India (RBI) in 2019, estimated the same at Rs. 20-25 lakh crore

1. As per the Census of MSMEs conducted by the Government of India (GOI) in 2015-16, 95 percent of the micro-enterprises experienced an acute shortage of institutional finance.

2. During the recent pandemic, the years 2020 and 2021, the situation was still critical for MSMEs to carry on day-to-day business operations due to inadequate bank credit. In this regard, the Local Circles Survey, conducted in April 2020, suggests that 47 percent of small industrial firms claimed to have just one month of cash left to run their business.

3. Nearly, a third of the MSMEs, financed by public sector banks (PSBs), were under stress and, their gross non-performing assets (GNPAs) ratio remained as high as 18.5 percent as of September end of 2021.

4. The reasons for the credit gap are two-fold: one, lack of assets with MSMEs to secure asset-based working capital (WC) financing, and two, challenges faced by banks in credit risk assessment owing to lack of financial data relating to small borrowers and their credit history of micro-enterprises. It is generally observed that some MSMEs tend to build up huge current assets with liberal credit which is not good in the interest of enterprises and banks and, consequently, WC credit limits are not fully utilized. Further, the diversion of WC finance is being commonly used for acquiring long-term assets by these enterprises. Therefore, banks seem to be hesitant to provide need-based credit for WC to MSMEs.

   Appreciating the inadequate supply of bank credit, in December 2021, the Governor, the Reserve Bank of India (RBI) said, “To improve the credit to gross domestic product ratio, access to credit and cost of credit need to be addressed by lesser reliance on collateral security and greater cash-flow based lending”.

5. Consequently, banks and non-banking finance companies (NBFCs) started launching new platforms/digital cash flow-based credit products to MSMEs to increase their lending. In this backdrop, a few digital CFBL-based products such as Buy Now Pay Later, Invoice-based financing, Supply chain financing, Co-lending, peer-to-peer (P2P) lending, etc., are being introduced. In the coming days, CFBL has enough scope to pick up which is evident from the recent speech delivered by the Reserve Bank of India (RBI) executive stating, “The provision of appropriate credit for MSMEs, contributing around 45 percent of the total exports and

generating employment to more than 11.1 crore people through seamless and digital cash-flow based lending, will provide them with the much-needed impetus. It could enable lenders to leverage real-time cash flow data to re-imagine end-to-end lending process".

6. Since the CFBL for WC under digital mode is new to officers in banks and NBFCs on one hand and MSMEs on the other, the present article attempts to create awareness of the same by discussing: WC needs, traditional lending methods for assessment of WC, CFBL - concepts and process, CFBL under digital mode and looking ahead.

2. Working Capital Need

WC is generally referred to as the 'current assets holding' of a firm which is needed for day-to-day operations. Current assets comprise cash, bank balance, inventory/stock (raw materials, stock in process, finished goods, stores, spares, components, etc.), receivables/book debts, short-term deposits/advances, etc. WC is needed for meeting different costs such as the cost of purchasing raw materials and stores, the cost of processing raw materials, holding finished goods, keeping receivables/ book debts in the books till payments are settled, maintaining minimum cash balance/bank balance, etc. For MSMEs, cash on hand and bank balance to cover cash expenses is generally considered for one month. To meet these costs, arrangements need to be made to raise credit from suppliers of raw materials and also to meet manufacturing and other expenses (called Other Current Liabilities – OCL), seek bank credit in the form of cash credit/ short-term loan, receive advances against orders and bring in the promoter's contribution from long-term sources (LTS) /margin money/ Net Working Capital – NWC). 'Gross working capital' is the aggregate of current assets.

The requirement of WC varies from one firm to another. WC of the firm depends upon the nature of the activity, the process involved and time required to complete the process of conversion of raw material into a finished product, terms of trade (purchase and sale), size of turnover, seasonality, inventory management, business cycle, etc. To elaborate on the nature of activities, in any trading or manufacturing firm, inventories are purchased by cash or by cheque (when the working capital limit/short-term loan is sanctioned) and stored as required. In a trading firm, these inventories are in the form of finished goods, called 'stock-in-trade'.

But in the case of a manufacturing firm, inventories include raw materials, stores, spares, work-in-process, and finished goods. In the trading firm, inventories are sold without any value-addition whereas in the manufacturing/processing firm, it is after value addition to raw materials, and finished goods for sale. In both cases, inventories are sold either for cash or on credit (known as receivables or trade debtors). The size and nature of investment in current assets depends on the type of products manufactured and the length of the operating cycle which refers to the conversion of one component of current assets into another.

To elaborate, a firm has to maintain a cash balance to pay the bills as they become due. In addition, the firm must keep inventories to comply with the customer orders promptly. Further, it invests in receivables to extend credit to customers. The operating cycle is equal to the length of inventory and receivables conversion periods, starting from

the purchase of raw materials by cash (out of LTS and short-term loan/bank credit for WC) –> stock in the process –> finished goods –> receivables and ending with cash. This operating cycle is expected to rotate throughout the year. It depends upon many factors such as the availability of raw materials, workers, and services of public utilities on one hand and the supply of timely and adequate bank finance in the form of cash credit/ overdraft/ bills discounting and credit from suppliers of raw materials, on the other.

The manufacturer of capital goods will have a longer operating cycle than a consumer goods manufacturer. The time involved for one operating cycle to complete is the sum of days of average holding of various components or WC, covering both current assets and other current liabilities. To calculate the level of current assets or current liabilities, ratios are used which are indicated in Appendix. The shorter the period involved in completing the cycle, the lesser would be the requirements of WC and vice-versa. Efficient firms always ensure that the operating cycle keeps on rotating without any interruptions. Banks should get all necessary details of the operating cycle from a borrower for assessment of WC. The length of operating cycle or average holding period of the above items, depends upon a working capital management policy followed by the firm.

The assessment of WC depends upon the correct classification of current assets and current liabilities. As said earlier, current assets get converted into cash or consumed within one year from the date of the balance sheet. But sometimes, the 'one-year' concept may not be valid. For example, for a vegetable vendor 'one day' may be the operating cycle but for a builder, the operating cycle may be even 'three years'. Hence, the bank is required to critically examine each component of current assets to decide the current and non-current portion.

For example, debts beyond six months may reflect realization weakness and, therefore, may be considered non-current. Slow-moving or obsolete inventory is treated as a non-current asset. For instance, investment in shares and advances to other firms not connected with the business may be treated as non-current. Security deposits and tender deposits also fall in the same category. Similarly, in the case of current liabilities, the obligation is normally expected to be liquidated within a year out of the sale proceeds of finished goods. From the level of the inventory and receivables, it is possible to ascertain their age.

Therefore, perishable stocks have to be disposed-off at the earliest. Similarly, the longer the period of receivables, the more difficult would be to collect dues from customers. And, the credit afforded to customers for a longer period may reflect lower demand for the product. Similarly, a too-high current ratio may indicate non-moving goods and long outstanding debtors. The Assessment of WC is carried out by banks by employing different lending methods which include traditional and CFBL which are discussed as under:

3. Cash Flow-Based Lending: Concept and Process

Several countries all over the world enabled credit lines during the Covid-19 pandemic through banks and NBFCs although many countries relied on the traditional financing practices, innovators in the banking industry involving FinTech's in the process.

In this fast-paced business world, there is still a large portion of the population that is not able to get its credit requirement fulfilled due to various challenges like lack of collateral that is done in asset-based lending.

Cash flow-based lending addresses the changing needs of businesses, promotes inclusivity, and facilitates strategic growth based on revenue-generating capacity. It represents a forward-thinking approach that prioritizes a company's ability to generate cash as a reliable indicator of creditworthiness. By focusing on cash flow rather than solely on collateral, this lending strategy opens doors for businesses to access financing tailored to their specific needs, fueling growth and facilitating financial stability.

It is highly important in today's world due to its flexibility in providing financing options. It allows businesses to access funding based on their ability to generate consistent cash flows, even without substantial tangible collateral. This is particularly beneficial for small and medium enterprises (SMEs) and promotes economic stability during uncertain times. By assessing a company's cash flow performance, lenders can conduct a comprehensive risk assessment, fostering a partnership-based approach that supports the borrower's financial management and optimization of cash flow generation. It focuses on the company's ability to generate consistent and predictable cash flows as the primary basis for extending credit. This innovative approach recognizes that a company's cash flow is a more reliable indicator of its financial health and repayment capabilities.

3.1 Why Adoption of Cash flow-based lending is important for MSME's?

There are very limited funding options available to MSMEs as they were not able to meet the asset-backed lending criteria. MSMEs often face working capital crunch due to factors such as –

- Fluctuating demand
- Inefficient supply chains
- Low cash flow buffers
- Delayed payment from customers
- Variable inventory turnover

Small businesses such as Kirana stores and small retail trade shops often don't own assets to submit as collateral. CFBL enables such small businesses to get access to credit.

MSMEs were provided with a moratorium period varying from 3 to 12 months depending upon how severely the enterprises were hit. The participation of FinTechs catalyzed the process of reaching out to MSMEs and helped MSMEs through digital customer identification and credit decision-making. And, the lending business has gained benefits from FinTechs like efficient delivery of financial aid, easier and cheaper access to financing products, and enhanced underwriting process. Lenders use digitized data for the assessment of the borrower's eligibility and build customer relations. However, digital lenders are not able to reduce interest rates. Digital lending rates' spectrum is

quite broad and greater than the traditional financial service providers. The digitization of the data worked in the favor of FinTechs as the risk-based pricing policy assists the company in accessing appropriate creditworthiness for different borrowers. Lenders targeting MSMEs cater according to their specific cash needs by tailoring loan products similar to their business models.

3.2. Types of Digital Lending Models to MSMEs

FinTechs lending to MSMEs are classified based on the risk as follows:

(i) **P2P lending** is a type of digital lending product that focuses on lending through unrelated entities either collateralized or uncollateralized. Entities with excess funds provide credit to other entities that are facing financial constraints in their business activities. Underwriting and transfer of payment are dealt with by the FinTechs.

(ii) **Balance sheet** lending differs from the P2P lending model by the characteristic of assumption of credit risk. In balance sheet lending, the lender holds the risk of the debtors in its balance sheet and often collateralizes the loan through securities. Traditional financial services use the balance sheet model and in case of a default face the consequences involved with it.

3.3 Credit Underwriting for Digital Lending

The underwriting process is swiftly managed by FinTechs in the digital era. These FinTechs are not only revolutionizing the underwriting process but also automating it. Faster appraisal procedures and customized credit underwriting result in reduction in a turnaround time. They can also use automated scorecard models to underwrite retail segment loans. The credit underwriting process in digital lending involves the following process:

(i) **Credit History:** Credit score reflects the creditworthiness of a borrower and the high credit score (750 and above) indicates the trait of a responsible borrower. The past transactions of the borrower in previous loans decide the rate of the loan (risk-adjusted return).

(ii) **Financial Position:** Underwriting through the financial standings of a borrower is achieved by its quality of business, income reports, and liabilities. An appraisal decision can reached by accessing the current macroeconomic data of the specific industry, Balance Sheet, Profit and Loss Account, and Management's approach towards business.

(iii) **Collateral:** The value of the collateral is used to analyze the credit risk involved. If the borrower defaults, the collateral can be used to repay the outstanding payments of the borrower.

(iv) **Alternative Credit Scoring:** New applicants usually do not have any credit history to rely upon during credit analysis. New businesses find it challenging to avail of appropriate-priced loans for themselves in the traditional lending market. FinTechs have intervened with a new approach to providing credit to such customers. Instead of the credit scores, the ability and willingness to pay are the

factors that are considered. These assumptions are backed by bill payments like utility bills, rental and lease payments, and digital footprints. Although countries like the US and China already have good infrastructure assuring the underwriting process, Indian FinTechs such as Moneytap and Cashkumar have already started working on alternative credit scoring.

Use of Cash flow for the purpose of lending offers various benefits over other sources –

- Cash flow underwriting uses Alternative credit data such as income or bank account transactions to understand a borrower's cash flow and better assess their creditworthiness. Now a days lenders are utilizing cash flow or bank transaction data to determine potential borrower's creditworthiness. With cash flow data, fintech, traditional financial institutions and lenders can improve their underwriting models, reduce fraud, and deliver better products.

- There are many loan applications that has inflated income statement. Cash flow data solves this problem by verifying applicant earnings using data straight from source systems.

- Cash flow data can help lenders navigate challenging economic conditions with in-depth insights into their customers' financial health.

- Credit reporting agencies update credit scores on average every month, but we can update cash flow data anytime. It provides real time insights of applicant's situation.

3.4 Types of CFBL Lending Products

- **Working capital loans**: Short-term, small ticket-size loans that cover a company's everyday operational needs such as payroll, rent, utility bills, and paying GST.

- **Buy-Now-Pay-Later**: BNPL is a payment option available at checkout for B2B E-Commerce platforms. It enables users to purchase on credit and repay in installments or bullet repayments.

- **Merchant Cash Advance**: MCA is a small-ticket size loan given against accounts receivables. It is meant to provide immediate relief in terms of tied-up cash flow to MSMEs.

- **Overdrafts**: An overdraft allows a borrower to overdraw their account up to a specified limit. It enables access to short-term funding to fill a temporary cash shortfall — and it can be paid off at any time, with the interest-only payable on the amount outstanding each day.

- **Trip finance for logistics companies**: Fleet owners or truck drivers need financing for their trips as they might not have the capital up-front. This could be used for fuel, vehicle maintenance, insurance payments, and other expenses. Alternate data such as load transported, kilometers travelled, and repayment history can be leveraged to underwrite these borrowers.

- **Turnover-based loans**: GST and Point of Sale data enable lenders to assess the turnover of MSMEs. Similarly, Anchor Platforms have data about the MSME's transaction history, ordering history, sales, accounts which can be used to determine turnover. Lenders can use this turnover information to determine loan amount and tenure for MSMEs.

- **Supply chain finance**: This refers to a working capital system where a lender pays suppliers while offering credit to the buyer for an extended period at various points in a supply chain. It is an unsecured arrangement that allows both the selling of goods and the maintenance of a healthy cash flow.

3.5 Procedure in CFBL

Here's a general procedure for cash flow-based lending:

1. **Initial assessment**: The lender begins by gathering information about the borrower's financial history, including financial statements, tax returns, and other relevant documents. This information helps to evaluate the borrower's past performance and identify any potential risks.

2. **Cash flow analysis**: The lender analyses the borrower's cash flow statements, which provide an overview of the inflows and outflows of cash over a specific period. This analysis involves examining the operating activities, investing activities, and financing activities of the borrower.

3. **Adjustments**: The lender may make adjustments to the cash flow statement to reflect any non-recurring or extraordinary items that may not be representative of the borrower's normal operations. This step helps to provide a more accurate picture of the borrower's sustainable cash flow.

4. **Financial ratios**: The lender calculates various financial ratios, such as debt service coverage ratio (DSCR), which compares the borrower's cash flow available for debt repayment to their total debt service obligations. Other ratios, like the current ratio and the quick ratio, may also be considered to assess the borrower's liquidity and ability to meet short-term obligations.

5. **Projections and forecasts**: Based on the historical cash flow data and other relevant information, the lender may request the borrower to provide cash flow projections for the loan term. These projections help to evaluate the borrower's ability to generate sufficient cash inflows to service the debt.

6. **Risk assessment**: The lender assesses the risk associated with the loan by considering factors such as the borrower's industry, market conditions, and the overall economic environment. The lender also evaluates any collateral or personal guarantees offered by the borrower to mitigate the risk.

7. **Loan structuring**: Based on the analysis and risk assessment, the lender determines the loan amount, interest rate, repayment terms, and any additional conditions or covenants that may be required to mitigate risk and protect the lender's interests.

8. **Monitoring**: Once the loan is approved and disbursed, the lender regularly monitors the borrower's cash flow and financial performance to ensure they are meeting their obligations. Ongoing monitoring helps to identify any potential issues early on and take appropriate actions if needed.

It's important to note that this procedure may vary depending on the specific lender's policies, the borrower's industry, and the nature of the loan. Additionally, legal and regulatory requirements may also influence the process.

3.6 Some Selected Cases Software Services in CFBL

Software offering services for cash flow-based lending provides invaluable tools for financial institutions and businesses alike. By harnessing advanced algorithms and data analytics, these platforms assess the viability of lending opportunities based on the cash flow history of borrowers. They streamline the lending process by automating credit risk assessment, cash flow analysis, and loan origination, reducing manual errors and expediting decision-making. Additionally, they offer customizable features to tailor lending criteria according to specific industries or risk preferences. Such software empowers lenders to make informed decisions, mitigate risks, and ultimately enhance their lending portfolios while providing businesses with timely access to capital to fuel growth. Table 1 provides some selected software that offers services for cash flow-based lending.

[Table 1]

3.6.1 Case Study on Ocrolus

It makes lending decisions with AI-driven document automation. It automates document analysis and helps managers to reduce risk and avoid fraud. The process followed by this software –

1. **Classify** – It classifies all types of documentation submitted by the applicants including PDFs, scans, and smartphone images.

The list of documents which it covers are –

- **Bank Statements (Accuracy)**

It's Human-in-the-Loop document processing automation solution captures and extracts data from bank statements and help in smarter, faster lending decisions.

Advantages of automated bank statement processing

- Retrieve data from bank statements regardless of format or image quality
- Verify bank statement and borrower income in few minutes
- Convert bank statement PDFs to Excel
- Develop robust, data-driven income assessments

- Identify suspicious activity and potential fraud with tampering detection

- **Paystub Processing** – Speed up underwriting process with automated paystub data capture.

- **ITR**

2. **Capture** - Extract and structure data using computer vision and human validation.

- It will accelerate processing speed by increasing accuracy.

- It extracts data using OCR technique

- It uses proprietary machine learning and pattern recognition to localize each key element of a financial document and identifying the data needed to make lending decisions.

- After that it gives accurate, structured data output.

3. **Detect** - Identify suspicious activity and potential fraud with file tampering detection and algorithmic validation.

- Detect Signals - Detect evaluates a document's origin and inspects it for signs of tampering after creation. Identify exactly what has been changed on the document by more informed decisions.

- Detect Visualizations

4. **Analyze** – Next step is to analyze the documents by deeper insights into cash flow, income with clean and normalized data.

- **Cash flow underwriting** - Cash flow underwriting, so one can easily identify income sources, payments to lenders, recurring transactions, overdrafts and more.

- **Review critical borrower information in an intuitive workflow -** Precisely measure your borrowers' revenue and expenses while identifying trends in their account balances, transactions and cash flow.

- **Supercharge risk models with cash flow features -** Assess debt capacity, cash flow trends, volatility to have optimize risk modeling and to ensure higher precision in measuring a borrower's ability to pay.

3.6.2 Case Study on Finezza

Finezza is an end-to-end lending solution portfolio that aims at easing financial analysis and decision support for any new-age, growth-oriented lending organization.

It offers the following services in the loan management system –

- Automatic Document Identification - Tagging and OCR-based data extraction of KYC documents, which makes the process more efficient

- Easy Integration with APIs - For faster onboarding and exchange of information with data sources, data aggregators, legacy systems, etc.
- End-to-end Solution - Combines the loan origination and management systems into one seamless flow, making the entire process of lending smooth.
- Loan Eligibility Estimator - Coordinates with various data points across numerous transactions to create a realistic view of the business/person who is being evaluated for a loan.
- Efficient Bank Statement Analytics - Analyses bank statements in real-time with all accounts aggregated at an application level.
- Credit Assessment Tools - Performs credit assessment and develops a unique scoring model to predict the repayment success of the applicant.
- 360-degree Customer Profile Assessment
- Superior Threat Detection

3.7 Elements of CFBL

Cash flow-based lending represents a paradigm shift in lending practices, prioritizing a borrower's cash flow over traditional metrics like collateral or credit scores. This approach hinges on thorough cash flow analysis, scrutinizing historical and projected cash flows to gauge a borrower's ability to meet debt obligations. Key metrics such as EBITDA, operating cash flow, and debt service coverage ratio (DSCR) offer critical insights into financial health and repayment capacity. Moreover, industry-specific nuances are considered, recognizing that different sectors may have unique cash flow dynamics influenced by factors like seasonality or market conditions.

Technology plays a pivotal role in enabling cash flow-based lending, with advanced software automating data collection, analysis, and decision-making processes. Machine learning algorithms enhance accuracy and efficiency, supporting lenders in making informed lending decisions. Customized solutions tailored to individual borrower needs further characterize this approach, offering flexibility in repayment schedules, interest rates, and collateral requirements to align with cash flow fluctuations and business cycles.

Continuous monitoring of cash flow performance throughout the loan term is paramount. Lenders employ robust monitoring mechanisms to track borrower performance, detect signs of financial distress early, and implement necessary remedial actions. Additionally, cash flow-based lending fosters closer relationships between lenders and borrowers, built on transparency, communication, and mutual understanding. Regular dialogue enables proactive management of cash flow challenges, ensuring sustainable financial partnerships.

3.8 CFBL under Digital Mode

Due to the availability of Digital Public Infrastructure (DPI) like GST and India Stack, cash-flow lending can be increased. As they are tied to future cash flow, they should

be of shorter tenure as short-term prediction is easy and more accurate. This type of lending will help to reduce the credit gap to MSMEs powering their growth.

(i) CFBL allows the lenders to analyze the credit risk based on projections of the future cash flows of the business based on the previous transactions. To improve the credit facility in the country, RBI suggested the use of CFBL for MSMEs in light of difficulties faced by creditworthy borrowers when accessed by the traditional underwriting approach. MSMEs can fund their liquidity gap for working capital by raising funds under CFBL and, the supply chain finance can also be addressed by the CFBL approach. Further, Out of all the participants in the study, two were certified community-developing financial institutions, and, only one of the participants was a non-profit organization. MSMEs generally need small amounts of loans for a short duration to meet their working capital requirements. But, CFBL is well suited in this regard.

(ii) CFBL requires the creation of a digital public infrastructure that can aid the lenders to get access to the cash flows of the borrower and lock them for repayment of the loans. In this regard, it is appropriate to refer to the digital public infrastructure action plan as suggested by RBI (11) which states two steps: (a) to promote the use of e-Liens which facilitates the banks to lock-in the collateral digitally to improve the repayment process and make it convenient for the lenders and, (b) to provide the cash flow information by Account aggregators to lenders through GST receipts. Associating GSTN to the account aggregator systems such as Camsfinserv, Cookiejar and Finsec AA, is essential for MSMEs to avail of CFBL. MSMEs can voluntarily participate in linking their GSTN with these account aggregators through firms like Onemoney, Camsfinserv, NESL Asset Data Limited, and Finvu.

(iii) MSMEs should register with TReDS for availing of reverse factoring through an invoice for supply chain finance. Trade receivables discounting system (TReDS) is an online platform, set up by RBI to help MSMEs to get finance by auctioning their trade receivables at competitive bids.

(iv) Enrolment of Self-Help Groups to avail of credit and enter into credit systems by providing their histories and upgrading their book-keeping in a digital format.

Further, evaluation of the prediction ability of the cash flow scores and metrics can be performed through different approaches. Let us assume, that six participants are FinTechs and indulge in the business of CFBL. They perform underwriting in ways that differ from each other. For example, associating cash flow metrics with traditional credit scores or concerning the bank. The six participants use cash flow data through openly available digital infrastructures by filling in the loan application form. The data collected for underwriting is of relatively short-term credit products. Other terms like the repayment periods, and fee structure based on the borrower's credit characteristics like whether the borrower is a customer of the lending company vary significantly.

Each of the participants uses very highly automated systems for credit underwriting using different sets of variables in the analysis along with the predominant use of cash flow metrics. Financial variables like income, expenses, cash balance, inventory turnover, and business activities are distilled from the cash flow data. Other

variables such as projected income, receivables, and business obligations are also generated by using the cash flow data. Such variables are used to predict the business's future projections. The financial metrics of MSMEs are evaluated from such data.

FinTechs can retrieve these data from banks, public digital infrastructure, POS systems, Business accounting software, payment processors, and e-commerce platforms. Other than the data from these sources, FinTechs can also obtain data from other sources such as payment receipts, invoices, bill statements, etc. In case the MSMEs lack access to automated software services and have a significantly low digital presence, the latter options can be used to get the cash flow data. All of the FinTechs vary in the method of the use of the cash flow data, the stage of using the cash flow data in their assessment, and the extent to which they rely upon those scores alongside traditional credit scores.

Lenders can choose to use traditional credit score data in their assessment process and assign weights to it. However, it completely depends upon the FinTechs to underwrite with credit scores. Some FinTechs may choose not to use the traditional data as many MSMEs might not have any history of credit. Small businesses have relatively less business information public as large firms have automated accounting systems and a long digital history. Therefore, revenue projections, tax returns, and bank statements of earlier digitization must be retrieved from MSMEs to suffice the data requirements for the research.

It is worth referring to empirical research conducted by FinReglab in consultation with Charles River Associates in the United States (12) which highlights the benefits and risks involved in cash flow underwriting. The researcher, FinReglab, studied six firms lending to small businesses with limited reserves that need to get access to credit for managing working capital needs, expansion activities or hiring new employees. However, the risk in these small firms is higher as they have significantly low survival chances relative to larger businesses and they are more vulnerable to the economic downturn. These small businesses are from different industries with different business approaches, financial capacity, and management strategies which impact their cash flow data significantly. Indian MSMEs are also impacted by similar components as do the small businesses in the United States.

Although Indian MSMEs have comparatively fewer reserves and the difficulty to access credit is higher, the same is offset by the role it plays in the economy. Developed countries like the United States and the United Kingdom generate 99 percent of the employment from Small and Medium Enterprises (SMEs) whereas, Indian MSMEs account for 78 percent of the employment in the country directly or indirectly. Thus, the said research by FinReglab is highly contextual to the Indian MSME scenario. Out of all the participants in the study, two were certified community-developing financial institutions, and, only one of the participants was a non-profit organization.

We cannot retrieve the proprietary algorithms involved in the credit assessment but, the cash flow metrics and, the credit scores generated with the models can be obtained from Account Aggregators, bank transactions, bills, or invoices. FinTechs provide different kinds of loan products to customers, their data could have some limitations, and aggregation of the data is most likely not possible. The default rate is a dependent variable in the analysis of the credit for which data sources include: credit score data derived from cash flow metrics, traditional credit scores, application status,

geography, the conduct of the loan account, Proxy variables such as gender, community and residential code (Proxy is a variable that is not relevant by itself, but can explain the dependent variable), industry-specific performance, subsidiaries or grants if applicable and proxy variables -gender, community and residential code must have significant correlation with default rate.

The prediction model assesses a credit score in two ways. For example, the credit score that is generated from the variables can be increased or decreased depending on the performance of the cash flows of MSMEs, unlike the traditional credit scoring methods. The model can also test whether cash flow data be used to evaluate credit risk for MSMEs that have negligible credit history. Cash flow scores derived from the underlying cash flow metrics can be used to measure the correlation between defaulted borrowers and non-default borrowers. Multivariate logistic models can be developed to understand the relationship between the cash flow scores and other variables and determine the probability of default (PD). The models of CFBL action plans are discussed in Table 2.

[Table 2]

4. Looking Ahead

The above-discussed models try to distinguish between the explaining powers of the two variables- Cash flow and Traditional credit score. As MSMEs might have no or negligible credit history, underwriting with the help of cash flow assists in mitigating the risk and evaluating MSMEs based on their performance. Lending decisions based on balance sheets and profit and loss statements might not always be accurate as these financial reports have depreciation charges, write-offs, revaluations and goodwill which do not represent the MSMEs' liquidity status. The cash flow metrics reveal the true status of the MSMEs' financials and, thus, credit decisions can be made much more accurately. A strong cash flow score prevents FinTechs from lending to firms with strong balance sheets with lesser cash flows and finally mitigating the credit risk. Automating the credit scoring system based on cash flow will enhance the turnaround time for MSMEs, lowering the total cost of loan appraisal and making the MSME loans equally profitable to the long-term commercial loans. Thus, CFBL seems to be more customer-friendly. However, there seems to be some hesitancy on the part of banks because of their perception of higher credit risk arising from heavy dependence on projected cash flows which shall not be verified accurately in the absence of any lending norms as followed under MPBF and Turnover methods. Besides, Customer Acquisition Costs (CAC) for lenders are high since lenders and borrowers are not connected under the digital mode of lending. Loan Operating Costs (LOC) for processing the loan application, disbursement, and chasing repayments are very high. Some of these costs are fixed and, hence, smaller business loans, particularly those with credit limits up to Rs 10 lakhs, are considerably less profitable than large business loans and are, therefore, less appealing to banks.

RBI Initiatives

RBI had introduced the Account Aggregator and Public Credit Registry which benefits Cash Flow based lending.

Account Aggregator – It is an entity licensed by RBI that works as an intermediary for borrowers. It acts as a 'consent broker' and accesses borrowers' data from various financial institutions. This helps NBFCs in assessing the borrowers and review credit applications instantly.

Public Credit Registry (PCR) – PCR captures data of the borrowers from all financial institutions and offers banks and lenders a whole perspective on their perspectives in a real-time manner.

Lastly, at present, CFBL is a very minuscule part of the total lending of banks. Nonetheless, CFBL is well suited to meet the WC requirements of MSMEs as compared to the traditional methods of lending. More importantly, the same shall be performed in the form of digital lending and payments value chain. In addition, it also provides benefits to banks from automated controls on cash-flows of the borrower to ensure the end use of bank credit. For instance, the lender can be assured repayment through a lien on future cash flows. Hence, it calls for to promotion of CFBL in a big way in the coming days for which the mindset of both banks and the age-old MSMEs needs to be changed by motivating them to be a part of the Digital India drive. In addition, education and training to both banks and MSMEs will play a vital role in promoting CFBL in the coming years. Towards this end, both have a long way to go.

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Table 1
Selected cases of software that offers services for cash flow-based lending

Software	Services they offer
Ocrolus	Understand the seasonality of cash flow
	Predict the risk of default with cash-flow-based risk models
	Bank statement analysis
	Pay-stub Processing
	Tax form analysis
	Credit reports
Newgen	Bank-specific Underwriting module
	Advanced analysis of global cash flows, DSCR, Discounted cash flows and stress testing
	Configurable Risk Rating module
Finezza	Cash Flow Based lending
	Bank statement Analyser
	Invoice Financing
Precisa	Bank statement analysis
	GSTR analysis
Cube	Scenario Modelling
Anaplan	Cloud-native cash management app
Abacum	Mid-market companies

Table 2
The examples of the action plans of various models

	Model 1	*Model 2*	*Model 3*	*Model 4*
Pre-analysis requirements	Deriving a series of cash flow metrics like income, expenses and business activities. Recent months of cash flows of MSMEs undertaken. Other variables can be the industry performance of MSMEs etc	Cash flow score to be derived from the MSME's transaction history. The cash flow score along with the traditional credit score (if applicable) Is used in the models	Retrieving cash flow metrics such as MSME's income, expenses and debt Deriving a cash flow metric score depending on the size of the loan and cash flow metrics	Using traditional credit scores to build a traditional probability of default upon which the first underwriting of the borrowers is building.
Stages of assessment	Correlation between the cash flow metrics and default rate to be found by comparing the performance of the MSMEs to cash flow Segregating the MSMEs into default and non-default borrowers Subsequently parametric tests of the two groups can indicate the impact the cash flows have in predicting default rate.	Separation of MSMEs into default and non –default borrowers. Parametric test of cash flow score between default and non-default groups Divide the sample into twenty groups from lowest to highest cash flow scores.	Divide the MSMEs into groups of ten enterprises as per loan the amount. Find the linear relationship between the default rates of MSMEs and cash flow metric scores. Correlation of the cash flow metric scores and default rate to be found in each group.	Those MSME which will be declined credit on the basis of traditional probability of default are given the option to be assessed on the basis of cash flows. Calculating probability of default on the basis of recent cash flows. Separating the MSMEs into groups – approved and denied on the basis of traditional probability of default. Performing a mean of the cash flow metrics and cash flow-based probability of default between the two groups.

	Model 1	*Model 2*	*Model 3*	*Model 4*
	Logit models can be used to predict the probability of default. The cash flow metrics had the most difference among the two groups. Proxy variables like the residential code and average income of that area to infer the impact they had on the default rate.	Compare the groups which have higher cash flow scores with lower cash flow score group. A correlation between higher cash flow scores and low default rates suggests that cash flows are able to explain the discrepancy in default rates. Developing Three logit models using traditional credit score, cash flow score and both respectively as independent variables. This will highlight the explaining power of the standalone variables as well as together.	Repeating the process with debt to income ratio with explain the impact of debt on the default rate. Comparing the median income of the area code and comparing the median income of the MSME with it.	Separating the MSMEs into default and non-default groups and correlating the cash flow-based probability of default to the actual default.