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RESILIENCE TO SHOCKS OF MICRO, SMALL, AND MEDIUM-SIZED ENTERPRISES IN FIJI

William Greenland and Russell Toth

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ABSTRACT

This paper examines the resilience of micro, small, and medium-sized enterprises (MSMEs) in Fiji against the economic impacts of major shocks including the coronavirus disease (COVID-19) pandemic and climate-related hazards, using a survey of 2,400 MSMEs from early 2023. The analysis focuses on the effectiveness of government concessional loans in aiding pandemic recovery and evaluates MSMEs' strategies for climate resilience. Findings indicate that while government support has been pivotal in mitigating pandemic-related economic downturns, its effectiveness is varied, highlighting the necessity of accessible and targeted financial support. Furthermore, experiences with natural hazards significantly influence MSMEs' future resilience strategies, with a notable preference for self-funding recovery efforts among MSMEs that had experienced a significant climate-related disaster. The study underscores the importance of integrating immediate financial support with long-term climate adaptation strategies for MSMEs, offering insights for policy formulation aimed at enhancing economic resilience in emerging markets in the Pacific and beyond.

Keywords: micro, small, and medium-sized enterprises; COVID-19 pandemic; concessional loans; climate resilience; Fiji

JEL codes: Q54, L53, O56

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1 INTRODUCTION

Micro, small, and medium-sized enterprises (MSMEs) contribute significantly to employment, income generation, and overall economic growth across a number of emerging markets, including in Fiji. As of 2020, MSMEs account for 82.4% of all enterprises in Fiji and absorb 28.3% of the labor force (ADB 2023). However, MSMEs in Fiji can face significant challenges from major shocks, which can threaten their survival and the resilience of the MSME sector. The coronavirus disease (COVID-19) pandemic provided a critical shock to enterprises in Fiji, as the country was isolated for a significant period of time, disrupting the tourism sector, import/export activities, and domestic consumption. As a small island economy, Fiji is also recognized to urgently face the increasing threat of climate change-related events, including cyclones and flooding. These risks not only disrupt business operations but also threaten the livelihoods of those dependent on these sectors, thereby amplifying their vulnerability to economic shocks. Understanding the resilience mechanisms of MSMEs in Fiji against such shocks is critical for crafting policies that ensure their sustainability and, by extension, the broader economic stability of the country.

This paper seeks to explore the resilience of MSMEs in Fiji, focusing on their responses to major shocks including the COVID-19 pandemic and climate change-related disasters. It draws on an original survey of MSMEs conducted in the first half of 2023, based on a sample drawn from the most comprehensive listing of formally-registered MSMEs in Fiji. The survey involved a short phone survey conducted with several thousand MSMEs, followed by an in-person survey of 2,400 MSMEs. The surveys were targeted to cover enterprises in, and in the vicinity of, the three largest towns in Fiji—Lautoka, Nadi, and Suva—on the main island of Viti Levu. These geographic regions contain 80% of formally registered MSMEs, and so our sample, though geographically-targeted, is largely representative of MSMEs across Fiji. The sample also slightly oversamples women-owned and operated MSMEs.

First, we focus on the impacts of the COVID-19 pandemic on MSMEs in Fiji. We find that enterprises were still feeling the economic effects of the COVID-19 pandemic as of the first half of 2023, as just 8.3% of enterprises affected by the pandemic said that they had completely recovered, with 65% saying they had partly recovered. We then provide evidence on the impact of the major intervention from the Government of Fiji to support MSMEs during the pandemic, the COVID-19 Concessional Finance Support Package. While MSME access to bank credit is traditionally small in Fiji, accounting for just 10.9% of total bank lending and 7.7% of gross domestic product (GDP) as of 2022, the subsidized

loans and credit guarantees caused bank lending to MSMEs to increase sharply in 2021, to record levels (ADB 2023).

Focusing first on targeting, we find that the loans were accessed mostly by relatively larger enterprises with greater collateral holdings and prior access to capital, or by enterprises more deeply affected by COVID-19. The potential of regressive targeting is plausible given the context of the program—banks were deluged with thousands of applications for concessional loans relatively early in the pandemic, and had little opportunity to screen borrowers apart from reviewing loan application paperwork. It is plausible that lending would favor MSMEs with a lower risk profile. Focusing on the subset of MSMEs that existed prior to the onset of the pandemic in 2020, we then use propensity score matching to create statistically-comparable groups of MSMEs that did and did not receive access to concessional loans. We find that the concessional loans may have helped soothe the impacts of the pandemic for some enterprises, with enterprises that accessed loans 3.4 percentage points more likely to have completely or somewhat recovered, though this estimate is not statistically significant. It is possible that since a significant amount of the financing went to relatively better-established enterprises, while more vulnerable enterprises were more likely to apply in general, that selection neutralizes the intended impact of the program.

Second, we provide evidence on climate resilience of MSMEs in Fiji, focusing on differences between enterprises that had and hadn't previously experienced a significant climate-related shock. Notably, we find that these two groups have different expectations about mechanisms to recover from a climate shock. In particular, enterprises that had not yet experienced a major climate shock are much more optimistic about the role of government support in aiding their recovery from a prospective future shock, compared to those that had experienced such an event. Those that had previous experience with a disaster are more likely to expect to rely on their own savings to recover from such a shock.

This study contributes to broader literatures on the impacts and responses to the COVID-19 pandemic in emerging markets, the resilience of MSMEs to natural hazards that may be increasing in light of climate change, and responses to major economic shocks for the MSME sector in Fiji.

First, the COVID-19 pandemic has had profound impacts on MSMEs in emerging market economies, necessitating a variety of policy responses. One strand of literature provides prospective analysis early in the pandemic, providing advice on fiscal and monetary policies to help support economic actors, including MSMEs (Baldwin and Weder di Mauro 2020; Gourinchas, Philippon, and Vayanos 2021). Others document the impacts of the COVID-19 pandemic on MSMEs in specific emerging economies (e.g., Shafi, Liu, and

Ren 2020), though much of the evidence is quite descriptive, while others document entrepreneurial responses to the pandemic (e.g., Kuckertz et al. 2020). Finally, there is a small literature reporting on government financing programs intended to mitigate the impacts of the pandemic on MSMEs. Cerda et al. (2023) conduct two randomized controlled trials to evaluate the impact of government-guaranteed loans on MSMEs that had applied for loans earlier in the pandemic, but previously been rejected for loans from banks in Chile and Colombia. They find that the loans had take-up rates of 27% and 29%, respectively, and cause a significant positive impact on MSMEs' total liquidity with the formal banking system. Our study contributes to this literature by providing evidence on pandemic impacts on MSMEs from a small island economy. It also evaluates the role of a concessional lending program on mitigating the impacts of the pandemic, including by providing some of the first global evidence on the targeting of such a program.

Second, the impacts of climate change, especially climate-related natural hazards, on MSMEs in emerging market economies have been increasingly studied within the economic literature. In seminal work, Hallegatte and Rozenberg (2017) explore the economic vulnerability of MSMEs to climate change, emphasizing the disproportionate impact of disasters on these entities due to their limited capacity to absorb and recover from shocks. They advocate for enhanced financial and technical support mechanisms for MSMEs, alongside improved access to information regarding climate risks. Noy and Yonson (2018) focus on the role of insurance in economic recovery following disasters. They argue that accessible insurance products tailored to the needs of MSMEs can play a critical role in their ability to withstand and recover from the effects of climate-related hazards. These studies collectively underscore the urgent need for comprehensive strategies that include financial products, policy interventions, and climate information dissemination to safeguard MSMEs in emerging markets against the adverse effects of climate change. We contribute to this literature by providing evidence from a comprehensive sample of MSMEs in an emerging market, on past impacts of natural hazards, and how past experience of natural hazards impacts expectations for mitigation and recovery mechanisms.

Finally, we provide new evidence on the impacts of economic shocks on MSMEs in Fiji, and policies to mitigate disaster risk. MSMEs in Fiji have faced significant risks and shocks, particularly from the COVID-19 pandemic and climate change. These dual crises present compounded challenges for its economy, heavily reliant on tourism and agriculture—sectors especially vulnerable to both pandemics and climate-related events. A study by Kumar and Singh (2020) assesses the pandemic's immediate economic impact in Fiji, noting significant declines in revenue and employment within MSMEs. They stress

the importance of government support programs to sustain businesses through the crisis. A report by the ADB (2019) outlines the vulnerability of the Pacific, including Fiji, to climate change, emphasizing the need for adaptive strategies to safeguard the future of MSMEs in these regions. We contribute to the literature on the impacts of economic shocks on MSMEs in Fiji by providing new evidence on the impacts and mitigation of the COVID-19 pandemic, and responses to natural hazards, from a comprehensive survey of MSMEs in Fiji.

In Section 2, we provide background information on the economic impacts of COVID-19 in Fiji, the government's loan assistance for MSMEs that was intended to mitigate the impacts of the pandemic, and the primary climate hazards faced by MSMEs in Fiji. In Section 3, we describe our primary data source, a survey of MSMEs, and provide descriptive evidence on COVID-19 impacts, concessional loan targeting, and climate hazards faced by MSMEs in our sample. In Section 4, we describe our methodology for identifying the causal impacts of COVID-19 concessional loans on pandemic recovery, and the impacts of climate events on MSMEs' mitigation strategies, while in Section 5, we report on the main findings. In Section 6, we provide a brief discussion and policy application of our findings, and in Section 7, we provide concluding remarks. Figures, tables, and some additional information is provided in the supplemental Appendix.

2 BACKGROUND AND CONTEXT

In this section we provide important background information that will inform the later sections. First, we briefly describe the economic impacts of the COVID-19 pandemic in Fiji. We then describe the Government of Fiji's COVID-19 Concessional Finance Support Package, which was designed to help mitigate the impacts of the pandemic on MSMEs. Finally, we provide information on the primary climate hazards and risks faced by MSMEs in Fiji.

2.1 Impacts of the COVID-19 Pandemic in Fiji

The COVID-19 pandemic delivered a significant blow to Fiji's economy, primarily due to the country's heavy reliance on tourism, which accounts for about a third of GDP and a similar proportion of employment. The first case of COVID-19 in Fiji was reported in March 2020, leading to immediate and stringent measures to contain the virus's spread. The Government of Fiji implemented its first lockdown in Lautoka, one of the country's major cities, in March 2020, followed by several localized lockdowns as cases were detected in different parts of the country. In addition to internal restrictions, Fiji closed its international

borders in March 2020, effectively halting the influx of tourists and significantly impacting the economy.

The cessation of international travel and tourism due to the pandemic led to unprecedented economic contractions. The tourism sector, which directly and indirectly supports over one-third of the workforce,¹ faced massive layoffs and reduced incomes, affecting livelihoods and decreasing domestic consumption. The ripple effects were felt across various sectors, including agriculture, manufacturing, and services, further exacerbating the economic downturn. To mitigate these impacts, the Government of Fiji implemented fiscal measures aimed at supporting businesses and individuals. These included wage subsidy schemes, concessional loans for affected businesses, and tax relief measures. Despite these efforts, the economy contracted significantly in 2020, with GDP shrinking by an estimated 19%, marking one of the most severe recessions in the country's history.

Fiji's economic recovery post-COVID-19 has been a concerted effort, marked by the reopening of international borders in December, 2021. This strategic move aimed to attract vaccinated tourists under strict health protocols, gradually restoring one of the country's vital revenue streams. The Government of Fiji also implemented various fiscal policies to stimulate economic activity, including tax incentives for businesses, wage subsidies, and financial support packages to alleviate the pandemic's impact on both enterprises and the workforce.

The focus on reviving tourism, alongside domestic stimulus measures, has led to positive signs of economic rebound in 2022 and 2023. Growth projections have improved, with the economy beginning to recover from one of the most significant contractions in its history. Efforts to diversify the economy have also been prioritized to reduce vulnerability to future shocks. However, the path to full recovery remains challenging, with the global economic climate and the potential for future COVID-19 variants posing ongoing risks. Fiji's experience underscores the need for resilience and adaptability in its economic strategies, ensuring long-term sustainability and stability.

2.2 The Fijian Government's COVID-19 Concessional Finance Support Package

The Government of Fiji announced the COVID-19 Concessional Finance Support Packages to aid MSMEs in Fiji in June 2020. The loans were explicitly aimed to support existing, majority Fijian-owned MSMEs that had been impacted by the economic fallout of

¹ Government of Fiji, Ministry of Finance. 2024. Tourism Fact Sheet. <https://www.finance.gov.fj/wp-content/uploads/2024/02/Fact-Sheet-Tourism.pdf>.

the COVID-19 pandemic, with a unique skillset and demonstrated capacity to create employment within a key economic sector and support the export of Fiji-made products.

Applications were first reviewed by Business Assistance Fiji (BAF) panel members, who were sourced from organizations including the Fiji Institute of Accountants, Fiji Chamber of Commerce and Industry, Women in Business and Fiji Commerce and Employers Federation.² The Ministry of Commerce, Trade, Tourism and Transport facilitated the operations of BAF. Applicants were required to submit a number of documents and pieces of information, including business registration, tax identification number, bank account details, business plan, cash flow projections, and application form. Larger enterprises were additionally required to submit their business license, latest financial statements, and tax documentation. Eligible enterprises needed to be operational, and for small and medium enterprises they needed to have at least 60% of the number of employees as they had in December 2019.

Loans were offered in 3 categories:³

1. **COVID-19 Concessional Loan Facility for New and Existing Microenterprises.** Available to new and existing microenterprises with a gross turnover less than F\$50,000, for working capital support, capital investment, and new business venture. The maximum funding amount was F\$7,000. The concessional interest rate was 0.5% per annum. The repayment term was 5 years, inclusive of a 1-year grace period in which no principal or interest payments needed to be made.
2. **COVID-19 Concessional Loan Facility for Existing Small Enterprises.** Available to existing small enterprises with a gross turnover between F\$50,000 and F\$300,000, for working capital support and capital investment. The maximum funding amount was F\$14,000. The concessional interest rate was 1.0% per annum. The repayment term was 5 years, inclusive of a 1-year grace period in which no principal or interest payments needed to be made.
3. **COVID-19 Concessional Loan Facility for Existing Medium Enterprises.** Available to existing medium enterprises with a gross turnover between F\$300,000 and F\$1,250,000, for working capital support and capital investment. The maximum funding amount was F\$21,000. The concessional interest rate was 1.5% per annum.

² Government of Fiji, Ministry of Trade, Co-operatives, Small and Medium Enterprises. 2022. Fiji Business Concessional Loan Brief. 5 May. <https://www.mcttt.gov.fj/fiji-business-concessional-loan-brief/>.

³ Fiji Sun. 25 May 2020. "A-G Announces SME COVID-19 Business Assistance Fiji Package." <http://fijisun.com.fj/2020/05/25/a-g-announces-sme-covid-19-business-assistance-fiji-package/>.

The repayment term was 5 years, inclusive of a 1-year grace period in which no principal or interest payments needed to be made.

2.3 Climate Risks and Enterprises in Fiji

In Fiji, MSMEs are increasingly confronted with significant risks due to climate change, notably from the nation's susceptibility to extreme weather events, sea-level rise, and shifting weather patterns. The frequent occurrence of cyclones, floods, and droughts can inflict immediate damage to the operations and assets of MSMEs, disrupt their supply chains, and cause considerable economic losses. Furthermore, sea-level rise poses a unique threat to coastal businesses through erosion, inundation, and saltwater intrusion, where many MSMEs are active in sectors such as agriculture and tourism. The variability in weather patterns also presents operational and planning challenges, particularly for those in agriculture, fisheries, and tourism, by affecting agricultural cycles, water availability, and energy needs.

The challenges MSMEs face in mitigating and adapting to these risks are multifaceted. Financial constraints significantly limit their ability to invest in resilience-building measures, such as infrastructure upgrades or the adoption of new business models. Additionally, there is a notable gap in access to crucial information and technology that could facilitate effective climate change mitigation and adaptation efforts. Regulatory and policy barriers further complicate the situation, making it difficult for MSMEs to navigate support mechanisms and benefit from government incentives aimed at promoting resilience. Moreover, a lack of technical skills and knowledge impedes enterprises from implementing robust climate change adaptation and mitigation strategies, including the development of business continuity plans and the integration of sustainable practices.

3 DATA AND DESCRIPTIVE EVIDENCE

In this section we provide an overview of our main data sources. We first describe the survey exercise and provide some basic descriptive evidence on the sample. We then provide some preliminary evidence on our main topics of interest: the impacts of COVID-19 on MSMEs, and MSMEs' climate resilience.

3.1 Survey on MSMEs in Fiji

The survey exercise was conducted as part of the baseline survey activity for an ongoing impact evaluation on access to finance for MSMEs in Fiji. The research team worked with

the Fiji Bureau of Statistics (FBoS) and Innovations for Poverty Action (IPA) over 2022-2023 to obtain an existing listing of 10,934 registered enterprises. This involved top-coding an unknown number of enterprises with turnover over F\$3 million, including most multi-location enterprises, and enterprises with essential missing information. Some further enterprises were removed due to being in one of the three ineligible sectors (highly concentrated sectors such as public utilities).⁴ After this first stage of filtering, 7,187 enterprises remained.

Based on the listing of 7,187 screening survey enterprises, FBoS, with supervision and support from IPA, conducted a screening survey from February to May 2023. The survey had the objective of reaching a final sample of 2,400 enterprises that are eligible for an in-person baseline survey. Hence the screening survey ended once the target of 2,400 had been reached, with some buffer to allow for survey refusals. Screening was primarily completed through 10-minute phone surveys, however in April to May 2023, some in-person screening surveys were conducted while the baseline survey was ongoing.

Female-owned and -led enterprise owners were prioritized for inclusion through the screening survey. The business registry variable on gender, which had missing observations for 53.1% of MSMEs, was used to sort otherwise-eligible female-owned enterprises to the top of the list for the screening survey. Of the 1,364 enterprises tagged as female-owned in the initial screening sample frame, all but nine were contacted for screening. As we document later, this approach led to a slight oversampling on female-owned enterprises.

The screening survey had a hard filter and a soft filter. The hard filter required all enterprises in the baseline survey sample to have turnover below F\$3 million, and to be located within 40 miles of one of the three major population centers (Lautoka, Nadi, or Suva). If enterprises failed to meet either criterion then the screening interview ended immediately. The screening survey then further queried enterprises about their past experience with access to finance (both account holding and borrowing), and their eligibility (in terms of documentation and holding collateral) and interest in obtaining financing in the next 18–24 months. In practice, the primary soft filter that was imposed was that enterprises would have the necessary minimal documentation to receive a loan: formal business registration, tax ID (TIN registration), and banking history.

The baseline survey was implemented from March to May 2023, by FBoS, with supervision and support from IPA. The baseline survey involved an in-person interview of 60 minutes on average. The survey covered topics including enterprise contact information; enterprise characteristics (e.g., ownership, documentation, main activity,

⁴ A full listing of sectors included in the study is provided in the Appendix.

history); financing (accounts, past borrowing, past loan denials, active loans, loan repayment, COVID-19 special loans, experience with movable collateral, informal financing, interest in future financing); business obstacles; financial profile (revenues, expenses, assets, liabilities); enterprise employment profile; experience and impacts of COVID-19 on the enterprise; climate change vulnerability and resilience of the enterprise; and overall enterprise resilience.

Unfortunately, the data on the financial profile of most enterprises is incomplete. The majority of enterprises complete formal business financial statements for tax purposes, and many were unwilling to share any financial information that hadn't already been formally audited. Many of these audited financial statements were not available at the time of the baseline survey, and hence are intended for collection during the endline survey. For the purposes of this paper, we have limited access to detailed MSME financial information.

3.2 Profile of MSMEs from Survey Data

The baseline survey is based on responses from 2,400 MSMEs located within a 40-mile radius of Lautoka, Nadi, or Suva, which included six regional towns, such as Ba, Nausori, and Sigatoka, making nine locations overall. In Fiji, microenterprises are defined as enterprises with less than F\$50,000 in annual turnover, small enterprises are defined as having F\$50,000 to F\$300,000 in annual turnover, while medium enterprises are defined as having F\$300,000 to F\$1.25 million in annual turnover. In 2022, 61% of baseline survey respondents had a turnover less than F\$50,000, while small enterprises and medium-sized enterprises each constituted 17% of respondents. The remaining 5% of enterprises had a turnover between F\$1.25 million and F\$3 million. Lower-turnover microenterprises tend to be concentrated outside of the major population centers of Suva, Nadi and Lautoka. Nonetheless, even in those three cities, microenterprises considerably outnumber small and medium-sized enterprises. The three cities are home to 64% of respondents in the baseline survey.

The 2,400 MSMEs identified in the baseline survey were engaged in a wide range of economic activity. In total, 13 different enterprise sectors are represented in the survey. By far the most represented sector was "Wholesale & Retail Trade," which accounts for 44% of all MSMEs in the baseline survey. Other prominently featured sectors include "Accommodation & Food Services" (12.3%) and "Other Services" (11.6%).

The majority (67.9%) of MSMEs identified in the baseline survey employed at least one other person. Among these 1,629 enterprises, microenterprises employed, on average, 4.0 other persons, while enterprises with a turnover between F\$50,000 and F\$3 million

employed 9.6 persons on average. Both categories of MSMEs were most likely to engage employees on a permanent basis, while smaller enterprises were more likely to hire workers temporarily, and to have family members work for the enterprise (but not be paid a wage) than larger enterprises. Of enterprises with at least one employee, “Construction” (19.6 persons), “Manufacturing” (8.8 persons), and “Financial and Insurance” (8.4 persons) sectors had the highest average number of employees.

We identify the gender of enterprise ownership, distinguishing female-owned and male-owned enterprises, and enterprises that are jointly owned by women and men. Of the MSMEs surveyed, 56.8% were male-owned, 29.1% were female-owned, while the remaining 14.1% were jointly owned. It is likely that our sample is over represented by female entrepreneurs, due to the sampling strategy outlined earlier.

Women are much more likely to own microenterprises than SMEs. Of enterprises in which females have a majority ownership interest, 79.5% had a turnover less than F\$50,000 in 2022. By contrast, just 60% of majority-male-owned enterprises fell into the microenterprise category. On the other hand, geographic heterogeneity in female-owned enterprises appears slight. For example, while Nadi and Lautoka have the smallest proportions of female-owned (or jointly-owned) enterprises (34.8% and 41.9%), Suva has one of the highest proportions (47.8%). Female ownership therefore does not seem to necessarily be concentrated in the major economic centers.

3.3 Impacts of COVID-19 Pandemic on MSMEs in Fiji

The baseline survey also included an additional module on COVID-19. The overwhelming majority (82.9%) of the 2,400 MSMEs reported that their business activities were affected by the pandemic. As shown in Figure A1, 74.8% of enterprises experienced a decline in profits in 2021, with 26.2% of enterprises saying that 2021 profits were down by at least 75% relative to expectations. However, many enterprises appeared to bounce back in 2022, with half (51.7%) reporting that profits were above expectations. Of course, this uptick in business confidence may be a reflection of a quicker than expected return from COVID-19 restrictions. Nonetheless, while profits may have been higher than expected, just 8.3% of MSMEs said that they had completely recovered from the pandemic at the time of being surveyed between March and May 2023, with 64.5% of enterprises saying that they had only somewhat recovered.

Enterprises that were more deeply affected by the impacts of the pandemic tended to be more likely to apply for the relief measures included in the government’s COVID-19 Concessional Finance Support Package. In the baseline survey, 504 MSMEs reported

accessing a loan provided through this support package. Figure A2 demonstrates that those enterprises that took out such a loan tended to be about 25% more likely to have laid off workers, and about twice as likely to have sold assets, to cope with the effects of the pandemic.

Two policy questions therefore arise from these observations:

- (i) Firstly, which MSMEs accessed concessional loans? Was the targeting of the loans progressive or regressive (were loans more likely to go to smaller, more vulnerable firms, or to larger firms with more resources)? We address this question in the following sub-section.
- (ii) Secondly, have these concessional loans actually helped enterprises recover from the effects of the pandemic? We address this question in Section 5.1 with the main results.

3.4 Targeting of COVID-19 Concessional Loans

Table A1 demonstrates that the enterprises that accessed a concessional loan tended to be larger (both in turnover and number of employees), and were more likely to have previously accessed credit than enterprises that did not take out a concessional loan. Of enterprises that received a loan, 53.5% were microenterprises, while 46.5% were small or medium-sized enterprises. Meanwhile, 62.9% of enterprises that didn't receive a loan were microenterprises, while only 37.1% of enterprises that didn't receive a loan were small or medium-sized enterprises. Loan recipient enterprises have 4.8 employees on average, compared to 4.2 for non-recipient firms. Loan recipient firms are also more likely to possess assets, both real property and movable collateral.

This suggests that the targeting of the concessional loan program was somewhat regressive. It is important to note that we don't have data on loan application behavior, so we cannot disentangle whether regressivity was caused more by smaller firms being less likely to apply ("demand side"), or more by smaller firms being more likely to be rejected after applying ("supply side"). In any case, somewhat regressive targeting may be a reflection of the reality of administering such a program, in which loan assessment needed to be conducted on a relatively tight schedule during a time of mobility restrictions that would have made the loan assessment process more difficult. In this case, it was generally not possible for loan assessors to have in-person meetings with MSMEs, while at the same time the program represented the largest increase in MSME lending in Fiji's history (ADB 2023). It is perhaps not surprising that enterprises that could prove creditworthiness and

likelihood to continue into the future, on paper, were favored with access to support. The social progressivity of the program is bolstered somewhat by the fact that loan recipient enterprises had more employees, and hence the concessional loan support may have also benefited workers, not just enterprise owners.

These findings on heterogeneity of loan targeting also suggest that an analysis of the impact of loans will need to consider this systematic heterogeneity in loan targeting. We describe our approach in Section 4.1.

3.5 Impacts of Natural Hazards on MSMEs in Fiji

The baseline survey also included a module asking MSMEs about their exposure to natural hazards and climate risk, that could lead to temporary closure or a significant reduction in revenue for up to 4 weeks. Table A1 shows that just over half of enterprises have experienced a significant natural hazard in the past, and a similar proportion believe they face a serious risk of being exposed to such a natural hazard in the future.

Figure A3 provides enterprises' subjective perception of their exposure to significant natural hazards, disaggregated by turnover, though responses tend to be relatively similar between microenterprises, and small and medium enterprises. We find that nearly half of the enterprises (48%) stated that a cyclone could lead to temporary closure or a significant reduction in revenue for up to four weeks. Other frequently cited natural hazard and climate-related risks include flooding (35.2%) and earthquakes (4.1%). Only 1.8% of the enterprises perceived sea level rise as a substantial threat to their enterprise, and an even smaller number perceived drought as a threat.⁵

If any of these risks had already impacted their enterprise, respondent enterprises were asked about the support mechanisms they relied on to cope with the aftermath. Additionally, enterprises that had not yet encountered these risks were asked about which support mechanisms they would rely on in the event of future occurrences of these risks. Figure A4 summarizes their responses. Interestingly, of the 711 enterprises that had previously suffered a serious climate event, most (79.3%) used their own savings to mitigate the impact of the event. Only 11.3% accessed government support, while less than a 10th received help from the financial service industry either in the form of a loan (7.7%) or an insurance payout (3.2%). In contrast, a smaller proportion (62.2%) of the 648 MSMEs that had not yet suffered a serious climate event stated that they would need to rely on

⁵ It is worth re-emphasizing that the survey was based on an enterprise database that excludes primary farming, fishing and forestry enterprises. It may include enterprises involved in other agricultural value chain functions—transport, storage, processing, etc. However, primary agricultural enterprises may be even more exposed to many natural hazards, and they are not represented in our study.

savings. On the other hand, they were much more likely to believe that government support (43.8%), or support from the financial sector through loans (31.8%) or insurance (8.2%), would assist their recovery. This suggests that enterprises with less direct experience of a serious climate event may overestimate the extent of outside support to aid their recovery. This provides suggestive evidence that enterprises that have more past experience with natural hazards tend to be more self-reliant. However, it does not account for the possibility that enterprises that display more self-reliant behaviors might have selected into sectors, geographies, or other characteristics that give them more exposure to natural hazards.

3.6 Allocation of Natural Hazards to Sampled MSMEs

In Table A2 we provide evidence on the correlates of having experienced a climate shock, in our sample. This helps us weigh the plausibility of asserting that climate-shocks are as-if random, or whether enterprises with certain characteristics might have made past choices that give them more exposure to natural hazards. It also provides insights on empirical strategies that might allow us to more plausibly identify the impacts of climate shocks on enterprises.

To do so, we employ a simple linear probability model with a number of explanatory variables capturing the age of enterprise, total employees, ownership of property, credit access outcomes, gender of firm ownership (male=1), a dummy for microenterprise, age of the enterprise, and a number of sectoral dummies. We vary location fixed effects by the three main towns, and clustering of standard errors by town. Our preferred specification is in column (3).

We find only mild evidence for a systematic relationship between these characteristics and climate risk. In our preferred specification, coefficients are often economically small. Only two sector dummies are significant: that for arts (with a positive 10.5% correlation with likelihood of experiencing a natural hazard), and the real estate sector (negative 21.2% relationship with experiencing a natural hazard); we suppress the other, economically and statistically insignificant sector dummies, for space. These are two of the more minor sectors in our data. Ownership of real property and intangible property show up as economically and statistically significant, along with microenterprise status. Hence from this we conclude that allocation of climate hazard shocks is largely idiosyncratic, though in our analysis of the impacts of climate hazard shocks we control for a targeted set of covariates, including gender, age, age-squared, turnover and collateral ownership (real, movable or intangible). We describe our methodology in more detail in Section 4.2.

4 METHODOLOGY

In this section we describe our methodology for identifying the causal impacts of COVID-19 concessional loans on pandemic recovery, and the impacts of climate events on MSMEs' mitigation strategies.

4.1 Impacts of COVID-19 Loans

As demonstrated in Section 3.4 and Table A1, there is heterogeneity in access to COVID-19 concessional loans, as larger firms (turnover, employees, assets) were more likely to receive the loans. It is also plausible that there are unobservable factors in loan application or loan approval, based on the risk, profile, reputation, or other aspects of the enterprises. Unfortunately, we lack a clear source of variation in access to loans. Nonetheless, it is plausible that there was some arbitrariness in loan allocation, as application filling and review was conducted under a rushed and pressured process in the early months of the pandemic. Hence it is plausible that there may be some overlap in enterprise characteristics between MSMEs approved for loans, and those that did not receive loans (whether due to being denied access upon applying, or failing to apply or qualify at all). For this analysis, we limit our sample to enterprises that were active prior to the onset of the pandemic in 2020.

To address the potential for endogenous selection into loan access, we employ propensity score matching (PSM), to impose balance on a rich set of observables between loan recipients and non-recipients (DIME Analytics, n.d.). The validity of PSM rests on the assumption that, conditional on these observable characteristics, treated units can be directly compared with untreated units. To do so, we follow well-established procedures in the literature. We utilize a logit regression for the matching equation, given the lack of guidance on functional form (Smith 1997). In our preferred specification, units are then matched through nearest neighbor 1-1 matching, with a caliper of 0.01. "Treatment" is defined as accessing a concessional COVID-19 loan.

The set of observable characteristics over which the propensity scores are calculated includes the following, which were selected because they were fixed prior to the pandemic, or irrelevant for loan eligibility:

- **Enterprise characteristics.** Age of enterprise, gender of ownership, past exposure to significant natural hazards;
- **Credit access.** An indicator variable showing whether an enterprise had an active loan when COVID-19 hit in March, 2020; and

- **Fixed effects.** Location and sector.

As shown in Figure A5, which displays the common support histograms, matching only excludes a tiny fraction of enterprises (<1%). This suggests, perhaps surprisingly, that selection into loan access may be moderate. From this figure we can also see that there is some heterogeneity in the sample, as untreated enterprises tend to have lower propensity scores, relative to treated enterprises. However, 1:1 matching ensures that there is balance between treatment and control across the support of the propensity score distribution covered by treatment units.

We are limited in the set of outcomes we can consider, as the survey was primarily designed to serve as a baseline for an ongoing study. We also have limited access to financial data on enterprises, as the majority of enterprises failed to provide baseline financial data. Hence we focus on the causal effect of accessing a concessional loan on whether enterprises laid off workers or sold assets to address the impacts of the pandemic, and enterprises' own subjective assessment of their recovery from the pandemic. These are binary outcomes, with the latter variable taking on two values: recovered (either completely or somewhat), and not recovered. It is more difficult to interpret the variables on laying off workers or selling assets, as firms may have already been carrying out these actions when considering and deciding to apply for concessional loans. It is possible that the loans may have mitigated an even larger employee or asset drawdown.

We then run the outcome regressions, based on an OLS linear probability model, with robust Abadie-Imbens standard errors (Abadie and Imbens 2016).

$$y_i = \alpha + \beta T_i + \gamma \mathbf{x}_i + \epsilon_i$$

where treatment, T_i is defined as being equal to one if a MSME has received a COVID-19 concessional loan, and zero if not.

We first run this model on the unmatched sample ("OLS analysis"). We then run the same model on the preferred PSM matched sample (nearest neighbor 1:1 matching, with a caliper of 0.01), which produces estimates of the average treatment effect on the treated (ATT). We also report on a robustness check in the adjacent columns to the main PSM results in Table A4, which adopts a 1:3 nearest neighbor matching mechanism, and widens the caliper to 0.02.

4.2 Climate Resilience

On the assumption that natural hazards largely affect MSMEs idiosyncratically in our sample, we quantify the extent to which past exposure to these types of hazards has a

causal impact on enterprises' perception of the mechanisms available to assist recovery from future disasters.

We follow a similar approach as in Section 4.1. First, we conduct propensity score matching with 1:1 nearest neighbor matching with a caliper of 0.01, with matching variables including age of the enterprise, gender of ownership, an indicator variable showing whether an enterprise had an active loan when COVID-19 hit, the amount of that loan, as well as location and sector fixed effects. Figure A6 shows that only a small proportion of the sample goes unmatched, though the control group has larger mass on lower propensity scores, while the treatment group has larger mass on higher propensity scores.

Second, we run outcome regressions in a similar style to the previous, though we also control for a vector of covariates, x_i , which includes turnover and collateral ownership (real, movable, or intangible), because of the selected imbalance shown in Table A2. Outcome variables capture whether the MSMEs report that they plan to rely on loans, government support, their own savings or local help to support them if a natural hazard were to affect them in the future (all binary outcomes). Standard errors are clustered at the location level.

Third, we additionally report on a robustness check with 1:3 nearest neighbor matching, with a caliper of 0.02.

5 RESULTS

We present our main results in this section, first for the impact of COVID-19 concessional loans in enabling recovery from the COVID-19 pandemic, and then the extent to which the experience of past natural hazards induces different expectations about disaster recovery mechanisms by MSMEs.

5.1 Impacts of COVID-19 Loans

Our main results on the impacts of COVID-19 concessional loans are presented in Tables A3 and A4.

Table A3 reveals a positive correlation between concessional loans and the likelihood of laying off workers (statistically significant at 1%), selling off assets (statistically significant at 10%) and recovery (not statistically significant). This provides weak, but suggestive evidence that the loans went to enterprises that were more harmed by the COVID-19 shock, and enabled recovery.

Our main results, which attempt to correct for selection bias into loan access through propensity score matching, are presented in Table A4. Our preferred results are in columns (1), (3), and (5), while we provide robustness checks in columns (2), (4), and (6).

First, regarding drawdowns of workers in response to the COVID-19 shock, we find that loan recipient firms are 3.3 percentage points more likely to have laid off workers, however this is not statistically significant. Though our robustness check has a larger magnitude (5.4%) and is statistically significant. Given that about 22% of non-loan recipient firms laid off workers, this suggests that loan recipient firms were at least one-seventh more likely to have laid off workers.

Second, regarding drawdowns of assets in response to the COVID-19 shock, we find that loan recipient firms are 4.0 percentage points more likely to have reduced assets in response to the pandemic, however this is not statistically significant. Given that about 7.1% of non-loan recipient firm laid off workers, this suggests that loan recipient firms were about two-thirds more likely to have shed assets. The robustness check corroborates this main result, with a slightly smaller point estimate.

With regards to drawdowns of workers and assets, it is possible that the administration of the concessional loan program, in spite of the best attempts, was not swift enough to mitigate the early impacts of the pandemic. Even after controlling for sector and geography, it is possible that the most-impacted firms were more likely to apply and qualify for concessional loans.

We also find in column (5) that MSMEs that accessed a concessional loan are 3.4 percentage points more likely to say that they have recovered from the impacts of the pandemic. However, this effect is not statistically significant. This effect is confirmed by our robustness check, though with a slightly smaller magnitude. As this result is less likely to be undermined as our worker and asset results can by uncertainty about timing or selectivity in loan receipt, it is more suggestive that the program only had mild benefits for recipients to mitigate the effects of the pandemic. This may be related to the regressive targeting of the loans that we documented in Section 3.4.

5.2 Climate Resilience and Mitigation Mechanisms

Our main results on the impacts of past experience of natural hazards on expectation for future mitigation mechanisms are in Tables A5 and A6.

Table A5 reveals a negative relationship between past experience of natural hazard events and future expectations of receiving outside help from third parties to recover (through loans (-0.22 p.p.) or government support (-0.3 p.p.)). Given that about 50% of enterprises have past experience with significant natural hazards, the magnitude of effect represents roughly a halving in the expectation of receiving loans or government support. Meanwhile, the change in expectation of receiving local help, while positive, is relatively

small (0.03 p.p.) and insignificant. Meanwhile, firms are 14 percentage points more likely to be self-reliant (relying on own-savings), significant at 5%.

Our main results, which attempt to correct for selection bias into loan access through propensity score matching, are presented in Table A6. Our preferred results are in columns (1), (3), (5), and (7), while we provide robustness checks in columns (2), (4), (6), and (8).

Table A6 shows that enterprises that have experienced a natural hazard were 25 percentage points less likely to say they would rely on loans if another hazard were to arise in the future, and 27 percentage points less likely to say they would turn to government support, compared to enterprises that had not experienced a previous serious disaster. These results are highly significant (1%), consistent with the robustness checks, and align with the magnitudes for our correlational analysis in A5. Hence, we have strong and consistent findings that past experience with natural hazards makes firms about half as likely to say they would rely on help from third-parties like banks or the government for assistance with recovery in the future.

Conversely, MSMEs with past experience of natural hazards were 15 percentage points more likely to rely on own savings in the future, about a 28% increase in likelihood. These results are highly significant, consistent with the robustness check, and align with the magnitudes for our correlational analysis in A5. We also find that the likelihood of relying on local help 3 percentage points in our preferred specification, though insignificant in our preferred specification. However, it is notable that the estimate is larger (5 p.p.) and significant at 5% in the robustness check.

These results are suggestive that MSMEs experiencing climate-related disasters have received less support from the formal financial sector or the government than they might have otherwise expected, which has led them to be more reliant on their own resources in the future. This disappointment could be attributed to a number of mechanisms, including delays in receiving support, receipt of less support than expected, or simply not receiving support when it was expected.

6 DISCUSSION

6.1 Impacts of COVID-19 Loans

The COVID-19 pandemic precipitated unprecedented economic challenges worldwide, prompting a reevaluation of financial support mechanisms for businesses, especially in emerging markets. These financing programs aimed to provide liquidity to businesses facing operational and financial disruptions, ensuring their survival and safeguarding employment.

Concessional loans, characterized by favorable terms such as lower interest rates and longer grace periods, emerged as a key tool in the policy arsenal. Studies such as Cirera et al. (2021) provide a comprehensive review of policies across several emerging markets. The authors found that while concessional loans were crucial in providing immediate relief, their effectiveness varied significantly across different economies, depending on the program's design and implementation efficiency. Moreover, studies have pointed out the need for complementing financial support with measures such as tax relief and wage subsidies.

From these policies, several lessons were learned:

- (i) The effectiveness of concessional loans hinges on careful design, including eligibility criteria, to ensure targeted support.
- (ii) Implementation efficiency, facilitated by digital platforms and streamlined processes, can enhance the impact of financial support programs.
- (iii) Complementary measures, such as tax deferrals and wage subsidies, are crucial in providing comprehensive support to businesses.

These findings emphasize the need for agile, well-targeted, and multi-faceted policy responses to support the business ecosystem in emerging markets during crises.

In Fiji, we observe that a number of these measures were in fact used. However, implementation was challenging due to the realities of the pandemic, and we find that the problem had relatively limited measurable impacts on helping MSMEs recover from the pandemic. Some financial institutions were overwhelmed with loan applications, which may have led to more regressive targeting as implementers traded off the speed of loan decision making with the extensiveness of the loan application reviews. While the program was successful in approving a record-breaking volume of MSME loans during an extremely challenging and unprecedented time, there may be room to reflect on the lessons learned from the program for considering what could be possible in the future. For example, it may be worth considering re-calibrating the balance between speed and extensiveness of review of applications (or even automatic pre-approval based on certain criteria) and the funding amounts available. It may be that what some MSMEs needed was faster approval and disbursement of financing, while others needed larger amounts, to have a more measurable impact on their mitigation and recovery from pandemic impacts. These detailed design questions would benefit from further research, targeted to the design of pandemic response concessional financing.

6.2 Climate Resilience

To mitigate the effects of climate change-related natural hazards and disasters, it is important to implement effective policy measures, and communicate clearly about them.

We find that in Fiji, many enterprises may overestimate the support measures available after a disaster. Enterprises that had previously experienced a disaster are less likely to expect to turn to loans or government support if a disaster were to occur again in the future, compared to enterprises that hadn't previously experienced such a disaster. Conversely, they are more likely to rely on their own savings and local help.

More effective communication about responses to disasters could help to reduce confusion among MSMEs, and reduce uncertainty and risk of catastrophic losses. If government and private sector resources are not available in the magnitude needed to fully mitigate the effects of climate-related disasters, then it may be best to encourage MSMEs to take steps to individually mitigate climate-related risks, such as through own-saving and purchasing private insurance.

7 CONCLUSION

This paper seeks to explore the resilience of MSMEs in Fiji to major shocks including the COVID-19 pandemic and climate change-related disasters. It draws on an original survey of MSMEs conducted in the first half of 2023. We find evidence of severe impacts of COVID-19 on MSMEs. The government responded with a concessional loan program, which we find had some regressive targeting, however this is plausible in light of the unprecedented and challenging early pandemic period. We find relatively mild impacts of concessional loans in mitigating the pandemic's economic impacts on MSMEs. The study reveals that previous experience with natural hazards significantly shapes MSMEs' strategies for future resilience, with a pronounced increase in reliance on internal resources over external support mechanisms.

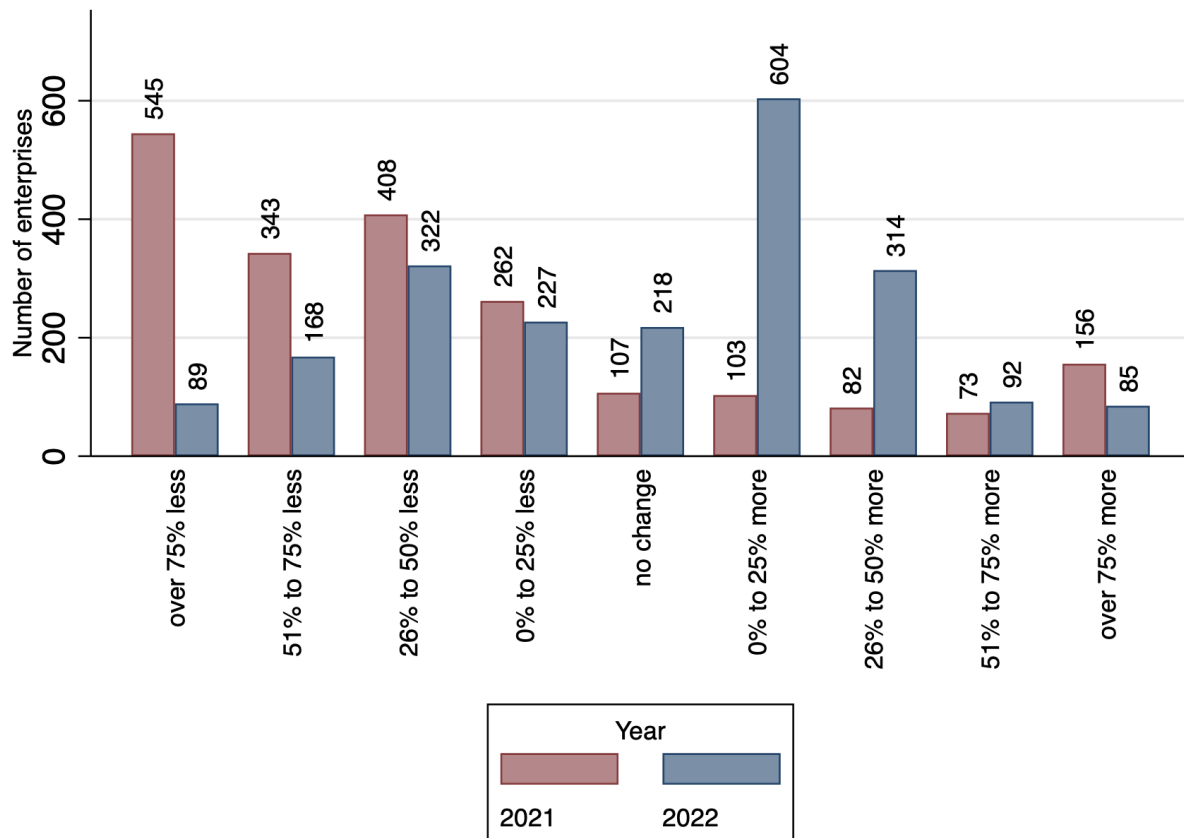
While existing policy measures have provided a foundation for economic recovery and resilience-building among MSMEs, there remains substantial room for improvement. While the pandemic undoubtedly provided an unprecedented challenge in implementing a concessional loan program, a more efficient assessment process may have better targeted the loans to MSMEs where the funds could have the highest marginal impacts. In the domain of natural hazards, enhancing awareness and access to climate adaptation resources could significantly bolster MSMEs long-term sustainability and resilience, as they would be better able to realistically plan and prepare for major climate events.

This study opens several avenues for future research. Investigating the specific barriers to accessing government support and the factors influencing MSMEs' preference for self-funding recovery efforts could provide deeper insights into optimizing policy interventions. Specifically in Fiji, there may be value in further research following up with loan recipient MSMEs to understand what might have led to more impactful outcomes from access to concessional loans (e.g., faster application and approval processes, larger amounts, or others). Additionally, exploring the long-term impacts of such shocks on MSMEs' operational and financial health would further contribute to our understanding of resilience mechanisms. Lastly, comparative studies across different emerging markets could offer valuable lessons on effective strategies for supporting MSMEs in the face of global challenges like pandemics and climate change.

A APPENDIX

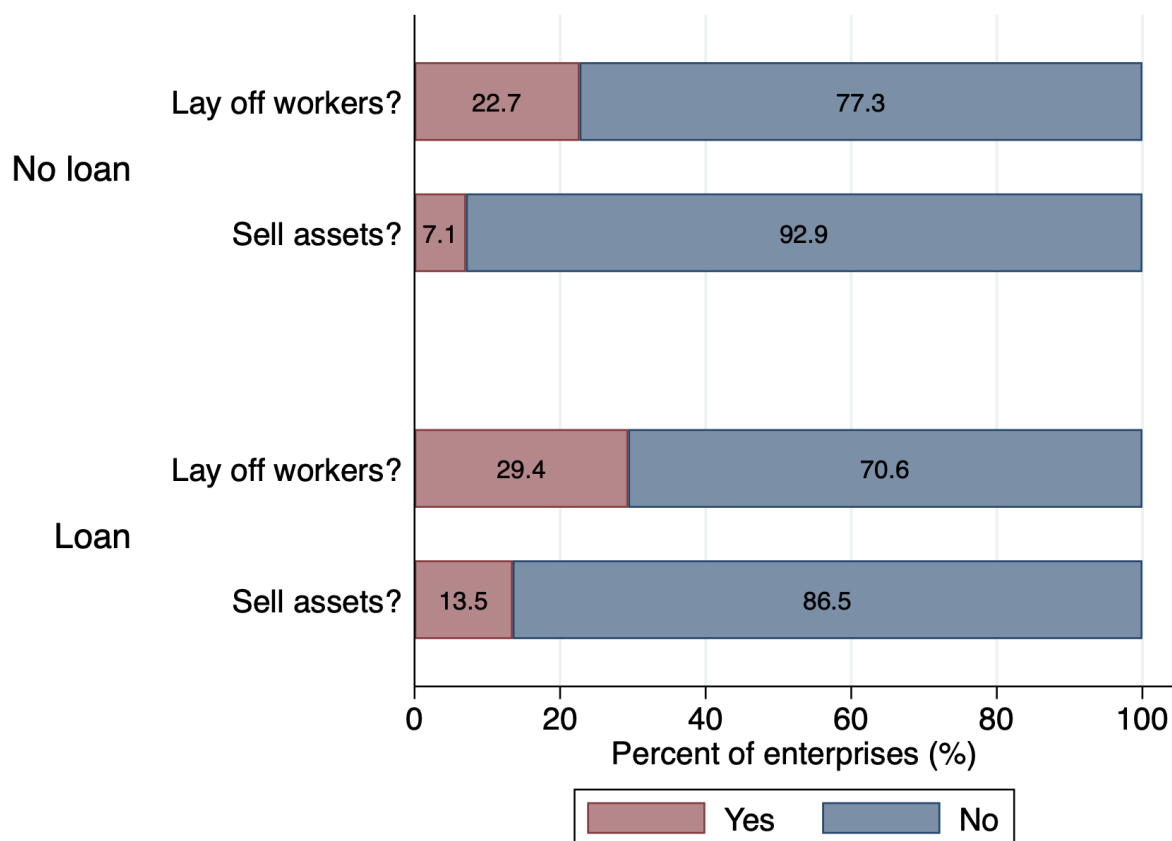
A.1 Figures and Tables

Figure A1: Change in Profits Relative to Expectations



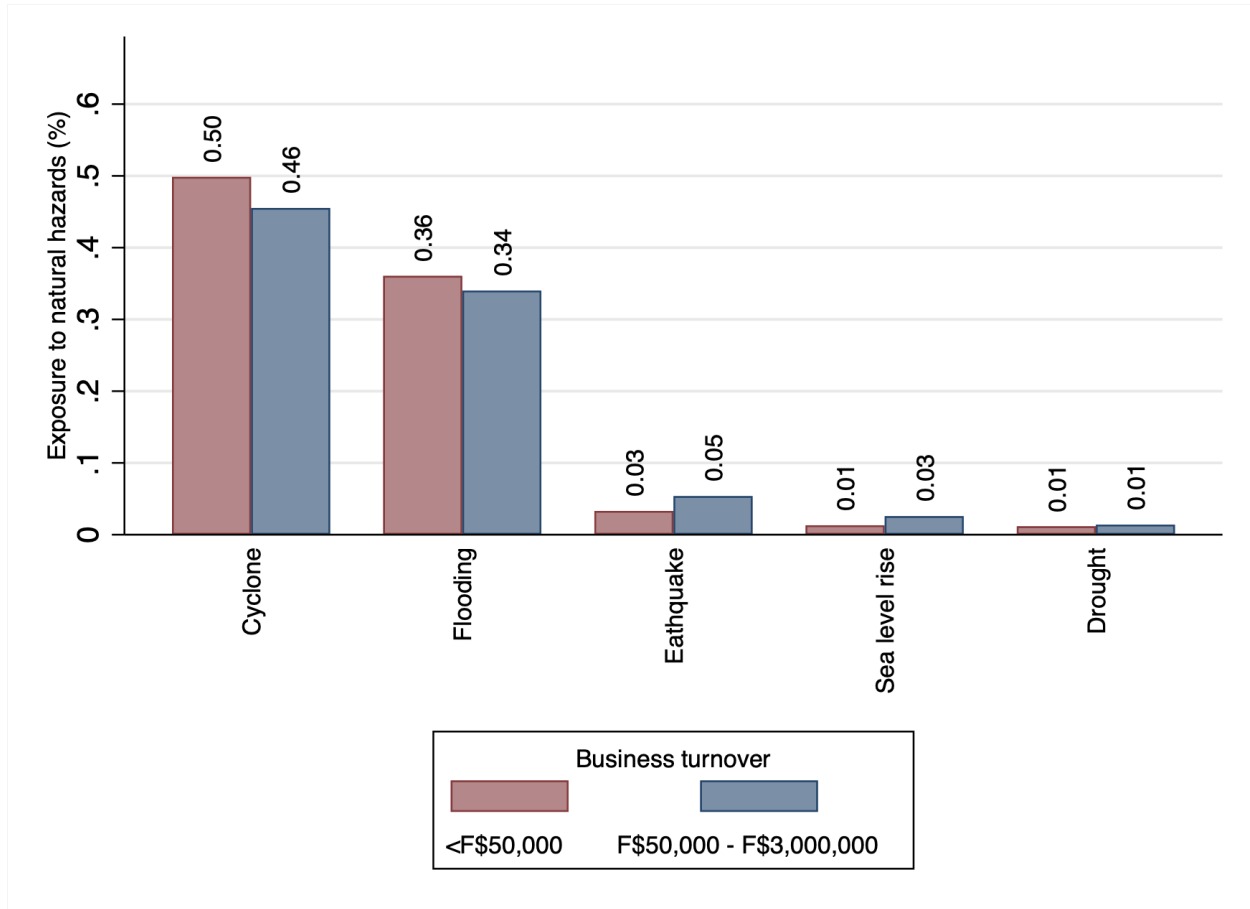
Source: Authors' calculations.

Figure A2: MSMEs' COVID-19 Responses



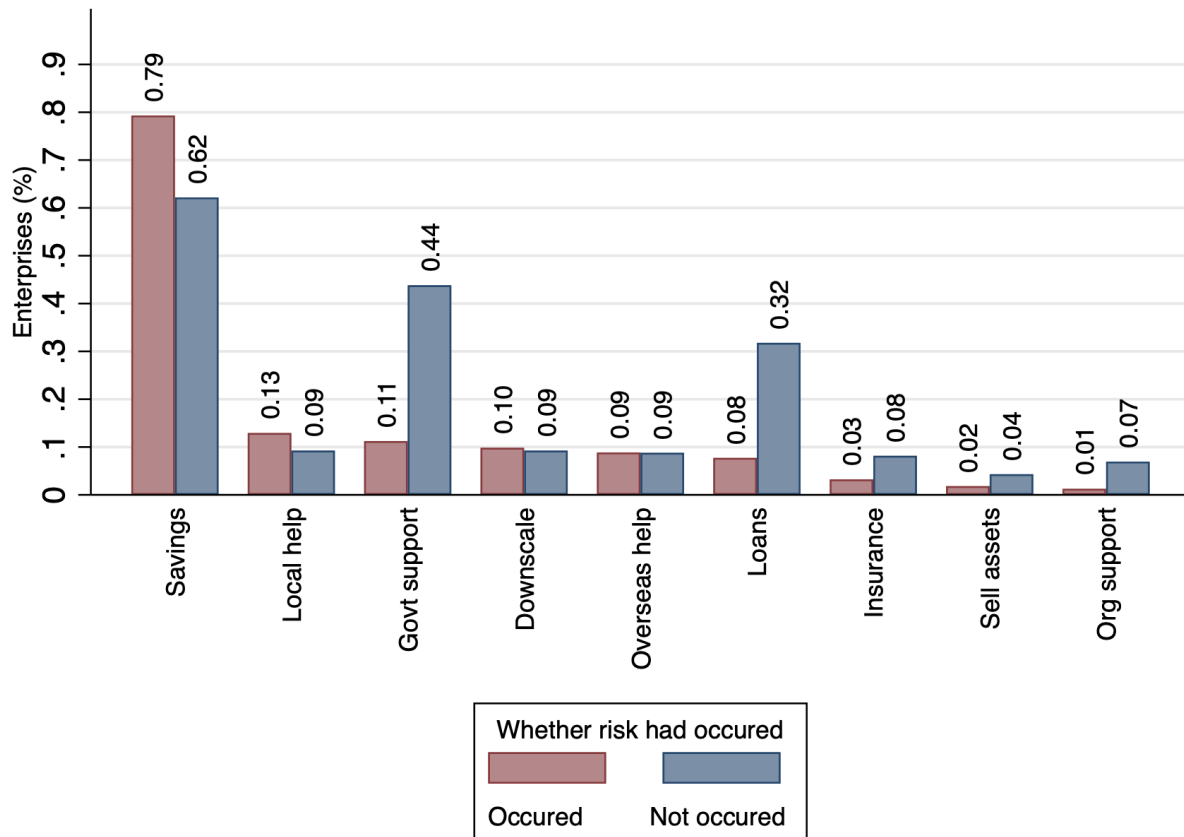
Source: Authors' calculations.

Figure A3: Exposure to Natural Hazards



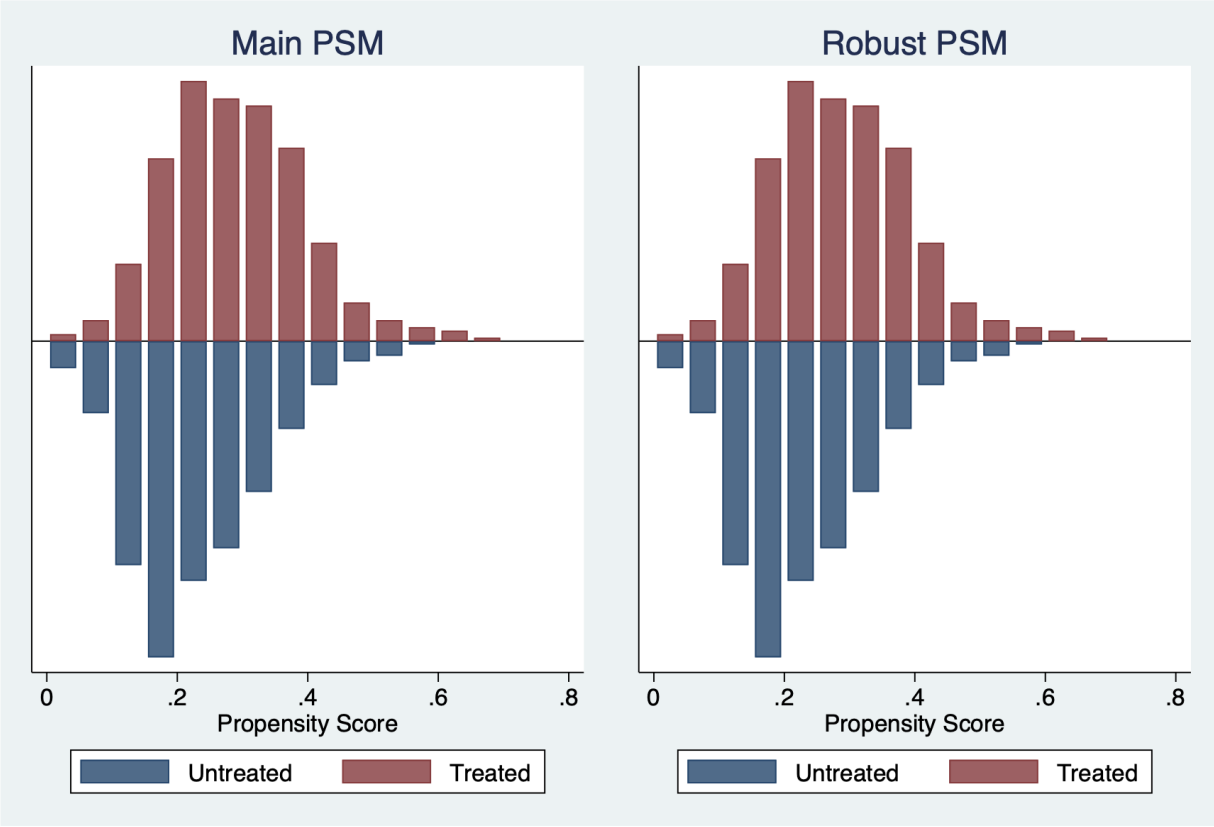
Source: Authors' calculations.

Figure A4: Mechanisms to Recover From Natural Hazards



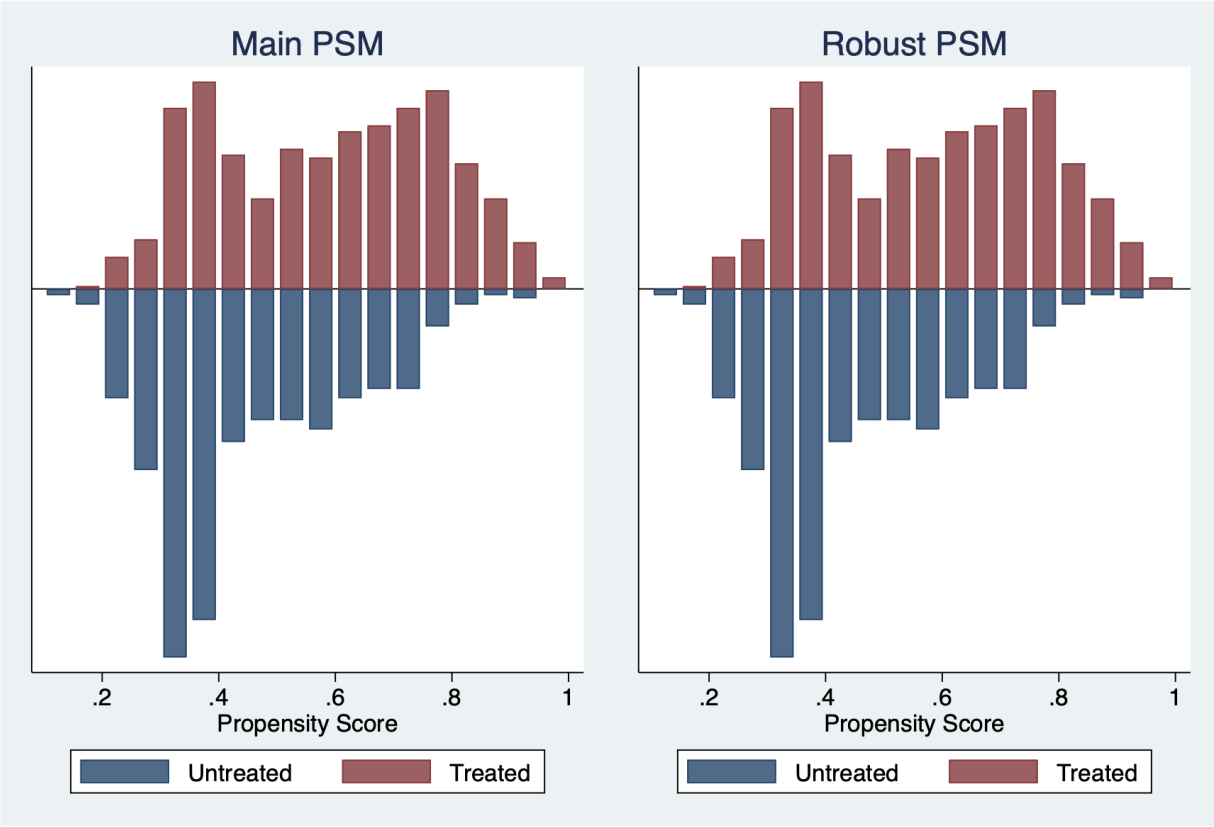
Source: Authors' calculations.

Figure A5: COVID-19 Analysis: Common Support Histogram



Source: Authors' calculations.

Figure A6: Climate Analysis: Common Support Histogram



Source: Authors' calculations.

Table A1: Characteristics of MSMEs by Concessional Loan Access

	(1)	(2)	(3)	(4)
	No Loan	Loan	Total	<i>N</i>
<i>Turnover</i>				
< F\$50,000	0.629	0.535	0.609	2,380
F\$50,000–F\$3,000,000	0.371	0.465	0.391	2,380
Age of enterprise	12.44	11.79	12.30	2341
Total employees	4.236	4.761	4.345	2,372
<i>Climate Impacts</i>				
Future exposure to natural hazard	0.561	0.583	0.566	2,400
Past exposure to natural hazard	0.521	0.532	0.523	1,359
<i>Ownership gender</i>				
Male	0.576	0.540	0.568	2,370
Female	0.297	0.270	0.291	2,370
Both	0.128	0.190	0.141	2,370
<i>Credit access</i>				
Accessed	0.220	0.380	0.254	2,288
Denied	0.0617	0.0551	0.0603	2,288
Never applied	0.718	0.565	0.685	2,288
Ownership of real property	0.361	0.431	0.376	2,399
Ownership of movable property	0.671	0.762	0.690	2,399
Ownership of intangible property	0.0327	0.0317	0.0325	2,399
Observations	1,896	504	2,400	

Note: The first column presents averages of characteristics for micro, small, and medium-sized enterprises (MSMEs) that did not access a concessional loan ($n = 1896$); the second column presents averages for MSMEs that did access a concessional loan ($n = 504$); the third column presents averages across the entire sample, dropping enterprises that did not report turnover or credit access; the fourth column presents the number of non-missing observations for each variable. With the exception of age and total employees, all variables are binary. Hence, averages can be understood as percentages.

Source: Authors' calculations.

Table A2: Is the Enterprise Exposed to a Natural Hazard that Could Shut the Business for 4 Weeks?

	(1)	(2)	(3)
Age of enterprise	-0.000691 (0.00174)	-0.000691 (0.00142)	-0.000232 (0.000964)
Age squared	0.00000817 (0.0000250)	0.00000817 (0.00000926)	0.000000710 (0.00000787)
Total employees	-0.000123 (0.00108)	-0.000123 (0.000742)	0.000823 (0.000632)
Ownership of movable property	0.0366 (0.0242)	0.0366 (0.0539)	0.0570 (0.0387)
Accessed credit (last 5 yrs)	0.0443* (0.0259)	0.0443 (0.0283)	0.0321 (0.0186)
Denied credit (last 5 yrs)	-0.0326 (0.0439)	-0.0326 (0.0359)	-0.0415 (0.0368)
Male ownership	-0.0215 (0.0214)	-0.0215 (0.0229)	-0.0260 (0.0185)
Ownership of real property	0.126*** (0.0234)	0.126*** (0.0360)	0.0855** (0.0354)
Ownership of intangible property	0.205*** (0.0594)	0.205** (0.0749)	0.158* (0.0834)
Microenterprise (2023 turnover)	0.0657*** (0.0236)	0.0657*** (0.0168)	0.0355* (0.0178)
Arts sector	0.106 (0.0725)	0.106** (0.0400)	0.105* (0.0465)
Real sector	-0.242** (0.117)	-0.242*** (0.0666)	-0.212** (0.0673)
Location fixed effects	No	No	Yes
Clustered SEs	No	Yes	Yes
R-squared	0.0344	0.0344	0.0923
Observations	2,195	2,195	2,195

Note: Each column represents a different specification of a joint regression of micro, small, and medium-sized enterprise (MSME) exposure to natural hazards or climate risks on a range of covariates. Column (1) reports standard Ordinary Least Squares (OLS) results, while column (2) adds clustered standard errors (at the town level), and column (3) includes location fixed effects. Age refers to the number of years since the enterprise was established, while both collateral ownership and credit access covariates are binary. The table omits the coefficient on sector fixed effects for sectors that are not statistically significant under any of these three specifications. Standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Authors' calculations.

Table A3: Did Concessional Loans Aid Post-pandemic Recovery? (Ordinary Least Squares Analysis)

	(1) Were workers laid off?	(2) Were assets sold off?	(3) Extent of recovery?
Concessional Loan	0.037*** (0.012)	0.045* (0.027)	0.022 (0.024)
Enterprises	1,710	1,710	1,658

Note: Estimates are in percentage point terms. Analysis is restricted to enterprises that existed prior to the onset of the coronavirus disease (COVID-19) pandemic in early 2020. Of these enterprises, 52 either did not answer or refused to comment on whether the firm had recovered from the impact of the pandemic. We estimate the effect of concessional loans on three relevant outcomes: (1) whether a firm laid off workers in response to the impacts of the COVID-19 pandemic, (2) whether a firm sold assets, and (3) whether micro, small, and medium-sized enterprises (MSMEs) think their business has “somewhat” or “completely” recovered from the impacts of the pandemic. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Source: Authors’ calculations.

Table A4: Did Concessional Loans Aid Post-pandemic Recovery? (Propensity Score Matching Analysis)

	Workers?		Assets?		Recovered?	
	(1) PSM	(2) Robust	(3) PSM	(4) Robust	(5) PSM	(6) Robust
Concessional Loan	0.033 (0.038)	0.054* (0.031)	0.040 (0.025)	0.033 (0.022)	0.034 (0.037)	0.030 (0.030)
Enterprises	1,696	1,703	1,696	1,703	1,640	1,645

Note: Estimates are in percentage point terms. We use propensity score matching (PSM) to estimate the effect of concessional loans on three relevant outcomes: (1) whether a firm laid off workers in response to the impacts of the COVID-19 pandemic, (2) whether a firm sold assets, and (3) whether micro, small, and medium-sized enterprises (MSMEs) think their business has “somewhat” or “completely” recovered from the impacts of the coronavirus disease (COVID-19) pandemic. Propensity scores are calculated using the following variables: age, gender of ownership, business location, whether the firm had an active loan when the COVID-19 pandemic hit, whether the firm was exposed to natural hazards, as well as location and sector fixed effects. Enterprises were then matched using nearest neighbor matching, restricted to common support. Robust Abadie-Imbens standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.
Source: Authors’ calculations.

Table A5: Does Past Experience with Climate Shocks Affect Enterprises' Future Responses? (Ordinary Least Squares Analysis)

	(1) Loans	(2) Govt Support	(3) Savings	(4) Local Help
Has that event occurred?	-0.22*** (0.05)	-0.30*** (0.06)	0.14** (0.05)	0.03 (0.02)
Enterprises	1,289	1,289	1,289	1,289
Mean of outcome	0.20	0.28	0.71	0.11

Note: Each column reports the regression results for a separate outcome. All four listed outcomes are binary, meaning that regression coefficients can be interpreted as percentage point changes. Whether an enterprise had encountered a natural hazard in the past is the dependent variable across all four regressions. Analysis is restricted to micro, small, and medium-sized enterprises (MSMEs) who face the risk of a serious natural hazard. Control variables include location, sector, gender, age, and age-squared. Robust Abadie-Imbens standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Authors' calculations.

Table A6: Does Past Experience with Climate Shocks Affect Enterprises' Future Responses? (Propensity Score Matching Analysis)

	Loans		Govt Support		Savings		Local Help	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Has that event occurred?	-0.25*** (0.04)	-0.21*** (0.03)	-0.27*** (0.04)	-0.25*** (0.03)	0.15*** (0.04)	0.11*** (0.03)	0.03 (0.03)	0.05** (0.02)
Enterprises	1,210	1,239	1,210	1,239	1,210	1,239	1,210	1,239
Mean of outcome	0.19	0.19	0.27	0.27	0.72	0.72	0.11	0.11

Note: We use propensity score matching (PSM) to estimate the effect of past exposure to natural hazards on likelihood of four distinct coping mechanisms: (1) loans, (2) government support, (3) savings and (4) local help. Propensity scores are calculated through a probit regression using the following variables: age, gender of ownership, business location, whether the firm had an active loan when the COVID-19 pandemic hit, the amount of that loan, whether the firm was exposed to natural hazards, as well as location and sector fixed effects. Enterprises were then matched using 1-3 nearest neighbor matching, restricted to common support. Robust Abadie-Imbens standard errors are in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Authors' calculations.

A.2 Sectors

All definitions are obtained from the Fiji Bureau of Statistics (2010) most recent Standard Industrial Classifications.

Accommodation and Food Services. These include provision of short-stay accommodation and the provision of complete meals and drinks fit for immediate consumption.

Administrative and Support Service Activities. These include a variety of activities that support general business operations. These activities do not require the transfer of specialized knowledge.

Arts, Entertainment and Recreation. These include a wide range of activities to meet varied cultural, entertainment and recreational interests of the general public, including live performances, operation of museum sites, gambling, sports, and recreation activities.

Construction. These include general construction and specialized construction activities for buildings and civil engineering works. Also includes the repair of buildings and engineering works.

Financial and Insurance Activities. These include financial service activities, including insurance, reinsurance and pension funding activities and activities to support financial services. It also includes the activities of holding assets.

Human Health and Social Work Activities. These include the provision of health and social work activities. Activities include a wide range of activities, from health care provided by trained medical professionals in hospitals and other facilities, over residential care activities that still involve a degree of health care activities, to social work activities without any involvement of health care professionals.

Information and Communication. These include the production and distribution of information and cultural products, the provision of means to transmit or distribute these products, communications, information technology activities, and the processing of data and other information service activities.

Manufacturing. These include the physical or chemical transformation of materials, substances, or components into new products. Substantial alteration, renovation or reconstruction is generally considered to be manufacturing.

Other Service Activities. These include the activities of membership organizations, the repair of computers and personal and household goods and a variety of personal service activities not covered elsewhere in the classification.

Professional, Scientific and Technical Activities. These include specialized professional, scientific and technical activities. These activities require a high degree of training, and make specialized knowledge and skills available to users.

Real Estate Activities. These include acting as lessors, agents and/or brokers in one or more of the following: selling or buying real estate, renting real estate, providing other real estate services such as appraising real estate, or acting as real estate escrow agents.

Transport and Storage. These include the provision of passenger or freight transport by rail, pipeline, road, water or air, as well as associated activities, such as terminal and parking facilities, cargo handling, storage etc.

Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles' (WRT). These include wholesale and retail sale (i.e., sale without transformation of goods), and the rendering of services incidental to the sale of these goods. Goods bought and sold are also referred to as merchandise and wholesaling and retailing are the final steps in the distribution of these goods. Also included in this section are the repair of motor vehicles and motorcycles.

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Resilience to Shocks of Micro, Small, and Medium-Sized Enterprises in Fiji

This paper examines the resilience of micro, small, and medium-sized enterprises (MSMEs) in Fiji to economic shocks, focusing on the COVID-19 pandemic and climate-related hazards. Based on original survey data from 2,400 MSMEs, the paper evaluates the impact of government concessional loans on pandemic recovery and explores climate resilience strategies. Findings reveal mixed outcomes from policy interventions and reliance on self-funding by enterprises impacted by disasters. The paper emphasizes integrating financial support with long-term climate adaptation to strengthen MSME resilience.

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