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MARCH 2021

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A CASI Working Paper

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ABSTRACT

Despite being the focus of numerous policy initiatives, the credit gap of the MSME sector in India has been persistent. An investment in tapping the data being generated by lenders to build a database to inform future lending is likely to improve the quality of lending decisions over time. This, in turn, has the potential to further expand MSME loan access and reduce MSME borrowing costs. To realize this objective, a credit risk database (CRD) has been found to play a useful role in catalyzing collateral and guarantee free loans for SMEs in Japan. The availability of the OCEN network and the account aggregator framework offers an opportunity to create a CRD involving banks and NBFCs at relatively low incremental cost. The CRD's role will be distinct from that of credit bureaus and rating agencies as it is based on financial and default data for the sector as a whole, rather than for individual entities. The main benefits of CRD include the development of credit scoring models based on nationwide data and the availability of benchmarks for different segments of the MSME sector. Additional benefits are that the credit scores from the models could be used to develop a more sophisticated pricing mechanism for guarantees and for potentially aiding MSME loan securitizations. [1]

[1] The author is grateful to Megumi Sagara, Director, Overseas Division, Credit Risk Database Association, Japan for valuable inputs.

INTRODUCTION

The micro, small, and medium enterprise (MSME) sector has an important place in the Indian economy as it accounts for roughly 29 percent of GDP and employs around 110 million people (Ministry of MSMEs, Annual Report 2019-20). As the maximum investment limit for MSMEs has been increased in June 2020, an even greater number of firms may now be included in the sector. There may also be some contraction in the sector as there are legitimate concerns that some MSMEs may not survive the COVID-19 crisis. However, the importance of the sector for the economy and for a large number of livelihoods remains undisputed. This widely acknowledged fact has made MSMEs the focus of several Government schemes over the years. Yet, the sector faces several bottlenecks, of which inadequate financing is one of the most important. Though MSMEs are part of the "priority sector" to which banks in India are directed to lend a certain proportion of their credit outstanding, access to financing continues to be a challenge for a majority of firms.

Several factors contribute to the financing challenges of MSMEs. Many MSMEs lack financial records, credit histories, and collateral; the bases on which lenders make credit assessments[2]. In their absence, lenders are unable to progress with their credit appraisals. This problem is referred to as "information asymmetry" and it contributes to the relatively higher transaction costs for lenders when they deal with this sector. The higher transaction costs arise because the costs of screening borrowers are higher than in the case of larger borrowers, especially when expressed as a percentage of the loan amounts which typically tend to be relatively smaller. To address this fundamental issue, some countries have invested in setting up credit risk databases focused on small and medium enterprises. The objective of such databases is to help lenders make better credit decisions while lending to this sector. This paper examines the idea of setting up a credit risk database in India, focusing on how its role would be distinct from those of other eco-system entities, the reasons why it is needed, the operational model that is likely to work, the possible challenges in setting it up and the contributions it can make.

The next section introduces the MSME sector in more detail and also discusses the effect of the COVID-19 crisis on the sector. The third section explains the MSME financing gap and the reasons why it exists. The fourth section is on the current MSME lending ecosystem in India. The fifth section introduces the concept of a credit risk database and explains how the initiative differs from other initiatives operational in the Indian context. The sixth section draws lessons from the experience of Japan where such a database has been established in 2001. The seventh section shares the recent experience of the Philippines in setting up an MSME credit risk database. The penultimate section proposes

[2] Lenders refers to such borrowers as "thin-file" borrowers.

a model for operationalizing a credit risk database in India and the specific benefits and challenges involved. The final section summarizes the conclusions of the paper.

THE MSME SECTOR IN INDIA

a. Definition of MSMEs

Until June 2020, enterprises were classified as belonging to the MSME sector solely based on their investment in plant and machinery. The Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 classified MSMEs into two categories: manufacturing enterprises and service enterprises. The limit for investment in plant and machinery for each kind of enterprise was as given in Table 1.

Table 1: Definition of MSMEs (until June 2020) [3]

Type of Enterprise	Manufacturing Sector Investment in Plant and Machinery	Service Sector Investment in Plant and Machinery
Micro	INR 2.5 million (around $34,000)	INR 1 million (around $13,500)
Small	INR 2.5 million to INR 50 million (around $34,000 to $0.67 million)	INR 1 million to INR 20 million (around $13,500 to $0.27 million)
Medium	INR 50 million to INR 100 million ($0.67 million to $1.35 million)	INR 20 million to INR 50 million (around $0.27 million to $0.67 million)

The reason for using investments as a benchmark to define MSMEs was that they were relatively easier to measure and verify. The lack of records and documents prevalent among these enterprises made this an important factor in the choice of definition for the sector. A bill was introduced in 2015, seeking to amend the Act and raise the investment limits for each of the categories to update the definitions after a decade to adjust for inflation during the period. In 2018, this bill was withdrawn, and another bill was

[3] The exchange rate has been assumed to be 1 USD=INR 74 for the purposes of this paper. The exchange rate between July 2020 and December 2020 has ranged between INR 74.9 and INR 73.0 (www.exchangerates.org).

introduced to revise the definition of MSMEs to one based on annual revenues rather than on investments. The logic for this was that in July 2017, the country had replaced multiple indirect taxes in the country with a single unified tax called the Goods and Services Tax (GST). The implementation of the GST required the creation of an information technology (IT) platform that could serve as an interface with taxpayers that could be shared by the central government and various state governments. As a result of this IT infrastructure, the government is now able to ascertain the annual turnover of registered entities, making it possible to have a turnover-based definition. This Bill lapsed with the dissolution of the 16th Lok Sabha following the 2019 General Elections.

On June 1, 2020, the Cabinet Committee on Economic Affairs approved a revision in the definition of MSMEs which uses investment as well as turnover as criteria to define each category of enterprises. The revision also introduced uniformity in the criteria used to define MSMEs in both manufacturing and service sectors. The new criteria are summarized in Table 2.

Table 2: Revised definition of MSMEs (with effect from July 1, 2020)

Type of Enterprise	Manufacturing and Service Sector
Micro	Investment: Up to INR 10 million ($0.14 million) Turnover: Up to INR 50 million ($0.68 million)
Small	Investment: INR 10 million to INR 100 million ($0.14 million to $1.35 million) Turnover: INR 50 million to INR 500 million ($0.68 million to $6.76 million)
Medium	Investment: INR 100 million to INR 500 million ($1.35 million to $6.76 million) Turnover: INR 500 million to INR 2.5 billion ($6.76 million to $34 million)

The change in definition is likely to vastly expand the pool of firms classified as "MSMEs" as the upper limit of investment for the sector as a whole has been increased by a multiple of 5. The change seeks to address concerns that the earlier narrow definition served to disincentivize MSME firms from growing on account of potential loss of benefits received by them on account of their MSME status (Sitharaman, 2020). The 2018-2019 Economic

Survey had highlighted the problem of "dwarf" SMEs which do not grow and hence do not contribute as much to employment and productivity (Government of India, 2019).

While state governments are primarily responsible for the promotion and development of MSMEs, at the national level, the Ministry of MSMEs is responsible for overseeing the growth of MSMEs through initiatives designed to help them become competitive and to assist them in scaling up. The ministry was formed after the enactment of the MSME Development Act in 2006. Under the ministry, the National Small Industries Corporation (NSIC) specifically focuses on assisting micro and small enterprises by providing integrated support services such as marketing, technology, finance, and other services.

b. Nature of the MSME Sector[4]

The number of MSMEs in the country was estimated to be 63.38 million according to the 2019-20 MSME Annual Report based on the National Sample Survey 73rd Round Survey in 2015-16. The Survey found that 99 percent of MSMEs fell into the "micro" category while 0.52 percent fell into the "small" category and the remaining 0.01 percent were classified as "medium." With respect to the sector of operation, 31 percent of MSMEs are in the manufacturing sector, 36 percent in trade and 33 percent in other services. Even within each sector, there is considerable heterogeneity in operation. For instance, MSMEs in the manufacturing sector operate in areas ranging from handmade crafts to high precision machine tools (IFC, 2018). The top five industries of operation were retail, food product and beverages, wearing apparel, repair and maintenance of motor vehicles and textiles (ibid). The survey found that MSMEs were spread across rural and urban areas with 51 percent in rural areas. Around 20 percent of the MSMEs were owned by women. Given the small size of the majority of MSMEs, it is not surprising that almost 96 percent of MSMEs were set up as proprietorships. Only 15 percent of MSMEs are estimated to be registered enterprises (IFC, 2018). Registered enterprises file business information such as investments, the number of employees, and the nature of operations with District Industry Centers of the state or union territory that they are in (replaced since July 1, 2020 by online MSME Udyam Registration process), while unregistered enterprises do not do so. The low proportion of registered MSMEs shows the limited availability of even basic information regarding the majority of MSMEs in the country. However, there is a trend towards formalization of MSMEs. After the introduction of the GST in 2017, many small enterprises voluntarily chose to be part of the GST, especially those buying from large enterprises and wanting to avail of input tax credits (Economic Survey 2017-18). A

[4] As per the revised MSME definition adopted in June 2020, the statistics relating to the sector are likely to change.

2018 Omidyar-BCG study found that there was a 50 percent increase in MSMEs registered with GST as compared to the previous tax regime.

c. Importance of the MSME Sector

The MSME sector has an important place in the Indian economy. The sector contributed around 28.8 percent to the country's GDP in 2015-16 (MSME Annual report, 2018). The MSME share has fallen from 2012-13 when it was 29.94 percent. The contribution of the Indian MSME sector to GDP is low when compared to several other countries in Asia. For instance, in the Asian Development Bank (ADB)'s Asia SME Monitor 2020, the average contribution of the SME sector to GDP for the ten Asian countries studied was 41 percent. The estimated contribution of the sector to the country's exports was 45 percent (MSME Annual report, 2018-19). According to the Ministry of MSME's 2019-20 Annual report, the MSME sector employed around 110 million people, 18 percent of whom were female. These numbers indicate the potential for the sector to provide livelihoods to a large section of the population. In view of the need for India to create around 90 million non-farm jobs by 2030 (McKinsey Global Institute, 2020), facilitating rapid growth of the sector is especially important. In addition to the above factors, MSMEs are important because they have the potential to promote employment in rural areas, thereby reducing the need for extensive urban migration. Many MSMEs also focus on traditional skills and the use of local resources. With the change in definition of MSMEs announced in June 2020, the statistics quoted above are bound to change significantly. A new survey will need to be undertaken to assess the characteristics of the newly defined pool of enterprises.

d. Effect of the COVID-19 Crisis on the MSME Sector

The COVID-19 crisis and the consequent lockdown posed especially tough challenges for MSMEs, stemming from their limited financial resources. A survey of 345 MSMEs conducted by CARE Ratings in June 2020 found that 60 percent of the firms were severely impacted with fall in demand, contraction in cash flows, inadequate finance, labor shortages, logistical constraints and increasing volume of receivables being the main issues faced by them (CARE Ratings, 2020a). A third of the respondents faced revenue losses of over 50 percent during the first three months of the lockdown. Another survey of 621 firms of various sizes conducted in August-September 2020 found that a majority of MSME units reported that the recovery in their production/ sales was less than 50 percent of the pre-lockdown numbers while a majority of large enterprises said that recovery had reached the 50 percent level (CARE Ratings, 2020b). The same survey found that a larger proportion of micro units reported closures as compared to small, medium or large units. Using scenario analysis based on secondary data, Sahoo (2020) estimates

that the MSME sector may have experienced a decline of 2.1 percent to 5.7 percent in 2020 as compared to the previous year.

Some MSME firms tried to cope with the COVID-19 related challenges by adopting technology. An online survey of 500 MSMEs in metropolitan cities conducted by Endurance International Group, an information technology services company specializing in web hosting found that 30 percent of the MSMEs surveyed had started a website or enabled e-commerce functionality after the lockdown started. More than 50 percent of firms surveyed used Whatsapp and/or video conferencing tools to continue operations during the lockdown (Awasthi, 2020). Digitization of MSMEs has benefits that go beyond market access. It has potential for more efficient financial management. More importantly, through digital transactions, MSMEs can create a trail of transactions that can enable access to new and cheaper sources of financing. A Cisco-India small and medium-sized business Digital Maturity Study 2020 predicts that the digitization of SMEs could add up to USD 158-216 billion to India's GDP by 2024 (Dutt, 2020). Digitization however poses its own set of challenges for MSMEs such as skill upgradation of personnel and ensuring data privacy.

In May 2020, the Government announced a package of measures, entitled the "Aatmanirbhar Bharat Abhiyan" to mitigate the distress caused by the COVID-19 lockdown. The largest initiative for the MSME sector was the provision of Rs. 3 trillion (USD 40 billion) in credit guarantees for sanction of collateral-free term loans at concessional rates of interest to 4.5 million MSMEs which currently avail facilities from banks and non-banking financial companies (NBFCs). The loans came with a 48-month tenure with a 12-month moratorium. This facility was later termed the "emergency credit line guarantee scheme" (ECLGS). The aggregate amount of Rs. 3 trillion was around 20 percent of the total credit outstanding to MSMEs on February 29, 2020. In addition, provision was made for Rs. 200 billion in subordinated debt for MSMEs classified as non-performing assets (NPAs) or stress assets. A fund of Rs. 500 billion was also set up for equity infusion into MSMEs. Banks and NBFCs were permitted to grant a moratorium of three months on payment of all term loan installments falling due between March 1, 2020 and August 31, 2020 and defer the recovery of interest on working capital facilities during this period (RBI, 2020 a, b). Lending institutions were also permitted to reassess borrowers' working capital cycle and reduce the margin required to be contributed by the borrower. In August 2020, the Government scheme was expanded to include business loans to professionals such as doctors and lawyers. The upper limit of the loans was also increased to Rs. 500 million from Rs. 250 million and the maximum turnover of eligible borrowers was raised to Rs. 2.5 billion from Rs. 1 billion. The impact of the scheme on MSME lending was clearly visible from the sharp spike in MSME related credit enquiries in June 2020 (TransUnion CIBIL, 2020).

However, despite expanding the scope of the scheme, of the Rs. 3 trillion set aside for the ECLGS, only Rs. 2.05 trillion was sanctioned and Rs. 1.58 trillion was disbursed as on December 4, 2020 (Ministry of Finance, 2020). The slow utilization of the ECLGS was initially attributed to procedural delays by banks but later was also found to be linked to the low demand from MSMEs on account of uncertainty about their business prospects (Palepu, 2020). The final date for utilization of the facility has been extended until March 2021 (Banerjea, 2020).

THE MSME FINANCING GAP

A 2018 study on the MSME finance gap in India by the International Finance Corporation (IFC) estimated the overall demand for finance by MSMEs in India to be around INR 87.7 trillion (USD 1.18 trillion), comprising a debt demand of INR 69.3 trillion and an equity demand of INR 18.4 trillion. After excluding enterprises that are financially stressed, enterprises that have been operating for less than one year, enterprises that have been rejected by financial institutions, and enterprises that prefer informal sources of finance, the study estimates the viable debt demand in the sector to be INR 36.7 trillion.

Of the financing available to MSMEs, only 16 percent is catered to by formal sources of finance, with the balance coming from self-finance or informal finance. A proportion of 86 percent of formal financing comes from banks. Informal sources of finance include friends, family, moneylenders, and rotating savings and credit associations (ROSCAs or "chit funds" as they are locally known). The viable equity demand is estimated to be INR 18.4 trillion by excluding entrepreneurs' equity contributions and equity demand from proprietorships and partnerships, as these legal forms do not allow outside capital to be accepted. Considering the available supply, the study estimates the gap between the demand and supply of funding for MSMEs to be around INR 25.8 trillion, affecting around 27.8 million enterprises. 95 percent of the viable debt gap comes from micro and small enterprises (ibid).

A major problem faced by MSMEs in accessing institutional finance is their lack of collateral, which makes it hard for them to offer any security for bank loans (IFC 2012). Yet another major hurdle is the information opacity prevalent in the sector. As many Indian MSMEs conduct a substantial portion of their business in cash, often there are no records available. As a result, the units are unable to prepare financial statements. As most MSMEs are yet to access formal loans, they also do not have credit histories. A very detailed loan appraisal of an MSME based on several site visits and observations may be possible but would entail very high transaction costs. Given the smaller unit value of typical MSME loans, such a high transaction cost could make lending to MSMEs unviable.

It is also found that even when MSMEs do access loans, the interest rates on these loans are frequently higher than for loans availed by large corporates. This is because when

lending models applied to large enterprises are applied to MSMEs, the ratings obtained by MSMEs are lower, resulting in higher interest rates being charged for loans availed by them. Besides their lack of collateral, MSMEs face other disadvantages that reduce their rating. For instance, MSMEs often lack bargaining power with suppliers and customers, resulting in their having unfavorable working capital terms that are a strain on their liquidity.

MSME LENDING ECO-SYSTEM IN INDIA

a. Apex Banks

The Small industries Development Bank of India (SIDBI) is the primary financial Institution for promoting, developing and financing the MSME sector. SIDBI provides refinance to banks, microfinance institutions (MFIs), small finance banks (SFBs) and non-bank finance companies (NBFCs), including new age fin-tech companies[5]. The institution undertakes direct lending in the case of innovative financial products with the objective of demonstrating the use of the product before it is mainstreamed. In addition, SIDBI provides indirect funding to MSME start-ups through venture capital funds. As on March 31, 2020 SIDBI's loans and advances stood at Rs. 1.65 trillion (SIDBI Annual report 2019-2020).

To specifically focus more on small and micro units, in 2015, the Micro Units Development and Refinance Agency (MUDRA) Bank was set up as a subsidiary of SIDBI. MUDRA Bank provides refinance to last mile providers[6] of finance for micro and small enterprise loans under three categories: up to INR 50,000, INR 50,000 to INR 0.5 million, and INR 0.5 million to INR 1 million. The three categories are expected to cater to microenterprises at different stages of development, though 60 percent of MUDRA Bank's funding is earmarked to cater to the first category. The loans are meant to be for nonfarm income-generating activities. An important objective of MUDRA Bank is to bring down the average cost of funds for the lending institution and consequently the interest rate charged to borrowers. Interest rate caps have been stipulated for different types of lenders. For example, in the case of NBFC–MFIs there is a cap on margins of 10 percent for MFIs with loan portfolios larger than INR 1 billion and 12 percent for smaller MFIs with loan portfolios lower than INR 1 billion or 2.75 times the average base rate of five major commercial banks, whichever is lower. In the case of banks, the RBI has also put a cap on the interest rate at the base rate or marginal cost of funds-based lending rate for

[5] SIDBI web site (Accessed on December 24, 2020)

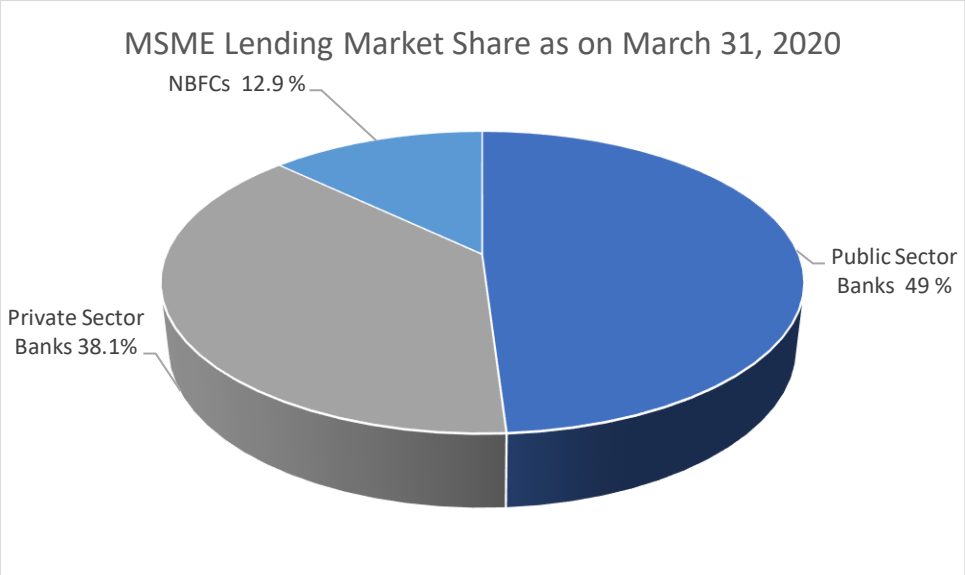
[6] The term "last mile provider" refers to the entity that ultimately interfaces with the customer as opposed to other entities that merely act as financial intermediaries in the process of financial service delivery to unbanked populations.

loans to micro units. Similarly, regional rural banks and cooperatives can only charge up to 3.50 percent over and above the MUDRA refinance rate to the ultimate borrower. In the case of NBFCs, the RBI has also stipulated an interest cap of 6 percent over and above the MUDRA refinance rate when lending to the MUDRA segment. During the financial year 2019-2020 MUDRA loan disbursements under the Pradhan Mantri MUDRA Yojna (PMMY) amounted to Rs. 3.2 trillion[7].

b. MSME Loan Providers

Public sector banks, private sector banks, and non-bank finance companies are the main providers of formal loans to MSMEs. As on March 31, 2020, the shares of each of these players is presented in Figure 1.

Figure 1



(Source: Author based on data from TransUnion CIBIL, 2020)

After the COVID-19 related lockdown started and the ECLGS was announced, the share of NBFCs had fallen to 9.7 percent, while the share of public sector banks had risen to 51.6 percent by June 30, 2020 (TransUnion CIBIL, 2020). The fall in the share of NBFCs is expected to be temporary (ibid).

[7] MUDRA Bank Web site (www.mudra.org.in) Accessed on January 16, 2021

Banks in India are required by R.B.I. to lend 40 percent of their adjusted net bank credit[8] (ANBC) to a designated "priority sector," of which the MSME sector is a part. A sub-target of 7.5 percent of ANBC has been set for lending to micro enterprises. While at one point, MSME lending was dominated entirely by public sector banks, their share has reduced over time with the growth in the share of private banks and NBFCs (TransUnion CIBIL, April 2020). The licensing of small finance banks in 2015 has brought in a new category of private banks with a special focus on the MSME sector. These banks are required to lend 75 percent of their ANBC to the priority sector. Many of these entities were microfinance organizations before receiving banking licenses and are in the process of expanding their portfolio beyond microfinance loans. Several types of MSME-focused NBFCs have also emerged. While formerly, many NBFCs focused primarily on the truck financing end of the market, newer NBFCs are exploring other areas such as the financing of specific textile clusters and agricultural value chains. There is also a new breed of NBFCs who are lending based on digital data (explained in the following section on lending models).

c. Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)

The Credit Guarantee Fund Scheme for micro and small enterprises, launched in 2000, provides guarantee cover between 50 to 85 percent for collateral-free loans given to micro and small enterprises by scheduled commercial banks and specific NBFCs, small finance banks and other institutions with which CGTMSE has contracts. The maximum credit facility that can be covered is Rs. 20 million. The guarantee covers the principal of term loans and interest for one quarter. In the case of working capital facilities, the amount outstanding (inclusive of interest) as on the date the account becomes a nonperforming asset (NPA) or on the date a suit is filed, whichever is lower is covered. Guarantee charges vary depending on the risk premium applicable for the lending institution (based on its level of NPAs and claim payout ratio). In 2018, the corpus for the fund was tripled to Rs. 80 billion. During financial year (FY) 2019-20, guarantees of aggregate value Rs. 458.5 billion were approved (CGTMSE, 2020).

d. Credit Bureaus

While the first credit bureau in the country was set up by TransUnion CIBIL in 2000, there are now six such bureaus that help individuals create a credit history. Often owners of MSMEs avail of loans based on their personal credit histories and use the loans for their enterprises as many of them are sole proprietorships or partnerships. In 2017, TransUnion CIBIL introduced a credit risk ranking for MSMEs that ranks MSMEs on the

[8] Defined in RBI's Master Directions on Priority Sector Lending dated September 4, 2020

chances of their defaulting over the next 12 months. Using algorithms based on the data that banks enter into their systems, a rank between 1 and 10 is assigned to MSMEs, with 1 representing the rank for the least risky MSME. The ranks are based on the MSME's credit profile, credit behavior and firmographics (the vintage and recency to credit) (RBI, 2019).

e. Credit Rating Agencies

In 2005, SMERA[9], a joint venture between the Small Industries Development Bank of India, Dun and Bradstreet,[i]and some commercial bank, was set up specifically for rating MSMEs. At that time it was felt that while several credit rating agencies were in existence in India, their main focus was on large corporations. It was believed that rating MSMEs called for a different approach from the standard approach adopted when rating large corporations.

In 2004–05, a scheme entitled the Performance and Credit Rating Scheme (PCRS) was announced to enable registered micro and small enterprises to obtain credit ratings. The rationale was that ratings would make available cheaper and faster financing from banks. RBI encouraged banks to use the ratings to enhance their micro and small enterprise lending. The scheme enabled such enterprises to obtain a 75 percent reimbursement of the rating fees charged by credit rating agencies for their first credit rating. Besides SMERA, it was decided to include the other major credit rating agencies too in the scheme in view of the large number of MSMEs in the country and to give the enterprises more choice. As a result of the PCRS, many of the large credit rating agencies soon set up MSME divisions to focus on the sector. Besides setting up focused teams to rate MSMEs, the need for a customized model to rate MSMEs was also felt. The standard rating models used to rate large corporations tend to be inherently biased against MSMEs as they have weaknesses arising from their small scale of operations, lower value of assets, and weaker bargaining power. As a result, an 8-point rating scale was developed specifically for MSMEs, so that such enterprises could be compared to their peers and not to large corporations. Like standard rating models, the model developed takes into account business, financial, operational, and management risks but it gives higher weight to the operating capability of the enterprise and lower weight to financial strength.

Site visits and interviews with the owners are an essential part of MSME ratings. The financial records of the enterprises are scrutinized in detail and stock audits are conducted to ascertain the quality of record keeping. If there are gaps in past financial records, these are corrected. As rating agencies require audited accounts for at least 3

[9] In May 2018, SMERA changed its name to Acuité Ratings & Research Limited to position itself as a full service rating agency with a diverse client base, as SME ratings accounted for less than 50 percent of its turnover.

previous years, if these are not available, the promoters need to draw up the accounts based on invoices and get the accounts audited.

As one of the main objectives of the PCRS is to reduce the information asymmetry prevailing in the MSME sector and to shorten the time required by banks to complete loan appraisals of MSMEs, the rating reports about MSMEs are more detailed than those of large corporations. The reports are typically six to seven pages long and provide detailed information on the enterprise's operations including the exact location using GPS coordinates (Shankar, 2019).

The main challenge with the credit rating of MSMEs in India is that many of the ratings were requested by MSMEs because of the availability of the subsidy under the PCRS. As the availability of subsidies tends to depend on the fiscal situation in any given year, this makes the scheme unreliable. Yet another challenge is that while the subsidy is available for only the first rating for an MSME, renewals of the rating were only carried out by a minority of enterprises. A 2012 study on the PCRS commissioned by the NSIC found that only 32 percent of the contacted enterprises had renewed their rating in the last 3 years (Mohapatra, 2012). Interviews with credit rating agency officials indicate that the percentage of renewals among MSMEs that have availed of the subsidies for credit ratings may be even lower at 20 percent. Another area of concern is that while interest rate reductions on bank loans are generally among the main benefits of credit rating for MSMEs, there are a few examples of MSMEs that have been unable to negotiate interest rate reductions despite having high ratings.

f. Other Information Sources for MSME Lenders

With the introduction of the GST, more data are available regarding MSMEs which are registered in the system. Moreover, the data is verified (as invoices are matched), granular in nature (invoice level details available), current (monthly/quarterly filing), and electronically accessible (Omidyar-BCG, 2018). The data has been leveraged by some business intelligence providers to provide user friendly products for lenders seeking potential customers. Some other sources of useful data for lenders are payment companies, mobile operators, utilities and online cloud-based accounting systems.

Public digital infrastructure in India is available through India Stack[10], a set of Application Program Interfaces (APIs) that enable instant communication between servers and devices. The objective is to provide Indian companies with a set of foundational layers

[10] A "stack" comprises all the technologies required to operate an application: computer languages, architecture, libraries or lexicons, servers, user interfaces and experiences, and software – the apps themselves – and tools used by developers, such as APIs, which connect databases and software (https://www.digfingroup.com/what-is-india-stack/)

based on which services can be offered with low marginal cost. The first layer is the identity layer which enables every resident to prove their identity using Aadhaar biometric identification. Next is a payments layer which enables anyone to pay anyone in a fast and low-cost manner. Finally, there is a data empowerment layer which enables secure sharing of data (Singh, 2020). India Stack and additional APIs enable granular verification of data regarding MSMEs. Entity data, individual data, financial and tax data, utility data, credit bureau data as well as social and mobile data can be accessed and verified subject to appropriate consents from the entity or the individual.

Yet another initiative is the MSME databank launched in 2016 by the Ministry of MSMEs. This is an attempt to get an online census of the MSMEs in the economy. The databank attempts to capture information on turnover, investment, number of employees, products and services, credit rating, joint ventures, technology transfers, and import and export of machinery. It is mandatory for MSMEs availing themselves of government assistance schemes to register their details on the databank.

For secured loans, CERSAI (Central Registry of Securitisation Asset Reconstruction and Security Interest of India) provides information on existing charges on immovable, movable, intangible properties and assignment of receivables.

g. Account Aggregators

Account aggregators are specialized NBFCs who act as consent managers for financial data. They act as conduits for flow of encrypted data from financial information providers to financial information users. Currently seven account aggregators have received approvals from RBI.

h. Lending Platforms

Several lending platforms focused specifically on MSMEs have been set up. The Trade Receivables Discounting Systems (TReDS) is an electronic platform for facilitating the financing and discounting of trade receivables of MSMEs through multiple financiers operational since 2014 (RBI, 2020c). The online bidding mechanism allows MSMEs access to lower cost funds. Currently there are three companies operating TReDS platforms. Participating in TReDs also enable MSMEs to build a data trail regarding their operations. Online marketplaces for MSME loans have been also set up through which MSMEs and prospective lenders can interact. Price discovery for loans happens through a real time bidding process. An online platform for loans from public sector banks is also operational.

In July 2020, an important addition to India Stack (discussed in the earlier paragraph) called “Open Credit Enablement Network (OCEN)” was announced. OCEN is a credit

protocol infrastructure which can create digital lending platforms at population scale and connect multiple lenders with communities (networks of potential borrowers) (Nilekani, 2020). It was built by the Indian Software Product Industry RoundTable (iSPIRT), a not-for-profit think tank run mostly by volunteers. Under OCEN, communities (or marketplaces) can act as loan service providers, enabling provision of loans to potential MSME borrowers. The loan service provider's knowledge about the MSME borrower's operations is expected to help structure cash flow-based loans that are low-cost, collateral free and low-risk.

i. MSME Lending Models

Banks in India usually make their lending decisions based on a number of factors such the financial statements of the enterprise and their assessment of the capability and reliability of the promoters through personal meetings and trade enquiries (Thampy, 2010). As mentioned earlier, many small MSMEs however do not record financial transactions systematically. They are also unable to afford payments to chartered accountants to prepare financial statements for them. Hence often financial statement-based lending excludes such entities. Yet another popular method for lending to MSMEs is based on collateral in the form of assets owned by the enterprise or the entrepreneur. Most commonly, loans are given against property or gold. This model tends to exclude MSMEs which are not able to offer such collateral. A third model is based on assignment of credit scores to MSMEs based on historical data. While such models are common in developed countries, they need to be specifically developed in the Indian context using historical data on lending to MSMEs As MSME financing has been a neglected area for a long time, such vast amounts of historical data on MSMEs in India are not currently available on a consolidated basis. Some banks in India have developed their own models based on the available data (Joshi 2014) but most lenders do not have access to such models.

As all the three models discussed above have limited utility in addressing the need to expanding access to finance for MSMEs, the idea of cash flow-based lending is gaining in popularity. In this method, potential lenders examine the cash flows of a firm to ascertain its repayment capacity and eligible loan amount. The 2019 U.K. Sinha Committee on MSMEs recommended that banks adopt this method (RBI, 2019). A variety of routes are adopted by lenders to ascertain a firm's cash flows such as using GST data, e-commerce transactions, data from online platforms that the firm participates in, data on the firm's supply chain etc. Some lenders help small businesses record financial transactions digitally by giving them access to software or mobile-based apps for this purpose, prior to sanctioning them loans. The availability of digital data and public digital infrastructure have also opened up an opportunity for lending based on digital data and artificial

intelligence[11]. The digital models have enabled some NBFCs to identify different types of "digital personas" in order to make lending decisions. Some NBFCs not only use digital data but also execute the entire loan process online. Others use "phygital models" which refer to a model using a combination of physical and digital channels.

MSME Credit Risk Database: Concept and Need in the Indian Context

A credit risk database (CRD) is a nation-wide database encompassing data from financial statements and loan defaults relating to a specific pool of borrowers. The objective of a CRD is to provide insights to develop benchmarks for improving decisions regarding loans to the pool over time. These insights can help lenders in evaluating credit risk when making future lending decisions to the pool. An example of such a CRD for small and medium enterprises is the CRD Association of Japan which has been established in 2001. It was set up to encourage bank lending to SMEs.

a. How CRD is Distinct from Other MSME Focused Initiatives in India

A CRD focused on MSMEs would serve a different purpose from those served by other initiatives aimed at reducing information asymmetry in the Indian context. For instance, the function of credit bureaus is distinct from that of a CRD. A credit bureau has borrower specific data and hence provides valuable information regarding the entity's past financial behavior. A CRD on the other hand is an extensive database that stores a wide range of financial statement items, a few non-financial items, and default-related information, collected by CRD member financial institutions at the time of screening and monitoring. The CRD database is not intended to refer to a specific MSME's management status but to build a model that statistically evaluates MSMEs' creditworthiness or provides statistical information to members. Therefore, it is unnecessary to identify a particular MSME in the database and the data is collected as anonymous data. The inputs provided by both credit bureaus and CRD are important and complement each other. In the Indian context, "CIBIL MSME ranks" provided by TransUnion CIBIL are based on a specific MSME's credit profile, credit behavior and firmographics such as vintage and recency of credit. Credit Scoring models based on CRD data would be based on the MSME's financial statements.

A CRD is also distinct from the concept of a public credit registry which was studied by a high-level task force under the chairmanship of Mr. Y.M. Deosthalee in 2018. A public

[11] The growth in the number of loan platforms in India has also led to concerns as there are reports of some platforms indulging in unethical collection practices, high interest rates and fraud. To suggest measures to address this, the RBI has formed a working group on digital lending through online loan platforms and mobile apps (RBI, 2021).

credit registry is an extensive database of credit information regarding borrowers to which all lenders are mandated to report. The main objective of a credit registry is to bring in greater transparency into the credit markets and enable creation of more complete credit histories of borrowers (RBI, 2018). Building up a CRD on the other hand would be useful in helping lenders make risk assessments.

Yet another initiative in the Indian context, the MSME databank launched in 2016 is also distinct from a CRD. The former is useful in developing a census of MSMEs and is especially useful to Government agencies in helping them meet their target of procuring a certain minimum percentage of their good and services from MSMEs.

b. Need for CRD in the Indian Context: High Risk Perception Regarding MSME Loans

Financial institutions typically consider MSME lending as high risk due to their incomplete understanding of their businesses (IFC, 2018). Indian banks have especially exhibited risk aversion in the recent past. RBI in its 2020 Annual Report pointed out that risk aversion was impeding the flow of credit to productive sectors of the economy and undermining the role of banks in the economy (RBI, 2020). In this scenario, increasing flow of credit to the sector could benefit from investment in infrastructure that could aid lenders in making more informed credit decisions.

The high-risk perception of MSME loans is not without basis. Public sector banks have experienced high levels of NPAs with regard to MSMEs. The NPA rate for these banks ranged between 16.7 percent and 18.6 percent between June 2018 and June 2020 (TransUnion CIBIL, 2020). The overall NPA rate for public sector MSME loans in June 2020 was higher than the overall NPA rate for commercial lending of 16.1 percent in June 2020. Private banks and NBFCs had far lower NPA rate ranges of 3.8 percent to 5.8 percent and 5.2 percent to 9.7 percent respectively for the same period. However, public sector banks account for the dominant share of the MSME lending market. As of June 2020, their share was 51.6 percent as compared to 38.7 percent of private sector banks and 9.7 percent of NBFCs. The high NPA ratio of the dominant lender in the MSME space highlights the need for infrastructure to support and enhance MSME credit decisions. Micro and small enterprise focused loans under the MUDRA Bank schema, for which the Government had set ambitious targets to lending institutions, have also shown signs of stress. The RBI has urged banks to focus on improving appraisal in respect of these loans

(Ghosh, 2019). 15 percent of the MUDRA loans of the country's largest public sector bank, State Bank of India, are reported to be under stress (Ghosh, 2020)[12].
Volatility and risk levels are also considered to be higher in the MSME sector because of instances of MSMEs' dependence on very few partners and contracts, especially as suppliers to larger companies. For instance, when there was a crisis on account of factory closures at a large corporate, Maruti Suzuki India Ltd[13],[ii] the company itself did not default but several MSMEs that were dependent on its business defaulted on their bank payments due to liquidity problems. These MSMEs therefore were classified as non-performing loans (NPLs) by their banks, though they later paid back their dues (Singh 2017).

c. Heterogeneity of MSME Sector

As discussed earlier, the MSME sector in India is highly heterogeneous. This implies that there are no standard benchmarks that can be developed for the sector as a whole. There is also likely to be variation in benchmarks in different regions of the country. Hence there is a need to develop benchmarks for each cluster of MSMEs in each geographical region. It may take considerable time for each lender to develop benchmarks for each cluster. Pooling of data accelerates learning about a greater number of clusters.

d. Large Demand Supply Gap for MSME Loans

The large gap between demand and supply for MSME loans requires rapid increase in the volume of MSME loans. While digitization trends in the economy augur well for increase in volumes of MSME loans, to obtain the full benefit of these trends, the information generated should be utilized to build a large credit risk data base which can produce insights that could further enhance MSME credit decisions and consequently MSME loan access.

The positive aspect of the large unmet demand for MSME loans is that it can motivate lenders to be part of the initiative as there is potential for each lender to increase their loan volumes without cutting into another's share. While currently some large lenders have their own in-house databases, most small lenders do not have them and may not be able to afford the cost of building them. Even for lenders with databases, supplementation

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[12] These developments have led the RBI to encourage banks to collaborate with NBFCs and use the co-origination model in lending to MSMEs. The objective is to leverage the low cost of funds of banks with the wider reach of NBFCs (RBI, 2020).

[13] One of India's leading passenger vehicle companies, Maruti Suzuki India Limited is a subsidiary of Suzuki Motor Corporation of Japan. Until 2007, it was known as Maruti Udyog Limited and was a joint venture between Suzuki, Japan, and the Government of India.

with data from the CRD will help. Statistical models based on a nation-wide database from multiple MSME lenders are likely to be much more robust than models based on single bank data. Moreover, the models used will improve with time as more data are added.

LESSONS FROM THE CREDIT RISK DATABASE IN JAPAN

The CRD in Japan was set up in 2001 to encourage bank lending to SMEs based on credit risk assessment rather than on collateral. Following the collapse of the bubble economy and the consequent fall in land prices, there was a need for banks in Japan to reduce their dependence on collateral, especially when lending to SMEs. The CRD was established using Government funding and was set up by the SME Agency (an authorized body of the Ministry of Economy, Trade and Industry) and the Bank of Japan (BOJ, the Japanese central bank). The database is managed by the Credit Risk Database Association, a private not-for-profit organization with member institutions providing data and paying fees (Nguyen and Sagara, 2020).

The CRD's members include 51 credit guarantee companies (which provide credit guarantees for loans availed by SMEs), 103 private financial institutions and five government-affiliated institutions. The BOJ, the SME Agency and the financial sector regulator, Financial Services Agency (FSA) are also members. As of November 2019, the database had data on 2.5 million SMEs (Nguyen and Sagara, 2020) out of the estimated 3.5 million SMEs in the country (METI, 2018). The CRD data includes data on 1.2 million SMEs which are sole proprietorships. The database has 21 million financial statements (data points) for SMEs of which 5.6 million financial statements are of sole proprietorships (Nguyen and Sagara, 2020).

Data relating to SME's financial statements, repayments and defaults are shared annually by financial institutions which are CRD members in an anonymous format. The data are cleaned, and each financial statement is checked for consistency by the CRD Association before being uploaded. As some SMEs would have borrowed from multiple lenders there is a need to avoid duplication of financial statements. To this end, an algorithm uses the starting letter of the SME's name, the date of incorporation and postal code of the registered address to remove duplicate entries (Kuwahara et.al., 2016). The credit model incorporates financial ratios derived from the financial statements into a logistic regression model. Between 35 to 85 financial items from financial statements are used to calculate approximately 174 financial ratios which are used in the model. The output from the model is default probability between 1 to 3 years. The model is validated yearly by an independent commission consisting of scholars. financial sector practitioners and policy makers (Nguyen and Sagara, 2020).

The CRD contributes to SME financial inclusion in Japan in three main ways. First, it provides information and benchmark statistics regarding the SME sector. For example, the business performance of a typical SME in a specific industry in a particular region is available. This information is useful for lenders and credit rating agencies. Lenders have also used these benchmarks to give managerial advice to their MSME customers. Second, CRD has developed a credit risk model based on which it can assign credit scores to SME customers of its member institutions. Banks having an internal risk model can use the CRD score to cross-check or validate their model, a practice recommended by the financial sector regulator, the FSA. The FSA also uses the model to evaluate the loan portfolios of banks and the appropriateness of their scoring. It also gets insights into the dispersion of credit risk and fund mobilization of SMEs. Third, credit scores from CRD are used by guarantee companies to determine the guarantee fee payable by the SME borrowers (ibid.).

The functioning of CRD Japan has been smooth since commencement of operation. CRD's exact impact on SME lending is hard to estimate due to the multitude of factors that affect the latter. However, the volumes of SME loans extended without collateral or guarantees is observed to have increased significantly after setting up of the CRD.

ONGOING CREDIT RISK DATABASE PROJECT IN THE PHILIPPINES

The Philippines' CRD project, which was formally launched in December 2020, is a joint initiative of the central bank, Bangko Sentral ng Pilipinas (BSP) and the Japan International Cooperation Agency (JICA) under a technical cooperation program between the Philippines and Japan from 2019 to 2022. The project was undertaken in order to address the abysmally low 8.8 percent share of MSME loans in the total business loans in the country despite accounting for 99.5 percent of business enterprises and two thirds of the employment (Diokno, 2020). The Philippines CRD is expected to promote the use of risk-based lending (as opposed to collateral based lending) by making available credit scoring models to assess the repayment capacity of MSMEs. Prior to launch of the program, a feasibility study was conducted by CRD Japan in 2016. The study used a sample dataset of financial statements and default data from financial institutions and found that despite the lower quality of MSME financial statements in the Philippines, a reasonably accurate credit scoring model reflecting characteristics of MSME borrowers in the Philippines could be developed (JICA, 2019). However, it was noted that improving the quality of financial statements of MSMEs would certainly improve the model. The Philippines Government's current initiatives to encourage MSMEs to prepare reliable financial statements would help in this regard. The CRD project implementation unit is located in the BSP and currently the project is being run jointly by the unit and CRD Japan

through the use of cloud-based technology[14]. CRD Japan is expected to transfer the know-how of building and operating a CRD to the unit over a period of three years. Seventeen financial institutions are already members of the Philippines CRD.

PROPOSED MODEL FOR A CREDIT RISK DATABASE IN INDIA

While a CRD similar to the one operational in Japan would be useful in India, some important contextual changes will need to be made. First, an Indian CRD will need to involve not just banks but also NBFCs as the latter are significant players in the MSME lending space. Second, as many MSME lenders are increasingly lending on the basis of a borrower's cash flow, the database needs to have models exclusively based on cash flow statements. Moreover, these cash flow statements should be prepared based on verified data to ensure that they are reliable.

Operationally, the most important challenge in setting up a CRD is that sharing of sensitive data on borrower financials and defaults will require data transmission to be secure. Second, the setting up of the CRD should be done with minimal incremental costs to the Government due to the current fiscal pressures on account of the COVID-19 related relief packages.

In India, the availability of the account aggregator framework offers a secure means to share data. The infrastructure underlying the OCEN network can be used to create the CRD in a low-cost manner[15]. Participating banks and NBFCs need to share their MSME borrower related financial statements (in an anonymous format) at the time of appraisal with annual updates as well as the data on defaults of the corresponding loans. The CRD will use the aggregate data to create a statistical model which will generate credit scores for use by the participating lenders.

While some initiation costs relating to setting up the CRD may need to be borne by the Government, the annual costs as in the case of CRD Japan, should be borne by payment of membership fees by participating lenders. RBI and SIDBI should encourage public and private banks and NBFCs to participate in the CRD as wider participation will result in a larger and more robust database. There should be incentives for lenders to join the initiative in the early stages through a system of gradually increasing fees.

The project can be implemented as a public private partnership, in the same manner that India Stack was developed. RBI can collaborate with iSPIRT, the nonprofit software industry think tank which was instrumental in developing India Stack to set up the CRD.

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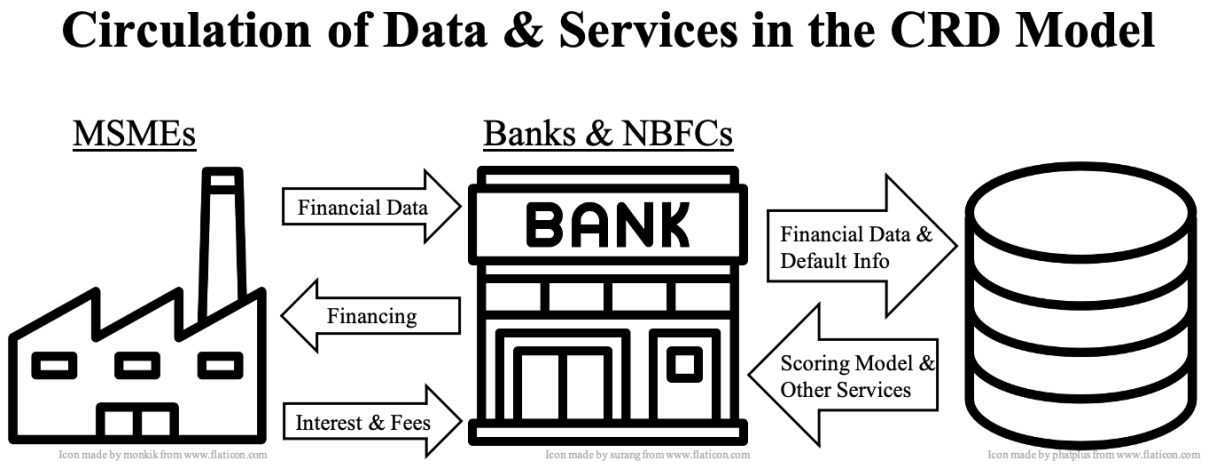
[14] Based on emails exchanged with officials of CRD Japan.

[15] During a virtual discussion with Mr. Ankit Singh, Co-founder, iSPIRT, he agreed that there is potential to use the OCEN network and the account aggregator framework for setting up a credit risk database in India

The flow of data and services among MSMEs, lenders and the CRD in the proposed model is illustrated in Figure 2.

Figure 2: Proposed CRD Model in India



(Image by author based on Kuwahara et.al., 2019)

a. Benefits of the CRD in India

A CRD in India can make several important contributions. First, lenders can use the credit score from the database to validate scores obtained from their own internal models. This can act as a means of cross checking their internal models and can also help provide a warning signal for the bank to take a relook at credit appraisals in case of considerable variation. New lenders who do not have sophisticated models can especially benefit. Second, the CRD can provide benchmarks regarding different MSME segments in different locations to aid lenders in making better assessments. Third, the credit score from the CRD can be an input for the Credit Guarantee Fund Trust in pricing guarantees. Currently, the pricing for a guarantee is based on the risk premium applicable for the lending institution based on its level of NPAs and claim payout ratio. A CRD score for the MSME can enable the Trust to develop a more sophisticated pricing mechanism that also takes into account the risk relating to the underlying MSME. Finally, if in the future, securitization of pools of MSME loans are undertaken, the credit scores from the CRD for the underlying MSME loans will be useful in bundling of loans and in communicating the risk profile of the pool.

b. Challenges of the CRD

The main challenge for the CRD will be to ensure the consistency and quality of financial statements. Often financial statements may need to be prepared by lenders based on GST

and bank account data. The availability of mobile based apps for record keeping and cloud-based accounting software have resulted in some lenders providing these tools to potential borrowers to help them with their assessment. Even when lenders prepare financial statements, the formats used may differ widely. Hence the database may need to develop a means to standardize the entries. Data quality checks need to be undertaken before incorporating the data.

Cash flow lenders may not have financial statements and hence a separate database regarding cash flow-based benchmarks may need to be developed. In 2019, CRD Japan conducted a collaborative research project with BOJ and a large Japanese bank to use bank transaction data to predict short term default probability. The objective of this research was to see if predictions regarding default probability can be made in respect of SMEs who have bank accounts but lack financial statements A model was developed by the application of machine learning techniques to high frequency bank transaction data. In January 2020, based on a similar model, a Japanese bank, Resona Bank, launched an SME credit line which only requires them to have accounts at the bank for a certain period of time (Nguyen and Sagara, 2020). A similar model will need to be developed in India as bank account ownership has expanded among small enterprises though financial statement preparation has not.

CONCLUSION

Despite being the focus of numerous policy initiatives, the credit gap of the MSME sector in India has been persistent. Bridging the gap is especially important in view of the need to revive the sector after the stress induced by COVID-19 related lockdowns. Two trends are observed which affect this gap in opposing directions. On the one hand, the non-performing assets relating to MSME loans of public sector banks are observed to be continually high, reinforcing the high-risk perception regarding such loans. On the other hand, availability of alternate data, digital infrastructure and new models of lending have encouraged more NBFCs to enter the MSME lending space.

An investment in tapping the data being generated by lenders to build a database to inform future lending is likely to improve the quality of lending decisions over time This in turn has potential to further expand MSME loan access and reduce MSME borrowing costs. To realize this objective, a CRD has been found to play a useful role in catalyzing collateral and guarantee free loans for SMEs in Japan. A similar initiative is under implementation in Philippines under a technical cooperation program between the Philippines and Japan.

In India, there is an opportunity to use the OCEN network and the account aggregator framework to create a CRD involving banks and NBFCs at relatively low incremental cost. The CRD's role will be distinct from that of credit bureaus and rating agencies as it is

based on financial and default data for the sector as a whole rather than for individual entities. The main benefits of CRD include the development of credit scoring models based on nationwide data and the availability of benchmarks for different segments of the MSME sector. Additional benefits are that the credit scores from the models could be used to develop a more sophisticated pricing mechanism for guarantees and for potentially aiding MSME loan securitizations. The main challenge in setting up a CRD would be ensuring the reliability and consistency of financial statements of MSMEs. Special efforts will need to be made to ensure that the statements have been verified with data. There will also be a need to develop special credit models to take into account cash flow-based lending which is increasingly being used by lenders.

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