RXIL
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Impact Assessment of the Trade Receivables Discounting System (TReDS)

May 2025

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Prof. Tanya Jain

Ahmedabad University

Email: tanya.jain@ahduni.edu.in

Prof. Rahul Singh

Ahmedabad University

Email: rahul.singh@ahduni.edu.in

Prof. Chetan Subramanian

Indian Institute of Management, Bangalore

Email: chetan.s@iimb.ac.in

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मनोज मित्तल
अध्यक्ष एवं प्रबंध निदेशक
Manoj Mittal
Chairman & Managing Director

FOREWORD

At the heart of India's economic growth lies the Micro, Small, and Medium Enterprises (MSME) sector, which serves as a cornerstone of India's economic progress. Contributing nearly one-third to the GDP and accounting for almost half of the country's exports, the MSME sector plays a pivotal role in driving employment, entrepreneurship, and industrial diversification.

Recognizing the sector as one of the four growth engines, the Government of India has introduced strategic reforms, expanded credit access and targeted policy interventions to strengthen the sector's competitiveness. MSMEs possess tremendous capabilities for boosting manufacturing and service sectors in India. However, this transformative potential is closely linked to timely and affordable access to working capital finance, which serves as the lifeline of supply chains.

One of the persistent challenges faced by MSMEs is delayed payments, disrupting their supply chain dynamics, restricting cash flow, and limiting their ability to expand their businesses. To address this critical issue, the Trade Receivables Discounting System (TReDS) platform was launched by the Reserve Bank of India (RBI) in 2016 to facilitate the financing of MSMEs' trade receivables. The success of TReDS has been driven by the proactive policies and regulatory support of the RBI and the Government of India, enabling MSMEs to access timely working capital.

TReDS platform has completed a short but promising journey. There is a long way to go before we solve the delayed payment problem completely. However, an assessment of the platform is necessary to understand the impact and carry out necessary improvement. This report commissioned by RXIL offers an evaluation of how the TReDS platform has impacted MSME suppliers, their buyers, and financiers, assessing its role in improving cash flows, mitigating payment risks and impact on other parameters. The report also outlines promising opportunities.

I commend RXIL for commissioning the report and express sincere appreciation to all stakeholders – MSMEs, Financiers, and Corporate buyers for contributing to this study. Together, we remain committed to building a robust, inclusive and resilient financial ecosystem for India's MSMEs.

Manoj Mittal

Message from the MD & CEO, RXIL

At Receivables Exchange of India Limited (RXIL), we believe that timely access to working capital is fundamental for MSMEs to thrive in a competitive economy. As India's first Trade Receivables Discounting System (TReDS) platform, RXIL, a joint venture between the Small Industries Development Bank of India (SIDBI) and National Stock Exchange (NSE), along with State Bank of India, ICICI Bank and YES Bank, has led the way in enabling digital, collateral-free financing of trade receivables for MSMEs across the country.

TReDS is playing a crucial role in the economic empowerment of MSMEs by handling the critical issue of their delayed payments. TReDS also reduces dependency on informal credit, accelerating cash flows, and enabling participation in broader supply chains. It allows MSMEs to focus on growth rather than collections, fostering financial independence and long-term sustainability.

Reserve Bank of India (RBI) and the Government of India have provided consistent policy direction to expand the participation on TReDS. The recent mandate requiring corporates with a turnover of ₹250 crore and above (earlier ₹500 crore) to onboard on the TReDS platform has significantly enhanced buyer participation, deepening the ecosystem and expanding the impact on the MSME payments.

We are pleased to have partnered with Professors of Indian Institute of Management, Bangalore (IIMB) and Ahmedabad University to publish this first-of-its-kind impact assessment of the TReDS ecosystem. Their academic rigor and independent insights add great value in understanding the platform's reach, effectiveness, impact on the working capital of MSMEs and it's future potential.

TReDS platform in India is transforming how MSMEs access finance. RXIL remains committed to driving this mission forward, and we are encouraged by Reserve Bank of India (RBI) and Government's continued support in strengthening digital financial infrastructure and promoting inclusive growth for the MSME sector.

Ketan Gaikwad
MD & CEO
Receivables Exchange of India Ltd.

Acknowledgement

We extend our gratitude to Small Industries Development Bank of India **(SIDBI)** for the valuable inputs and continued encouragement and support in promoting initiatives that benefit MSMEs and strengthen the financial ecosystem.

We are grateful to the Receivables Exchange of India Limited **(RXIL)** Management and the team for their support, guidance, and suggestions. We also acknowledge the **Board of RXIL** for the insights and oversight on impact report.

We are also grateful to Swaeta Singha Roy and Subroto Bannerjee for excellent research assistance.

We thank Indian Institute of Management, Bangalore (IIMB) and Ahmedabad University for institutional support.

Finally, we are grateful to all the MSMEs, Buyers, and Financiers, who spared time for interviews and surveys, and shared valuable insights regarding the TReDS platform and its functioning. This report would not have been possible without their inputs.

Executive Summary

For India's Micro, Small, and Medium Enterprises (MSMEs), working capital constraints have been a critical roadblock, significantly hindering their growth and operational efficiency. Capitalizing on the potential and success of the public provision of digital infrastructure, the Reserve Bank of India (RBI) launched the Trade Receivables Discounting System (TReDS) platform in 2016. This initiative was designed to facilitate the financing of trade receivables for MSMEs, addressing their liquidity needs and fostering growth. The TReDS platform was aimed at transforming the factoring landscape by streamlining operations, reducing turnaround times, and lowering discount rates through a competitive auction mechanism. It has integrated

key stakeholders namely MSME sellers, corporate buyers, and financiers into a unified digital ecosystem, enabling MSMEs to unlock their working capital by auctioning their trade receivables to financiers.

In this report, we undertake a comprehensive analysis of the TReDS platforms' impact on its key stakeholders. To this end, we combine data on participants from one of the TReDS platforms, Receivables Exchange of India Limited (RXIL), enterprise-level financial data from the Prowess database, filings from the Ministry of Corporate Affairs (MCA), hand collected survey data from the MSMEs registered on RXIL, and stakeholder interviews to carry out a rigorous analysis of the impact of the TReDS platforms on several dimensions of performance of MSMEs, buyers, and financiers.

Specifically, our empirical analysis employs the synthetic difference-in-differences approach to examine the effect of the TReDS platforms on the sellers and buyers. The identification strategy relies on comparing the changes in outcomes for TReDS participants (treated group) to those of the synthetic control group, which is constructed using a weighted combination of non-participating firms such that control and treated firms have similar trends in the outcomes in the years before onboarding on the TReDS platform.

Our empirical estimates suggest that participation on the TReDS platform reduces the receivable cycle of MSME suppliers by 23 percentage points on average, relative to the control group. These effects were stronger for MSMEs belonging to financially less developed states, highlighting the potential for TReDS to compensate for the lack of financial development for working capital management of MSMEs. These results indicate that the platform has successfully alleviated liquidity constraints faced by the suppliers on the platform by expediting payment realization and relaxing working capital constraints. Our analysis suggests that improving working capital availability allows participating MSMEs to scale up their operations and improve their productivity. These firms, on average, experience an 8% increase in sales relative to the control group of MSMEs, in addition to increasing their acquisition of fixed assets (by 4%) and salary expenses (by 6%). Furthermore, TReDS reduces the need for precautionary cash holdings, consistent with reduced cash flow uncertainty. MSMEs also increase their short-term borrowings as a ratio of total assets. This is consistent with improved creditworthiness enabling MSMEs to increase their borrowings from traditional banking channels outside of the TReDS platform.

Our findings also suggest considerable benefits to the relatively liquidity constrained buyers from participating on the TReDS platform. The platform allows these relatively liquidity constrained buyers to extend their payment periods without delaying supplier payments. The platform also enables these buyers to negotiate better terms with their suppliers in terms of cash discounts or lower prices to purchase goods and services, which allows them to scale up their operations as evidenced by an increase in sales by 10%, on average. The relaxing of the liquidity constraints and better terms with suppliers also leads to improvements in the productivity and profitability of these liquidity constrained buyers.

The TReDS platform has addressed several challenges faced by financiers under the conventional factoring model. Banks, the primary financiers, faced a challenge of onboarding MSMEs and

buyers, due to the high internal costs of providing factoring services leading to high financing rates. The TReDS platform, by enabling simplified onboarding and automated reconciliation, has addressed many of these bottlenecks and allowed financiers to scale up their factoring services.

In summary, the TReDS platform has been remarkably successful in alleviating the working capital constraints of MSMEs. This is evidenced by the fact that the total amount financed by the TReDS platforms has grown exponentially from approximately INR 950 crore in FY2018 to over INR 2,33,000 crore in FY2025. The presence of multiple financiers and the auctioning mechanism has also reduced the interest burden on both the buyer and the seller on the platform. Importantly, there has also been considerable improvement in the participation of MSMEs with women entrepreneurs or senior women executives with their share increasing from 14 firms (10%) to 7,406 firms (40%) between 2018-2024. This trends highlights the crucial role digital platforms can play in ensuring an inclusive financing ecosystem.

In the future, expanding the services to include export factoring could be a potential growth area. Additionally, integrating TReDS with the Government e-Marketplace (GeM), Goods and Services Tax Network (GSTN), and Export factoring will enable the platform to scale up significantly. Despite the significant success of the platform in expanding factoring services in India, challenges remain. Lack of awareness, particularly amongst the sellers, and the existence of only a few participating financial institutions remains a challenge. Introducing the "Second Window" model would enable supplier financing without requiring buyer approval of invoices, thus reducing transaction costs and enabling more MSMEs to access funds. Extending the Credit Guarantee Fund Scheme for Factoring (CGFSF) and trade credit insurance would help mitigate risk for financiers, fostering greater participation in the platform.

Background Note & the Evolution of the TReDS Ecosystem

3.1. DELAYED PAYMENTS: AN ENDEMIC PROBLEM IN INDIA

Delayed payments have long been a persistent challenge for India's Micro, Small, and Medium Enterprises (MSMEs), significantly hindering their growth and operational efficiency. Despite their substantial contribution to the economy accounting for approximately 30% of India's GDP (Ministry of Micro, Small, and Medium Enterprises, 2022) and employing over 265 million individuals as per the Udyam portal- MSMEs frequently face liquidity challenges due to payment

delays from buyers (Sinha, 2019). Delayed payments disrupt their cash flow, constraining their ability to invest in business expansion, technology upgrades, and employment (Murfin and Njoroge, 2015).

The severity of this problem is evident in recent estimates of the scale of delayed payments. According to a recent report by Global Alliance for Mass Entrepreneurship (GAME) and Dun & Bradstreet (D&B), delayed payments to MSMEs in India are estimated to total INR 10.7 lakh crore, with micro and small enterprises bearing 80% of this burden (GAME and D&B, 2022). These figures highlight the systemic nature of payment delays for MSMEs in India and their disproportionate impact on smaller businesses within the MSME sector.

Delayed payments can have significant negative consequences for the competitiveness of the economy. We reproduce Figure 1 from GAME and D&B (2022) that describes the compounding effects of delayed payments for the firms in the supply chain and the broader economy. Delayed payments place considerable strain on the MSMEs' working capital, forcing them to rely on costly external financing to cover operational expenses (Kaya, 2023; Devalkar and Krishnan, 2019) or delaying payments to their suppliers (Fabbri and Klapper, 2008). Tighter liquidity brought about by a stretched working capital cycle may also lead to a downgrade of existing credit ratings or scores, raising interest costs. The increased costs and disruptions in operations could further lead to higher output prices and reduced profitability, negatively impacting the MSMEs' performance. Finally, the prolonged payment cycles often lead to a vicious debt spiral, where MSMEs struggle to repay creditors, further exacerbating their financial distress and reducing their creditworthiness.

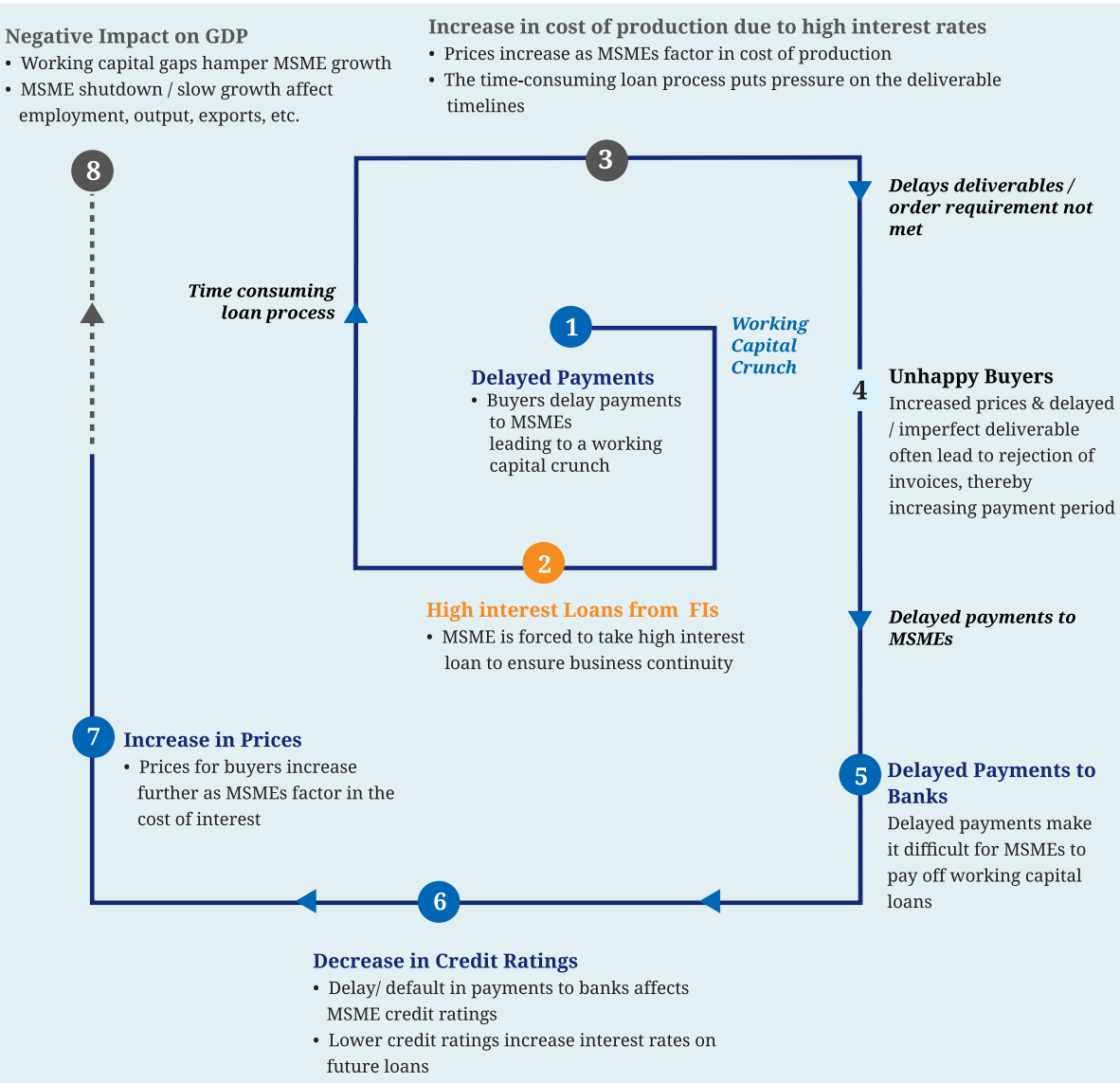
The liquidity crunch caused by delayed payments could potentially hamper MSMEs' ability to maintain inventory of key inputs, fulfill new orders, and invest in quality and process improvements. It can also affect their ability to pay employees on time, leading to dissatisfaction and potential attrition of employees thereby reducing employment (Barrot and Nanda, 2020). Over time, these operational challenges could negatively impact the financial performance and competitiveness of MSMEs.

In the long run, the impact of sustained delayed payments extends well beyond individual enterprises, affecting supply chains and the competitiveness of the economy (Huang et al., 2022; Checherita-Westphal et al., 2016). Cash flow shortages limit MSMEs' ability to procure raw materials on time, resulting in delays in production schedules. These disruptions ripple through the supply chain, creating uncertainties and increasing costs for both upstream and downstream industries. Consequently, the productivity and resilience of the entire supply network are adversely affected, potentially undermining the economy's overall efficiency.

Delayed payments for MSMEs could also potentially contribute to India's firm size distribution.

This distribution is marked by a high concentration of very small enterprises and a limited number of medium-sized firms (Hsieh and Olken, 2014), potentially reflecting barriers that restrict the growth of small firms. Unlike developed economies with a more balanced distribution of firm sizes, India's pattern highlights systemic issues such as limited credit access and prolonged receivable cycles. The failure of small firms to scale up has significant economic implications, as medium sized firms play a critical role in enhancing productivity, fostering innovation, and generating employment. Thus, policies aimed at addressing the issues related to delayed payments to the MSMEs have the potential to transition the economy towards a more balanced structure by improving the working capital cycle of MSMEs and enabling them to scale up. The TReDS platform is one such policy initiative aimed at accelerating the factoring services market in India and alleviate the issues related to delayed payments for MSME suppliers.

Figure 1: The Vicious Cycle of Delayed Payments for MSMEs, Supply chains, and the Economy



Notes: The figure describes the consequences of delayed payments for the economy, reproduced from GAME and D&B report (2022).

3.2 FACTORING SERVICES

MSMEs typically have a high cost of external borrowing from formal banking channels, and they are increasingly choosing alternative sources of external borrowing like factoring services to fund their working capital (Klapper, 2006). Factoring is a financial service that offers MSMEs a practical solution for effectively managing their receivables. In this arrangement, MSMEs sell their accounts receivable (invoices) to a third-party financial institution, known as a factor, at a discounted value. This factor provides an advance typically a significant percentage of the invoice value immediately, improving cash flow and reducing the MSMEs reliance on working capital loans.

For MSMEs, factoring ensures timely access to funds, enabling them to cover operational expenses, pay suppliers, employees, and maintain uninterrupted production schedules. This is especially critical for mitigating the effects of delayed payments by buyers. From the buyers' perspective, factoring allows them to benefit from extended credit periods while ensuring that suppliers receive immediate payment from the factor. This arrangement strengthens buyer-supplier relationships and promotes smoother business operations.

Once the buyer settles the invoice, the factor releases the remaining amount to the MSME, after deducting a nominal service fee. Figure 2 describes the role of the seller, buyer, and financier in a typical factoring transaction. By reducing cash flow uncertainties for MSMEs and providing buyers with greater flexibility in managing payment cycles, factoring creates a mutually beneficial solution for all parties involved.

Factoring and traditional bank finance differ significantly in their approach to managing receivables and providing liquidity:

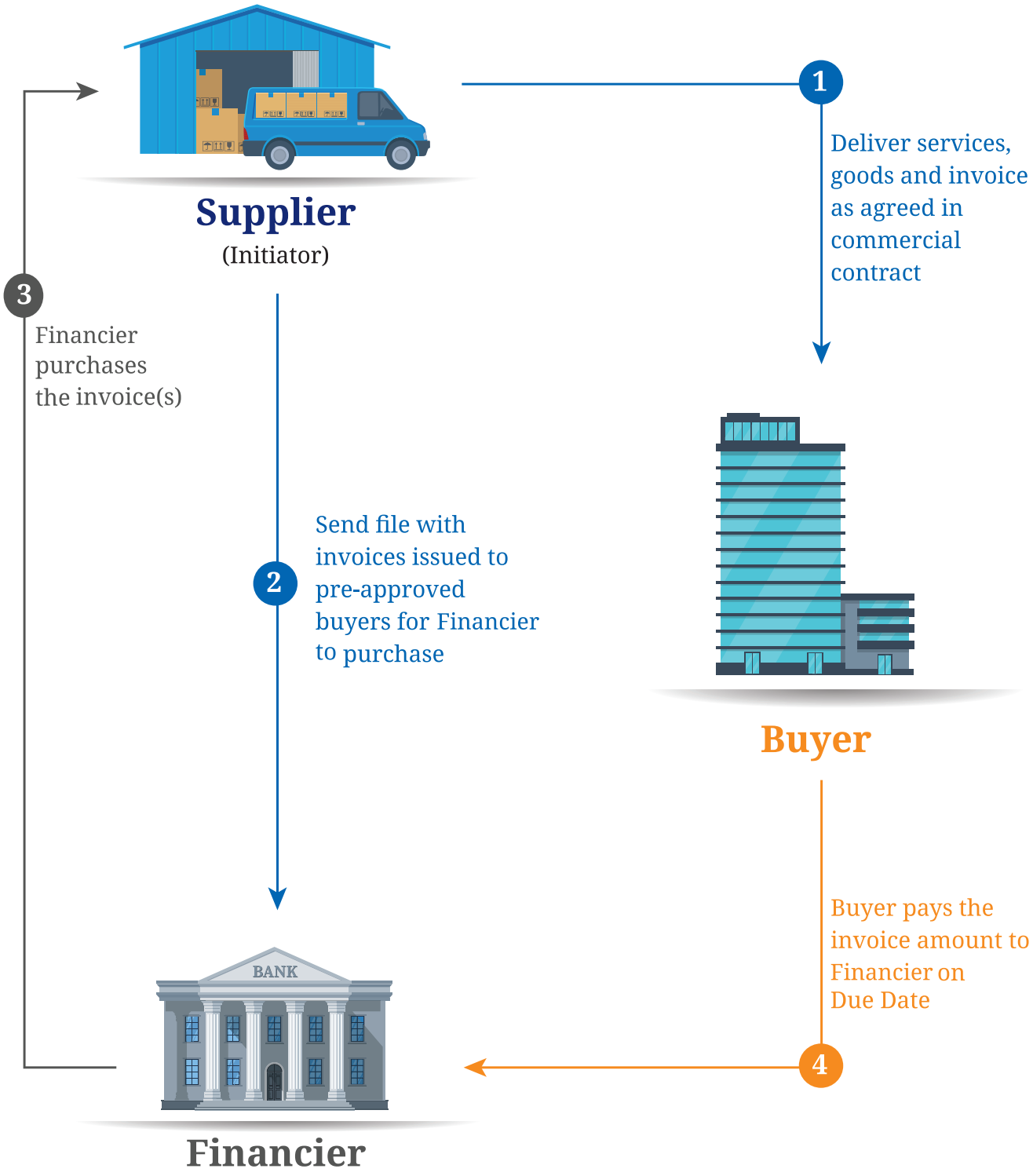
Factoring

Factoring involves the sale of receivables to a third party (the factor) at a discounted value, providing immediate liquidity to MSMEs. The factor takes on the responsibility of collecting payments from buyers, reducing administrative burden and payment risks for the MSME. While the traditional factoring services operate both with and without recourse to the seller, it is without recourse to MSMEs on the TReDS platform.

Traditional Bank Finance

Bank finance typically involves loans or credit lines that require collateral and depend heavily on the creditworthiness of the borrower. Unlike factoring, bank finance does not inherently address payment delays or reduce the burden of receivables management. This is typically with recourse to the MSMEs.

Figure 2: Factoring Services

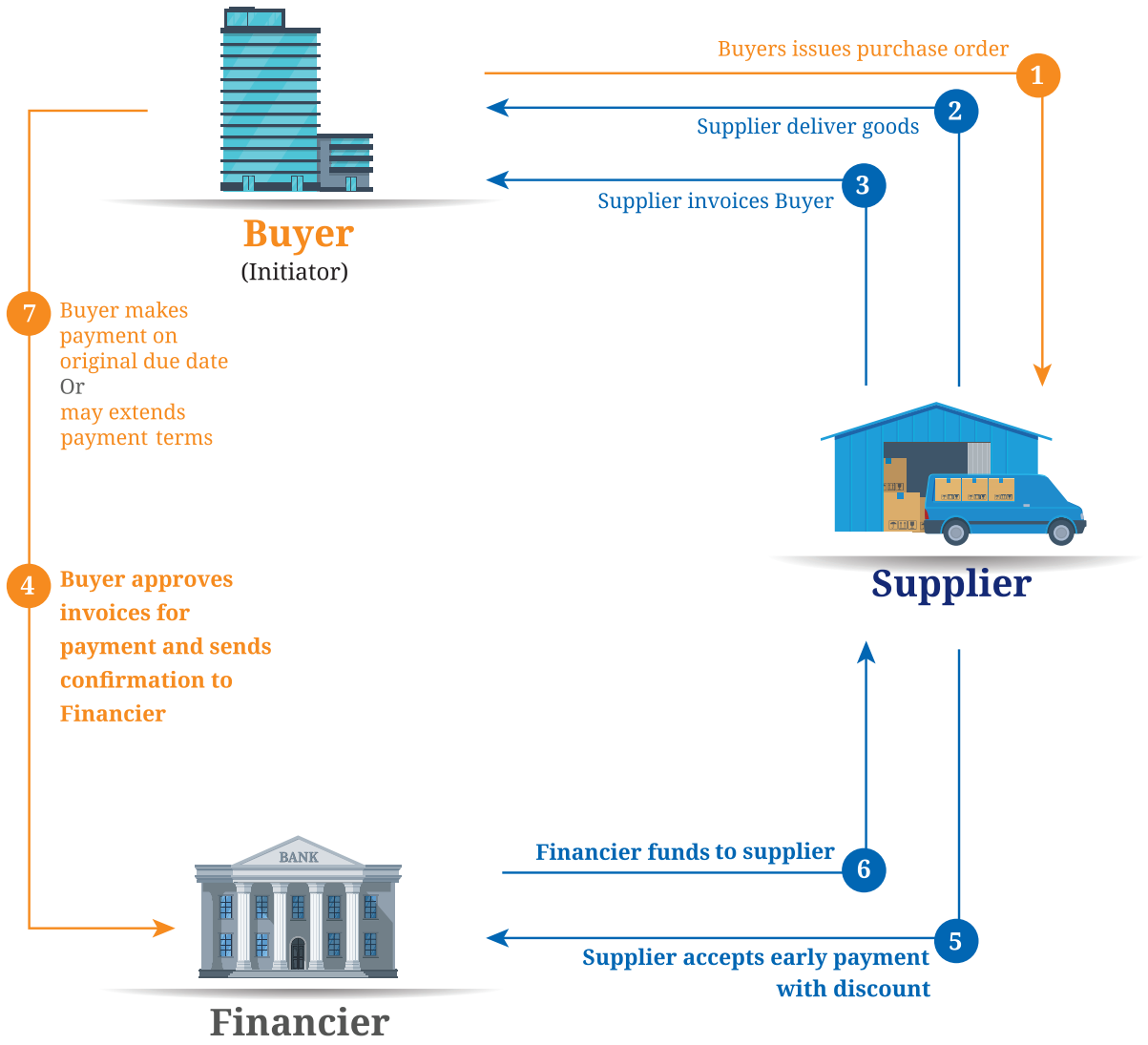


Notes: The figure describes the factoring transaction.

3.3 REVERSE FACTORING SERVICES

Reverse factoring is a financial arrangement where a buyer facilitates early payments to its suppliers through a financial institution. Unlike traditional factoring, where suppliers initiate the process, reverse factoring is buyer driven, ensuring low-cost financing and smooth payment cycles for buyers. The buyer then settles the amount with the financier at a later date. Figure 3 describes the role of the seller, buyer, and financier in a typical reverse factoring transaction.

Figure 3: Reverse Factoring Services



Notes: The figure describes the reverse factoring transaction.

Reverse factoring provides MSMEs with timely payments, easing cash flow constraints and enabling them to sustain uninterrupted production cycles. For buyers, it offers the advantage of extended payment terms without financial burdening their suppliers. This arrangement enhances supply chain relationships, lowers procurement costs, and improves overall operational efficiency. By aligning the financial interests of MSMEs and buyers, reverse factoring creates a more resilient and collaborative supply chain ecosystem.

3.4 FACTORING LANDSCAPE BEFORE TReDS

Factoring services in India began to emerge following the economic liberalization of 1991, as businesses sought more efficient mechanisms for managing their receivables (Leena, 2024). However, the industry's growth was constrained by the lack of a structured regulatory framework, which hindered scalability and market formalization. A key development occurred in 2001 when the Reserve Bank of India (RBI) issued guidelines aimed at introducing accountability and transparency to factoring operations. This marked an important step towards the development of the factoring sector.

The enactment of the Factoring Regulation Act 2011 represented a significant milestone, providing the legal infrastructure necessary to assign receivables to factors. This legislation also facilitated the entry of Non-Banking Financial Companies (NBFCs) into the factoring market, which do factoring as "principal business" i.e. whose financial assets in the factoring business constitute at least 50 percent of its total assets and income derived from factoring business is not less than 50 percent of its gross income, also called as NBFC Factors, broadening its scope and competition. However, despite these regulatory advancements, the industry faced persistent challenges in recovering dues from defaulting entities who failed to pay the financiers on the due date. These issues were partially resolved with the 2014 amendments to the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act, which enhanced enforcement mechanisms for NBFC factors and improved the overall recovery process.

Despite these legislative and regulatory reforms, the factoring industry in India continued to struggle with limited market penetration and elevated transaction costs. The ecosystem primarily catered to larger, well-established businesses, leaving MSMEs underserved. Below, we characterize the pre-TReDS factoring landscape:

Limited Access for MSMEs

Factoring services were predominantly offered by a few financial institutions, and MSMEs often struggled to meet the eligibility criteria for accessing these services. High costs, stringent collateral requirements, and a lack of financial documentation created barriers for smaller enterprises, leaving them reliant on costly informal credit.

Manual and Fragmented Processes

The absence of digital platforms meant that factoring processes were largely manual and fragmented. Transactions required significant paperwork, including submission of invoices, credit assessments, and approvals, which led to delays and inefficiencies. The lack of standardization further exacerbated the operational challenges for both suppliers and financiers.

Dominance of Bank-Led Financing

Factoring services were dominated by traditional banks, which were more focused on preferred providing loans rather than invoice discounting solutions. This emphasis on lending over

receivables financing further marginalized MSMEs, especially those with limited collateral or shorter operational histories. The factoring industry included a small number of non-banking financial companies (NBFCs) and private players, but their reach and scale were limited. These players were not well integrated with broader financial systems or digital infrastructure.

Lack of Transparency and Credit Assessment Tools

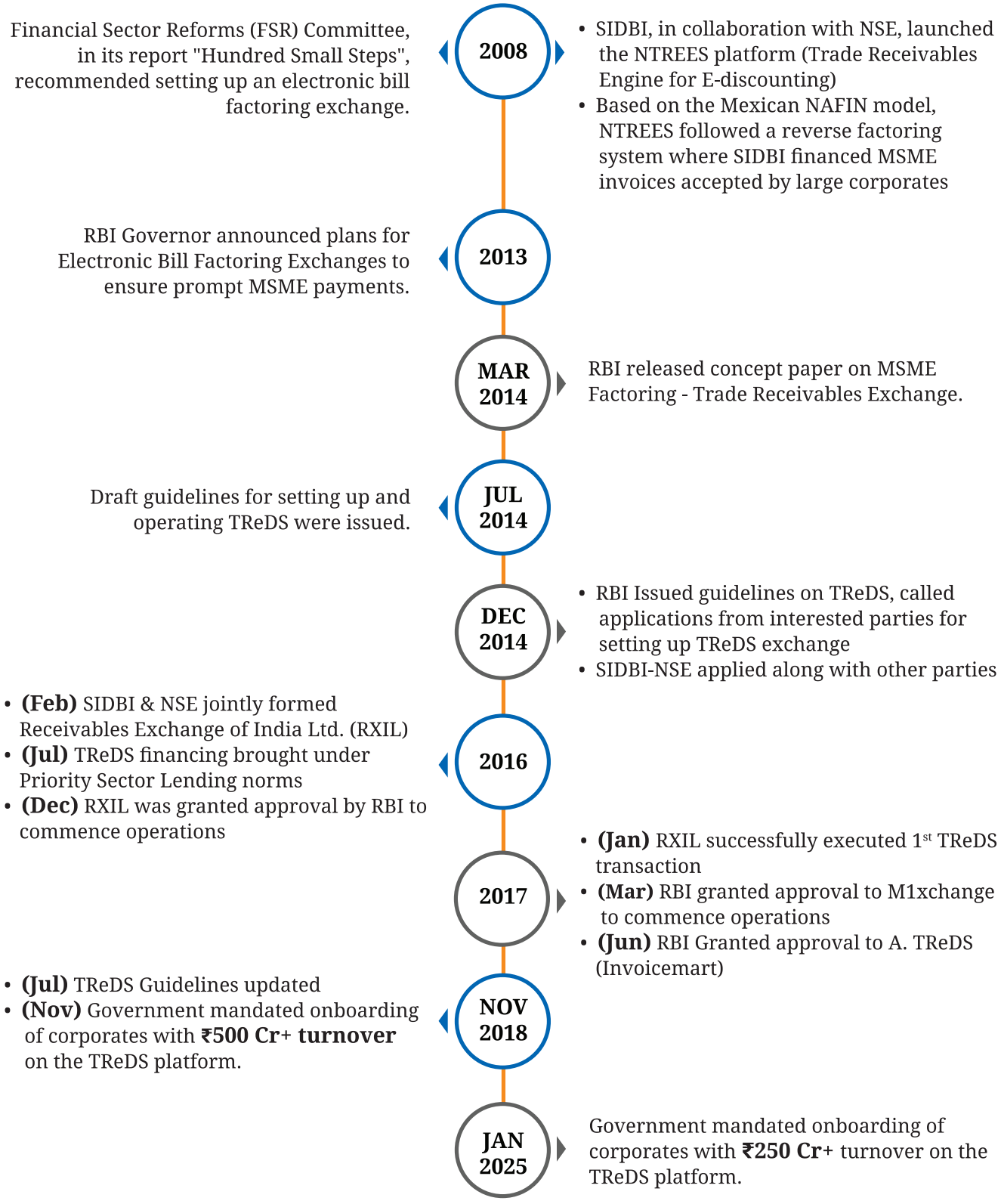
The factoring market was characterized by a lack of transparency, with limited tools for assessing the creditworthiness of buyers. MSMEs faced challenges in securing favorable terms as financiers hesitated to extend credit facility due to inadequate information about the buyers' payment history or financial health.

3.5 THE TReDS PLATFORM: ORIGINATION, OPERATIONS AND BENEFITS TO STAKEHOLDERS

The Reserve Bank of India (RBI) conceptualized the TReDS platform to address the liquidity challenges faced by MSMEs and enhance the efficiency of trade receivables financing. By issuing guidelines in 2014 and granting licenses in 2016, RBI facilitated the establishment of a digital marketplace for invoice discounting. The platform aimed to transform the factoring landscape by streamlining operations, reducing turnaround times, and integrating key stakeholders using digital technologies. The origination of the TReDS platform was a crucial step toward enhancing liquidity for MSMEs.

Figure 4 describes the evolution of TReDS platform. Currently, TReDS platforms such as Receivables Exchange of India Ltd. (RXIL), Invoicemart, M1xchange and C2treds are operational, with one more newly approved platform DTX by KredX.

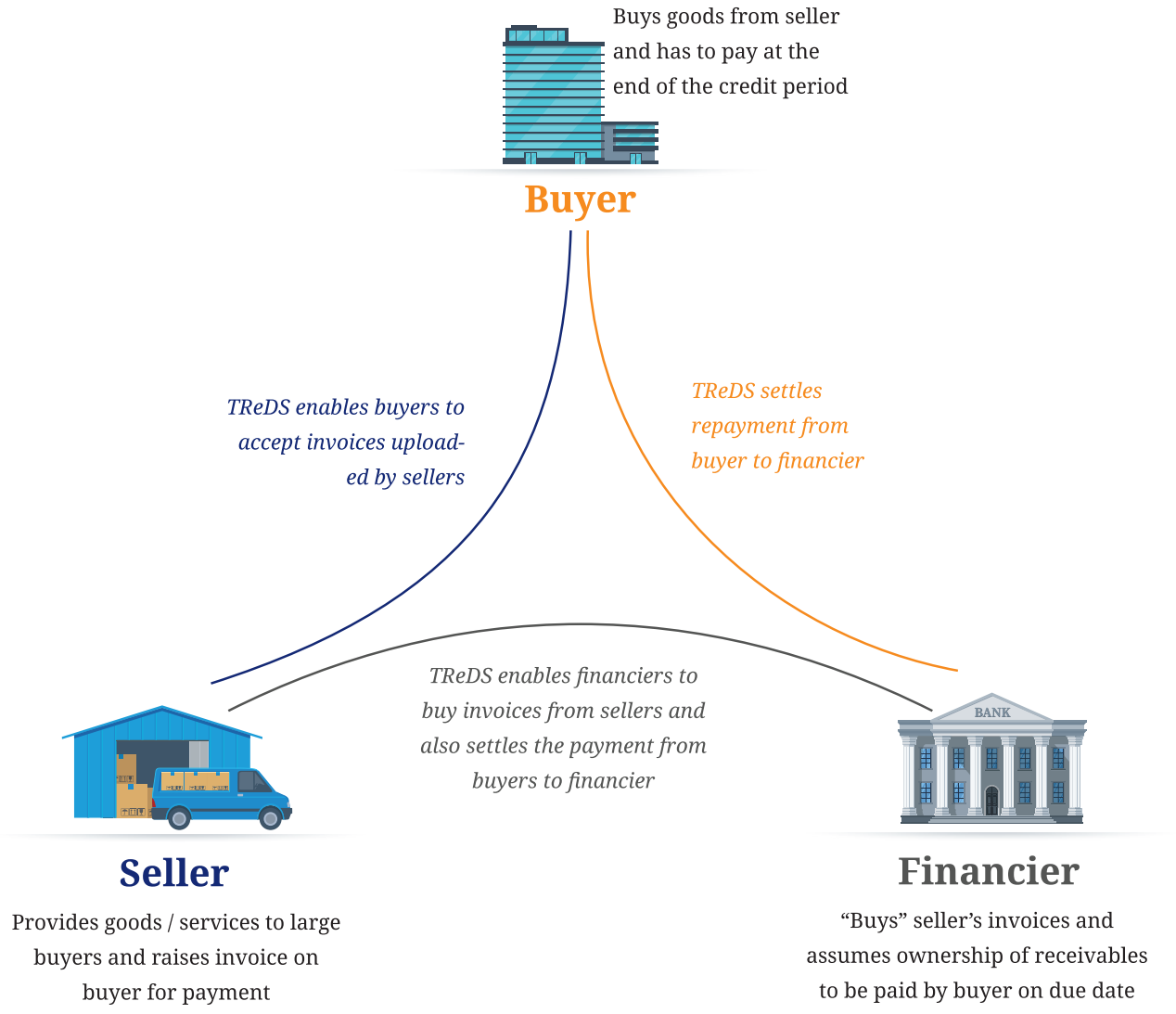
Figure 4: Evolution of TReDS platform



Notes: The figure describes the regulatory changes leading to launch of the TReDS platform.

Figure 5 illustrates a core feature of the TReDS platform: its ability to integrate multiple stakeholders, including MSMEs, large corporate buyers, and financiers, within a unified digital ecosystem. The platform digitizes the entire receivables discounting process, from invoice submission to payment settlement, significantly reducing turnaround times. By leveraging competitive bidding, TReDS ensures that MSMEs receive the best financing terms based on the creditworthiness of their buyers. Additionally, TReDS promotes financial inclusion by allowing smaller enterprises with limited credit histories to access funds at lower costs on the back of the buyers' credit strength.

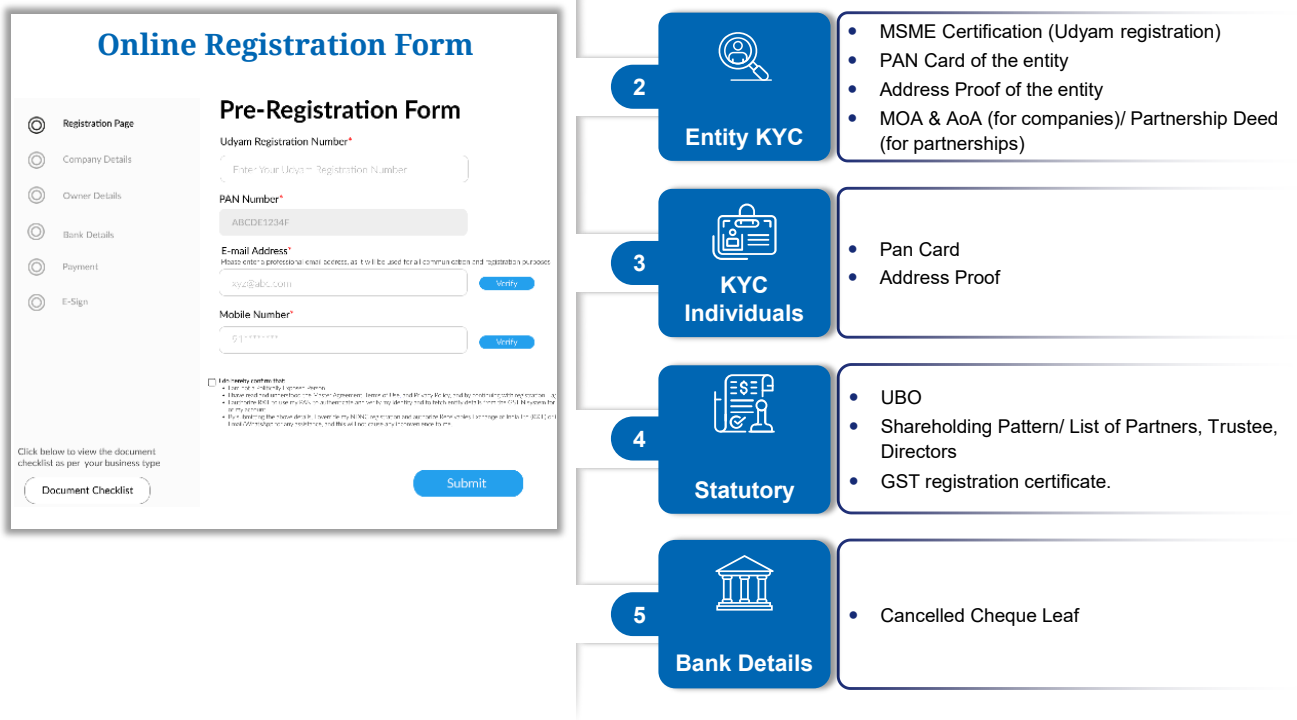
Figure 5: Core feature of the TReDS platform



Notes: The figure describes the interaction of the TReDS platform with the different stakeholders.

TReDS platform offers digital registration process to encourage increased participation from MSMEs, buyers, and financiers. The process involves uploading requisite documentation, due diligence and agreement, user-friendly digital interfaces, and streamlined approvals, ensuring due diligence and faster onboarding. Figure 6 describes the registration process on the TReDS platform.

Figure 6: Registration on the TReDS platform

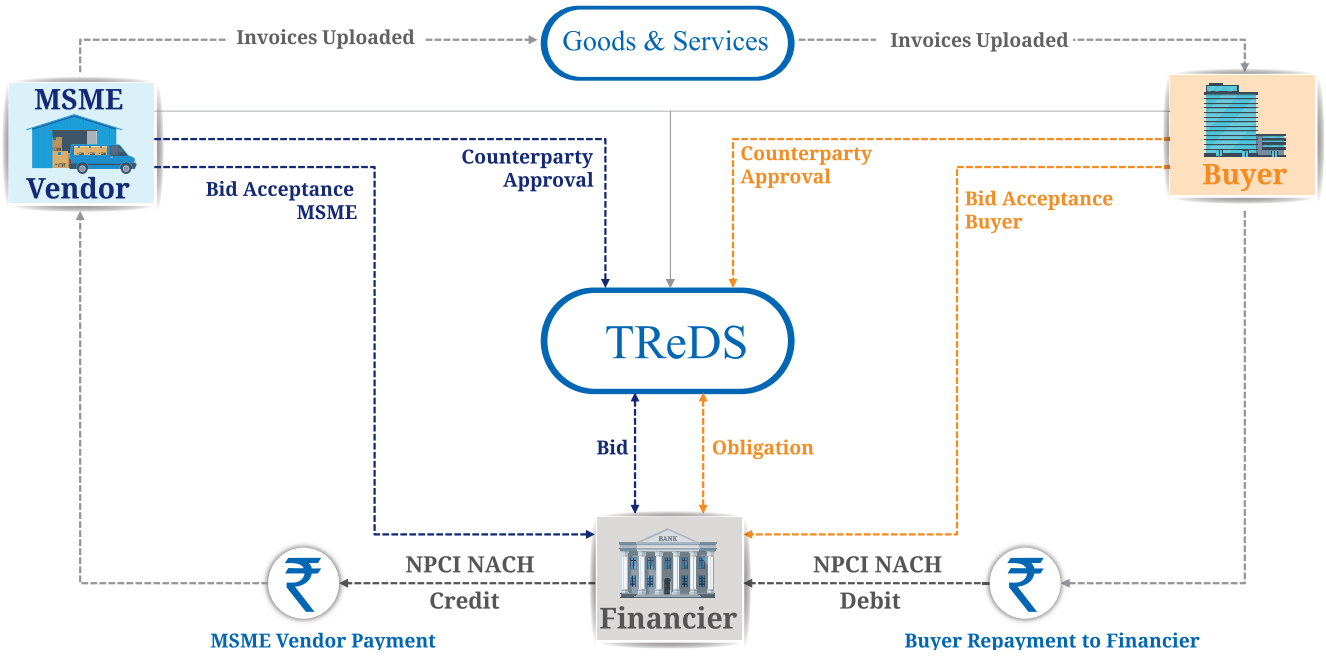


Notes: The figure describes the registration process on one of the TReDS platforms, https://www.rxil.in/, RXIL.

Figure 7 describes the workflow on the TReDS platform. The process begins with the MSME seller or the buyer uploading the invoice details, including purchase order information, invoice number, acceptance dates, and net amount, onto the TReDS platform after the goods or services have been delivered and accepted. Once verified and approved by the counterparty (buyer or seller), the invoice becomes a "Factoring Unit" (as defined in the TReDS guidelines issued by RBI on Dec, 2014, and updated on July, 2018) and becomes visible to financiers who have predefined credit limits for the buyer. Financiers participate in an auction, submitting competitive bids on the factoring unit by offering discount rates. The buyer or seller then accepts the most favorable bid, and the selected financier's name is disclosed only to the transacting parties post acceptance of the bid.

The financing process occurs in two stages: Leg 1, where the financing amount (minus the discount) is credited to the seller's account, and the financier's account is debited. The buyer/ seller may bear the financing charges, depending on the agreement. On the invoice due date, Leg 2 is triggered, where the buyer's account is debited for the obligation amount and the financier's account is credited. For unfinanced invoices, a Leg 3 option allows buyers to settle payments directly through the TReDS platform, ensuring timely payments to MSMEs on due date of the invoices. Automated notifications at each stage enhance transparency and efficiency in the payment process.

Figure 7: Workflow on the TReDS platform



Notes: The figure describes the workflow of the TReDS platform.

Figure 8: Benefits to Stakeholders from the TReDS platform

MSME Seller	Buyer	Financier
Without Recourse financing; no repayment obligation for the seller	Strengthen Supplier Relationships through seamless digital settlement and cash management	Access to Quality Customers with cost-effective access to buyer ecosystem
Quicker payments within min 24 hours, no administrative costs	Enhanced Procurement Terms through competitive auction	Low Risk of Default as it minimizes default risk with top-rated buyers
Lower cost of funds through a transparent bidding process based on buyer's credit rating	Seamless ERP Integration with Secure information exchange with ERP systems	Priority Sector Lending Benefits for financing on TReDS
Multiple financiers with the option to choose the lowest bid	No More Follow-ups as quicker supplier payments via TReDS	Automated Reconciliation with efficient digital settlement and reconciliation

Notes: The figure describes the benefits to the MSME sellers, buyers, and financiers from the TReDS platform.

The TReDS platform offers several potential benefits for MSME sellers, enabling them to access financing without recourse borrowing, which means they have no repayment obligation after selling their invoices. Additionally, sellers receive quicker payments, typically within minimum 24 hours, while avoiding administrative costs. The platform facilitates access to funds at a lower cost to MSME suppliers as this is predicated on the buyer's creditworthiness through a transparent bidding process involving multiple financiers. This process is based on the buyer's creditworthiness, allowing the cost bearer the flexibility to select the most competitive bids. Additionally, sellers benefit from engaging with multiple financiers, further enhancing their ability to choose the most favorable bid.

For buyers, participation on the TReDS platform presents an opportunity to strengthen their supplier relationships. This is achieved through seamless digital settlements and enhanced cashflow management capabilities. Buyers may also benefit from improved procurement terms through the competitive auctioning mechanism that leads to price discovery on the platform, potentially leading to cost efficiency. The platform's seamless Enterprise Resource Planning (ERP) integration offers a secure and efficient exchange of information, which aligns well with their existing ERP systems. Additionally, buyers avoid the hassle of follow-ups, as quicker supplier payments are facilitated through the TReDS platform.

TReDS enables financiers to scale their factoring business. Financiers on the TReDS platform can expand their customer base by gaining cost-effective access to a quality buyer ecosystem. The risk of default is minimized due to the inclusion of creditworthy buyers, offering a sense of security in transactions. Further, financiers can leverage the Priority Sector Lending (PSL) benefits by channeling funds through accredited mechanisms like TReDS. Additionally, TReDS uses the National Automated Clearing House (NACH) system to settle transactions that enable automated clearing and settlement of payments thereby reducing the need for manual intervention. It also enables quicker transfer of funds between the participants involved in the TReDS ecosystem. For the financiers, NACH ensures transparency by providing electronic tracking of all payments and settlements and also provides legal remedies to financiers in case of default by buyers. [1]

3.6 FACTORING LANDSCAPE AFTER TReDS PLATFORM

The factoring landscape changed considerably after the introduction of TReDS. The TReDS platform has witnessed significant growth in the number of MSMEs registered since its inception in 2017. Figure 9 plots the number of MSMEs registered in one of the TReDS platforms, RXIL, between 2017-2025. While MSMEs were slow to adopt digital platforms in the initial years, the platform experienced exponential growth in the number of MSMEs from 2020 onwards. By closing of FY2025, there were more than 40,000 MSMEs registered on the platform.

1 In the event of default by the buyer in making payment on the due date to the financier, the financier, being a valid assignee in relation to a factoring unit, is entitled to legally pursue its rights against the buyer under Factoring Act 2011 and under section 25 of Payments and Settlement Systems Act, 2007 read with Negotiable Instruments Act, 1881, and its applicability in case of funds transfer failure.

Figure 9: MSMEs Registered on RXIL Platform

Evolution of Number of MSMEs Registered on the RXIL Platform

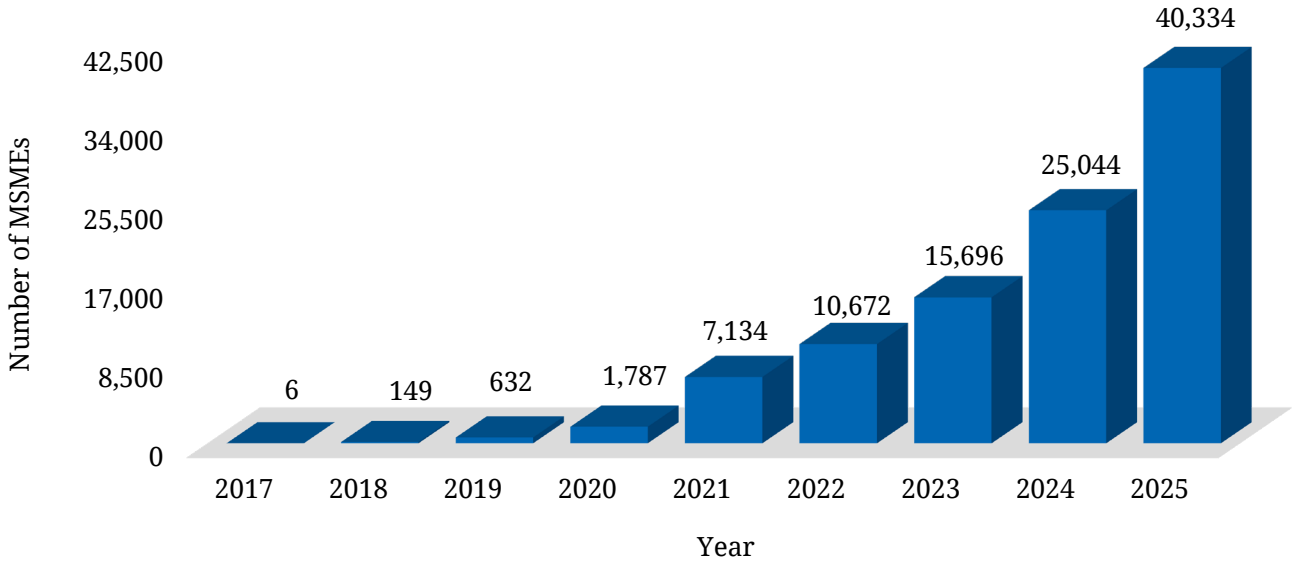


Figure 10 shows that there has been considerable improvement in the participation of MSMEs from underrepresented groups. The share of MSMEs with women entrepreneurs as senior executives has increased from 14 firms (10%) to 7406 firms (40%) between 2018-2024. This trend highlights the ability of digital technologies to enable an inclusive factoring services platform.

Figure 10: MSMEs Registered on RXIL Platform by Gender

Evolution of Number of MSMEs Registered on the RXIL Platform by Gender

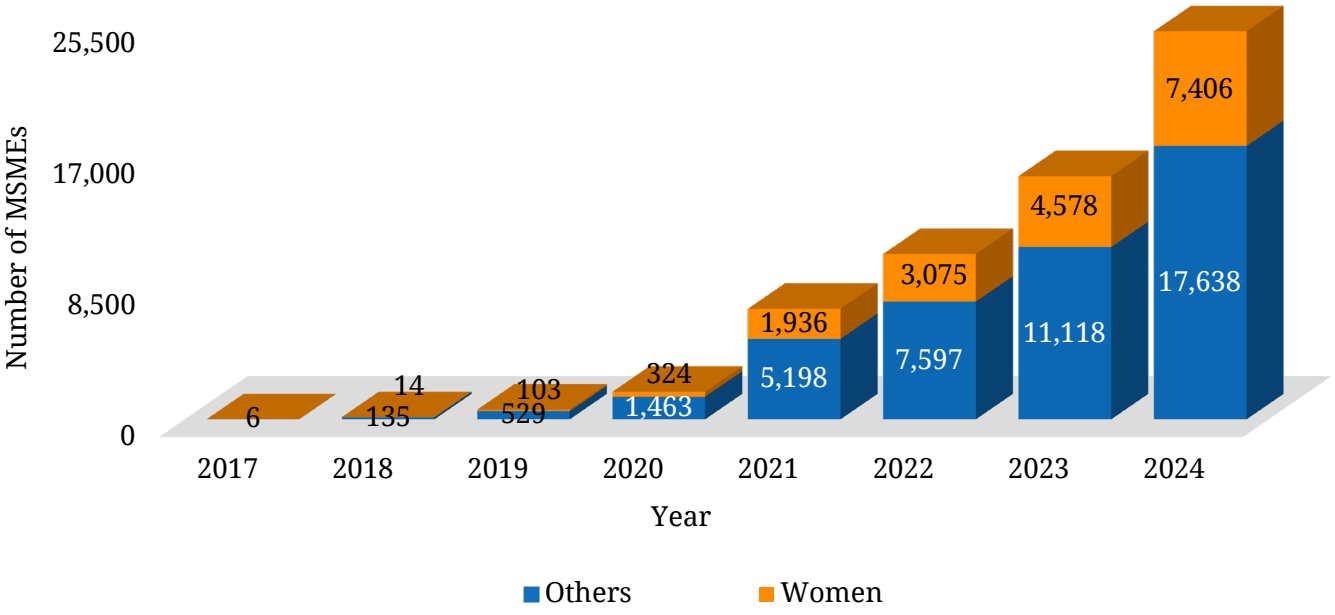


Figure 11 shows the number of MSMEs on the platforms from the three main sectors, i.e., manufacturing, services, and trading. A large share of the MSMEs on the platform are from the manufacturing sector (52%) with the rest being accounted for by MSMEs from the services sector (24%) and trading sector (24%).

Figure 11: MSMEs Registered on RXIL Platform by Sector

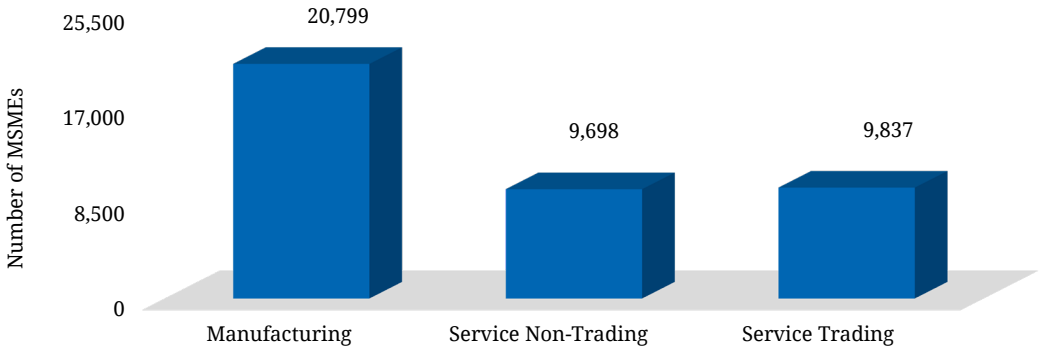
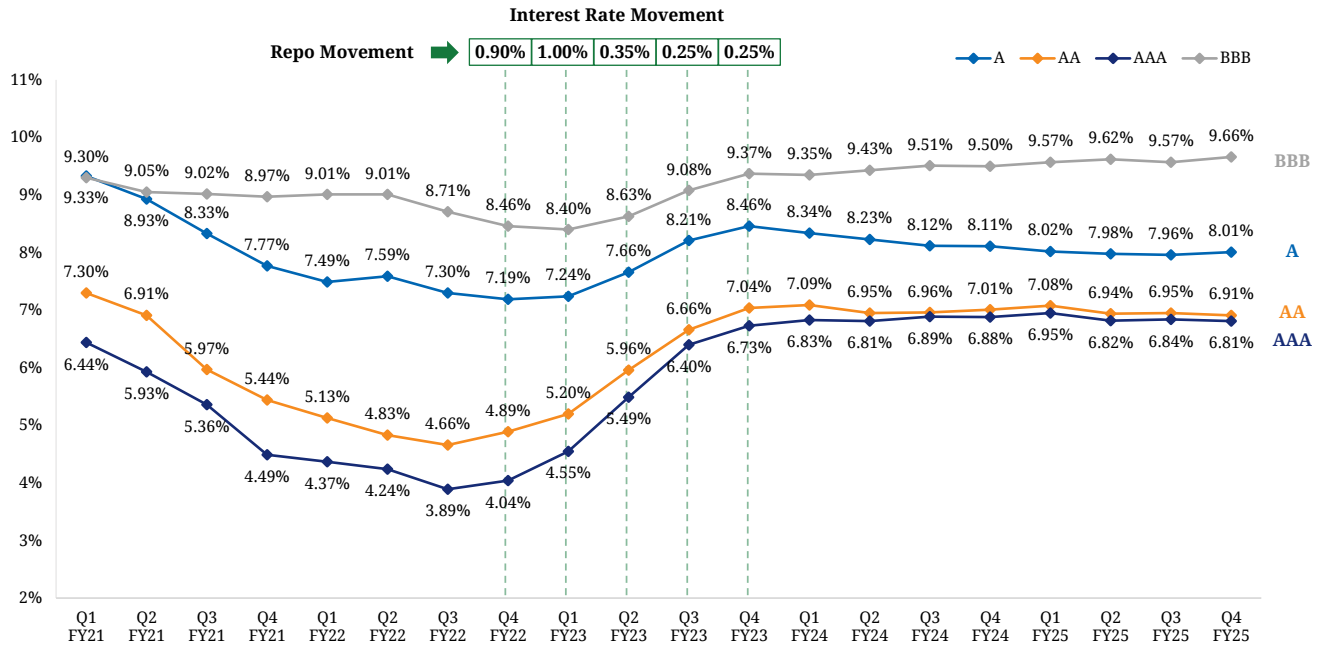


Figure 12 illustrates the evolution of interest rates across different credit rating (AAA, AA, A, and BBB) on the RXIL platform from Q1 FY2021 to Q4 FY2025. The interest rates for higher-rated borrowers (AAA and AA) remain consistently lower, reflecting their lower credit risk while the lower-rated borrowers (A and BBB) experience higher interest rates due to the higher perceived risk. Notably, the spread between different credit ratings narrows slightly over time, indicating a more competitive rate environment. Further, the interest rates for all categories of buyers respond to changes in monetary policy. These trends highlight the impact of financier competition and monetary policy on the cost of borrowing for MSMEs through the TReDS platform.

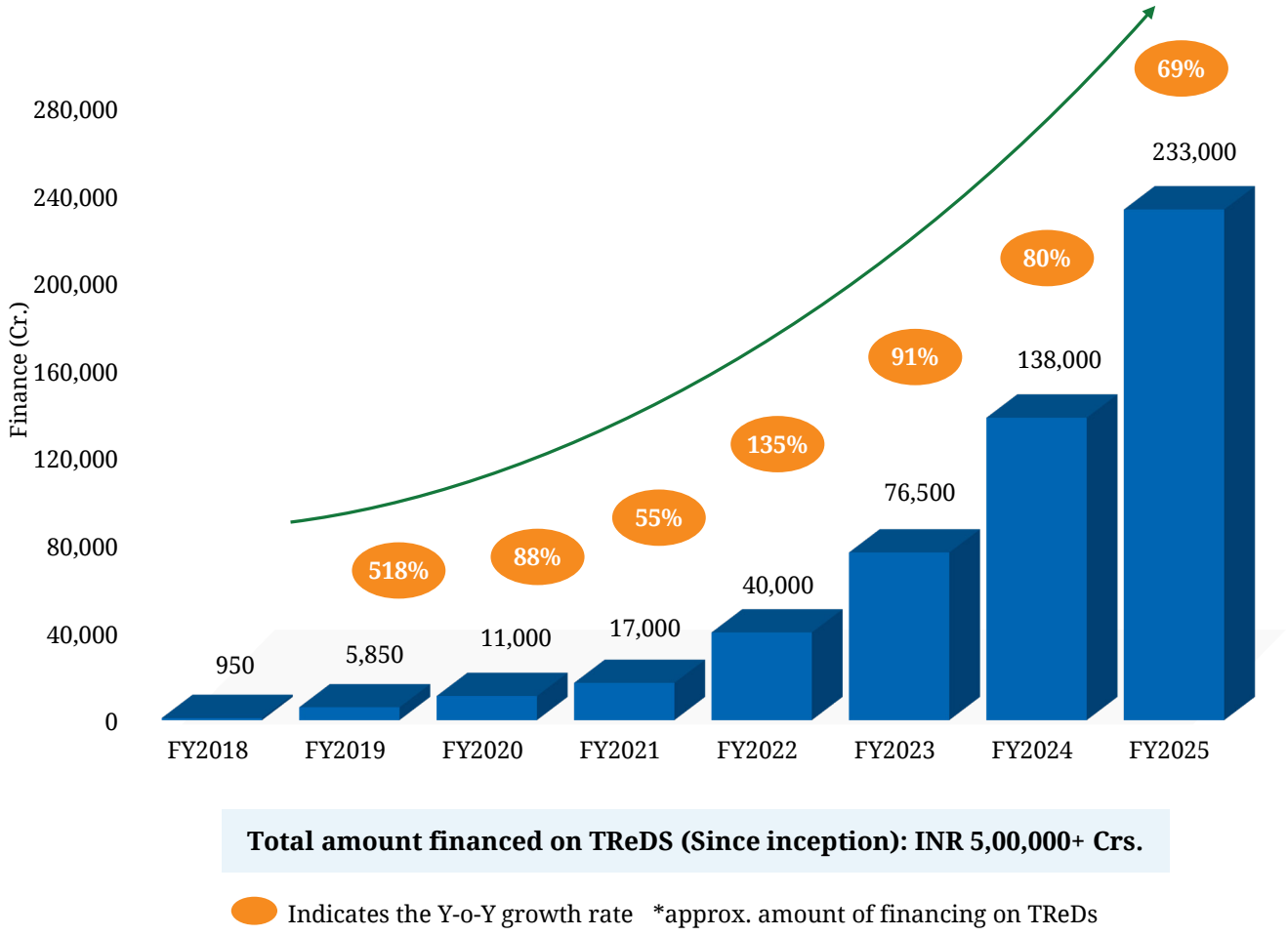
Figure 12: Evolution of Interest Rates on RXIL TReDS platform



Notes: The figure reports the trends in interest rates on transactions processed on the one of the TReDS platform, RXIL for buyers with different credit ratings.

Figure 13 illustrates the growth trajectory of the transaction amounts facilitated through all TReDS platforms from FY2018 to FY2025, highlighting the platform's significant impact on MSME financing. The total amount financed has grown exponentially from approximately INR 950 crore in FY2018 to over INR 2,33,000 crore in FY2025. The platforms experienced acceleration followed by a sustained high growth rate, indicating consistent adoption and utilization of the platform.

Figure 13: Growth of Annual Throughput Processed on the TReDS Platforms



Notes: The figure reports the growth in the transaction amounts processed on the TReDS platform.

Methodology: Impact Assessment Approach

4.1. DATA SOURCES

Our analysis is based on a combination of enterprise-level financial data, survey data, and stakeholders' interviews to provide a comprehensive assessment of the impact of the TReDS platform. The primary data sources employed are as follows:

Enterprise-Level Financial Data: The regression analysis leverages detailed financial data from two key sources: the Prowess database and filings from the Ministry of Corporate Affairs (MCA). The Prowess database is maintained by the Centre for Monitoring Indian Economy (CMIE) and provides a comprehensive dataset on the financial performance of Indian enterprises, including balance sheets, and profit and loss accounts. For the smaller enterprises on the RXIL platform that are not included in the Prowess database, we sourced data on the key financial indicators from their annual filings with the MCA.

We were able to match

1,174 sellers and **456** buyers

from the platform, with these datasets

Survey Data: To complement the financial data, we conducted an online survey for the MSMEs registered on the RXIL platform. The survey was conducted through an e-mail campaign, and we received 121 responses. These surveys were designed to capture firm specific characteristics, operational challenges, access to finance, and perception of the benefits derived from participating in TReDS. The survey data allows us to explore dimensions of firm's behavior that are not readily observable in the secondary datasets.

Stakeholder Interviews: We also conducted semi-structured interviews with key stakeholders, i.e., MSME sellers, corporate buyers, and financiers. We interviewed a total of 285 stakeholders, comprising 220 MSME sellers, 50 buyers, and 15 financiers. These interviews provided qualitative insights into the motivation for using TReDS, perceived benefits, and operational barriers. For example, MSMEs highlighted the platform's role in addressing delayed payment issues, while buyers emphasized improved supplier relationships and operational efficiency. Financiers discussed the acquisition of new clients, enhanced portfolio diversification, and reduction in transaction costs enabled by TReDS.

The integration of enterprise-level financial data, survey responses, and qualitative insights from interviews enabled a rigorous evaluation of the TReDS platform, capturing its potential impact across multiple dimensions.

4.2. EMPIRICAL STRATEGY

The empirical analysis employed the Synthetic Difference-in-Differences (SDiD) approach, a robust method that combines elements of both Difference-in-Differences (DiD) and Synthetic control methods (Arkhangelsky et al., 2021). This framework is particularly suitable in settings where the parallel trends assumption of traditional DiD may not be plausible. By constructing a synthetic control group that closely resembles the treated units (i.e., MSMEs participating in TReDS) in the pre-treatment period, the SDiD method enables us to better isolate the causal effects of TReDS participation from other confounding factors that may also influence the outcomes of interest.

The identification strategy relies on comparing the changes in outcomes for TReDS participants (treated group) to those of the synthetic control group, which is constructed using a weighted combination of non-participating MSMEs. The weights are chosen to minimize pretreatment differences in the trends of outcomes between the controlled and treated firms. This approach allows us to control for time-varying unobserved heterogeneity that might otherwise bias the estimates.

Specifically, the SDiD method assigns unit weights to align pre-treatment trends in the outcome of untreated units with those of treated units, ensuring that the treated group's pre-trends are approximately parallel to a weighted control group. It also applies time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. These weights are then incorporated into a two-way fixed effects regression to estimate the average treatment effect. We refer the reader to Arkhangelsky et al. (2021) for a detailed discussion of the SDiD method and the implementation strategy.

Summary statistics for the key variables are reported in Table 1 for the year preceding the start of the RXIL TReDS platform, i.e., 2016. Participating MSMEs differ systematically from non-participants in several dimensions, such as their receivable cycle, revenue, fixed assets & compensation. For instance, the RXIL TReDS participants are smaller in size & have lower receivable cycles compared to the control group of MSMEs, suggesting a potential self-selection of participants on the platform.

Table 1: Summary Statistics by Treatment

	Control MSMEs			Treated MSMEs		
	N	Mean	SD	N	Mean	SD
	(1)	(2)	(3)	(4)	(5)	(6)
Receivables Cycle	10740	0.884	(5.494)	1174	0.350	(1.419)
Log (Sales)	10740	1.315	(1.923)	1174	0.867	(1.465)
Log (Fixed Assets)	10740	(0.543)	(2.109)	1174	(1.352)	(1.962)
Log (Compensation to Employees)	10740	(1.047)	(1.843)	1174	(1.730)	(1.467)

This table reports the summary statistics, i.e., mean and standard deviation (SD), separately for control and treated MSMEs in the sample for the year 2016.

While the summary statistics provide valuable descriptive insights, they also highlight the inherent selection bias in TReDS participation. These differences raise questions about whether observed post-TReDS improvements are due to the platform itself or due to pre-existing differences in the characteristics of the firms. For example, smaller firms may be expected to grow faster than the larger control group firms even without participation in the TReDS platform. Further, the survey and interview findings, while informative, are subject to self-reporting biases.

To address these limitations, the Synthetic Difference-In-Differences (SDiD) framework is employed to construct a counterfactual group closely resembling TReDS participants in the pre-treatment period. This allows us to isolate the causal impact of TReDS participation on firm outcomes such as sales, receivables, wages, capital, cash holdings, and borrowings. Next, we turn to a more rigorous examination of the TReDS platform's impact on the performance of MSMEs (sellers), buyers and financiers.

Impact of TReDS on MSMEs

5.1 CONCEPTUAL FRAMEWORK: IMPACT OF TReDS ON MSMEs

To guide the empirical analysis of the impact of the TReDS platform on MSMEs, we briefly describe how delayed payments affect firm growth, followed by a discussion of how the TReDS platform enables a more efficient factoring process.

In a financially unconstrained environment, firms should be able to borrow against future cash flows and delayed payments should not impact their operations. However, when firms are financially constrained, improvements in the receivable cycle for MSMEs can have a significant positive impact on their revenues, capital and employment (Murfin and Njoroge, 2015). To fix ideas, we reproduce a simple example from Barrot and Nanda (2020) to highlight the link between cash collection and scale of operations of a firm. Consider a firm that relies only on internal cashflow to fund its operations and is currently at cashflow breakeven so that it cannot grow further unless it receives cash from buyers. If the annual turnover of such a company is $1 million and it receives payment from buyers in 30 days, it has around $80,000 ((30/360)*1 million) as receivables at a given time. A permanent shift to a faster payment period of 15 days would lead the firm to only have $40,000 tied up in receivables and would allow the firm to expand their revenue, capital, and employment and double in size. In a more realistic setting where firms have access to external borrowing, there would still be substantial improvements in their scale of operations as long as they are financially constrained and unable to fully borrow against their receivables.

A digital platform like TReDS can outperform standalone traditional factoring services offered through individual banks and improve MSMEs' working capital and performance through several channels. We outline these mechanisms linking the platform to the performance of MSMEs below:

Financier Competition: The TReDS platform creates a competitive environment by enabling multiple financiers (such as banks and financial institutions) to bid on the same invoice through an auction based system. This competition is based on the buyer credit rating and results in better financing rates for MSMEs, as financiers aim to offer more attractive terms to secure the factoring unit. This is also evident in the data collected through surveys of MSMEs and the interviews with the stakeholders. All financiers we interviewed confirmed that the interest rates offered on the platform were typically much lower than those offered to MSMEs through traditional banking and factoring channels, as the rates are based on the buyer's creditworthiness. For buyers with better credit ratings, the rates are better. Further, over 60% of respondents in the MSME survey reported lower interest rates on the TReDS platform as one of the main reasons for registering on the platform.

Using monthly transaction level data for each buyer-supplier-financier combination, we examine the association between the number of financiers and the interest rates offered on the transactions processed on the TReDS platform. The results in Table 1 confirm that an increase in the number of financiers on the platform considerably reduces the interest rates for transactions. On average, an additional financier on the platform reduces rates by 5 basis points. These results confirm the importance of financier competition as a key mechanism driving lower interest rates for transactions on the TReDS platform.

TReDS: Role of Financier Competition

	Interest Rates
Number of Financiers	-0.053*
	(0.002)
Repo Rates	0.888*
	(0.016)
Observations	**294,553**

*Notes: The table reports the association be- tween the number of financiers and interest rates for transactions pro- cessed on one of the TReDS plat- forms. Standard errors, reported in parentheses, are clustered at the MSME-Buyer level. * denote significance at 1%.*

Reduced Transaction Costs and Time: The digital and centralized nature of the TReDS platform significantly reduces the transaction costs associated with the factoring process. Traditional financing methods often require extensive paperwork, verification, and coordination between multiple parties, all of which incur costs and lead to the exclusion of a large share of MSMEs from participation in traditional markets. The TReDS platform streamlines these steps, reducing both the time and costs. Under the RBI Know Your Customer (KYC) Master direction (2016) and the Anti-Money Laundering (AML) Rules, TReDS platform ensures KYC compliance of the buyer and the seller participants to ensure the genuineness and existence of the legal entity. Further, using the NACH for settlements enables quicker transfer of funds between the participants involved in the TReDS ecosystem. Most sellers, buyers, and financiers we interviewed highlighted the reduced verification costs and the efficiency of the digitized process on the platform that reduced administrative delays.

Reduction in Asymmetric Information: One of the key challenges MSMEs face in traditional financing systems is asymmetric information. Lenders often lack access to reliable data on the creditworthiness of MSMEs, making them reluctant to offer financing. TReDS addresses this issue by providing information about invoices, buyers, and payment terms, which reduces the information gap between MSMEs and financiers. This helps financiers process transactions on the platform based on the creditworthiness of the buyers.

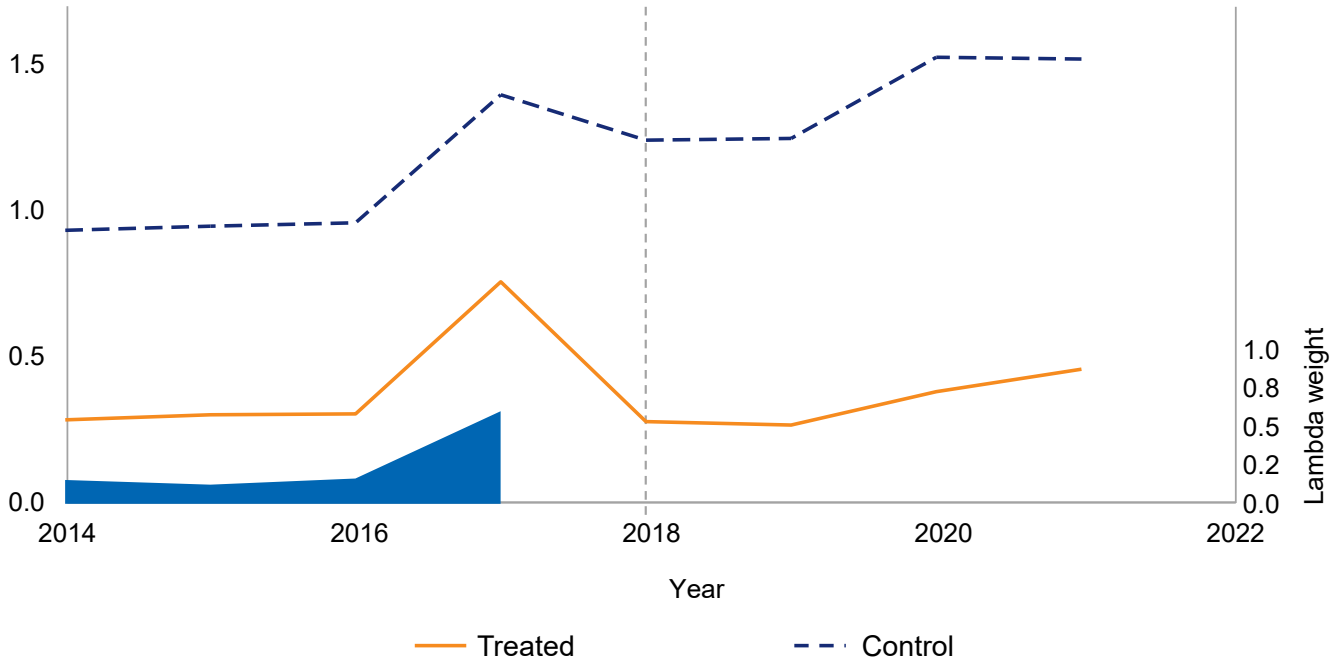
Regulatory Oversight and Transparency: TReDS platforms are classified as large PSO (Payment System Operator) and are regulated entities of RBI. TReDS is governed by the regulatory framework of the Reserve Bank of India (RBI), which ensures that the platform is transparent in its operations and accountable to the regulators and stakeholders unlike other unregulated invoice discounting platforms/companies. This regulatory oversight adds an additional layer of security for both MSMEs and financiers, with increased trust among stakeholders.

The above mechanisms highlight the significance of a centralized, digital platform like TReDS in offering factoring services at favorable interest rates enabling the scaling up of the factoring market and benefiting the MSMEs. We expect this improved access to cash through the platform to enable the MSMEs to expand their operations. Next, we rigorously examine the causal impact of the platform on the performance of the MSMEs.

5.2 IMPACT OF TReDS ON THE RECEIVABLE CYCLE OF MSMES

The Synthetic Difference-In-Differences (SDiD) estimates suggest a significant reduction in the receivables cycle, as measured by the ratio of receivables to overall sales, for MSMEs participating on the TReDS platform relative to other MSMEs. Participation on the TReDS platform reduces receivable cycle of MSMEs by 23 percentage points, on average, relative to the control group. These effects are economically meaningful and highlight the potential of digital platforms to resolve liquidity bottlenecks faced by MSMEs by facilitating faster payment realization and improving working capital availability.

Figure 14: Impact of TReDS on the Receivable Cycle of MSMEs



Notes: The figure compares the trends in the receivable cycle for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform. using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

Figure 14 shows the trends in the receivable cycles for treated and control firms graphically. The receivable cycles of treated (red) and control firms (blue) followed similar trends before onboarding onto the TReDS platform, confirming that the SDiD algorithm has resulted in similar trends in the outcomes for treated and synthetic control firms. After onboarding, the receivable cycle for treated firms declined sharply relative to the control group, with the decline persisting over time.

We also find that the reduction in the receivable cycle was more pronounced for MSMEs belonging to states that are financially less well developed, as measured by their share of credit to state GDP. While MSMEs in financially developed states experience a reduction in their

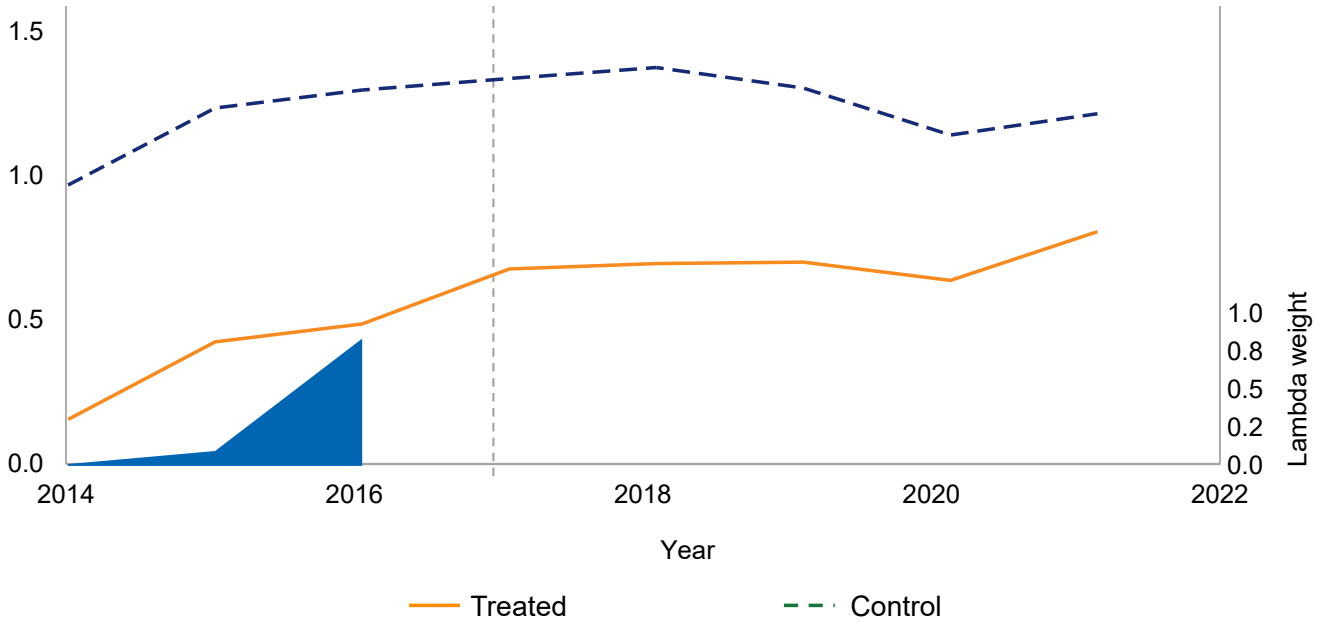
receivable cycle by 21 percentage points, the MSMEs in the less developed states see a reduction of 40 percentage points in their receivable cycle. These results point to the important role digital platforms like TReDS can play in compensating for the lack of financial development for the working capital management of MSMEs.

These results are consistent with the information collected from interviews with the MSMEs. Most MSMEs that were interviewed replied that the lack of credit access was the main motivation for joining the TReDS platform. Further, most of the MSMEs interviewed responded that the TReDS platform has improved their working capital cycle. Additionally, only a few of these MSMEs had prior experience with factoring services, highlighting the importance of digital platforms like TReDS in ensuring an inclusive platform for factoring services for the MSMEs.

5.3 IMPACT OF TReDS ON THE PERFORMANCE OF MSMES

Our findings also suggest that participation on the TReDS platform enables MSMEs to increase their sales. On average, firms using TReDS experience an 8% increase in sales compared to the non-participating firms. Further, Figure 15 shows that the sales for treated, and control firms had similar trends in the periods before TReDS registration, followed by a relative increase in the sales of treated firms post onboarding onto the platform. These results are consistent with MSMEs scaling up their operations as their working capital constraints are relaxed due to access to factoring services on the TReDS platform.

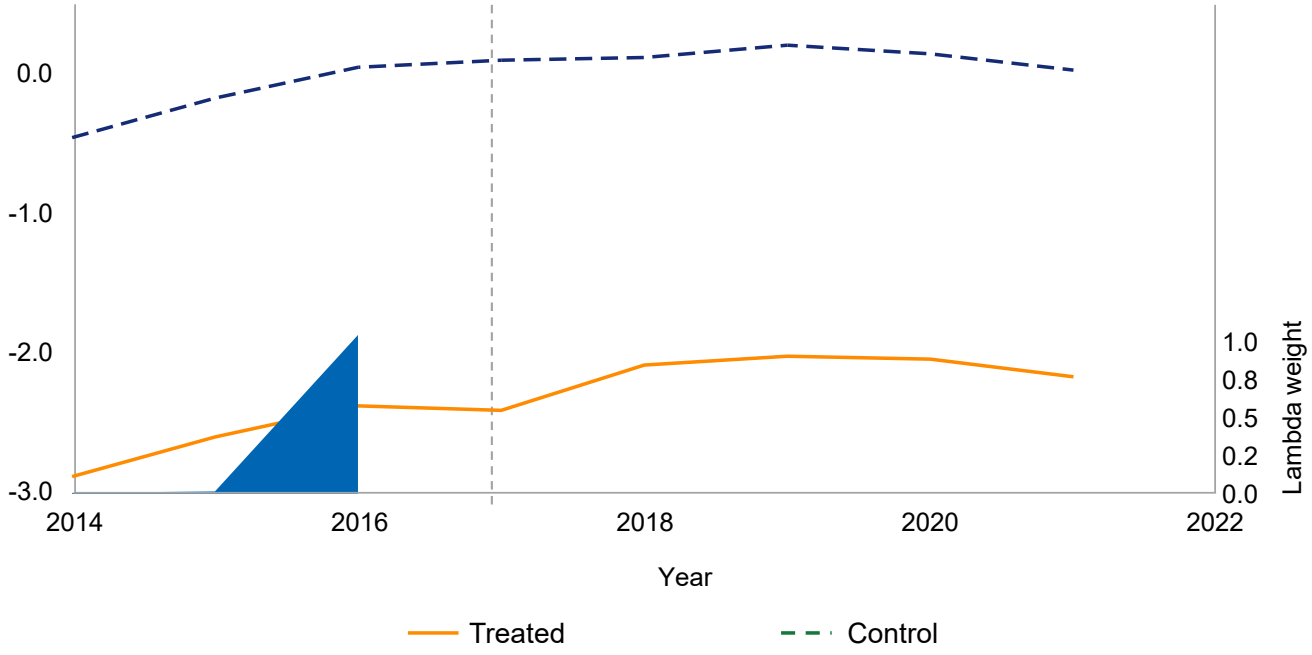
Figure 15: Impact of TReDS on the Sales of MSMEs



Notes: The figure compares the trends in the (log of) sales for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

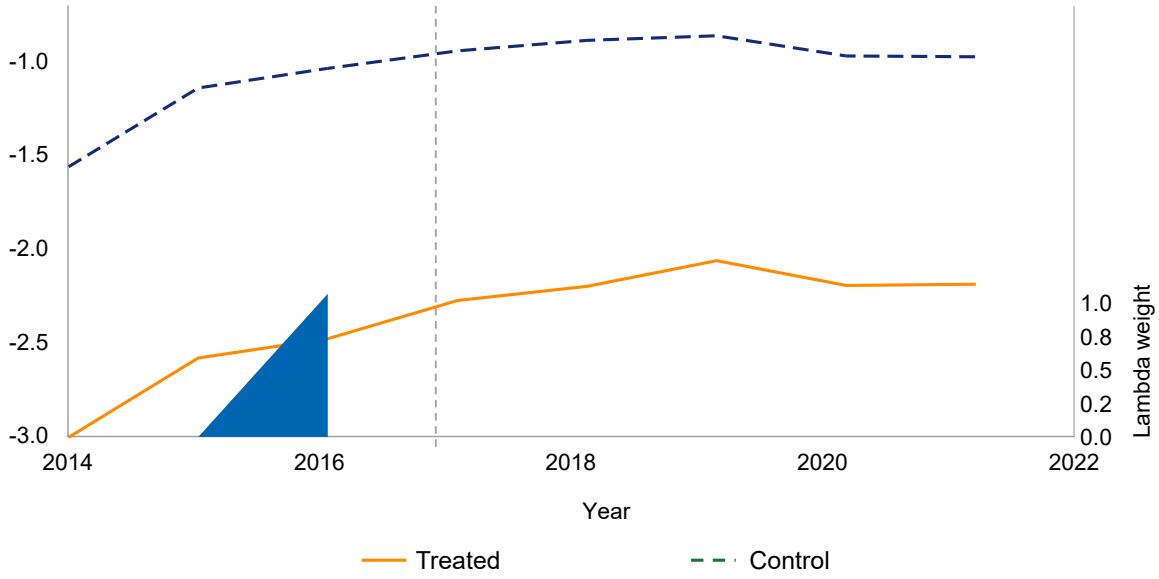
The improvement in cashflow due to the TReDS platform could, in principle, increase both the physical capital and employment by MSMEs. Firms on the platform would be able to utilize the increased cash collections to invest in capital and this would indirectly lead to an increase (decrease) in employment if capital and labor are complements (substitutes). Further, in case of MSMEs it is also likely that improved cash collections directly lead to increased employment as workers may need to be paid in advance of the receipt of cash from sales. Our findings suggest that participation in the TReDS platform indeed increases both the fixed assets (by 4%) and compensation to employees (by 6%) for MSMEs. Further, Figure 16 and Figure 17 show an increase in these outcomes for treated firms post registration on the TReDS platform, while there is no differences in the trends in these outcomes for treated and control firms in the preceding periods.

Figure 16: Impact of TReDS on the Fixed Assets of MSMEs



Notes: The figure compares the trends in the (log of) fixed assets, for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

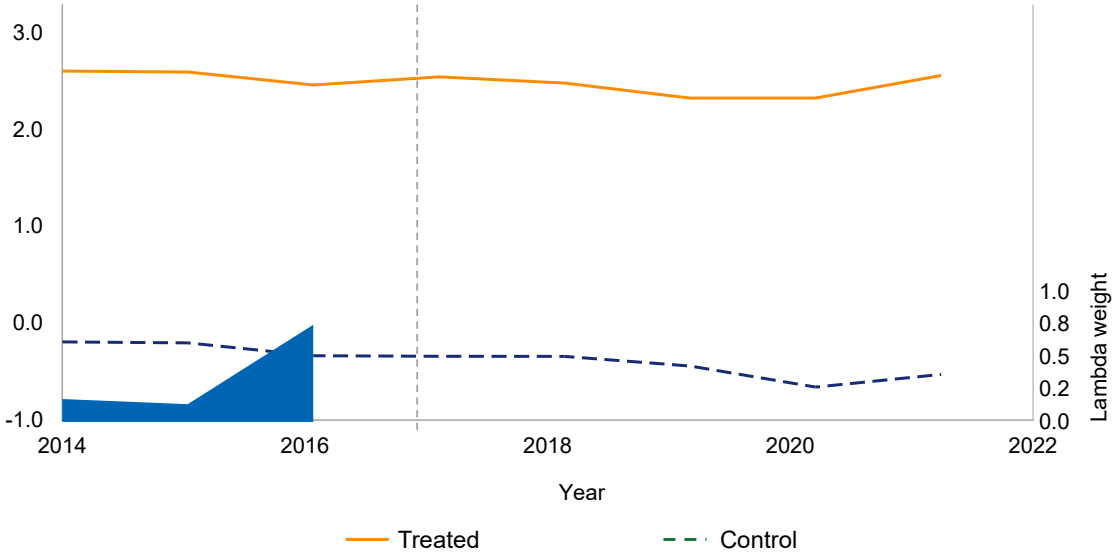
Figure 17: Impact of TReDS on the Compensation to Employees of MSMEs



Notes: The figure compares the trends in the (log of) compensation to employees for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

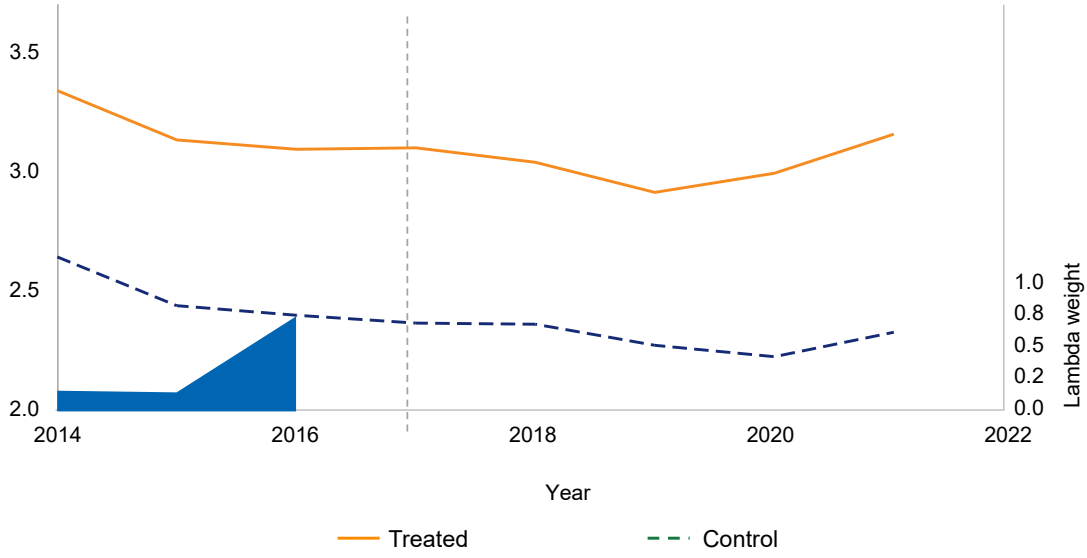
Next, we examine whether participation in the TReDS platform also improved the productivity of MSMEs. We find that MSMEs increased both their output per unit capital as well as output per unit employee compensation, as shown graphically in Figure 18 and Figure 19.

Figure 18: Impact of TReDS on the Average Product of Capital of MSMEs



Notes: The figure compares the trends in the (log of) average product of capital ,i.e. sales divided by physical capital, for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

Figure 19: Impact of TReDS on the Average Product of Labor of MSMEs



Notes: The figure compares the trends in the (log of) average product of labor,i.e. sales divided by employee compensation, for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

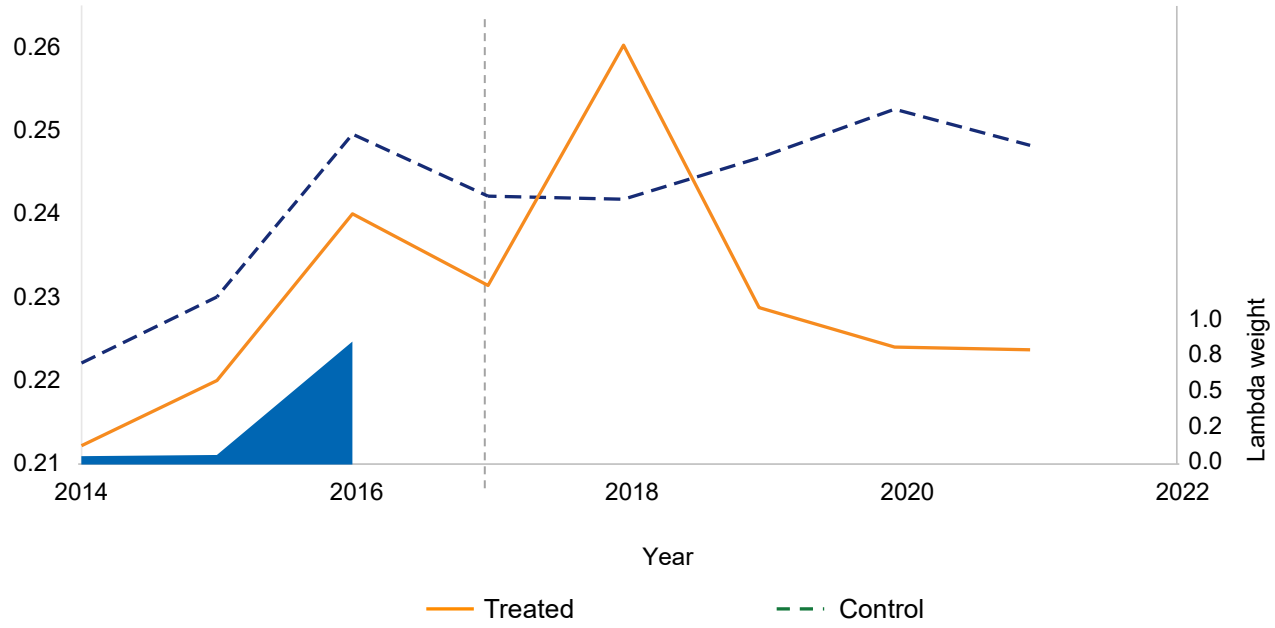
The improvements in firm performance due to the TReDS platform is also consistent with the data from the MSME surveys and interviews. Around 70% of the respondents agree that onboarding onto the TReDS platform enabled them to scale their operations in terms of turnover (Appendix Figure A.1). Additionally, most of the interviewed MSMEs responded that they have experienced an improvement in their performance after registering on the TReDS platform. The data from the MSME surveys is also consistent with firm expansion, with more than a third of respondents suggesting that they increased their investments in physical capital (Appendix Figure A.2) and employment (Appendix Figure A.3). Around two-thirds of the respondents in the MSME survey also reported an increase in the efficiency of their operations, consistent with productivity improvements (Appendix Figure A.4).

Many MSMEs also reported experiencing an improvement in several dimensions of firm performance that are unobserved in the firm data used for the empirical analysis. Around a third of respondents reported TReDS having a positive impact on the introduction of new products and services (Appendix Figure A.5). Half of the respondents reported an improvement in the quality of their products and services (Appendix Figure A.6) and increased customer satisfaction from their buyers (Appendix Figure A.7). A third of the respondents reported an increase in the number of buyers (Appendix Figure A.8), while a quarter of the respondents also reported an increase in the number of their suppliers (Appendix Figure A.9). Finally, around 40% of the MSME respondents also reported better payment terms with their suppliers after onboarding onto the TReDS platform (Appendix Figure A.10).

5.4 OTHER OUTCOMES: CASH HOLDINGS AND BANK BORROWING

We next examine the impact of TReDS on cash holdings and borrowing behavior of MSMEs. TReDS allows MSMEs to quickly convert their receivables to cash thereby significantly reducing the cash flow uncertainty faced by these firms. This should lead to a reduction in precautionary cash reserves, and we expect a reduction in the share of cash holdings to total assets for MSMEs after onboarding on the TReDS platform (Harford et al., 2014; Strebulaev et al., 2012). Further, TReDS can also affect the MSMEs borrowing from banks. Participation on the TReDS platform increases the creditworthiness of these MSMEs as their financial performance improves, and this may translate into lower costs of borrowing from banks. Alternatively, MSMEs may substitute a part of the working capital loans with transactions on the TReDS platform, leading to a reduction in their bank borrowings. The overall effect on borrowing is thus an empirical matter.

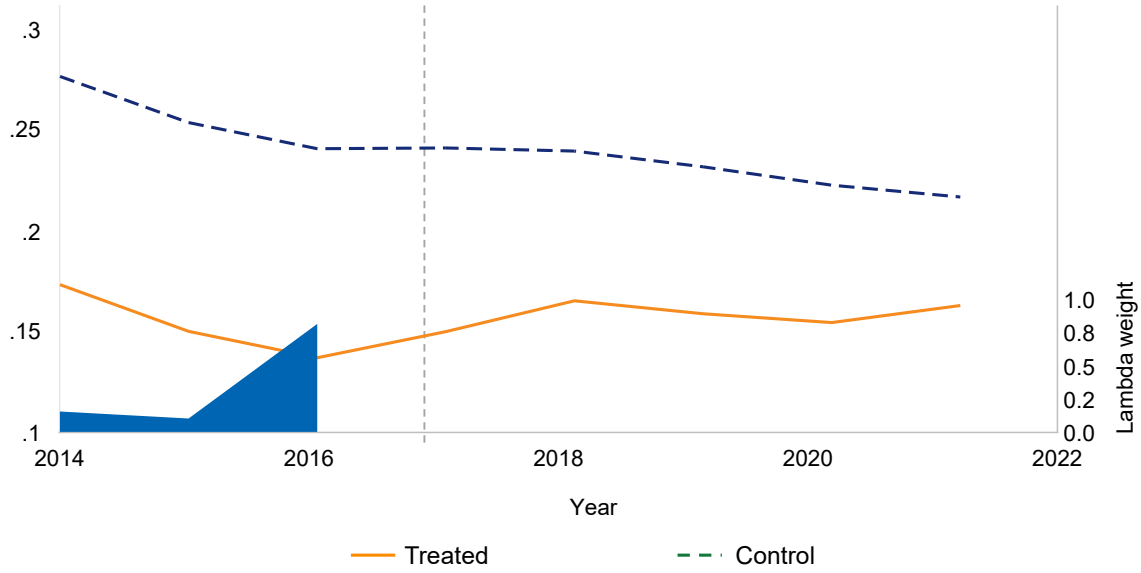
Figure 20: Impact of TReDS on the long term borrowing of MSMEs



Notes: The figure compares the trends in the long term borrowing as a share of total assets for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

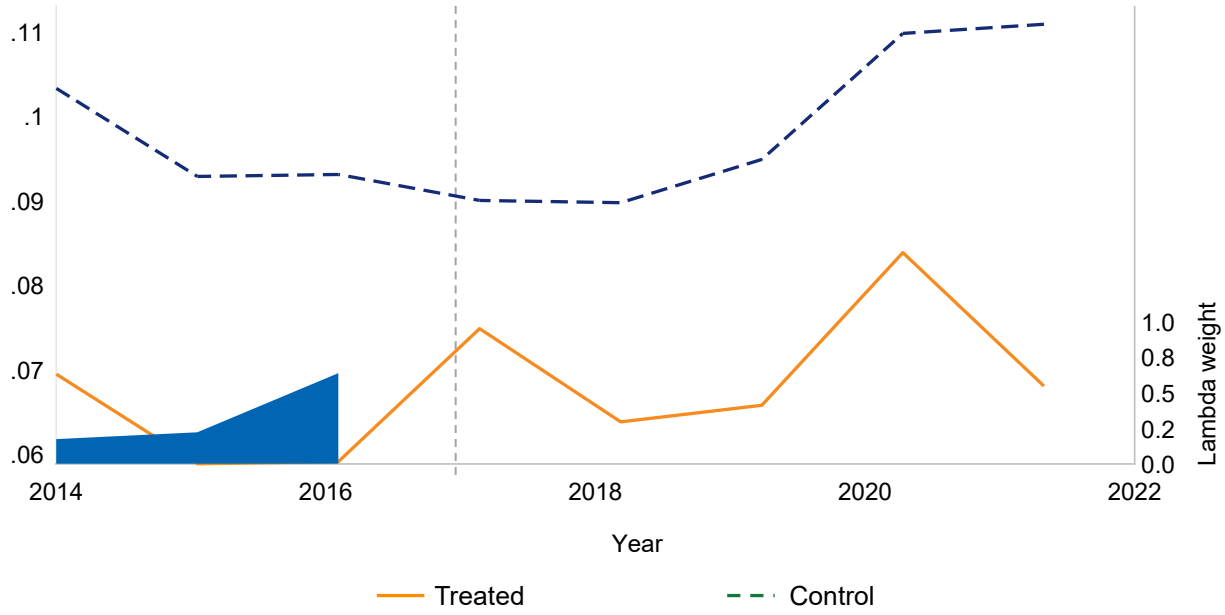
We find no significant effect of TReDS on long term borrowing of MSMEs (Figure 20). In contrast, TReDS participation leads to an increase in short term borrowing for these firms, as shown in Figure 21, consistent with improvements in access to formal banking credit for MSMEs. Further, We find that participation in the TReDS platform has indeed reduced the share of cash holdings to total assets of the MSME firms, as shown in Figure 22. These findings are also consistent with the MSME survey where 67% of the respondents suggested an improvement in their creditworthiness after onboarding onto the TReDS platform (Appendix Figure A.11).

Figure 21: Impact of TReDS on the short term borrowing of MSMEs



Notes: The figure compares the trends in the short term borrowing as a share of total assets for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

Figure 22: Impact of TReDS on the Cash Holdings of MSMEs



Notes: The figure compares the trends in the cash and bank balance as a share of total assets for treated MSMEs on the TReDS platform (red) with the control MSMEs that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in green) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

Taken together, these results provide strong evidence that the TReDS platform leads to a significant improvement in the working capital of MSMEs and enables them to scale up by increasing sales and factor inputs.

Impact of TReDS on Buyers and Financiers

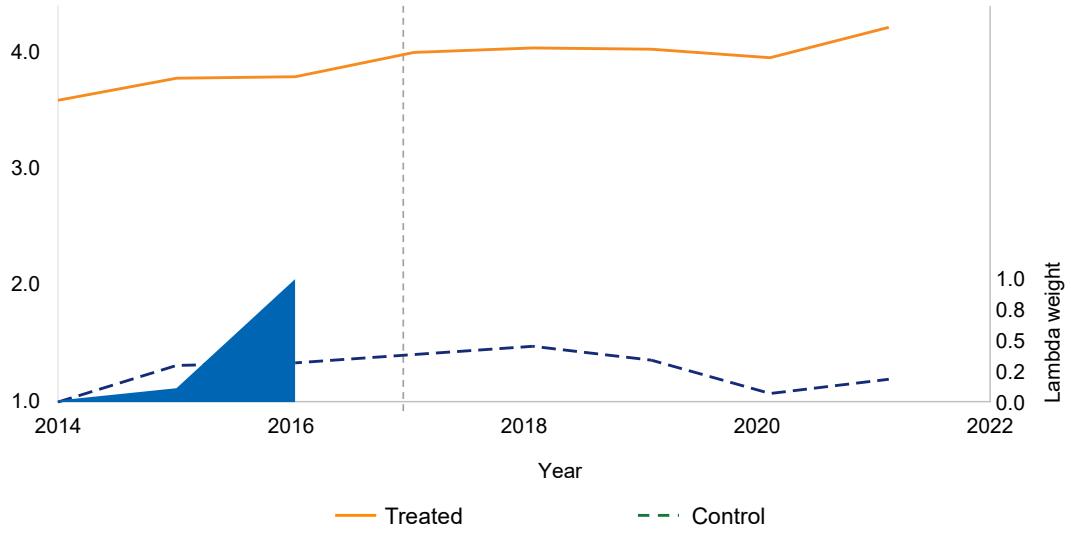
6.1 IMPACT OF TReDS ON BUYERS

Participation in the TReDS platform could improve buyer performance for several reasons. Through TReDS, buyers enable their suppliers to access early payments at lower rates based on the buyer's stronger credit profile. This mechanism reduces the supplier's cost of financing, which not only stabilizes the supplier's operations but also ensures a steady and reliable flow of

goods and services to the buyer. By reducing the risk of supplier defaults and ensuring supplier liquidity, buyers indirectly improve the supply chain continuity and operational efficiency (Kouvelis and Xu, 2021). Further, TReDS allows buyers to extend their payment terms without negatively affecting supplier liquidity (Chuk et al., 2022; Liebl et al., 2016). This helps alleviate working capital constraints on buyers, allowing them to allocate resources towards productive investments (Chuk et al., 2022; Wetzel and Hofmann, 2019). Finally, buyers can also negotiate better terms, in terms of cash discounts or lower prices, to purchase goods and services from their suppliers in exchange for early payments at reasonable rates from the TReDS platform. Thus, we expect to see an improvement in the performance of buyers in response to participation on the TReDS platform.

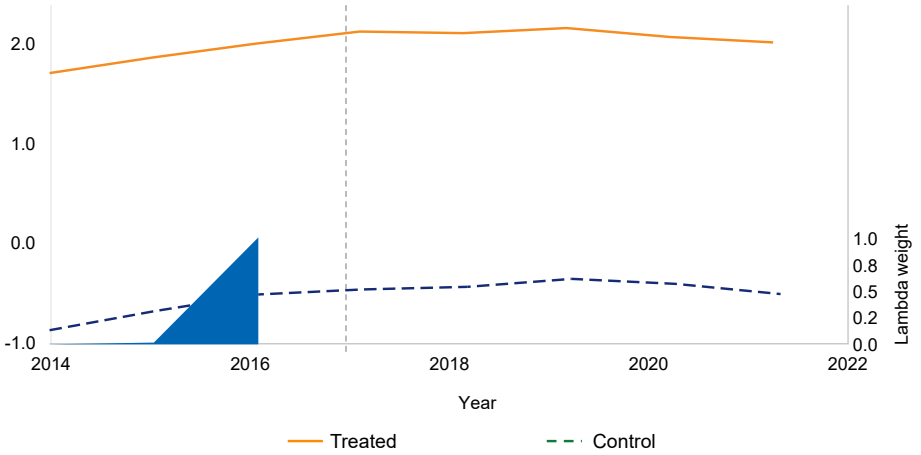
Our findings from the SDiD estimations suggest a significant positive impact of TReDS on the sales performance of buyers. Further, we find that the increase in sales is entirely driven by the relatively liquidity constrained buyers, specifically those with credit ratings of A or below. In contrast, there is no effect on the sales of the AA and AAA rated larger buyer. TReDS increases sales by 10%, on average, suggesting a significant scaling up of operations for the liquidity constrained buyers. Figure 23 shows that the sales of treated buyers and control group of firms had similar trends before onboarding on the TReDS platform, followed by a persistent increase in sales of treated buyers relative to the control buyers. These results are also consistent with the buyer interviews where several of the relatively liquidity constrained respondents reported that TReDS enabled them to scale up their operations significantly.

Figure 23: Impact of TReDS on the Sales of Buyers



Notes: The figure compares the trends in the log of sales for treated buyers on the TReDS platform (red) with the control Buyers that are not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

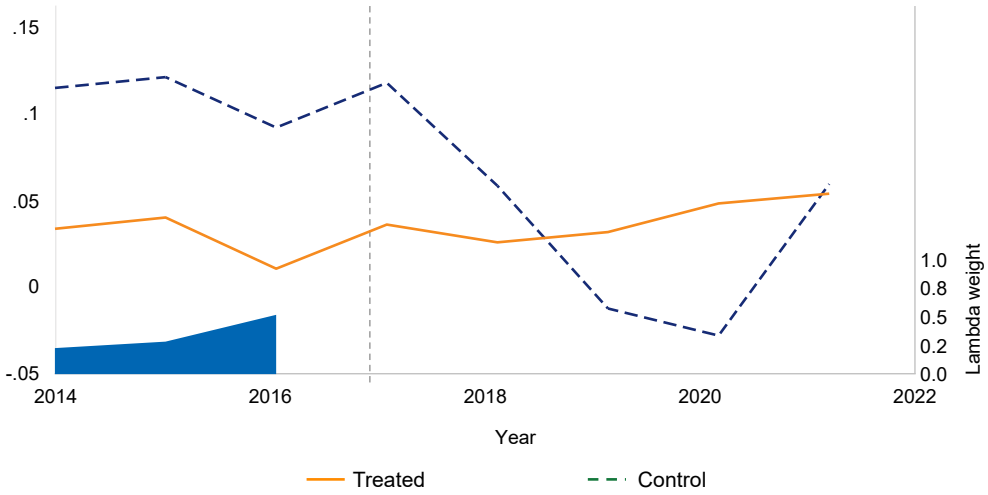
Figure 24: Impact of TReDS on Fixed Assets of Buyers



Notes: The figure compares the trends in the log of fixed assets for treated buyers on the TReDS platform (red) with the control buyers not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

Figure 24 shows that there was a significant increase in the fixed assets of buyers on the TReDS platform relative to the control group of firms. Further, we find significant improvements in the profitability of buyers on the TReDS platform, as shown in Figure 25.

Figure 25: Impact of TReDS on the Profitability of Buyers

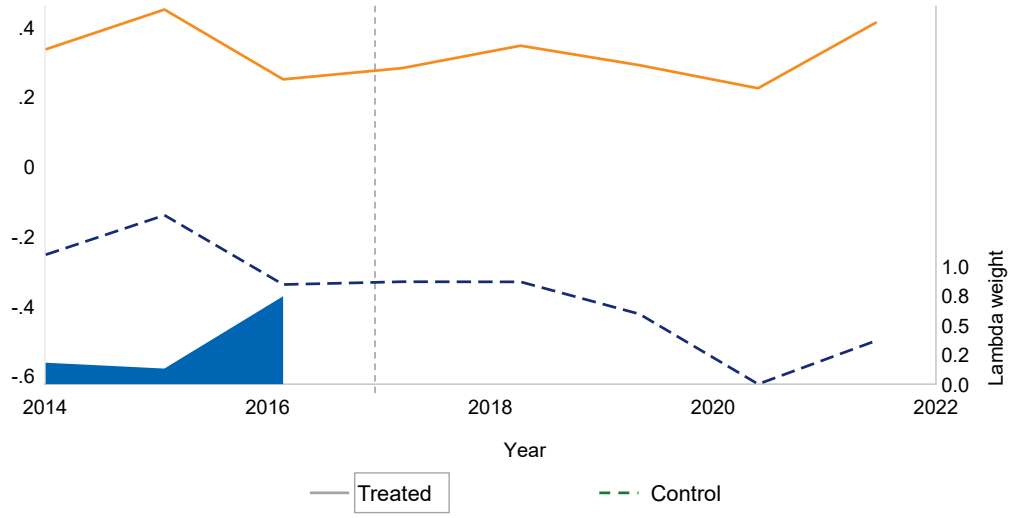


Notes: The figure compares the trends in the profitability of treated buyers on the TReDS platform (red) with the control buyers not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

We also find significant improvements in the productivity of the buyers on the TReDS platform. Figure 26 shows that there was a significant increase in the average product of capital for buyers. Finally, Figure 27 shows that the average product of labour also shows improvements for buyers on the TReDS platform, albeit to a lesser extent. These results are consistent with buyers allocating resources to accumulate factor inputs and improving productivity through

negotiating better purchase terms from suppliers or availing of extended payment days on the platform.

Figure 26: Impact of TReDS on the Average Product of Capital of Buyers



Notes: The figure compares the trends in the average product of capital for treated buyers on the TReDS platform (red) with the control buyers not onboarded on the platform using the SDiD method (Arkhangelsky et al., 2021). Lambda weights (in blue) represent time weights that are constructed to ensure that, for each control unit, the average outcome in the post-treatment period deviates by a fixed amount from a weighted average of its own pre-treatment outcomes. This eliminates the role of time periods that differ substantially from the post-treatment period. This figure is for the cohort of firms that were onboarded in 2017.

6.2 IMPACT OF TReDS ON FINANCIERS

TReDS platform benefited the financiers on the platform in several ways. The platform ensures seamless digital verification for the onboarding of Suppliers/Buyers and transaction processes, considerably reducing operational costs and delays compared to the traditional factoring services that involve more manual interventions in all stages of the transactions. Further, the financiers benefit from access to a large, diverse base of MSMEs and larger-sized creditworthy buyers, expanding their potential customer base and potentially diversifying risk. Additionally, the banks on the platform can meet part of their priority sector lending targets through the TReDS platform. The digitally signed buyer acceptance greatly reduces the risk of fraud and dispute for financiers. Finally, exposure to a diverse base of suppliers and buyers on the TReDS platform opens the possibility of the financiers starting bilateral relationships with these buyers outside of the platform. In our interviews with the financiers, the respondents confirmed the presence of these channels in driving the scaling up of their factoring business.

Our interviews with the smaller financiers also revealed that the access to a large client base for factoring services on the TReDS platform comes with potentially reduced margins due to increased competition on the platform. The effect on margins is particularly severe for the relatively smaller financiers, like the Non-Banking Financial Companies (NBFCs) and NBFC factors, with higher funding costs than Banks. Nonetheless, the platform does enable all financiers to scale up their factoring business.

The Way Forward: Identifying Challenges and Opportunities for Growth

While the RBI regulated TReDS platform is a significant step toward addressing the working capital challenges of MSMEs, it still caters to a very small portion of the MSME and Corporate sectors (Niti Aayog, 2021). This suggests considerable potential for the scaling up of the TReDS platform going forward. Through stakeholder interviews and data from the platform, we identified several potential structural and operational challenges confronting the platform.

Complex Registration Processes and Lack of Digital Capabilities: In the interviews with the buyers, several respondents highlighted difficulties in getting their suppliers to onboard on the

TReDS platform. Many MSMEs, particularly micro-enterprises, struggle with the registration process due to limited digital literacy and documentation requirements. While the TReDS platform represents a considerable improvement over the manual processes existing in the factoring services market earlier, it needs to be simplified further to encourage large scale adoption of the platform.

Restrictive Regulations for Onboarding Sellers: Non MSME suppliers are currently not allowed on the TReDS platform. This deters many corporate buyers that have both MSME and non MSME suppliers from participating on the platform. These restrictions imply that such corporates would need to have two separate systems for payments to MSME and non MSME suppliers (Niti Ayog, 2021)

Inactive Participants: A significant share of registered participants on TReDS are inactive with no processed transactions, suggesting a need to identify the potential causes behind their inactivity. We interviewed 20 registered but inactive MSMEs to identify the primary reasons for their inactivity on the platform. Most MSMEs cited a breakdown in their trading relationships either due to pausing sales to the buyers or their buyers becoming insolvent as the main cause. A few MSMEs also mentioned that they were engaging in direct transactions with buyers, benefiting from faster payment period of 15-20 days.

Low Profitability for Small Financiers: While the platform's auctioning mechanism benefits the buyer and sellers on the platform along with banks, smaller financiers with limited liquidity, who have relatively high funding costs are often unable to compete with the banks and have experienced a reduction in their margins.

Exclusion of Export Factoring: The platform does not yet accommodate cross border trade receivables, leaving export oriented MSMEs without a viable mechanism for discounting receivables

To accelerate the TReDS platform's growth, we suggest the following interventions:

Increasing Awareness and Digital Capability: The platform should partner with industry bodies and local associations to conduct workshops and webinars to educate MSMEs on the importance of working capital management and the benefits of the TReDS platform. Further, the platform should advocate for government initiatives aimed at improving digital capabilities among MSME entrepreneurs.

Simplified Verification Processes: The platform should explore data integration with various government databases such as MCA annual filings and Udyam registration portal to enable easier verification.

Integration with Goods and Services Tax Network (GSTN): Integration with the GSTN will facilitate real time data sharing of invoices issued by MSME sellers to buyers. This integration would enable the sellers to access all invoices through a single window, simplifying the process of financing these invoices through the TReDS platform. Additionally, the GSTN-TReDS integration would allow for the verification of invoices uploaded on the platform, enhancing the credibility of the receivables and also faster payments to MSMEs.

Integration with the Government e-Marketplace (GeM): All government procurement of goods and services is conducted through the Government e-Marketplace (GeM), linking data between the TReDS platform and GeM can facilitate better information flow and enable effective working capital financing for MSMEs from the TReDS platform.

Tier-2 MSMEs: The supply chains for corporates and Public Sector Enterprises often involve multiple tiers of MSME suppliers, with Tier-1 sellers currently benefiting from TReDS due to their direct relationships with buyers, which instill financier confidence. Significant potential exists to extend financing to Tier-2 suppliers, with Tier-1 MSMEs acting as buyers on the platform. This approach would deepen financial inclusion and liquidity across the entire supply chain.

TReDS "Second Window": This model, proposed by (Sinha, 2019), would allow for supplier financing without the need for buyers to accept invoices, considerably reducing transaction costs. In this model, financing will be 'with re-course' to MSME sellers and would be feasible after the integration of TReDS with GSTN and other databases such as the Account Aggregator (AA), Credit Bureau, IT returns, E-Lien and Public Credit Registry (PCR).

Extension of Credit Guarantee Fund Scheme for Factoring (CGFSF) to TReDS: The CGFSF under National Credit Guarantee Trustee Company Limited (NCGTC) could be extended to cover invoices discounted through the second window on the TReDS platform. Providing such guarantees would enable factors and banks to accept bills drawn on smaller or lower-rated buyers, facilitating greater inclusion. Over time, as transaction histories develop, the need for guarantees may diminish, allowing financiers to rely on established credit records. (At the time of printing this report, RBI has granted approval along with specific instructions.)

Trade Credit Insurance: Within the TReDS framework, Trade Credit Insurance (TCI) provides financial institutions with coverage against losses resulting from buyer defaults on discounted invoices. Transactions on TReDS are without recourse to MSME sellers, with financiers having recourse only against buyers. Many MSMEs supply to unrated or lower rated corporates, which represent a large, underserved market for receivables financing. The high credit risk associated with such buyers discourages financiers from funding these transactions. TCI can mitigate this risk, improving financiers' willingness to extend credit and increasing access to financing for MSMEs.

Harnessing the Power of Artificial Intelligence (AI): AI-driven solutions can be explored to simplify the onboarding process. For instance, a step-by-step guide and videos in regional languages can assist MSMEs in registering on the platform. Additionally, AI and predictive analytics can be used to provide insights into transaction patterns, flagging potential risks, and opportunities (such as lead generation) for MSMEs, buyers, and financiers. AI tools can enable support services for MSMEs in regional languages and considerably improve the user experience without significantly increasing the costs.

Expanding Platform Capabilities: TReDS can introduce export factoring services, enabling MSMEs engaged in international trade to access immediate financing while ensuring compliance with foreign exchange regulations. MSMEs account for a significant share of exports in India, and thus export factoring services can enable the platform to considerably scale its operations.

APPENDIX

Figure A.1: MSME Surveys: Impact of TReDS on Scale of Operations (Turnover)

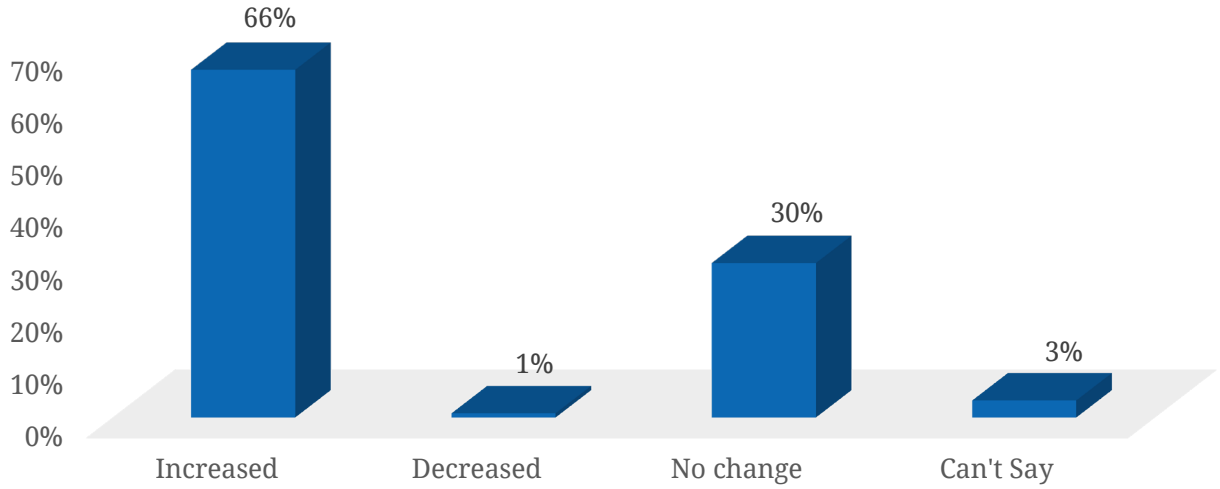


Figure A.2: MSME Surveys: Impact of TReDS on Investment (Physical capital)

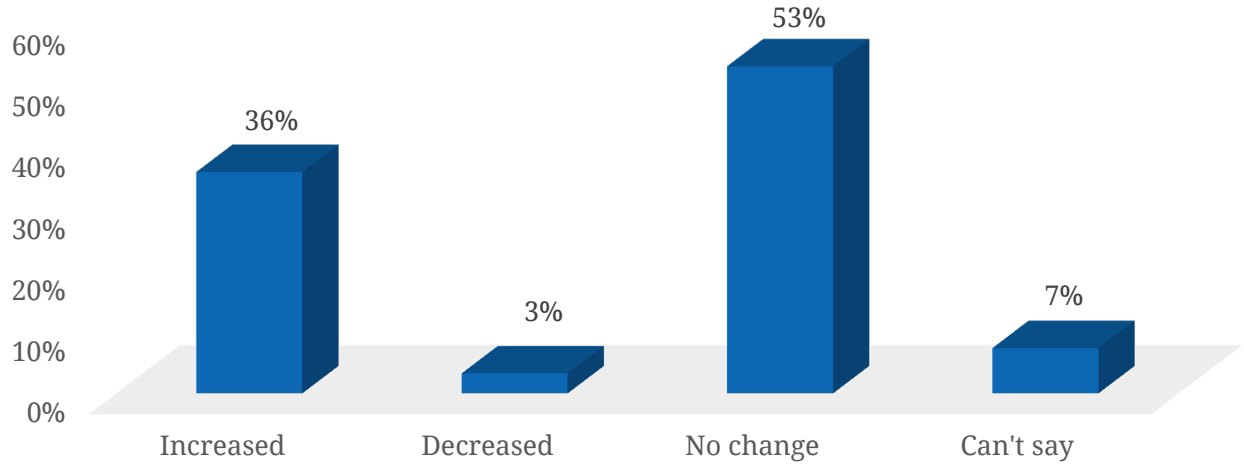


Figure A.3: MSME Surveys: Impact of TReDS on Employment (Employee Count)

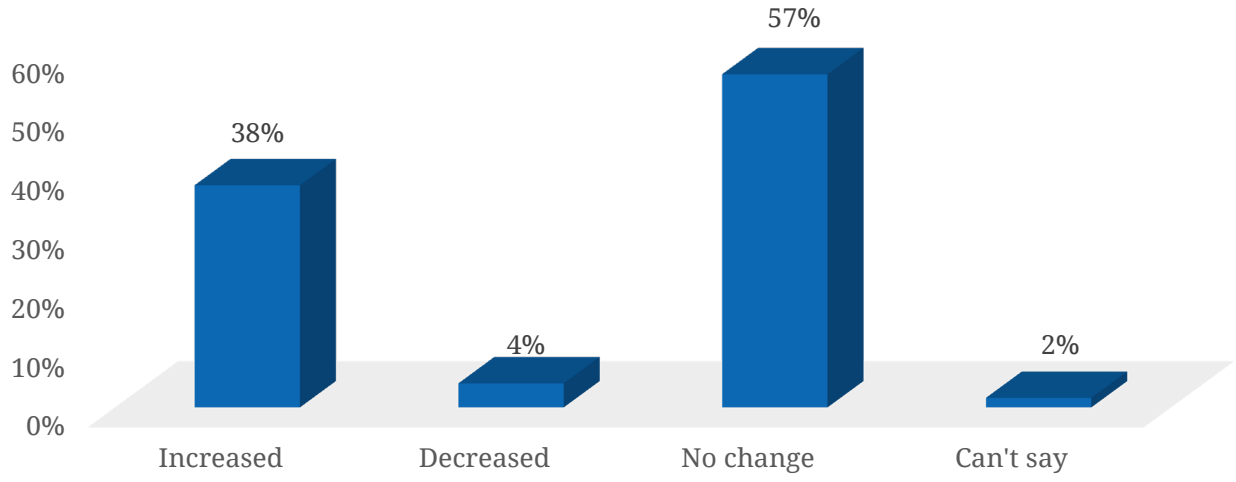


Figure A.4: MSME Surveys: Impact of TReDS on Productivity

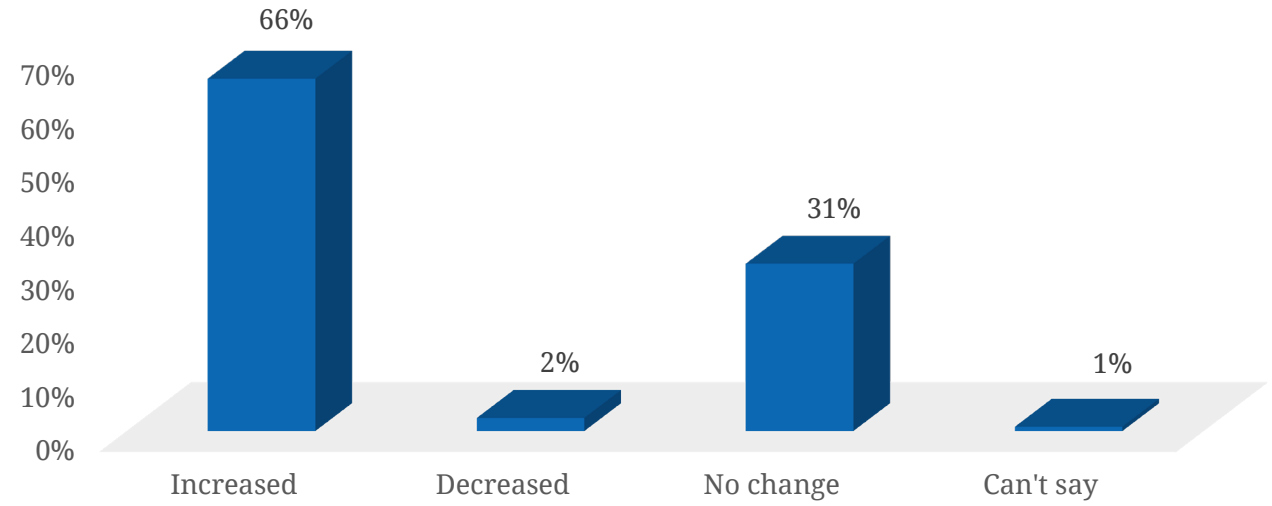


Figure A.5: MSME Surveys: Impact of TReDS on New Products and Services

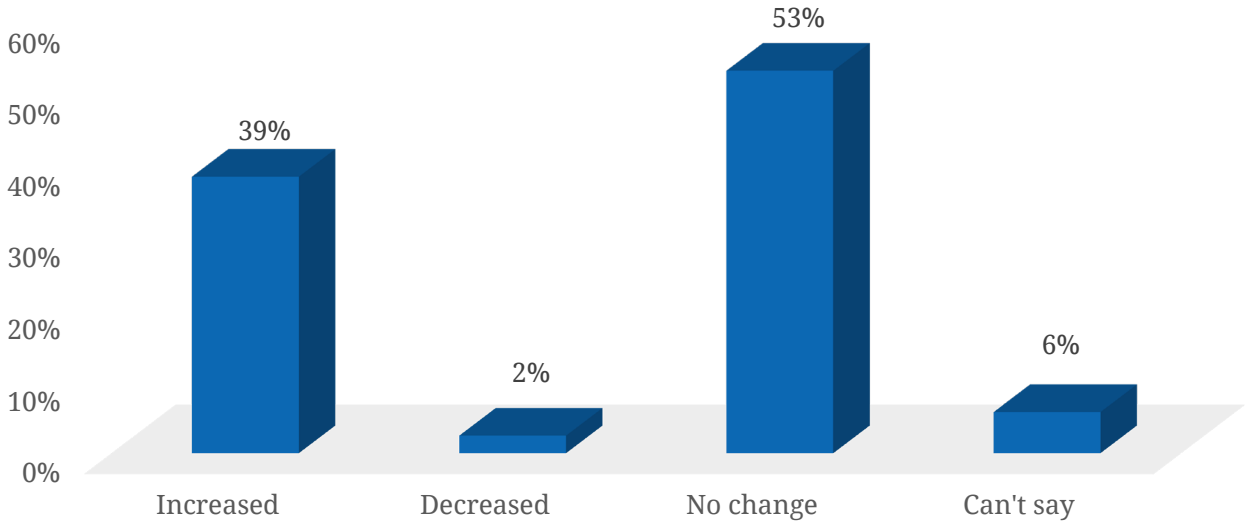


Figure A.6: MSME Surveys: Impact of TReDS on Quality of Products and Services

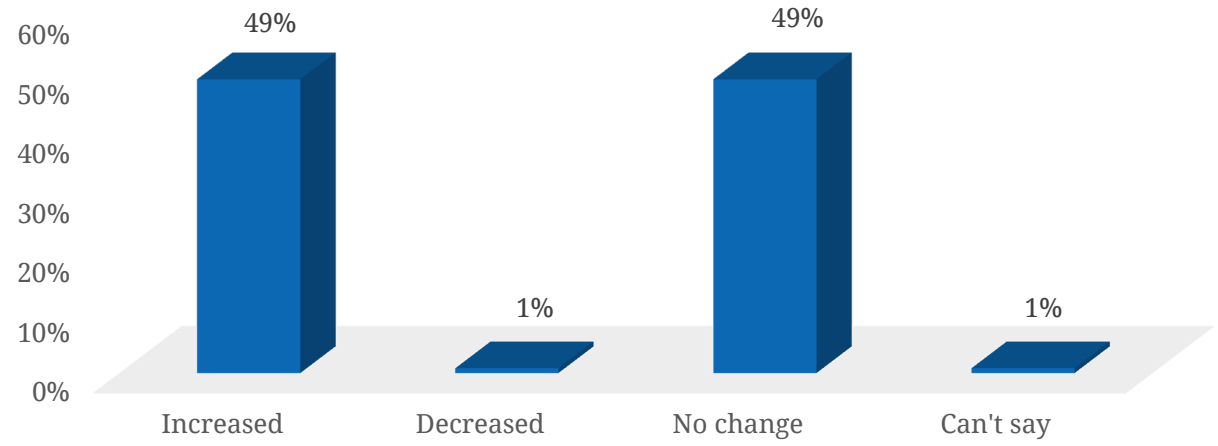


Figure A.7: MSME Surveys: Impact of TReDS on Customer (Buyer) Satisfaction

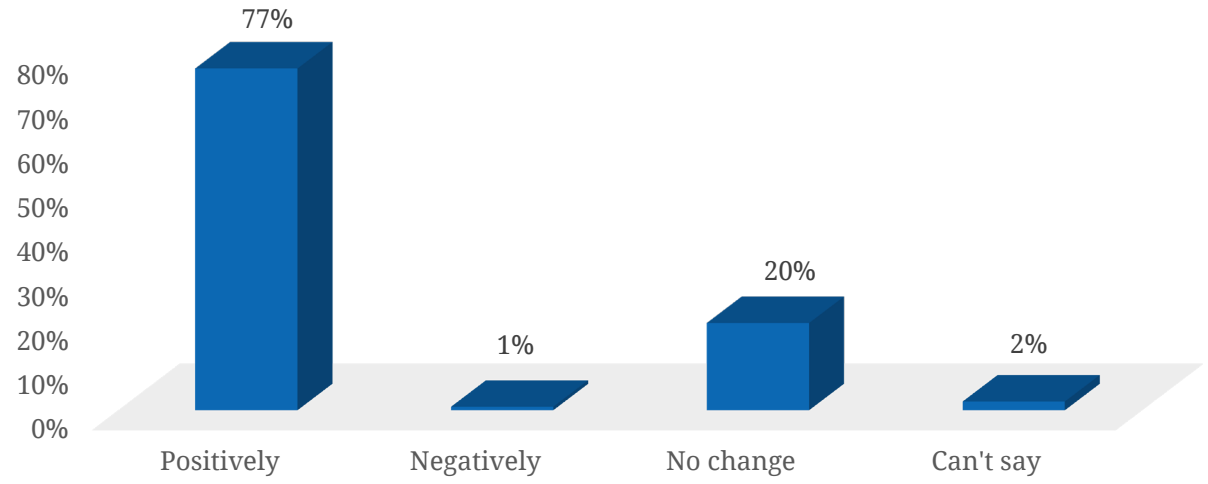


Figure A.8: MSME Surveys: Impact of TReDS on the Number of Buyers

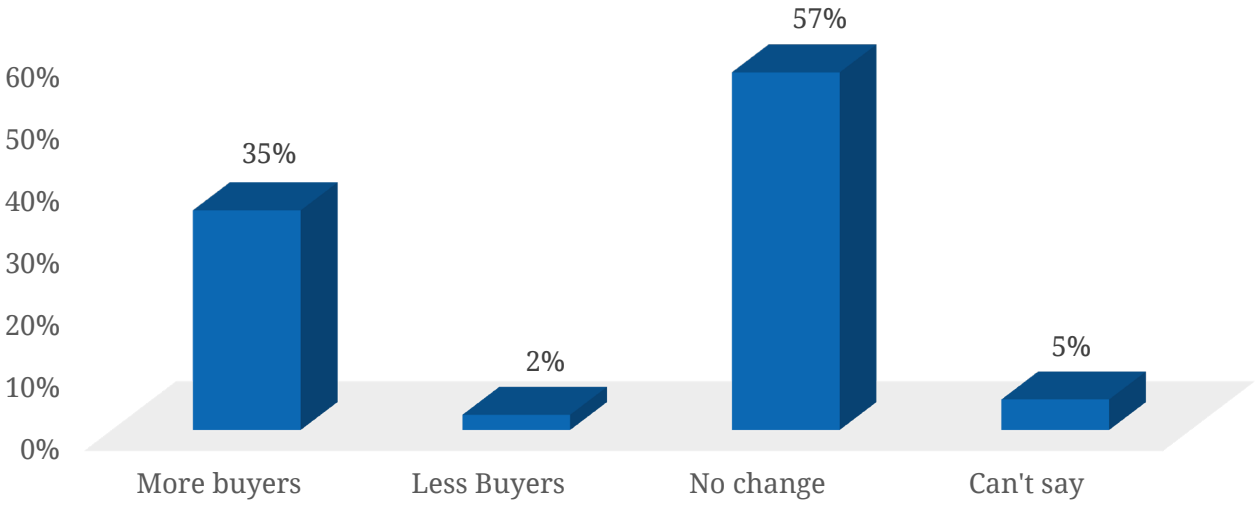


Figure A.9: MSME Surveys: Impact of TReDS on the Number of Suppliers

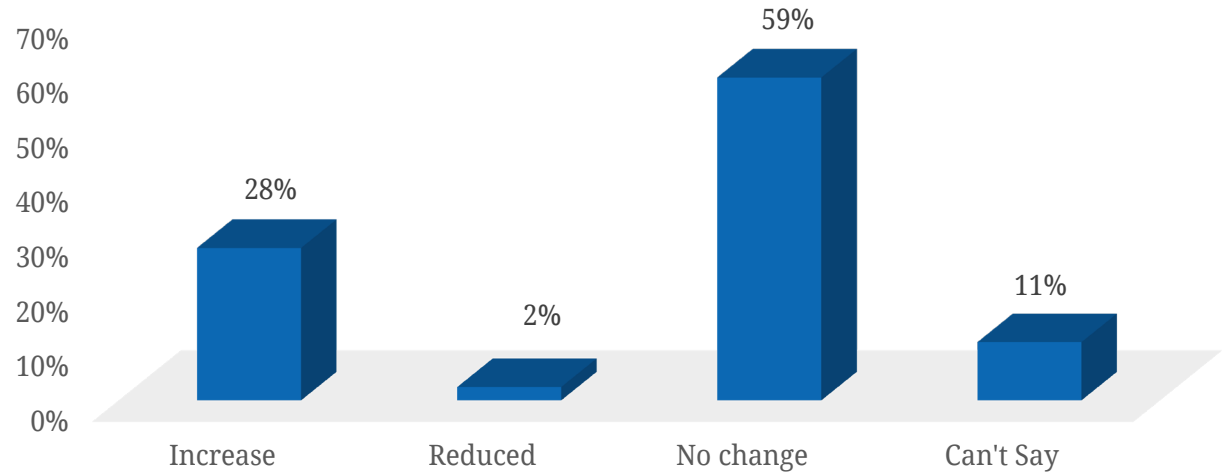


Figure A.10: MSME Surveys: Impact of TReDS on better payment terms with Supplier

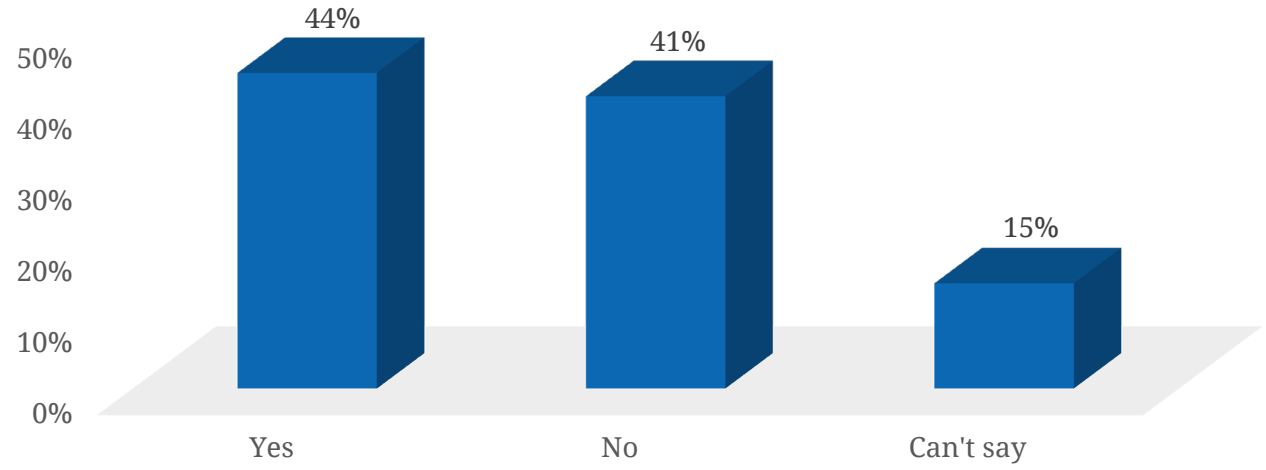
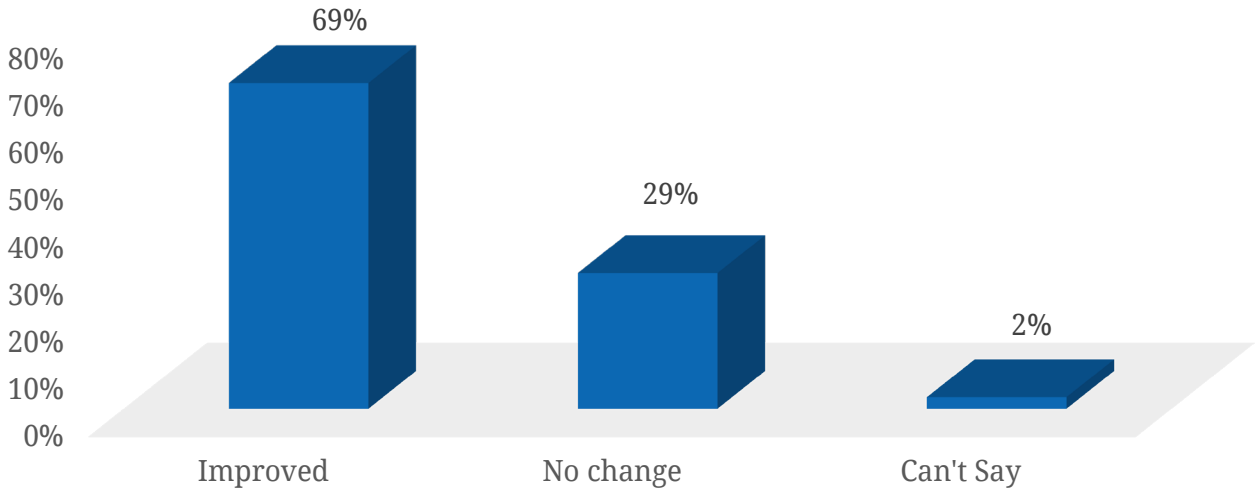


Figure A.11: MSME Surveys: Impact of TReDS on MSME Creditworthiness



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GLOSSARY

AA (Account Aggregator)
Entities that operate payment systems for financial transactions.

AI (Artificial Intelligence)
The simulation of human intelligence processes by machines, especially computer systems.

AoA (Articles of Association)
The document that defines the regulations for a company's operations.

AML (Anti-Money Laundering)
A set of procedures, laws, and regulations designed to stop the practice of generating income through illegal actions.

CGFSF (Credit Guarantee Fund Scheme for Factoring)
A government initiative aimed at providing credit guarantees to encourage factoring services.

CMIE (Centre for Monitoring Indian Economy)
An independent, private sector economic think tank based in India that provides economic and business data.

D&B (Dun & Bradstreet)
A global commercial data, analytics, and insights provider for businesses.

DiD (Difference-in-Differences)
A statistical technique used in econometrics and empirical research to estimate treatment effects.

E-Lien (Electronic Lien)
A legal claim on an asset, which is stored and managed electronically.

ERP (Enterprise Resource Planning)
Integrated management of main business processes, often in real time and mediated by software and technology.

FSR (Financial Sector Reforms)
Policy measures undertaken to improve the efficiency and stability of the financial system.

FY (Fiscal Year)
A one-year period used for financial reporting and budgeting.

GAME (Global Alliance for Mass Entrepreneurship)
An organization focused on creating and supporting mass entrepreneurship ecosystems.

GDP (Gross Domestic Product)
The total value of goods produced and services provided in a country during one year.

GeM (Government e-Marketplace)
An online platform for public procurement in India.

GSTN (Goods and Services Tax Network)
A non-profit organization that manages the IT system of the GST portal in India.

GLOSSARY

IT Returns (Income Tax Returns)
Tax forms filed by individuals or businesses to report their income, expenses, and other tax information to the government.

KYC (Know Your Customer)
The process of verifying the identity of a client to prevent fraud.

MCA (Ministry of Corporate Affairs)
An Indian government ministry responsible for the regulation of corporate affairs.

MOA (Memorandum of Association)
A document that outlines the scope and objectives of a company's operations.

NACH (National Automated Clearing House)
A centralized clearing service for facilitating interbank, high-volume electronic transactions.

NCGTC (National Credit Guarantee Trustee Company)
An institution providing credit guarantee support to lending institutions.

NTREES (Trade Receivables Engine for E-discounting)
A digital platform that facilitates discounting of trade receivables for MSMEs.

PAN (Permanent Account Number)
A unique identifier issued to individuals and entities for tax purposes.

PCR (Public Credit Registry)
A central repository of credit information for enhancing transparency in credit systems.

PSL (Priority Sector Lending)
The requirement for banks to lend a certain percentage of their total lending to specific sectors.

PSO (Payment System Operator)
Entities that operate payment systems for financial transactions.

Prowess
Proprietary financial database from Centre for Monitoring Indian Economy (CMIE).

SARFAESI (Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest)
An Indian law allowing banks and financial institutions to auction properties for loan recovery.

SDiD (Synthetic Difference-in-Differences)
A modern econometric method to estimate causal effects in the absence of randomized experiments.

TCI (Trade Credit Insurance)
Insurance that protects businesses against the risk of non-payment of commercial debt.

UBO (Ultimate Beneficial Owner)
The person who ultimately owns or controls a company or an asset.The simulation of human intelligence processes by machines, especially computer systems.

NOTES

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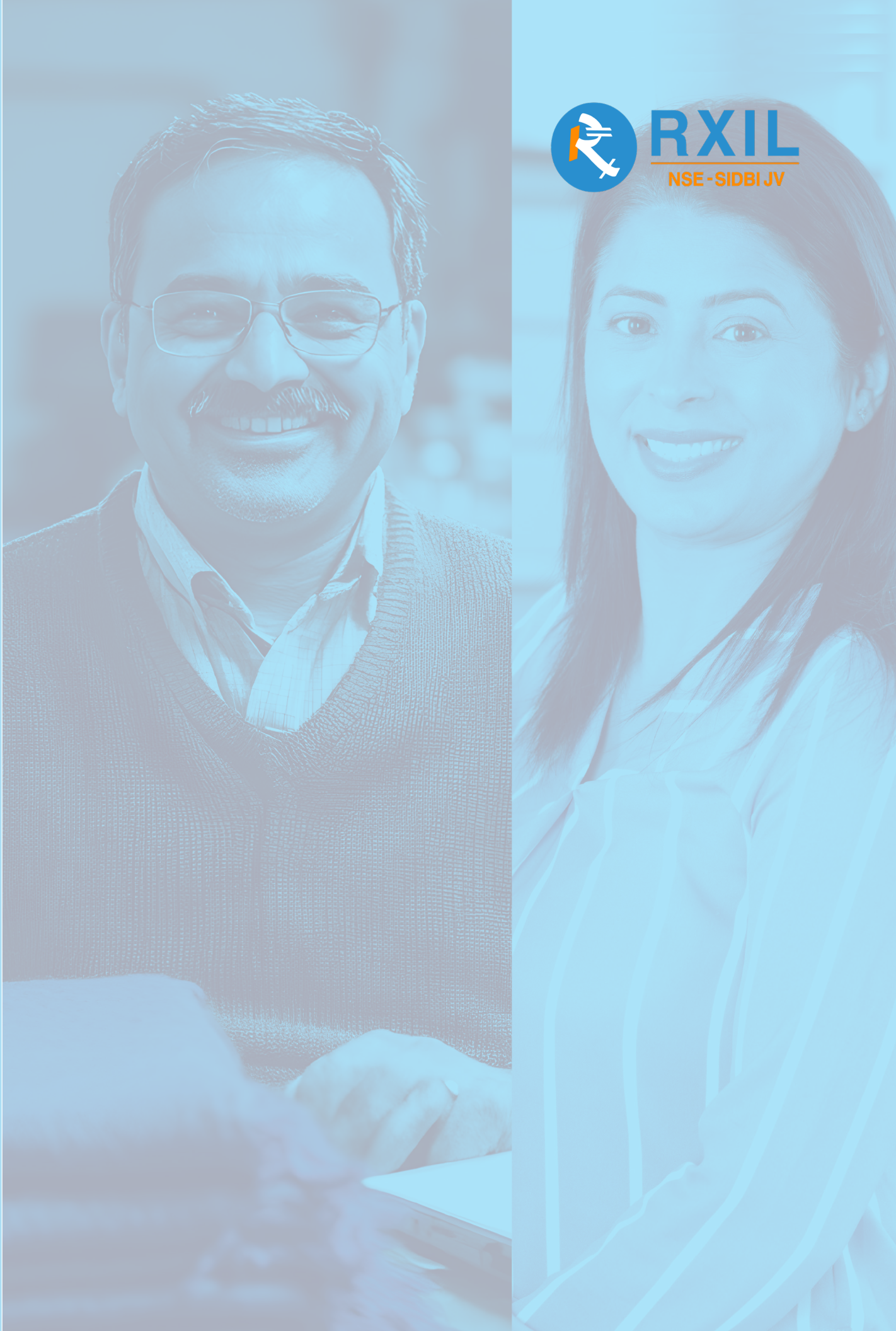
“Empowering MSMEs through digital financing solutions that help them reduce their receivables in the fastest way possible.”



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