INCLUSIVE GROWTH IN MOZAMBIQUE

– scaling up research and capacity

Survey of Mozambican Manufacturing Firms 2022

DESCRIPTIVE REPORT

FEBRUARY 2023

Preface

This report presents the results of the 2022 Mozambican Manufacturing Enterprise Survey (IIM) and compares throughout with the findings in its two predecessors from 2012 and 2017. The third edition of the survey was implemented within the *Inclusive growth in Mozambique* (IGM) programme. IGM is a research and capacity development programme supporting Mozambique since 2015 in designing evidence-based policies that support inclusive growth benefitting the poorest and most vulnerable groups. It is implemented by the National Directorate of Economic and Development Policies (DNPED) of the Ministry of Economy and Finance of Mozambique (MEF) and the Centre for Economic and Management Studies (CEEG) of the Faculty of Economics of the Eduardo Mondlane University (UEM) in partnership with the University of Copenhagen Development Economics Research Group (UCPH-DERG) and the United Nations University World Institute for Development Economics Research (UNU-WIDER). The Government of Finland and the Government of Norway provide financial support that is gratefully acknowledged.

The main objective of the IIM 2022 was to trace the enterprises interviewed in the two previous survey rounds to document how the economic situation has developed for firms in the manufacturing sector in Mozambique over the past decade. The report is focused on providing a descriptive overview, with more in-depth studies to be elaborated during 2023. Out of 831 firms interviewed in 2012, 355 firms were found to be still in operation in 2022; and the survey covered the main urban areas of seven provinces: Maputo City, Maputo Province, Gaza, Sofala, Manica, Tete, and Nampula. Each of the report's chapters analyses a specific topic that is of particular relevance to the development of the Mozambican manufacturing sector. A key policy message is that the sector has experienced significant difficulties in progressing as desired and contributing to much needed economic transformation, industrialization and development.

Many colleagues worked in an admirable manner with consistent commitment to undertake the 2022 Mozambican Manufacturing Enterprise Survey (IIM). The data collection took place in April and May of 2022 by a team of 40 enumerators – mainly recent university graduates. They were supervised by Giulia Barletta, Hanna Berkel, Antonio Cruz, Firmino Guiliche, Edson Mazive and Ivandra Vieira. I wish to add that the survey work would not have been possible without the highly appreciated work of these enumerators, who personally went to interview the firms, often under challenging conditions. The same gratitude is due to the numerous enterprise owners and managers, who kindly agreed to answer our many questions in the interview sessions. We also wish to acknowledge the Mozambican

Confederation of Economic Associations (CTA), which suggested changes and additions to the questionnaire, and formally supported the data collection.

The team of co-authors of this report include Giulia Barletta, Hanna Berkel, Sam Bryson, Peter Fisker, Francesca Gioia, Firmino Guiliche, Agustina Lopez, Edson Mazive, Frederikke Mikkelsen, John Rand, Finn Tarp, Neda Trifkovic and Ivandra Vieira. Hanna Berkel coordinated the data collection and drafting of the report under the overall guidance of Finn Tarp. The report contains the research findings of these authors, and the views expressed do not necessarily reflect the views of the organizations with which they are associated or the programme donors.

As Programme Manager of the IGM programme, I would like to express my sincere gratitude to all of the many colleagues, who contributed to producing the report we are now launching.

Dr Enilde Francisco Sarmento
National Director
National Directorate of Economic Policies and Development (DNPED)
Ministry of Economy and Finance (MEF)
Maputo, Mozambique

23 February 2023

Tables of contents

Acronyms and abbreviations

AT	Finance Authority
AfCFTA	African Continental Trade Area
BAU	Single Service Desks
CEEG	Centre for Economic and Management Studies
CEMPRE	Mozambique's Official Enterprise Census
CREL	Registry of Legal Entities
CTA	Confederation of Business Associations
DNEAP	National Directorate of Studies and Policy Analysis
DERG	Development Economics Research Group
DANIDA	Danish International Development Agency
ENDE	National Development Strategy
EO	Entrepreneurial Orientation
FDI	Foreign Direct Investment
GDP	Growth Domestic Product
GoM	Government of Mozambique
GPS	Global Positioning System
ILO	International Labour Organization
IIM	Mozambican Manufacturing Enterprise Surveys
INE	Mozambique Statistics Bureau
INSS	National Institute of Social Security
IOF	Household Income Survey
IPEME	Institute for the Promotion of Small and Medium Enterprises
ISIC	International Standard Industrial Classification of All Economic Activities
LP	Labour Productivity
MIX	Microfinance Information Exchange
MSMEs	Micro, small and medium enterprises
MT	Meticais
NUIT	Tax Identification Number
SME	Small Medium Enterprises
TFP	Total Factor Productivity
UNDP	United Nations Development Programme
UNU-WIDER	United Nations University World Institute for Development Economics Research
VA	Value Added

List of tables

List of figures

Executive summary

The manufacturing sector has been and continues to be a development priority of Mozambique. A well-functioning industry has the potential to generate high-quality and poverty-reducing employment, fuel growth through enhanced productivity and improve the opportunities for trade in the globally interconnected economy. In many Asian countries, the manufacturing sector has played a central role in the economic transformation, and the hope is high for the same to happen in Africa. However, in Mozambique, there is no significant evidence of transformative industrialization despite the long-term focus on supporting industrial firms. Better knowledge of the manufacturing sector is vital for a deep understanding of the economic situation in Mozambique. This report – the third edition in the series – aims to help develop evidence-based policies that could boost the Mozambican industry, and ultimately contribute to inclusive and sustainable growth.

The Survey of Mozambican Manufacturing Firms (Inquérito às Indústrias Manufactureiras - IIM) is a project within the Inclusive Growth in Mozambique (IGM) programme. The IGM programme is a collaboration between the Centre for Economic and Management Studies (CEEG) at the University Eduardo Mondlane, the Directorate of Economic and Development Policies as the Ministry of Economics and Finance of Mozambique, the Development Economics Research Group (DERG) at the University of Copenhagen and the United Nations University World Institute for Development Economics Research (UNU-WIDER). The IIM survey has financial support from the Government of Finland and the Government of Norway. The survey benefitted from the active collaboration of all programme partners and the data collection was implemented through CEEG.

In 2012, the IIM survey was implemented for the first time[1], and the following two survey rounds in 2017 and 2022 had as a main objective to examine the development of the manufacturing sector over time. What has improved, what is stagnating and what has become more challenging for the Mozambican manufacturing sector in the past ten years? Thus, this report mainly focusses on the development of the same 355 enterprises that were interviewed in all three survey rounds. This means that the dataset is not statistically representative of the Mozambican manufacturing sector. Its focus is on older enterprises that are likely more productive and formal than the majority of enterprises.

[1] The first IIM survey in 2012 was planned and carried out by the Confederation of Business Associations (CTA) together with the National Directorate of Studies and Policy Analysis (DNEAP) at the Ministry of Planning and Development (MPD) and the Development Economics Research Group (DERG) at the Department of Economics at University of Copenhagen, realized with financial support from the Danish International Development Agency (DANIDA). The survey followed up on previous surveys conducted by DNEAP (2006) and the World Bank (ICA, 2009) and tracked 216 firms from these surveys. In addition, 545 not previously surveyed firms were interviewed.

Nevertheless, it describes broad trends and shows that these trends are also valid for many firms that closed, as well as for many new firms that opened between 2012 and 2022.

Each of the report's chapters addresses a specific topic that is relevant for the Mozambican manufacturing sector. The first chapter introduces the report's overall goal and structure, as well as the basic characteristics of the interviewed firms. It explains why it is important to study the Mozambican manufacturing sector and its development over time. Further, it outlines the various industrial goals and policies that the Mozambican government has put forward since the 1990s and explains that these goals have not been achieved in practice.

Chapter 2 describes the sample and broad characteristics of the firms in more detail. Approximately half of the sampled firms are located in the South of Mozambique (30 per cent in Maputo City, 11 per cent in Maputo Province and 9 per cent in Gaza). One-third are in the centre, either in Sofala Province (21 per cent) or in Manica Province (11 per cent). The remaining 17 per cent are in the Northern provinces of Nampula (9 per cent) and Tete (8 per cent). The firms concentrate in only a few, basic industries. Wood and furniture together form the largest aggregated industry (one-third of the sample) and usually include small-scale carpenters. Food-processing follows suit with 16 per cent, and most of the food-processors are mills and bakeries. Innovative and dynamic industries such as the chemical and the high-tech industry are tiny such that they do not play a prominent role in the manufacturing sector of Mozambique. Over time, firms have become smaller, i.e., they are employing fewer workers. Between 2012 and 2022, the share of micro enterprises (<10 employees) has increased from 66 to 75 per cent. Small firms (10-49 employees) became fewer, as their share has declined from 26 per cent in 2012 to 20 per cent in 2022. Similarly, the share of medium firms (50-300 employees) decreased from 7 per cent to 4.5 per cent over the study period.

The third chapter analyses the Mozambican business environment, and, in particular, how Mozambican enterprises interact with their peers, competitors, and the public sector, including both formal and informal interactions with the administrative and regulatory systems. It illustrates worsening conditions in the business environment, as indicated by the growing incidence of direct and indirect bribes. Even though some reduction in the administrative burden in terms of fewer inspections is detected, there was no substantial change in time spent dealing with bureaucracy during the past ten years. Informal institutions such as business associations do not contribute much to the private sector development; instead, the formal institutions of the public sector play the main role. Female- and male-led businesses fare similarly in terms of interactions with the public sector, business associations and informal payments, but as the number of female-owned enterprises is so low, the

question remains whether the obstacles for women are so large that they do not even try establishing private enterprises.

Chapter 4 examines firms' financial performance, productivity and impacts of the COVID-19 pandemic. We find a notable increase in productivity for small firms between 2017 and 2022, while micro and medium firms were struggling. The wood (carpenters), metal (black smiths) and paper (book binding) industries were performing better than the food, textile (tailors) and chemical industry. Despite the relative improvements, we find no evidence of industrialization in the Mozambican manufacturing sector, which is not in line with the country's Industrial Strategy. Since 2017, employees' wages were higher than productivity. Further, medium firms appear to have suffered the worst impact of COVID-19, especially considering the high percentage of business closure and the relatively high percentages they present in most categories of the pandemic effects relative to micro and small firms.

The fifth chapter takes a closer look at the firms that left the sample in the ten-year period, either because they could not be re-located during the follow-up data collections or because they stopped operating, i.e., they closed their business. About 6.7 per cent of the IIM firms left the sample over ten years. This share is lower than in many other developing countries. On the one hand, this is positive because it means that we were successful in tracking firms. On the other hand, a low exit share is a signal of an inefficient economy, in which unproductive firms are not replaced by new, more productive enterprises. In the past five years, larger and female-led enterprises were more likely to close, probably as a result of the negative impacts of the COVID-19 pandemic. On a positive note, there seems to be a somewhat positive fluctuation in the Mozambican manufacturing sector in the sense that younger, more productive firms replace firms that die. However, the productivity differences between dying and new firms are somewhat small, i.e., there is a lot of scope for improvement. Overall, firms that left the sample and firms that were newly added are not fundamentally different from the firms that we followed over ten years. This means that our results are generalizable for the Mozambican manufacturing sector, even though the IIM dataset is not representative of the country's manufacturing enterprises. Further, it shows that the manufacturing sector is stagnating over time, i.e., it is not moving forward in a more positive direction.

Chapter 6 analyses some of the key characteristics of firm owners and managers, both in terms of demographic as well as personal characteristics. The level of education attained by owners and managers has increased in relation to 2012, as well as the levels of risk propensity and of trust. This can mostly be explained by the fact that older firm owners and managers have been substituted by younger ones who are more educated and more willing to take risks. The share of firms owned or

managed by females has been stagnating in the past 10 years. However, on a positive note, women-led firms have better financial performance compared to male owned/managed firms.

Chapter 7 looks into specific management practices that firms employ. These management practices are grouped into four sub-categories: (i) Marketing, (ii) Buying & stock control, (iii) Cost & record keeping and (iv) Financial planning. In the past five years, there has been no profound improvement of the management quality among the sampled manufacturing firms. This is surprising because, already in the 1990s, the Mozambican government had the goal of improving and supporting firms' management capabilities. Larger firms that have a female owner/manager are particularly well-managed because these women are generally better educated and trained than men that lead larger firms. We find some evidence that business practices affect firm performance in the Mozambican manufacturing sector. Specifically, financial planning practices (sub-index D) have a strong and robust effect on firm performance.

The eighth Chapter analyses the characteristics of the workforce that the Mozambican manufacturing sector employs. It shows that the manufacturing firms that have been operating for more than a decade lost 2,500 jobs in ten years. These jobs do not seem to be replaced by younger, more productive enterprises. In a context of a young and growing population, these are disappointing trends. Of the total workforce, only 6 per cent of the workers are women, and, just as the total number of workers has declined over time, the share of female workers has declined as well. Medium and formal firms are more likely to employ women. Further, between 2012 and 2022, the number of firms contributing to the national social security system through the National Institute of Social Security (Instituto Nacional de Segurança Social, INSS) remained stagnant. This is surprising as one of the Mozambican Government's priorities is to expand the social security system.

Chapter 9 shows that over the past ten years, important steps towards fulfilling the Government of Mozambique's objective of creating inter-firm linkages have been achieved. Across all provinces, inter-firm linkages have become stronger. Firms are not only selling to individual clients, but it has become more common to sell to state-owned enterprises (SOEs) and foreign direct investment (FDI) firms. However, exporting remains more the exception than the norm among the Mozambican manufacturing sector. Further, medium firms have deepened their linkages much more than micro firms. Lots of scope for the diversification of forward linkages remains, especially for the smallest firms. Regarding the relationship with suppliers, i.e., backward linkages, they have remained the same or become worse over time. The ease of acquiring raw materials is evaluated as easy but has not improved over time. In most provinces, firms now find it more difficult to find alternative suppliers. On the positive side, firms have become more satisfied regarding the social and economic aspects of

their relationship with the main supplier. Further, they are more likely to communicate with and have a long-term orientation towards the main supplier. However, there is scope of improvement in terms of communication and long-term orientation in the supplier relationship. Lastly, we show that firms that are members of a business association are more likely to invest and innovate, even when controlling for unobserved time-invariant firm characteristics.

Even though firm formalisation is a long-standing goal of the Government of Mozambique, Chapter 10 shows that de-formalisation occurred in the past 10 years. The average level of formality is lower in 2022 than in 2012. Two opposite trends are at play: on the one hand, there is a reduction of firms that do not comply with any of the regulations of interest, while on the other, there is a decrease in the share of firms that fulfil all five formality criteria that we analyse. This suggests that firms may not see benefits in fully complying with regulations, but that firms are interested in not being completely informal. Moreover, higher formality does not seem to lead to better financial performance. In the absence of clear benefits of formalisation, it is recommendable for Mozambique not to focus on eradicating informality. The informal sector plays a key role in providing employment to the vast majority of the labour force in the country. Indeed, informal jobs provide a livelihood to categories that are already marginalized and economically vulnerable, thus contributing to poverty alleviation.

Chapter 11 investigates enterprises' access to finance. There is increasing demand for external finance among Mozambican small and medium enterprises (SMEs) but this increase in demand is yet to be served. Currently, 68 per cent of the firms applying for finance have trouble in obtaining credit, a number among the highest on the African continent (based Investment Climate Assessment information), although the average bank customers in Mozambique (based MIX Market information) is comparable to the average customer in Africa. Moreover, having a firm owner who is politically connected is linked with a higher likelihood of applying for formal credit. More specifically, the political connections of informal firms are especially important for the decision to apply for formal finance. However, conditional on having credit demand, political connectedness is not related to whether the firm is credit constrained.

As the frequency and intensity of natural disasters are predicted to increase in the future, we asked firm owners and managers about their extreme weather risk perceptions and reaction measures for the first time in 2022. Chapter 12 illustrates that almost all firm owners and managers perceive extreme weather as a high risk to doing business. Floods and cyclones are perceived as particularly risky. Nevertheless, not enough firms are reacting to the perceived risks, and the quality of the reaction measures they employ is low.

The present report supports the conclusion that the manufacturing sector remains instrumental for Mozambique's economic growth. However, the manufacturing sector is not developing and even on decline in several aspects. This leads to a need for considerations of renewed policies that support economic growth.

Some considerations include efforts to:

- Reduce the administrative burden of the public sector by implementing in practice the already existing regulations of simplifying the regulatory environment (e.g., decrease the number and costs of licenses and inspections required for businesses)
- Make corruption a more easily detectable and punishable offence for both public officials and private sector actors
- Even if many firms do not rely on business associations as a source of knowledge and technology transfer, it is still desirable to support their work as collective engagement could motivate a development of a more efficient bureaucratic and legislative system
- Investigate low prevalence of female-owned enterprises and create a conducive environment for the development of more women-owned businesses given its high potential for contributing to economic growth
- Facilitate the further deepening of value chains, enabling firms to specialize and cooperate for increased productivity
- Make efforts to improve connections to international value chains
- Ensure that all firm size categories are able to access formal finance for investments that could lead to improvements in productivity
- Incentivize training and up skilling opportunities for firms and their employees, particularly when productivity increases can be achieved
- Create support programs for firms that are multidimensional in the sense that they do not only focus on one specific business-related but on two or more. For example, a combination of information sessions, help with business registration and guaranteed access to credit could be helpful
- Pay more attention to how manufacturing firms in the country are managed. Better management is one of the aspects that can be improved and positively contribute to the economy
- To harness the poverty-reducing potential of the informal economy and boost economic growth, it is necessary to make social protection programs available to informal workers,

as well as to boost productivity in the sector with productivity-enhancing measures and by addressing infrastructural and regulatory constraints

- Understand why the supply of finance for private sector activities is so slow in reacting to the increasing credit demand. Relax the lending criteria of local financial institutions to better react to the increasing credit demand by firms
- Enterprises need to be supported in their efforts to react to the future risks of extreme weather events and climate change

1 Introduction

This report brings together the results of the Mozambican Manufacturing Enterprise Surveys (IIM) from 2012, 2017 and 2022. Manufacturing is defined as "the physical or chemical transformation of materials, substances, or components into new products. Units engaged in manufacturing are often described as plants, factories or mills and characteristically use power-driven machines and materials-handling equipment (UNSD, 2007, p. 85). Manufacturing is seen as the dynamic motor of an economy, and has the potential to transform a subsistence and agricultural-based economy into a more productive, modern and industrialized economy. Better knowledge of the manufacturing sector is vital for a deep understanding of the economic situation in Mozambique, which continues to be dominated by agriculture. This report aims to support the development of evidence-based policies that could boost the Mozambican industry, and ultimately contribute to inclusive and sustainable growth.

The IIM survey focusses on the analysis of the development of micro, small and medium-sized enterprises (MSMEs) because these represent the majority of businesses in Mozambique. In low- and middle-income countries, own-account (firms that do not employ any workers) and micro enterprises alone employ 80 to 90 per cent of the work force (ILO, 2019). As such, MSMEs often represent the only source of revenue and opportunity for the economically disadvantaged part of the population. This report provides answers to what has become easier, more challenging or stagnated for Mozambican manufacturing MSMEs during the past ten years (2012-22).

The dataset includes information on firm and firm owner characteristics, detailed financial accounts, management practices, the business environment, inter-firm linkages, access to credit and climate change, among others. As such, the IIM datasets allow for analyses of many dimensions of enterprise performance and the business environment in Mozambique. The data cover the six provinces with Mozambique's highest industrial activity and the province of Tete. Tete was included in 2012 due to particular industrial developments related to mining projects (IIM, 2012). In each province, we interviewed firms in at least one and in a maximum of three urban areas. This implies that in each province, firms in the province's capital were interviewed, and in some provinces, one or two additional cities were included.

The data were collected through face-to-face interviews with firm owners or managers, which resulted in datasets that hold highly diverse information on enterprise outcomes. The 2012 survey interviewed 832 enterprises, the 2017 survey interviewed 460 enterprises and the 2022 survey 475 enterprises. The report's focus is on the same 355 enterprises that were operating in all three years, 2012, 2017

and 2022, i.e. they form a so-called *balanced sample*. By describing enterprises operating during the entire study period, the report can give a focused picture of the changing environment for existing firms, which is not blurred by changes in the sample composition. This choice may exclude important dynamics if younger enterprises are substantially different from those operating for at least ten years. Thus, in addition, the report analyses the characteristics and context of firms that closed their operations in the study period (exit firms), as well as of new firms that started their operations in the study period and were interviewed for the first time in 2022 (newly added firms). Overall, the sample is not statistically representative of the Mozambican manufacturing sector. However, the different datasets described follow similar trends over time such that it is possible to create statistically valid and strong conclusions for Mozambique's industry.

After 15 years of violent conflict, Mozambique established a democratic system in 1994. The country's economy had to be revitalized, and the manufacturing sector was given a particular focus through the Industrial Strategy Policy in 1997 (GoM, 1997). Hopes were high for structural transformation to occur. Structural transformation (Lewis, 1954) implies the movement of workers from low-productivity employment in agriculture to high-productivity employment in manufacturing. An increase in the supply of industrial workers who have moved out of agriculture allow for a country's industrialization. Once manufacturing firms make profit that is invested, industrialization further increases and capital starts accumulating, which allows for sustainable economic development. In practice, structural transformation has helped develop the economies of many Asian countries such as Viet Nam and China (Abbot, Tarp and Wu, 2017; Dekle and Vandenbroucke, 2012; Kim and Ncube, 2014). Consequently, until today, an ideal scenario is for the same process to occur on the African continent. In some African countries, structural transformation is happening, and these countries have higher average growth rates (Busse et al., 2019). However, structural transformation in Africa is weaker than in Asia, and, in Mozambique, there is no clear evidence of significant industrialization.

Between 1993 and 2014, Mozambique's economy grew strongly, with an annual average of 7 per cent. Rapid growth did not occur as a result of structural transformation but, in large measure, due to recovery, foreign development aid and foreign direct investment (FDI). The share of manufacturing in GDP even shrank from 13 per cent in the 1990s to 11 per cent in the 2010s, and, until today, more than two-thirds of this share is created by the megaproject Mozal, an aluminium smelter. In 2023, around 80 per cent of Mozambique's workers remain in agriculture, meaning that the economy's structure is stagnating over time. Urban areas are characterized by a relatively large and uncompetitive service sector (Cruz and Mafambissa, 2018; Matusse, 2022).

Since the 2010s, economic growth slowed down as Mozambique suffered from an economic crisis and was hit by major cyclones in the Centre and North of the country. The COVID-19 pandemic did not make it easier such that poverty is on the rise again. Practically, the government's growth strategy focusses on foreign investment in coal, gas and public infrastructure, which is risky and unsustainable. On a positive note, the Industrial Policy and Strategy from 2016 set the objective to use the manufacturing sector as the main vehicle for the country to achieve prosperity (GoM, 2016). However, the strategy mostly repeats the points that the country has already set during the 1990s and continues repeating in its Five-Year-Plans and the National Development Strategy (ENDE) (GoM, 2014, 2016, 2020). This report shows that the manufacturing sector is not moving decisively forward regarding the government's aim of industrialization. Thus, it develops detailed and evidence-based recommendations that policy-makes can follow to support the Mozambican industry.

Going into more details, in the 1990s, the Industrial Strategy aimed at industrializing the country by supporting MSMEs in particular, establishing funding mechanisms, simplifying registration processes to facilitate the formalisation of the informal sector, promoting inter-firm linkages with a focus on exports, supporting the production of intermediate goods, introducing advanced technology and improving the business environment. A specific goal was to revitalize the textiles (clothing), metalwork and construction material industries. This report illustrates that the government's objectives have not been achieved, and that industrialization has rather been on a decline than on the wished for rise between 2012 and 2022.

Despite the implementation of major programs to support the Mozambican industry such as the opening of one-stop shops all over the country to simplify business registration, the establishment of the Institute for the Promotion of Small and Medium Enterprises (IPEME) and a comprehensive Industrial Strategy for the period 2016-25 (GoM, 2016), the overall situation of firms has not changed over ten years. Alongside a few large industrial projects, a majority of firms is concentrated in the same industries and carry out basic manual work without adding value. Most micro-sized enterprises seem to be stuck in a low-level equilibrium, from which it is challenging to escape without multidimensional support.

For the manufacturing sector to become growth enhancing, a lot remains to be done. Further, as one of the countries most affected by extreme weather phenomena, Mozambique will have to adapt to climate change, which is yet another challenge that could hamper the country's industry and society as a whole. The last chapter of this report therefore makes specific and evidence-based policy recommendations on how to support the Mozambican industry and its development in the coming years.

2 The data

The aim of this chapter is to outline the data collection process and acquaint the reader with the different sample types (balanced, unbalanced, exit and newly added firms samples), which will facilitate the understanding of the subsequent chapters. The main characteristics of and differences between the samples are described.

2.1 Survey preparation and data collection

In April and May 2022, the data of the third IIM survey round were collected. The project's 32 enumerators conducted face-to-face interviews in Portuguese with firm owners and managers. In the few cases where the owner/manager was absent, employees replied to the survey. We registered the replies on tablets using the KoBo Toolbox software. The data cover the country's six provinces with the highest industrial activity namely Maputo, Maputo Province, Sofala, Nampula and Gaza. In addition, the province of Tete was included due to unique developments related to mining projects in that province during the sample creation in 2012. Within a province, only firms in districts with the highest concentration of firms were included, which implies that most firms are located in urban areas. In each province, firms in the province's capital were interviewed and, in some provinces, two or three more urban areas were enumerated.

Four supervisors and the survey coordinator oversaw the data collection. Together, they were responsible for a one-week training of 40 enumerators in March 2022. Through presentations by the supervisors and group exercises, the enumerators familiarized themselves with all survey questions and learned how to conduct quantitative interviews. One entire day was reserved for piloting the questionnaire such that all enumerators visited multiple firms in Maputo to try out the survey questions, and revise some of the questions afterwards. On the final training day, the best 32 enumerators were selected based on a written test. The Centre for Economic and Management Studies (CEEG) of Eduardo Mondlane University locally contracted all enumerators as service providers.

The two previous survey rounds were conducted in 2012 and 2017 (see Berkel et al., 2018). In 2012, a random sampling strategy was used to select the firms to be interviewed. Specifically, firms were randomly selected from Mozambique's official enterprise census (CEMPRE) from 2002 (revised in 2004). This means that the sample is not representative of firms that were founded after 2012 because the IIM has a tracer-survey design, meaning that its overall objective is to follow the same firms over time.

In addition to the random sample from CEMPRE, informal firms were selected through an on-site identification strategy in 2012. An informal firm is defined as not being registered for tax payment, i.e. it is not in possession of a tax-identification number (NUIT). The enumerators asked interviewees in the selected formal firms about nearby manufacturing firms. By comparing this information with the registry data of formal firms, they located informal firms. These informal firms are likely to be more competitive relative to other informal firms as they are known by formal firms and might even work with formal firms. Thus, the sample of informal firms is not representative of the entire informal sector in Mozambique.

The balanced panel consists of 1,065 observations (the same 355 firms in each survey round), whereas the unbalanced panel includes 1,766 observations (831 firms in 2012, 460 in 2017 and 475 in 2022). In 2017, no new firms were added to the sample, i.e., all 460 firms from 2017 had also been interviewed previously in 2012. Between the first and the second survey round (2012-17), 371 firms left the sample and between the second and third survey round (2017-22), 105 firms left the sample because we could not re-locate them, they refused participation or had closed down their operations. In 2022, 120 new firms were added to the sample with the aim to replace the firms that had exited in the ten-year period from 2012.

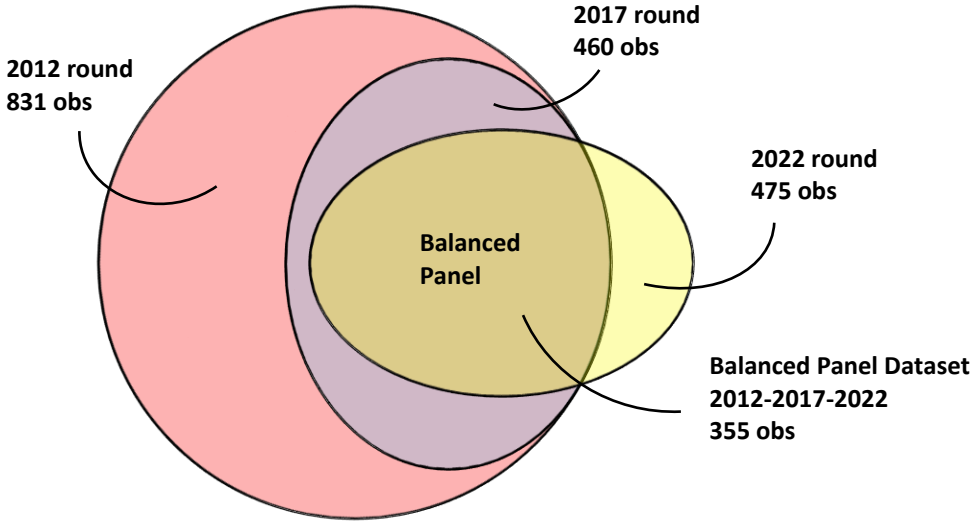
Monitoring of the data quality happened during the data collection process. The supervisors and a research assistant from the University of Copenhagen cross-checked whether certain replies made sense by comparing them to replies to the same repeated or similar questions. In case of inconsistencies, the enumerators received feedback to improve their work. Further, the supervisors re-visited the interviewed firms to make sure they had been fully interviewed, besides visiting many of the firms jointly with the enumerators on a daily basis.

2.2 The samples

Figure and Table 2.1 provide an overview of the number of firms ever interviewed and to which sample type they belong. We begin describing the unbalanced panel dataset that includes all 1,766 observations ever interviewed by the IIM project. The term unbalanced means that the dataset has an uneven distribution of observations, i.e., the number of firms per survey round is not the same. The observations are uneven over time because not all of the firms originally interviewed in 2012 could be re-interviewed in the following two survey rounds. In the first survey round that happened in 2012, 831 firms answered the survey. In the second survey round that was implemented in 2017, only 460 of the 831 originally interviewed firms were re-interviewed. In the third survey round in 2022,

the IIM project re-interviewed 355 of the firms that had also been interviewed in the previous two survey rounds and, in addition, included 120 firms that were interviewed for the first time.

Figure 2.1: Graphic representation of the IIM unbalanced panel sample



Source: Authors' illustration based on IIM 2012, 2017 and 2022 data.

The balanced panel dataset includes the same 355 firms in all three survey rounds. Expressed differently, 355 of the 831 firms originally interviewed in 2012, were re-interviewed in both 2017 and 2022. This report's focus is on the balanced sample because it most accurately describes the development of the Mozambican industry over time. Nevertheless, it is important to understand whether the firms that survived and were re-interviewed in all three survey rounds are fundamentally different from the exit and the new firms. Thus, the report also analyses the exit and new firms in depth.

Table 2.1: Number of firms (observations) by sample type

Survey round	Only 2012 Exit Firms	Only 12&17 Exit Firms	Only 2022 New Firms	Balanced Panel 12-17-22	Unbalanced Panel 12-17-22
2012	371	105	-	355	831
2017	-	105	-	355	460
2022	-	-	120	355	475
Obs	371	210	120	1,065	1,766

Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Between the first and the second survey round (2012-17), some 371 firms of the 831 firms originally interviewed exited the sample because they could not be found, refused to participate or closed in the five years. Another 105 firms of the 460 firms interviewed in both 2012 and 2017 exited the sample

until 2022. The entire Chapter 5 is dedicated to analysing the characteristics of the 475 (371+105) so-called exit firms. Lastly, the 2022 survey round includes 475 firms, of which 120 answered for the first time and 355 firms are part of the balanced sample. The 120 newly added firms help understand whether older firms in the manufacturing sector are replaced by younger, more productive enterprises, which would be a signal of a well-functioning economy.

A key feature that is analysed throughout the entire report is firm size, i.e., the firms' number of employees. To facilitate the analysis, this report adopts the standard World Bank definitions to categorize firm size. Enterprises with less than 10 employees are categorized as micro, with 10–49 employees as small, and with 50–299 employees as medium-sized (DNEAP, 2013).

Table 2.2 provides the distribution of firms according to their size categories by survey round and sample type. Independently of the sample type, a general trend is for the firms to shrink in size. The micro-size category becomes larger over time, whereas both the small and medium-size categories become smaller. For example, in the unbalanced panel, about two-thirds of the firms were of micro-size in 2012, while one-third belonged to the small category and the remaining 10 per cent were medium-sized. By 2022, the micro category had increased to 74 per cent, whereas the small and medium category decreased to 21 and 5 per cent. Similar trends are followed by both the firms in the balanced panel and exit sample.

Table 2.2: Distribution of size categories by survey round and sample

	Unbalanced Panel			Balanced Panel			Exits (only 12 & 17)	
	2012 Obs (%)	2017 Obs (%)	2022 Obs (%)	2012 Obs (%)	2017 Obs (%)	2022 Obs (%)	2012 Obs (%)	2017 Obs (%)
Micro	500 (60.1)	321 (69.8)	353 (74.3)	235 (66.2)	257 (72.4)	267 (75.2)	50 (47.6)	64 (61.0)
Small	249 (29.3)	99 (21.5)	100 (21.1)	94 (26.5)	71 (20.0)	72 (20.3)	36 (34.3)	28 (26.7)
Medium	82 (9.9)	40 (8.7)	22 (4.6)	26 (7.3)	27 (7.6)	16 (4.5)	19 (18.1)	13 (12.4)
Obs	831	460	475	355	355	355	105	105

Note: Unbalanced panel and balanced panel. Percentages may not add up to 100% due to rounding.
Source: Authors' calculation based on IIM 2012, 2017 and 2022

Without doubt, the debt crisis in 2016 had a negative impact on growth opportunities for various businesses in Mozambique (Cruz et al., 2020). The average annual growth rate, measured in terms of GDP, between 2016 and 2019 was 3.3 per cent, about half of the growth rate in the previous 15 years (Gebregziabher, 2022). Moreover, Mozambique has, as the rest of the world, struggled to address the

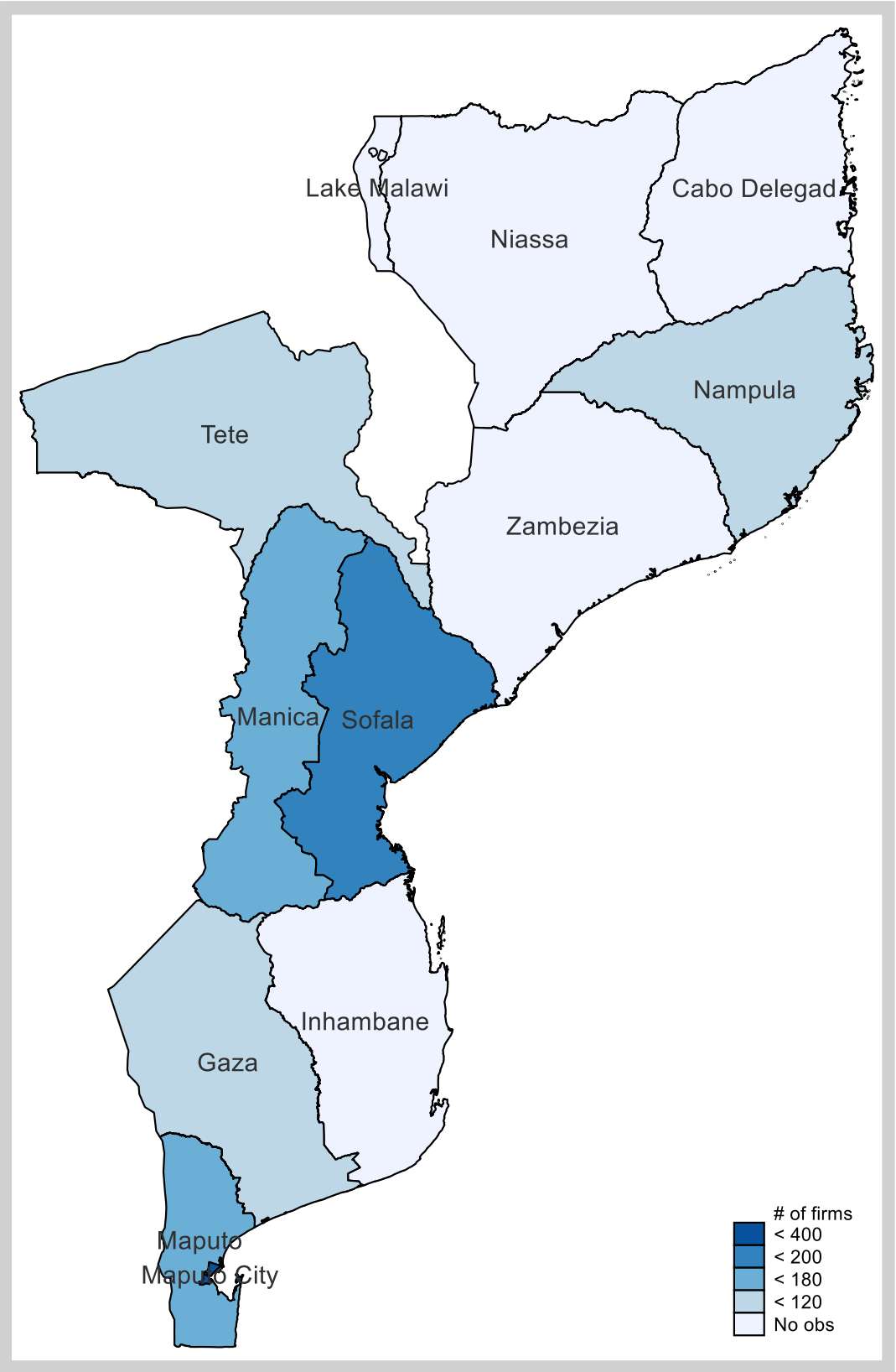
impact of the COVID-19 pandemic. The growth dynamics of enterprises are analysed in more detail in the Employment Chapter 8.

Geographically, the sample covers the six provinces with the highest industrial activity plus Tete. Figure 2.2 illustrates the distribution of observations across those provinces. Approximately half of the sampled firms are located in the South of Mozambique (30 per cent in Maputo City, 11 per cent in Maputo Province and 9 per cent in Gaza). One-third are in the centre, either in Sofala Province (21 per cent) or in Manica Province (11 per cent). The remaining 17 per cent are in the northern provinces of Nampula (9 per cent) and Tete (8 per cent). The provincial distribution is almost the same in the balanced and in the unbalanced sample.

Table 2.3 adds an additional detail to the geographical distribution by illustrating the number of firms by city and sample type. About 13 per cent of the firms in the balanced sample are located in Maputo Province, either in Matola (11 per cent) or in Boane (2 per cent). In Gaza, the cities of Xai-Xai (7 per cent) and Chokwé (4 per cent) were covered by the IIM survey. In the centre of Mozambique, the survey included Sofala Province where firms in Beira (19 per cent), Dondo (2 per cent) and Mafambisse (1 per cent) were interviewed, and Manica Province where firms in Chimoio (9 per cent), Gondola (1 per cent) and Manica (1 per cent) were inquired. In northern Mozambique, the provinces of Tete (Tete, 5 per cent, and Moatize, 4 per cent) and Nampula (Monapo, 0.6 per cent, Nacala, 4 per cent, and Nampula, 5 per cent) participated in the IIM survey.

Moreover, Table 2.3 shows that the exit shares are generally higher in the cities with more industrial activity, i.e., where more firms participated in the survey. For example, the two cities where most firms were interviewed, Maputo (23 per cent) and Beira (19 per cent), also have the highest exit shares (40 and 15 per cent). Similarly, these cities are also the ones where most firms were newly added to the sample in 2022 (29 per cent in Maputo City and 28 per cent in Beira). The share of newly added firms by location is not equal to the exit share for two main reasons. First, it was impossible to know how many firms would leave the sample between 2017 and 2022. Second, many of the firms that we intended to add in 2022 could not be found at the GPS location they had reported in CEMPRE such that we interviewed fewer newly added firms than we had initially planned.

Figure 2.2: Geographical distribution of the unbalanced sample



Note: Unbalanced panel
Source: Authors' illustration based on IIM 2012, 2017 and 2022 data.

Table 2.3: Firm distribution by geography and sample type

Geography	Province	City	Balanced sample Obs (%)	Exits Obs (%)	Newly added in 2022 Obs (%)
South	Maputo City	Maputo City	82 (23.1)	189 (39.7)	35 (29.2)
	Maputo Province	Matola	39 (11.0)	46 (9.7)	5 (4.2)
		Boane	6 (1.7)	0 (0.0)	5 (4.2)
	Gaza	Chokwé	15 (4.2)	17 (3.6)	1 (0.8)
		Xai-Xai	26 (7.3)	17 (3.6)	2 (1.7)
Centre	Manica	Chimoio	31 (8.7)	57 (12.0)	22 (18.3)
		Gondola	4 (1.1)	0 (0.0)	0 (0.0)
		Manica	2 (0.6)	0 (0.0)	1 (0.8)
	Sofala	Beira	68 (19.2)	70 (14.7)	34 (28.3)
		Dondo	8 (2.3)	0 (0.0)	0 (0.0)
		Mafambisse	5 (1.4)	0 (0.0)	0 (0.0)
North	Tete	Moatize	14 (3.9)	10 (2.1)	1 (1.0)
		Tete	19 (5.4)	18 (3.8)	4 (3.3)
	Nampula	Monapo	2 (0.6)	0 (0.0)	0 (0.0)
		Nacala	14 (3.9)	15 (3.2)	2 (1.7)
		Nampula	20 (5.6)	37 (7.8)	8 (6.7)
Observations			355	476	120

Note: Unbalanced panel. Percentages may not add up to 100% due to rounding.
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Table 2.4 shows the distribution of firms by province and size category. Maputo Province and Maputo City have the largest shares of small and medium firms. In Maputo (City and Province), almost 15 per cent of the firms are of small size and 6 per cent of medium size. In most of the other provinces, fewer than 5 per cent of the firms are small and fewer than two per cent are medium-sized. This reflects higher economic development and more growth opportunities in the southern region. Maputo Province and City jointly account for around a quarter of the GDP of Mozambique relative to the nine remaining provinces (Knoema, 2017).

Manufacturing is defined as

> "the physical or chemical transformation of materials, substances, or components into new products […]. The materials, substances or components transformed are raw materials that are products of agriculture, forestry, fishing, mining or quarrying as well as products of other manufacturing activities. […] Units engaged in manufacturing are often described as plants, factories or mills and characteristically use power-driven machines and materials-handling equipment. […] The output of a manufacturing process may be finished in the sense that it is ready for utilization or consumption, or it may be semi-finished in the sense that it is to become an input for further manufacturing" (UNSC, 2007, p. 85).

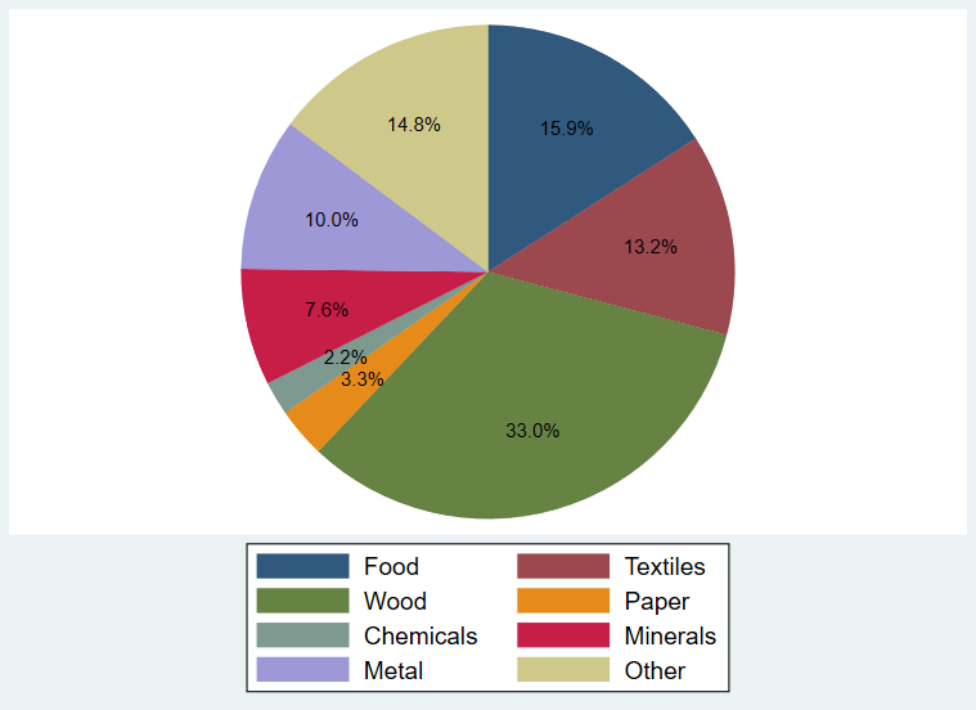
In the manufacturing sector, there are sub-sectors, also called industries, defined along the International Standard Industrial Classification of All Economic Activities (ISIC) codes (UNSC, 2007). Even though the data present information that is more detailed about the specific activity of the individual firms, this introductory section introduces a distribution across eight aggregate sector categories described in Figure 2.3. The reason for aggregating several sectors is that a majority of firms concentrate in few and similar sectors.

Table 2.4: Firm distribution by size class

	Micro Obs (%)	Small Obs (%)	Medium Obs (%)	Total Obs (%)
Maputo City	304 (17.2)	168 (9.5)	56 (3.2)	528 (29.9)
Maputo Province	104 (5.9)	71 (4.0)	24 (1.4)	199 (11.3)
Gaza	137 (7.8)	20 (1.1)	9 (1.0)	166 (9.4)
Sofala	281 (15.9)	81 (4.6)	12 (1.0)	374 (21.2)
Manica	146 (8.3)	37 (2.1)	12 (1.0)	195 (11.0)
Nampula	98 (5.6)	43 (2.4)	25 (1.4)	166 (9.4)
Tete	104 (5.9)	28 (1.6)	6 (0.3)	138 (7.8)
Total	1,174 (66.5)	448 (25.4)	144 (8.2)	1,766 (100.0)

Note: Unbalanced panel. Percentages may not add up to 100% due to rounding.
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Figure 2.3: Firm distribution by sector (unbalanced sample)



Note: Unbalanced panel.
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Wood and furniture together form the largest aggregated industry (one-third of the sample) and usually include small-scale carpenters. Food-processing follows suit with 16 per cent, and most of the food-processors are mills and bakeries. In descending order, the textiles (usually small-scale tailors), metal (usually black smiths), minerals (usually firms that produce simple bricks for houses), paper (usually book binders and printing) and chemicals industries follow suit. The 'other' category represents several niche industries not included in the eight aggregate sector categories such as the repair of electric equipment and production of jewellery.

Innovative and dynamic industries such as chemical and high-tech industries do not play a prominent role in the manufacturing sector of Mozambique. Hence, in 2022, the manufacturing enterprises in Mozambique continue to be concentrated in very few sectors, just as in 2012 (IIM, 2012, 2017). The structure of the manufacturing sector has not changed over time.

Lastly, the report includes in-depth analyses of formality, i.e., a firm's level of registration with the state. The level of informality is measured by an index ranging from 0 to 2 where the different "formality checks" are counted (registration with the local tax office, "Repartição de Finanças", and contributing to the National Institute of Social Security, INSS). In Chapter 10 the rationale behind the index and its dimensions are explained in more depth. For now, it is sufficient to understand that the

index ranges from 0 to 2 where 0 implies full informality (firm is not registered with any authority), 1 is partially formal and 2 is the highest level of formality (firm is registered with two authorities).

Despite the government's objective to gradually formalize the informal sector and even though registration has been simplified in terms of the number of procedures, duration and costs, the informality level has increased over time (see Table 2.5). In 2012, only 43 per cent of the surveyed enterprises were completely informal, while in 2022 the share of informal firms had increased to 51 per cent. Consequently, the (full) formality level dropped from 43 per cent in 2012 to 32 per cent in 2022.

Table 2.5: Formality level across years (unbalanced sample)

	2012 %	2017 %	2022 %
Informal (0)	42.8	36.5	51.4
Partially formal (1)	14.7	21.3	16.6
Formal (2)	42.5	42.2	32.0
Observations	831	460	475

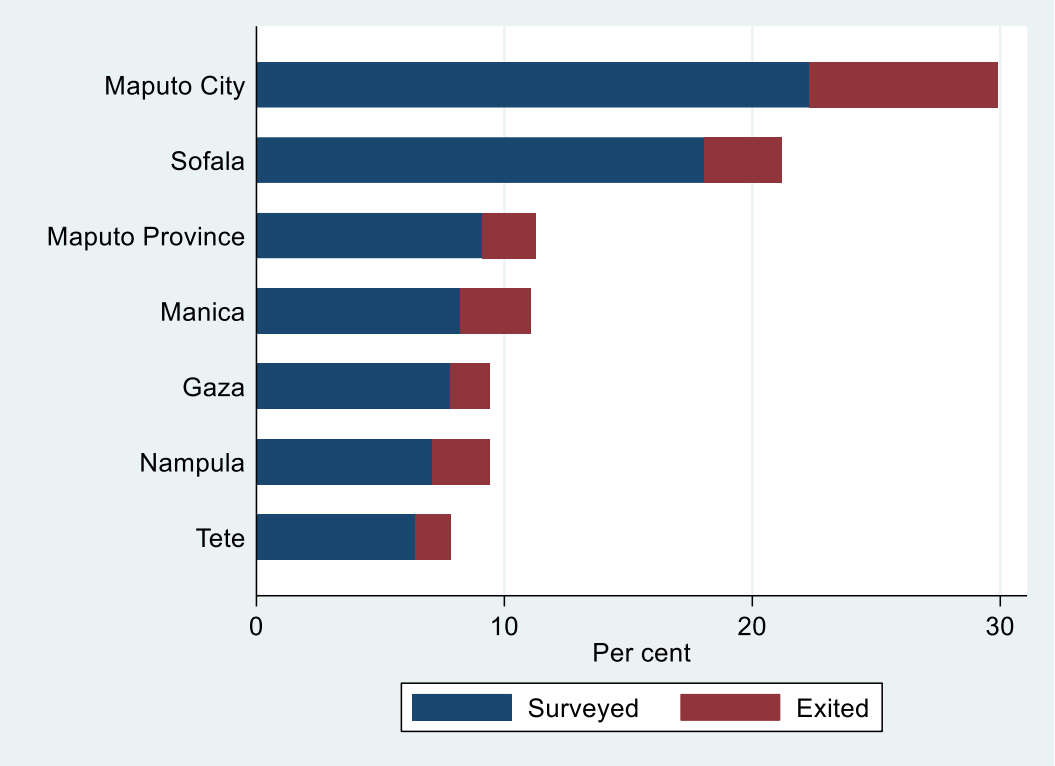
Note: Unbalanced panel. Percentages may not add up to 100% due to rounding.
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

2.3 Firm exit between 2017 and 2022

The 2022 survey round aimed at revisiting all enterprises from 2017 and 2012. It was not always possible to re-interview the enterprises of the precedent rounds both due to intractability and industry exit. In total, 105 enterprises left the sample between 2017 and 2022. Chapter 3 investigates the reasons for survey exit and firm death in more detail. This paragraph summarizes the most important characteristics of the exit firms.

Figure 2.4 illustrates the share of exited firms by province. Maputo City experienced the highest drop-out rate (more than 20 per cent), followed by Sofala (8 per cent) and Nampula (8 per cent). These are also the provinces with the biggest firms and more industrial activity than the other provinces. In contrast, the provinces where a majority of firms are of micro-size and carry out subsistence-based activities instead of high-tech and machine-driven operations, have smaller exit shares.

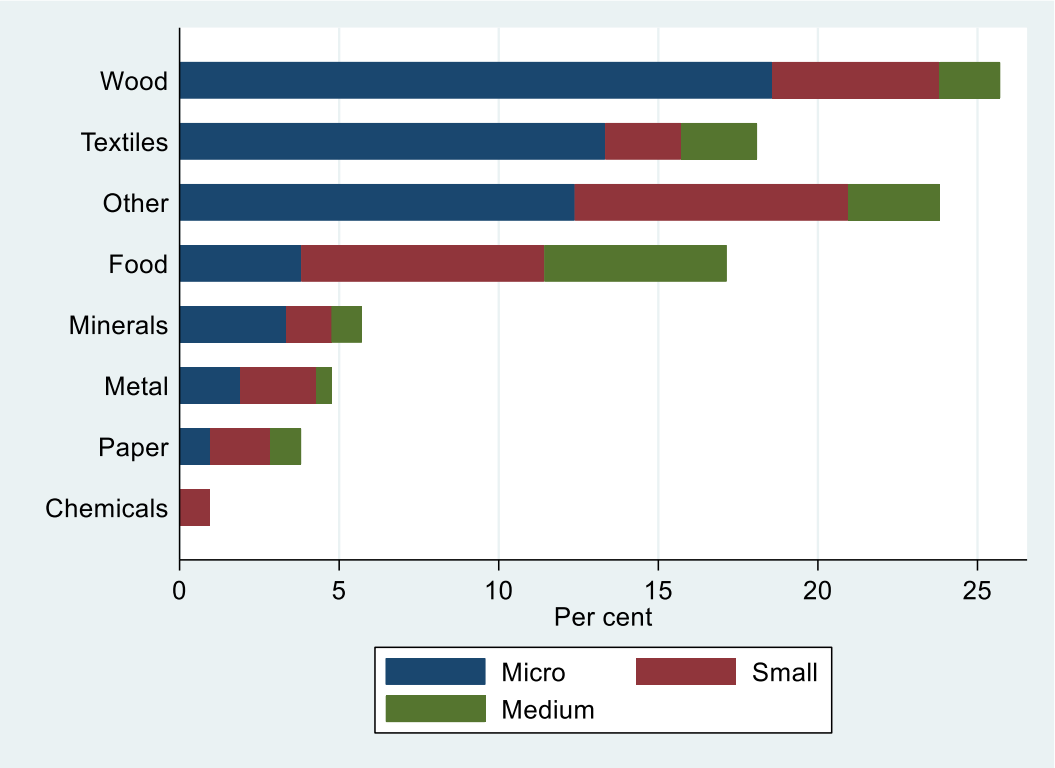
Figure 2.4: Firm exit by province



Note: Panel 2012 2017
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Figure 2.5 presents firm exits by sector and size. The majority of the enterprises that exited between 2017 and 2022 were carpenters and food processors. This result is not surprising because these sectors are also the biggest ones in the sample in terms of number of the number firms. Hence, it is relevant to look at the share of dropouts in each sector to better understand the changes. Table 2.6 therefore presents the relative exit rate for each sector, thus compares the number of exit firms between 2017 and 2022 with the number of firms present in each sector in the 2012-2017 panel. We find that tailors (textiles sector) experienced the highest exit rate of 31 per cent, followed by printing firms (paper sector) with 30 per cent and lastly, food processors with 26 per cent. The chemicals sector has the lowest exit rate of 10 per cent.

Figure 2.5: Firm exit by sector and size



Note: 2012-2017 Panel and Firm exit 2022
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Table 2.6: Firm exit by sector

	Food	Textiles	Wood	Paper	Chemicals	Minerals	Metal	Other	Total
	Obs	Obs	Obs	Obs	Obs	Obs	Obs	Obs	Obs
Panel 12-17	138	124	318	28	20	62	84	146	460
Firm exited	36	38	54	8	2	12	10	50	210
Exited firm share	26.0%	30.6%	16.9%	28.5%	10.0%	19%	11.9%	34.2%	

Note: 2012-2017 Panel and Firm exit 2022
Source: Authors' calculation based on IIM 2012, 2017 data.

2.4 The balanced sample

The report aims to give an overview of the dynamics of the manufacturing sector in Mozambique between 2012, 2017 and 2022, with an emphasis on the balanced panel dataset with information from the 355 enterprises interviewed in all survey rounds. This sub-section therefore presents the key characteristics of the balanced panel in terms of size, provincial distribution and manufacturing industries.

Table 2.7 shows the frequency and percentage of firms by city, size category and survey round. The provinces with the highest prevalence of medium enterprises are Maputo Province and Maputo City, while Gaza, Sofala and Tete account for the highest share of micro firms, ranging from 80 per cent to 90 per cent. Between 2012 and 2017, the share of micro enterprises increased by 6 percentage points, from 66 to 72 per cent, and increased further to 75 per cent in 2022. Small firms became fewer, as their share in the sample declined from 26 per cent in 2012 to 20 per cent in 2017 and 2022. Medium firms also decreased by 3 percentage points between 2012 and 2022. Medium-sized enterprises account for about 7 per cent of the sample in both 2012 and 2017 but only 5 per cent in 2022. Thus, overall, both small and medium-sized firms shrunk in size during the past ten years.

Table 2.7: Firm distribution by province, firm size and year

	2012			2017			2022			
	Micro Obs (%)	Small Obs (%)	Med Obs (%)	Micro Obs (%)	Small Obs (%)	Med Obs (%)	Micro Obs (%)	Small Obs (%)	Med Obs (%)	Total Obs (%)
Map City	47 (56.0)	30 (35.7)	7 (8.3)	53 (63.1)	21 (25.0)	10 (11.9)	53 (63.1)	27 (32.1)	4 (4.8)	84 (23.6)
Map Prov	23 (52.8)	16 (36.4)	5 (11.4)	26 (59.1)	14 (31.8)	4 (9.1)	29 (65.9)	11 (25.0)	4 (9.1)	44 (12.4)
Gaza	36 (87.8)	4 (9.7)	1 (2.5)	37 (90.3)	3 (7.3)	1 (2.4)	37 (90.2)	4 (9.8)	0 (0.0)	41 (11.6)
Sofala	61 (71.7)	21 (24.7)	3 (3.5)	68 (80.0)	14 (16.5)	3 (3.5)	70 (82.4)	13 (15.3)	2 (2.4)	85 (23.9)
Manic	26 (72.2)	6 (16.7)	4 (11.1)	26 (72.2)	7 (19.4)	3 (8.3)	28 (7.8)	6 (16.7)	2 (5.6)	36 (10.1)
Namp	19 (52.8)	7 (19.4)	5 (13.9)	20 (64.5)	7 (22.6)	4 (12.9)	23 (74.2)	5 (16.1)	3 (9.7)	31 (8.7)
Tete	23 (67.6)	10 (29.4)	1 (2.9)	27 (79.4)	5 (14.7)	2 (5.9)	27 (79.4)	6 (17.6)	1 (2.9)	34 (9.6)
Obs	235	94	26	257	71	27	267	72	16	355

Note: Balanced panel. Percentages may not add up to 100% due to rounding.
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Between 2012 and 2017, it was mostly small firms that became smaller, while between 2017 and 2022, many medium firms declined in size. Similar patterns hold across the provinces. In Maputo Province, where the share of micro firms was smallest (52 per cent) relative to all other provinces in 2012, it has increased to 66 per cent in 2022, mostly because small firms became micro firms. The share of micro firms was highest in Gaza (88 per cent) in 2012 and has increased even further to 90 per cent in 2022.

Table 2.8 digs deeper into the changes between firm size categories in the period 2017-22. During these five years, only 20 enterprises moved to a bigger size category: 18 micro firms became small and two small firms achieved a medium size. None of the micro enterprises in 2017 managed to become a medium-sized enterprise by 2022. There were more firms that shrank in size category than firms that grew: 24 small firms became micro firms, 4 medium firms decreased to micro firms and 9 medium firms shrunk to small firms. This illustrates that the total number of employees that left the balanced sample was higher than the total number of employees that entered the sector.

Table 2.8: Size category transition matrix 2017 – 2022

		Firm size 2022			
		Micro	**Small**	**Medium**	**Total**
Firm size 2017	**Micro**	239	18	0	257
	Small	24	45	2	71
	Medium	4	9	14	27
	Total	267	72	16	355

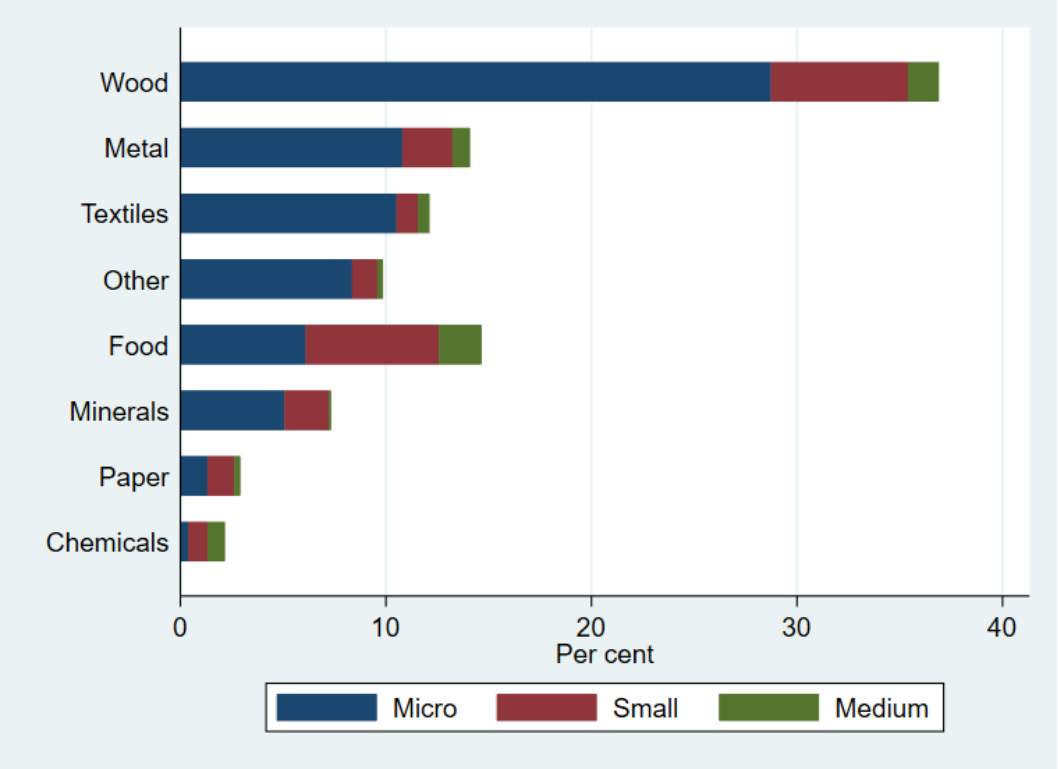
Note: Balanced panel
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Figure 2.6 provides a breakdown of the balanced panel sample by enterprise size and the eight aggregated industries. The distribution across sectors does not differ much from the distribution of the unbalanced panel, with the wood industry (carpenters) and food-processors (grain mills and bakeries) representing the two biggest sectors, and chemical enterprises being the fewest. Just as in the unbalanced sample, firms accumulate in few sectors and carry out basic, mostly manual activities. Only very few enterprises carry out advanced technical manufacturing processes. In most of the industries, more than 50 per cent of the firms are micro-sized. Food-processors have a relatively high share of small firms and in the chemicals sector, a majority of firms are small or medium-sized.

Figure 2.7 illustrates the distribution of formality by sector. The formality index includes three formality levels, namely informal, partially formal and formal. Similarly, the chemicals and paper industries are highly formalized industries with more than 90 per cent of the firms being partially or

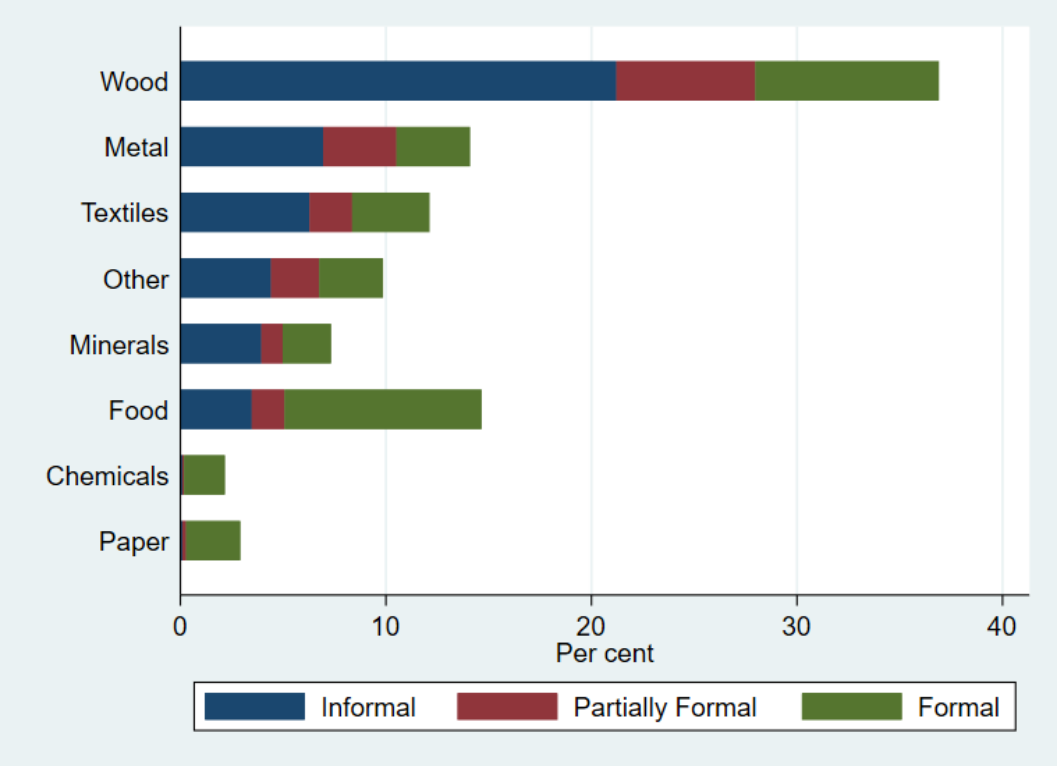
fully formal. Food-processors form the third most formal industry, with 75 per cent of the firms being partially or fully formal. In contrast, carpenters and tailors are the most informal sectors as more than half of them are fully informal. These informality patterns are very similar in the balanced and unbalanced samples in the sense that the most formal industries and the most informal sectors are the same in both samples. Thus, the firms that the report focusses on are not fundamentally different in terms of their formality level from the exit and newly added firms.

Figure 2.6: Sector distribution by enterprise size



Note: Balanced panel
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Figure 2.7: Informality by sector



Note: Balanced panel
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

2.5 The new 120 observations from the 2022 survey round

In addition to the 355 firms interviewed in 2012, 2017 and 2022, the most recent IIM 2022 survey round interviewed 120 additional firms for the first time. Focusing on the 120 new enterprises, Figure 2.8 and Table 2.9 illustrate geographic distribution by size category and the aggregate sector, respectively. The geographical distribution of the new surveyed enterprises was determined by the exit rate of firms between 2012 and 2017. We assumed the exit rate of 2012-17 to be the same for 2017-22, and added new firms accordingly.

However, we could not find 40 per cent of the 200 firms we wanted add to the sample. These 200 firms were randomly chosen from the Mozambican enterprise census (CEMPRE), and when we went to the GPS location they had reported in CEMPRE, many firms were not located there or had closed. Thus, we only interviewed 60 per cent of the firms that we wanted to interview such that the share by province and sector is not fully consistent with the exit share. Nevertheless, the newly added sample is good enough to implement profound statistical analyses.

Table 2.9: Firm frequency by province and sector

	Food	Textiles	Wood	Paper	Chemicals	Minerals	Metal	Other	Total (%)
Maputo City	7	7	6	10	0	2	1	2	35 (29.2)
Maputo Prov	1	0	1	0	0	2	5	1	10 (8.3)
Gaza	0	0	1	0	1	0	0	1	3 (2.5)
Sofala	4	7	14	0	1	3	3	2	34 (28.3)
Manica	4	3	6	0	0	1	6	3	23 (19.2)
Nampula	2	0	1	3	1	0	1	2	10 (8.3)
Tete	1	1	2	0	0	1	0	0	5 (4.2)
Total	19	18	31	13	3	9	16	11	120

Note: Newly added firms. Percentages may not add up to 100% due to rounding.
Source: Authors' calculation based on IIM 2022 data

Almost 60 per cent of the newly sampled enterprises are from Maputo City and Sofala, which are also the provinces with the highest exit shares. Similarly, fewer than 5 per cent of the newly added firms are located in Gaza and Tete, which also had the lowest exit shares between 2017 and 2022. Table 2.9 illustrates that one-quarter of the newly-added firms are carpenters (wood industry), which is consistent with the wood industry having the highest exit share as well. Most of the newly-added

carpenters are located in Sofala, where the wood industry is the largest of all provinces. The chemicals industry has the smallest exit share and, therefore, only two of the newly added firms are operating in the chemicals industry.

Table 2.10 illustrates multiple firm characteristics by sample type. In terms of size classification, the newly added firms (column 1) are similar to the firms of the balanced sample (column 3). More than 70 per cent of the firms in both samples are micro-sized, followed by slightly more than 20 per cent of small firms and 5 per cent of medium-sized firms. However, an over-proportional share of medium-sized (15 per cent of all exits) and small-sized (30 per cent) left the sample between 2017 and 2022, and these firms were not replaced by new medium and small-sized firms.

Table 2.10: Firm shares by sample and firm characteristics (per cent)

	Only 2022 New Firms	Only 12&17 Exit Firms	Balanced Panel 12-17-22
Size classification			
Micro	71.7	54.3	75.2
Small	23.3	30.5	20.2
Medium	5.0	15.2	5.0
Province			
Maputo City	29.2	51.0	23.7
Maputo Province	8.3	9.1	12.4
Gaza	2.5	5.7	11.6***
Sofala	28.3	14.3	23.9
Manica	19.2	6.7	10.1***
Nampula	8.3	10.8	8.7
Tete	4.1	2.9	9.6*
Sectors			
Food	15.8	17.1	15.2
Textiles	15.0	18.1	12.1
Wood	25.8	37.1	36.3**
Paper	10.8	3.8	3.1***
Chemicals	2.5	1.00	1.4
Minerals	7.5	5.7	7.9
Metal	13.3	13.3	21.4*
Other	9.2	3.8	2.5***
Woman-led	7.5	18.1	9.9
Total firms	120	105	355

Note: Percentages may not add up to 100% due to rounding
Source: Authors' calculation based on IIM 2012, 2017 and 2022 data.

Turning towards the provincial distribution of firms, we find that the shares of newly added firms located in Gaza (3 per cent) and Tete (4 per cent) are very low. However, this is reasonable because these are also the provinces with the lowest exit shares (6 per cent and 3 per cent of the exit firms were located in Gaza and Tete) such that it was not necessary to replace many firms that exited with new firms. Moreover, Manica is significantly over-sampled among the newly-added firms (19 per cent) as few firms from Manica (7 per cent) left the sample and, more generally, only 10 per cent of the firms in the balanced sample are located in that province. The reason why Manica is oversampled is probably because it was easier to locate the newly added firms in this province than in other provinces.

Regarding manufacturing industries, carpenters seem to be under-sampled among the newly added firms (26 per cent) as their shares in the exit (37 per cent) and in the balanced sample (36 per cent) are significantly higher. On the other hand, the paper industry is over-sampled in Maputo among the newly-added firms when compared to the number of paper firms in the balanced sample. The reason for over-sampling paper firms is that the paper industry is especially large in the CEMPRE, perhaps because these are also the firms that are more likely to be registered with the government and, therefore, easier to find than other industries. Moreover, an especially high number of paper firms was opened in the past ten years (40 per cent of the newly added paper firms are younger than 10 years) such that paper firms seem to replace older firms from other sectors that left the sample.

2.6 Conclusion

In April and May 2022, the third survey round of the Mozambican Manufacturing Enterprise Survey (IIM) was implemented, 10 years after the first survey round in 2012 and 5 years after the second survey round in 2017. The IIM's main focus lies on the same 355 firms that were interviewed in all three survey rounds, i.e. they form the balanced sample. The balanced sample makes it possible to understand the development of the Mozambican manufacturing sector over ten years.

The survey covers seven of Mozambique's provinces and 16 cities: Maputo City, Maputo Province (Matola, Boane), Gaza (Xai-Xai, Chokwé), Sofala (Beira, Dondo, Mafambisse), Manica (Chimoio, Gondola, Manica), Nampula (Nampula, Nacala) and Tete (Moatize, Tete). A majority of the sampled firms are located in southern Mozambique, which is also the most economically active region, followed by the Centre and the North. Three-quarters of the sampled firms are micro-sized (0-9 employees), 20 per cent are small firms (10-49 employees) and 5 per cent are medium-sized (50-300 employees). Over the 10 years, the firms have significantly shrunk in size. Carpenters, black smiths, food processor and tailors form the biggest manufacturing industries, whereas there are very few chemical and other high-tech enterprises.

While the report's focus lies on the balanced sample, it also examines firms that left the sample over time (exit sample) and firms that were newly added in 2022 to replace the exit firms. All firms together form the unbalanced sample. Overall, the firms follow similar patterns over time, independently of the sample. However, a few differences between the samples stand out: an over-proportional share of medium enterprises left the sample between 2017 and 2022, which is probably an outcome of the COVID-19 pandemic. Moreover, the province of Manica is oversampled in the newly added sample. Due to these differences across samples, the subsequent chapters analyse the data in more depth.

3 Business environment

This chapter examines how Mozambican enterprises interact with their peers, competitors, and the public sector, including both formal and informal interactions with the administrative and regulatory systems. Understanding how SMEs perceive the conditions under which they operate and the constraints they experience can help inform future policies that will help create conditions for their prosperity.

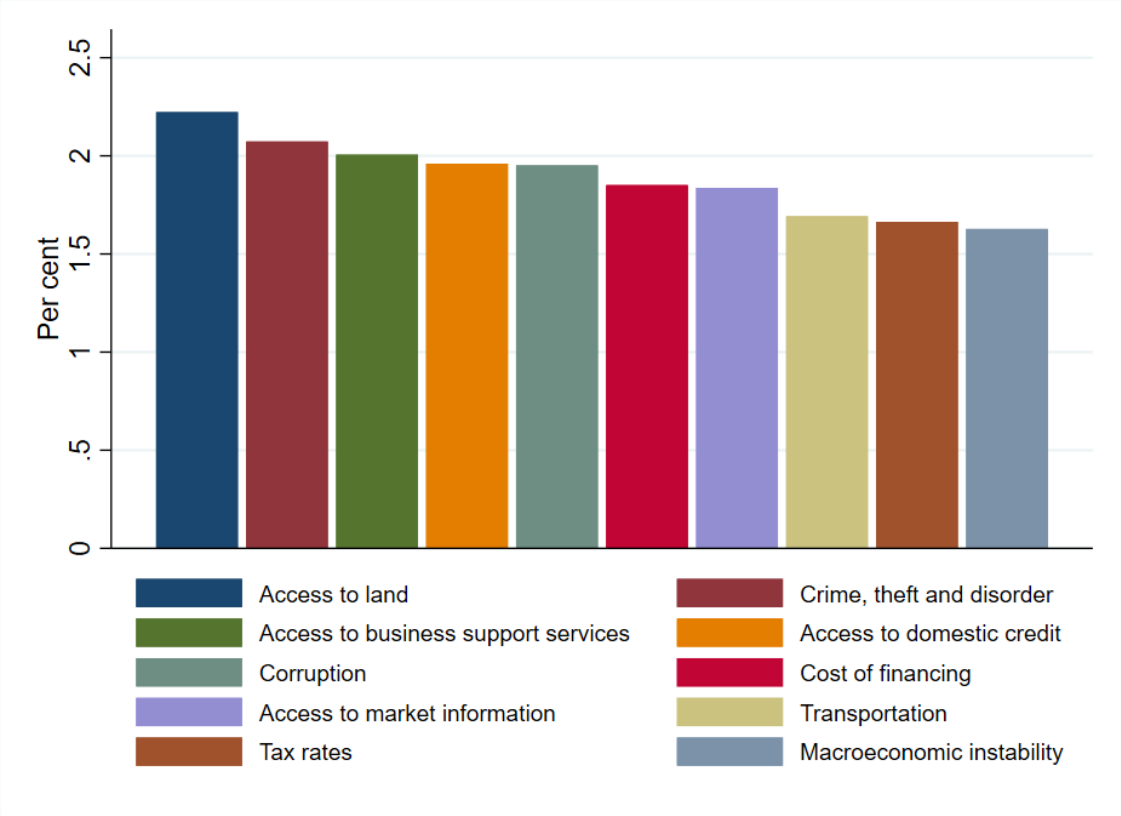
SME performance is, to a great extent, influenced by the characteristics of the business environment in which they operate. Various policies and administrative procedures can impose significant constraints on private sector development and can be particularly disadvantageous for SMEs with few options to influence them. According to the Worldwide Governance Indicators, Mozambique scores lower in government effectiveness and the rule of law than Uganda and three neighbouring countries: Tanzania, Malawi and Zambia (Cruz et al., 2020a). Conditions are imposed on the creation and development of enterprises through licensing requirements, labour inspections and tax inspections (Cruz and Mafambissa, 2018, p. 245). The role of political elites in rent-seeking and capturing in Mozambique is pervasive and widely documented (Cruz et al., 2020b; Forquilha, 2020; Macuane and Muianga, 2020). Moreover, private industry is characterized by extensive links between the holders of political office and owners of large private firms, as testified by many cases of deep state involvement in securing the success of selected industries and particular establishments (e.g. sugar, tobacco, cement) (Jones et al., 2021; Whitfield and Buur, 2014). For others, constraints abound.

In 2012, SMEs were asked to identify a range of factors that they perceive negatively affect their business and its prospects for growth. The questionnaire contained a list of 25 factors that affect business operations and growth. Respondents assessed the severity of each constraint by giving it a value from 0 to 4 (where 0 = no obstacle, 1 = slight obstacle, 2 = moderate obstacle, 3 = major obstacle, and 4 = serious obstacle). A higher number on the applied scale indicates a more severe obstacle, so Figure 13.1 uses the average value for each constraint to show 10 factors that, according to enterprise owners and managers, constitute the gravest obstacles for firms in Mozambique. Factors that affected SMEs most severely in 2012 include access to land; crime, theft and disorder; access to business support services; access to domestic credit and corruption, which is consistent with what can be observed in other African countries (Asongu and Odhiambo, 2019; Bah and Fang, 2015; Eifert et al., 2008).

Among other factors, the list of obstacles from the 2012 IIM survey illustrates that various aspects of interaction with formal public institutions are singled out as problematic for enterprise growth. Literature highlights the role of formal institutions such as formal property rights, simplified business registration processes, and well-functioning courts and credit bureaus in determining firm productivity in developing countries (Barasa et al., 2017; Bloom et al., 2014; Dethier et al., 2011). In particular, the poor business environment in Africa leads to significant declines in productivity and output (Bah and Fang, 2015).

This chapter further explores which types of enterprises are affected negatively by the business environment and how some constraints have changed in the 10-year period since 2012.

Figure 3.1: Ten most severe business constraints for SMEs in 2012



Source: Authors' calculations based on IIM 2012 data.

3.1 Interaction with public administration

As illustrated in Figure 3.1, one of the main aggravating factors for private enterprises is a lack of access to business support services. In many countries, a solution for easing the burden of complicated and lengthy administrative processes for SMEs has been introducing single service desks (sometimes known as one-stop shops). Mozambique introduced Single Service Desks (Balcão de Atendimento Único, BAÚ) across the country in 2014. The objective of the desks is to provide a range of

administrative services related to, among others, business registration, employment registration, commercial and industrial licensing, issuing import and export permits, etc. In 2022, 40 per cent of enterprises reported being registered at the BAÚ, and two-thirds of surveyed enterprises responded that they knew about the service desks. The service desks are located within 10 kilometres or less for three-quarters of the respondents. About 15 per cent of respondents would have to travel more than 50 kilometres to reach the nearest service desk. Next, we focus on two other measures of the administrative burden for private enterprises.

First, we focus on the time spent dealing with public regulation and officials. This measure is expressed as the number of days enterprises spend each month dealing with taxes, permits, licenses, inspections, business, and trade regulations. Table 3.1 shows that enterprises spend on average 4.5 days per month on various administrative tasks related to dealing with the public sector. The values in 2012 and 2022 do not differ by much, but there was a spike in the time use in 2017, when the firms dedicated about seven days per month to bureaucracy. It is difficult to tell whether the single service desks contributed to the decline in administrative time-use in 2022 compared to 2017.

Table 3.1: Bureaucracy over the years

	2012	2017	2022	All
Time spent on bureaucracy (days per month)	3.6	6.6	3.4	4.5
Micro	2.1	6.3	3.0	3.8
Small	6.1	6.2	4.6	5.6
Medium	8.4	10.6	5.6	8.6
South	4.8	5.9	3.9	4.9
Centre	2.3	6.8	3.0	4.0
North	2.8	8.1	3.0	4.6
Informal	1.5	6.0	2.4	2.9
Formal	5.4	6.8	4.0	5.5
Female owner	4.3	6.8	5.3	5.3
Male owner	3.5	6.6	3.2	4.5
Inspections (number per year)	2.6	1.2	1.7	1.8
Micro	1.9	0.9	1.4	1.4
Small	3.9	1.8	2.3	2.8
Medium	3.6	2.6	3.1	3.1
South	3.2	1.3	2.1	2.2
Centre	1.7	0.9	1.4	1.3
North	2.5	1.7	1.2	1.8
Informal	1.7	0.3	1.4	1.3
Formal	3.4	1.6	1.8	2.2
Female owner	3.3	0.9	1.4	1.9
Male owner	2.5	1.3	1.7	1.8
Observations	355	355	355	1,065

Note: Balanced panel.
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

The rate of time used on administration increases with enterprise size. Medium enterprises spend, on average, nine days per month on administration, which is more than double compared to micro

enterprises. Between 2012 and 2022, time spent on bureaucracy among small and medium firms decreased, whereas it increased for micro firms. Enterprises located in the South spend almost one whole day more on administrative tasks than enterprises in the Centre. As expected, formal enterprises spend more time dealing with the public sector (about two times more) than informal enterprises that reported around three days per month of interaction with the public sector.

Second, we also investigated the level of direct interaction between the surveyed private enterprises and the public sector by measuring the number of times enterprises were inspected in the past year concerning health, labour, taxes, etc. Table 3.1 shows that enterprises are, on average, inspected about two times per year. The data show a negative trend in the number of inspections in the past 10 years. The number declined from 2.6 inspections in 2012 to 1.7 inspections per year in 2022.

The number of inspections increases proportionally with enterprise size. Micro enterprises have, on average, slightly above one inspection per year, while medium enterprises have, on average, three inspections per year. Between 2012 and 2022, the incidence of inspections decreased among all size categories, and the most among small firms. Formal enterprises are inspected about two times more frequently than informal enterprises, which is as expected.

It may come as a surprise that our enterprise surveys register some interaction between informal enterprises and the public sector (i.e., 2.9 days per month spent on bureaucracy and 1.3 inspections per year). It should however be noted that, in this report, registration with the local municipality is not included in the formality measure, i.e., enterprises that have municipal registration only are considered informal – only those that have one or more of the following registration types are considered formal: Registry of Legal Entities (CREL), Alvará (formal business certificate), Finance Authority (AT), workers registered with the National Institute of Social Security (INSS), and workers registered with the Ministry of Labour and Social Security (MITSS). The fact that informal enterprises spend some time dealing with public administration could also indicate that some of them are perhaps at the beginning of the formalisation process and that, in the future, we can expect a higher number of formal enterprises in Mozambique. Another possibility could be that informal firms are engaging with the public sector illicitly (e.g., making informal payments to remain informal). This aspect is explored in more detail in the following subsection.

Female- and male-led enterprises are not affected differently by time spent on bureaucracy and inspections. Although women reported a consistently higher average number of hours spent on public administration in the observed 10-year period (5.3 days per month), the amount is not significantly different from what is reported by male business owners (4.5 days per month). In terms of inspections,

female-led businesses reported a higher incidence in 2012, but that has reversed in favour of male-led businesses in 2022. Again, the difference in the number of inspections experienced by female- and male-led enterprises is not statistically significant. The incidence of inspections decreased over time for both female- and male-owned businesses.

The laws and regulations governing the manufacturing sector in Mozambique are perceived as complicated, abounding with confusing and contradictory requirements. In 2017, 43 per cent of enterprises responded that they are afraid of being fined or shut down by the authorities. That is why some prefer making informal payments instead of paying inspection fines (Berkel et al., 2018).

To assess the prevalence of corruption in the private sector in Mozambique, we asked enterprise owners/managers about bribe-paying behaviour both indirectly and directly. To obtain the indirect bribe measure, we asked enterprises how much, as a percentage of sales, a typical enterprise in their line of business and of similar size would pay public officials to help with issues related to customs, taxes, licensing, regulations etc. The direct bribe question was related to an enterprise's actual informal payments made to a public official in the past three years. Table 3.2 shows the incidence of different types of bribes by enterprises of different sizes, registrations and locations.

According to our interviewees' estimates, 47 per cent of enterprises similar to theirs would make an informal payment to a public official. In the past 10 years, the incidence of informal payments increased substantially. It has more than doubled every five years: starting from 3 per cent of sales in 2012, over 7 per cent in 2017 and reaching 19 per cent of sales in 2022. The incidence of indirect bribes is highest among small firms in the balanced and among micro firms in the unbalanced panel. Still, the tendency to report more informal payments among peers has increased for enterprises in all size categories. The indirect bribe measure has the highest value in the country's central regions, whereas the South and North have very similar values. Formal enterprises reported higher bribe values than informal enterprises, indicating that the reason for bribes may not mainly be related to staying invisible to the authorities.

The average amount of bribes is estimated to be about 10 per cent of sales, but 53 per cent of enterprises did not know or did not want to answer and indicated that the amount of bribes is zero. Six per cent of the interviewees indicated that the estimated amount of bribe is 5 per cent of sales, while 8 per cent stated that it is 10 per cent. Higher values are far less common. For example, 3 per cent estimated the informal payments at 15 per cent of sales, 4 per cent stated 20 per cent, and a further 3 per cent estimated the amount of bribes at more than 90 per cent of sales.

Table 3.2: Bribe incidence over the years

	2012 Per cent	2017 Per cent	2022 Per cent	All years Per cent
Indirect bribes	24.8	49.3	67.3	47.1
Micro	21.7	47.9	65.9	46.1
Small	31.9	53.5	73.6	51.1
Medium	26.9	51.9	62.5	44.9
South	26.6	41.4	67.5	45.2
Centre	24.8	66.1	63.6	51.5
North	20.0	38.5	73.8	44.1
Informal	18.2	57.1	66.9	44.2
Formal	30.5	46.3	67.6	48.9
Female owner	34.8	55.6	67.7	54.2
Male owner	24.1	49.0	67.3	46.6
Indirect bribes amount (percentage of sales)	3.0	7.5	19.1	9.9
Micro	2.5	6.9	17.7	9.3
Small	4.2	10.4	23.2	11.8
Medium	2.9	5.9	23.9	9.0
South	3.4	7.4	23.6	11.5
Centre	3.1	9.8	12.6	8.5
North	1.7	3.5	19.7	8.3
Informal	2.0	7.2	14.5	7.5
Formal	3.8	7.6	21.9	11.3
Female owner	4.3	10.1	16.2	10.9
Male owner	2.9	7.4	19.4	9.8
Direct bribes	5.1	7.6	8.2	6.9
Micro	5.1	7.8	7.9	7.0
Small	6.4	9.9	5.6	7.2
Medium	0.0	0.0	25.0	5.8
South	6.5	6.5	7.7	6.9
Centre	4.1	3.3	9.1	5.5
North	3.1	18.5	7.7	9.7
Informal	6.7	3.1	11.3	7.3
Formal	3.7	9.3	6.3	6.7
Female owner	8.7	5.6	6.5	6.9
Male owner	4.8	7.7	8.3	6.9
Observations	355	355	355	1,065

Note: Balanced panel.
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

In 2012, micro firms were least likely to report informal payments. They estimated the bribes amount to be 2 per cent of sales, on average, but by 2022, this amount increased to 18 per cent of sales. The perceptions about bribes increased more among small and medium than among micro firms. Small firms started with 4 per cent of sales in 2012, and in 2022 estimated the bribes amount at 23 per cent of sales. Medium firms reported informal payments in 2012 at 3 per cent of sales, and in 2022, they estimated bribes at 24 per cent of sales.

The perceptions about the level of informal payments increased the most among respondents from the South, who in 2012 estimated bribes at 3.4 per cent of sales and, in 2022, at 24 per cent. Enterprises from other parts of the country also perceive that bribe paying has increased since 2012. Enterprises from the North report a higher increase than enterprises from the Centre.

For both formal and informal enterprises, the trend in the amounts of indirect bribe paying increased over time. This is consistent with other accounts of a declining ability of Mozambique to control corruption measured in terms of the Worldwide Governance Indicators between 2005 and 2018 (Cruz et al., 2020a). Informal enterprises report that the amount of bribes paid in 2022 (14 per cent of sales) is seven times larger than in 2012 (2 per cent of sales). Formal enterprises report six times higher informal payments in 2022 (22 per cent of sales) compared to 2012 (4 per cent of sales). It is difficult to know for sure whether this is due to formal enterprises being differently informed about the amounts others are paying or due to formal enterprises indeed paying higher amounts than informal enterprises. In addition, the perceived amount of bribes could be a function of size, as informal enterprises tend to be mainly in the micro size category.

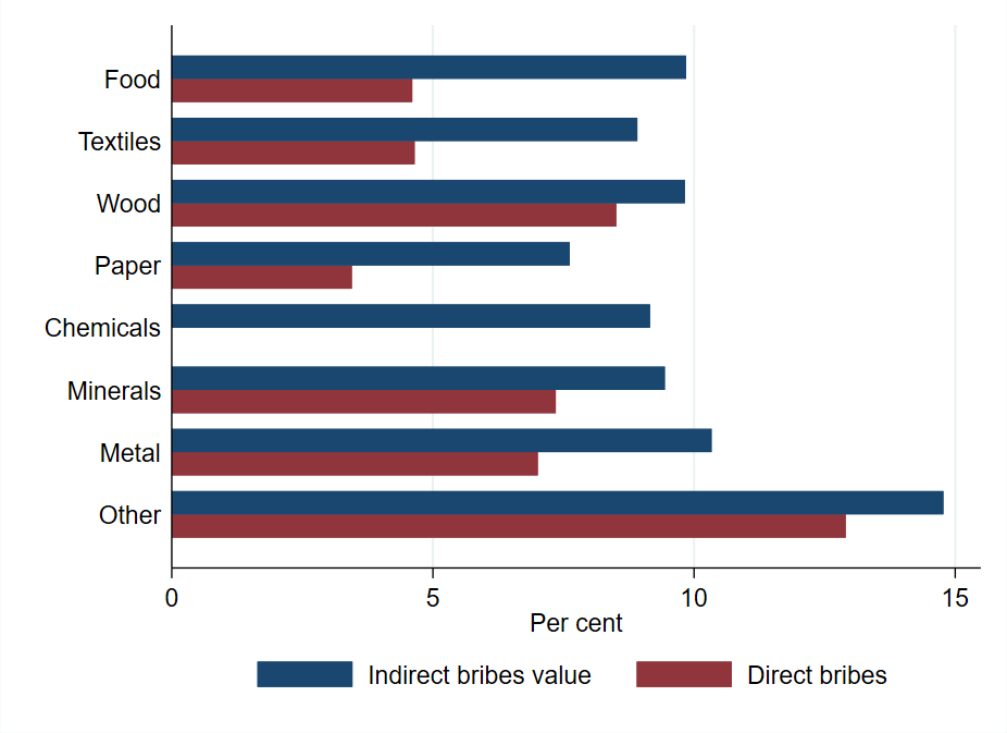
The prevalence of direct bribes is much lower than the prevalence of indirect bribes. This could result from serious concerns among enterprise owners and managers related to behaving outside the legal framework. Only 7 per cent of enterprises reported making an informal payment to a public official. Unlike indirect bribes, the direct bribe measure has been much more stable over time, increasing by 3.1 percentage points in the period 2012-2022. An exception to a slow-changing trend is medium enterprises, which only reported bribes in 2022. This could be related to their higher visibility to the authorities. As they are larger than micro enterprises, they are visited more frequently by public officials who may prefer taking informal payments to write fines for legal violations and who can realize higher gains per inspection.

Enterprises in the North report the highest incidence of direct bribes, almost 10 per cent over the observed 10-year period, largely owing to a huge jump in 2017 when 18 per cent reported direct bribe payments. The bribe incidence has more than doubled among enterprises located in central parts of the country, while it has increased only slightly in the South. This could result from greater proximity to different public institutions in the South, where potential anti-corruption measures may be more prevalent, or enterprises may be more concerned about disclosing this aspect of their behaviour. There are no significant differences in the direct bribes measure along the formal/informal enterprise divide, averaging around 7 per cent. In addition, the bribe incidence has increased by about two times in the past 10 years for both enterprise categories.

Female- and male-led enterprises paid similar average amounts of bribes in the observed 10-year period, measured in terms of both direct and indirect payments. However, over time, there has been a reversal in the prevalence of bribes in male- and female-led enterprises. In 2012, female-led enterprises reported higher amounts of both direct and indirect bribes, whereas, in 2022, this was done by male-led firms. The differences in the reported bribe paying is not statistically significant.

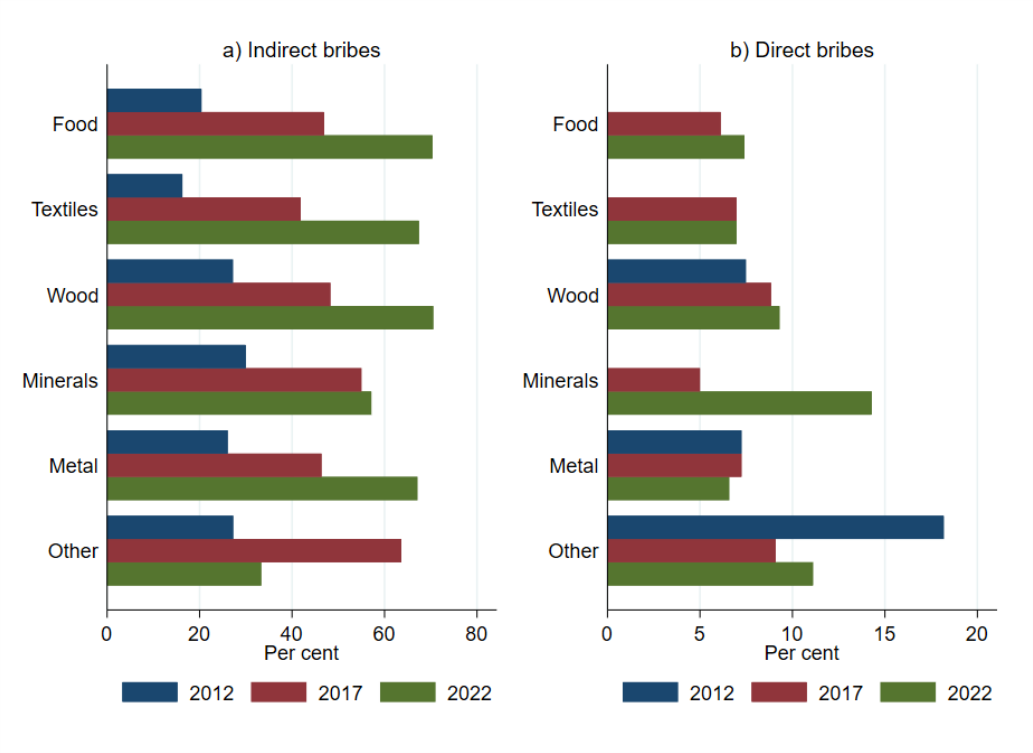
Figure 3.2 shows the estimated value of indirect bribes (as a percentage of sales) and the prevalence of direct bribes across different manufacturing industries. The direct bribes measure singles out the wood (carpenters) and the chemicals industries with the most prevalent practice of informal payments. The indirect bribe measure, in addition, highlights the metal industry (black smiths) as an industry with very high estimated values of informal payments. Figure 3.3 illustrates an upward trend in both the direct and indirect bribe measures in the food industry, wood, and non-metallic minerals.

Figure 3.2: Direct and indirect bribes by sector



Note: The indirect bribes value is an estimate of the value of bribes paid by a similar firm as a percentage of sales. Balanced panel.
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

Figure 3.3: Bribes by sector over time



Note: The indirect bribes value is an estimate of the value of bribes paid by a similar firm as a percentage of sales. Balanced panel. For some years, there are no direct bribes reported in the chemicals and paper sector and, therefore, we decided not to report the shares for these two sectors.
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

3.2 Informal institutions

Institutions – established rules and norms – are some of the main factors affecting enterprise performance. When formal institutions such as property rights, the regulatory framework, well-functioning courts, and the financial sector are missing, businesses use informal institutions such as their social networks, business associations or business partners to safeguard their transactions with suppliers and customers. We focus on membership in business associations as one of the critical measures of informal institutions that can partly compensate for the weaknesses of formal institutions. Business associations can defend business interests in front of the government or lobby the government to improve public goods provision. They can also create business opportunities, extend professional and personal networks by connecting different enterprises, and partially substitute for legal contract enforcement by providing helpful information about the reliability of particular enterprises.

Table 3.3 shows the prevalence of business association membership among private sector enterprises in Mozambique, focusing on enterprise size, location and formality. On average, around 15 per cent

of enterprises belong to a business association. Whereas the figures in 2012 and 2022 hover around 12-13 per cent, the proportion of business association membership peaked at 17 per cent in 2017.

Table 3.3: Business associations

	2012 Per cent	2017 Per cent	2022 Per cent	All Per cent
Business association member	13.2	17.7	12.4	14.5
Micro	3.8	8.6	3.7	5.4
Small	21.3	39.4	36.1	31.2
Medium	69.2	48.1	50.0	56.5
South	13.0	20.1	11.2	14.8
Centre	12.4	15.7	11.6	13.2
North	15.4	15.4	16.9	15.9
Foreign	40.0	20.0	50.0	37.5
Domestic	11.6	17.7	11.3	13.6
Female owner	17.4	11.1	12.9	13.9
Male owner	13.0	18.1	12.3	14.5
Business association is beneficial	72.7	74.6	84.1	76.8
Micro	57.1	68.2	70.0	66.7
Small	78.9	82.1	88.5	83.6
Medium	72.2	69.2	87.5	74.4
Foreign	100.0	50.0	80.0	86.7
Domestic	66.7	75.4	84.6	75.7
Female owner	100.0	100.0	100.0	100.0
Male owner	70.0	73.8	82.5	75.2
Observations	355	355	355	1,065

Note: Balanced panel.
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

The proportion of enterprises that are members of a formal business association increases drastically with firm size. Whereas a negligible part of micro firms – only 5 per cent – has formal business association membership, 57 per cent of medium enterprises report being members. The membership rate is the highest in the North (16 per cent), closely followed by the South (15 per cent). Business association membership is much more prevalent among enterprises whose owners/managers are foreigners and only slightly more prevalent among male than female-led firms. However, the decline in business association membership since 2012 was much higher in female- than in male-owned enterprises. For female-owned enterprises, membership declined from 17 to 13 per cent, while it declined from 13 to 12 per cent for male-owned enterprises.

On average, three-quarters of business association members find that the association brings direct benefits to their business. The beneficial trend has been steadily increasing over the past ten years. Small enterprises are especially positive about benefits from business associations as testified by 84 per cent of them. The satisfaction with business associations increases with firm size, so fewer micro enterprises find them beneficial (67 per cent). This likely reflects their weaker internal capacity and bargaining power towards associations, which probably offer services better tailored to larger firms.

Enterprises owned by foreigners and women are more likely to report satisfaction with business associations, probably because they offer a forum for enterprises to obtain information about prospective clients and suppliers, or new technologies and management practices. However, the absolute numbers of foreign and women-led firms satisfied with business association membership are very small (15 and 10, respectively).

3.3 The competitive environment

Table 3.4 gives frequency distributions of perceptions of SME owners/managers of the competitive environment in which their enterprise operates. More than two-thirds (67 per cent) of enterprise owners/managers consider the level of competition in their line of business to be moderate or severe, whereas about one-third (33 per cent) considers the competition insignificant or absent. The perceptions vary by both enterprise size, owner's gender and location. Compared to enterprises in other size categories, small enterprises perceive stronger competition. Whereas 71 per cent of small enterprises perceive competition in their line of activity to be moderate or severe, 66 per cent of micro and 57 per cent of medium enterprises perceive the same to hold. Female enterprise owners perceive the level of competition in their line of activity to be significantly stronger than in the case of male enterprise owners.

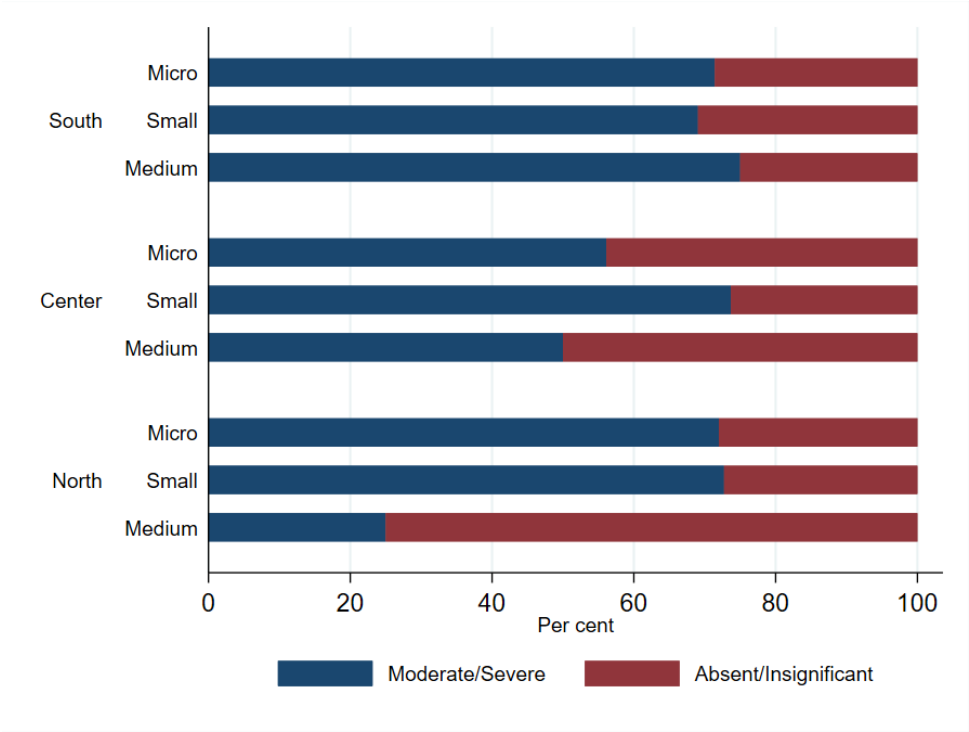
Table 3.4: Perceived level of competition

	Moderate/Severe Per cent	Absent/Insignificant Per cent
Micro	65.9	34.1
Small	70.8	29.2
Medium	56.3	43.8
Female owner	65.1	34.9
Male owner	80.6	19.4
Total	66.5	33.5
Observations	236	119

Source: Authors' calculations based on IIM 2022 data.

Figure 3.4 gives frequency distributions of perceptions about competition by enterprise size and location. According to enterprises owners'/managers' perceptions, the centre of the country seems to have the lowest competition level. In the South, 71 per cent of enterprises perceive the level of competition to be moderate or severe, while 69 per cent of enterprises in the North and 59 per cent in the Centre report the same. Medium enterprises in the South tend to report higher levels of competition than micro and small enterprises, whereas in the North and Centre, medium enterprises tend to report the lowest perceived levels of competition.

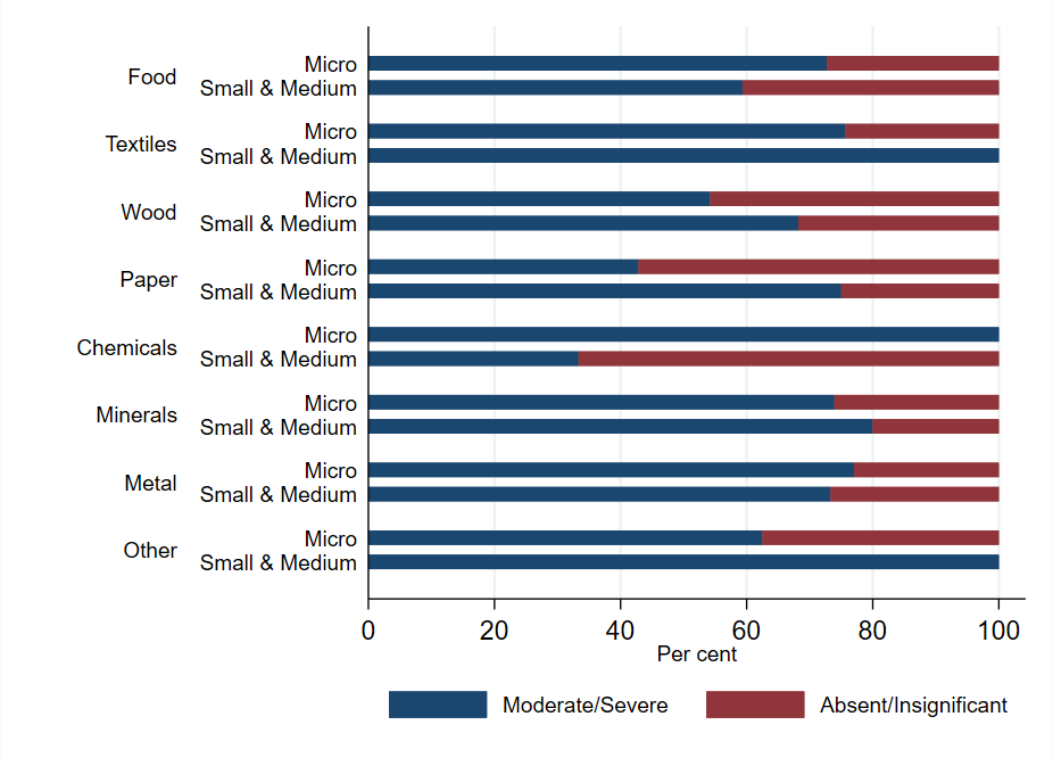
Figure 3.4: Assessment of competition by size and region



Source: Authors' calculations based on IIM 2022 data.

Distinguishing between micro and larger enterprises, Figure 3.5 compares the perceived level of competition in various manufacturing industries. In some sectors, micro enterprises express facing strong perceived competition, whereas in other sectors, larger enterprises claim to be facing the highest competition level. For example, all micro enterprises in the chemicals sector stated that the completion level is moderate or severe, while all larger firms in the textiles sector stated the same. Larger enterprises perceive stronger competition than micro enterprises also in the minerals, paper and printing, and wood and carpentry sectors. Perceived competition is higher among micro than in larger enterprises in the food and metal sectors.

Figure 3.5: Assessment of competition by size and sector



Source: Authors' calculations based on IIM 2022 data.

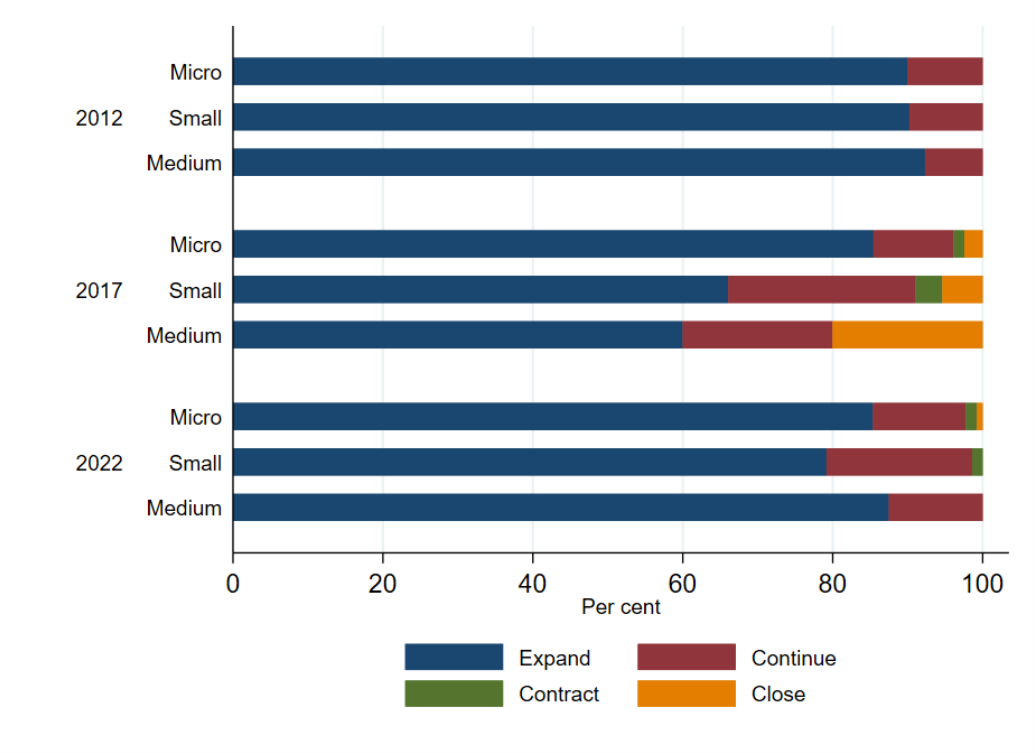
3.4 Future outlook

The overall economic situation in Mozambique and the prevailing business environment exert an important influence on how enterprises make investment plans. We focus on owners' investment plans over the next two years to assess the SMEs' take on the future. Figure 3.6 illustrates the investment plans by enterprises of different sizes over time. The main message is that a vast majority of SME owners (85 per cent) has a positive outlook on the future of their business, stating that they will increase or considerably increase their production in the next two years. Some 12 per cent plan to stay at the same level; only 1 per cent will reduce production, and an additional 1 per cent will close their business.

However, some notable differences can be observed over the years. The most positive situation was presented in 2012, when more than 90 percent of enterprises in all size categories responded positively about future investment plans. Enterprises that stated that they will contract or close production were no longer in the sample in 2017 and are not included in Figure 3.6, as we focus on responses from owners from the same firms. The optimism about the future faltered in 2017, when 14 per cent of respondents stated that they will not change the production level, 2 per cent stated that they will reduce production and 4 per cent stated that they are planning to close. Especially

medium-sized enterprise owners presented a severely pessimistic take on the future developments of their enterprises: 20 per cent did not plan any changes in production and a further 20 per cent seemed to be planning to close their business. In contrast, micro firms remained mostly optimistic with only 14 per cent planning not to increase production. In 2022, medium firms are the ones with the most positive outlook to the future, but still not returning to the positive sentiment from 2012. In contrast, the sentiment among micro firms did not change compared to 2017, indicating that more favourable conditions for doing business for larger firms have emerged in the past five years in Mozambique.

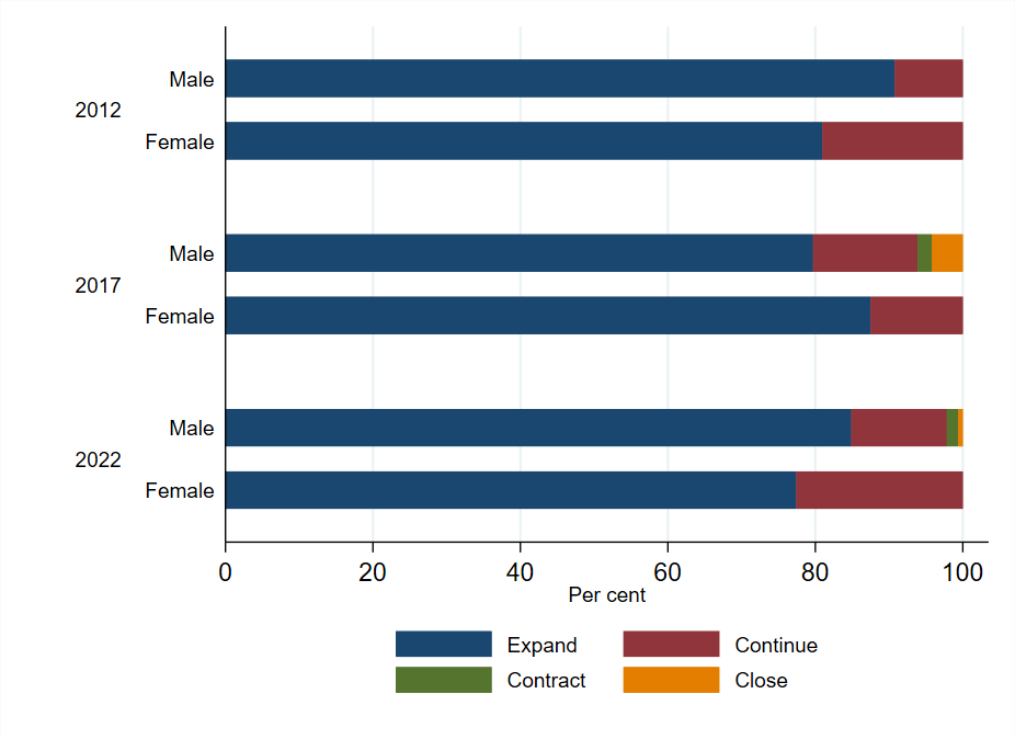
Figure 3.6: Investment plans by firm size over time



Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

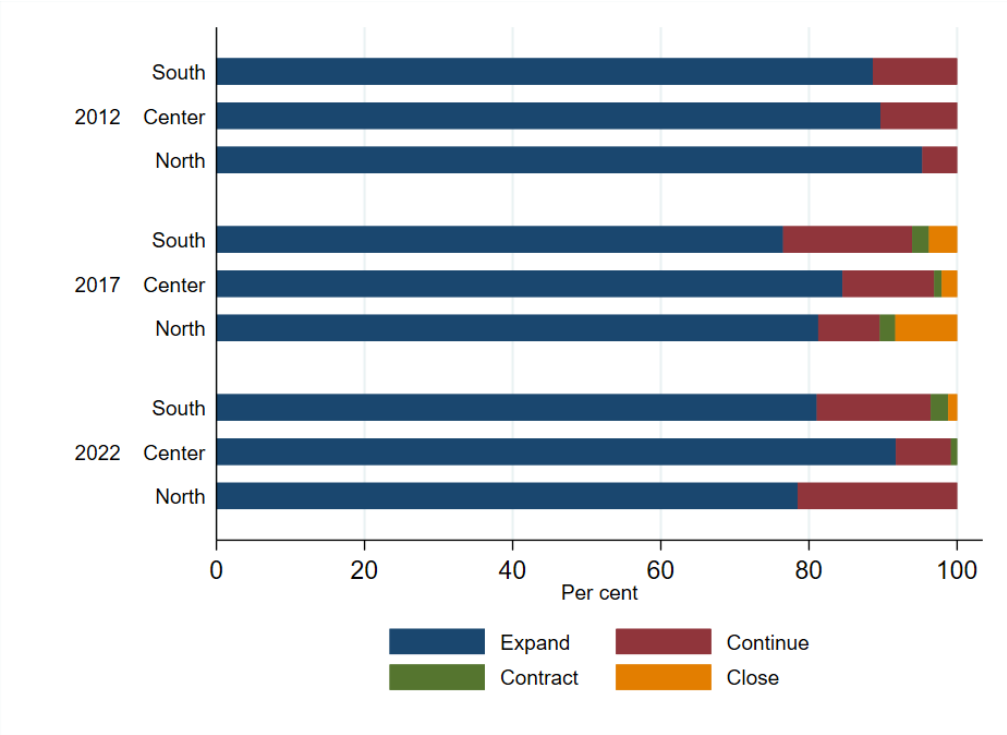
According to Figure 3.7, female enterprise owners kept a more optimistic perspective than their male counterparts only in 2017, whereas it was male owners with a more positive attitude towards production expansion in the two other years. Figure 3.8 focuses on regional differences in investment planning. Whereas the northern region of the country showed a more favourable outlook than other regions in 2012, its positive outlook on the future declined thereafter. In fact, in 2017, enterprises from the north of the country had the highest share of enterprises reporting that they will contract (2 per cent) or close production (8 per cent). However, it seems that this did not happen as in 2022, these firms were still operating, although not planning to expand production.

Figure 3.7: Investment plans by male and female owners



Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

Figure 3.8: Investment plans by region over time



Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

The centre of the country is singled out as the most optimistic regarding the future in 2017 and 2022. This is in particular pronounced in 2022 even though it is against expectations given that Cyclone Idai affected the central region of Mozambique in 2019. However, this finding may indicate a beginning of a successful recovery after a natural disaster. The circumstances also seem to have improved in the south of the country since 2012, as indicated by the increasing share of enterprises who plan to expand production and slightly fewer of those who plan to contract or close.

To close this section, we use a linear probability framework to explore how various aspects of the business environment determine enterprises' plans to expand production. We hope to answer two questions. Do investment prospects change with bureaucratic burden? Can informal institutions correct for the absence or weaknesses of formal institutions?

We regress a dummy variable for planning to expand production considerably in the next two years on a number of indicators of the business environment while controlling for key enterprise characteristics (firm size, female owner, foreign owner, sector, and region) and survey year. We focus on inspections by public officials, time spent on dealing with public administration and direct bribe dummy as indicators of interactions with formal institutions, while we take business association membership as a measure of interactions with informal institutions. The results are shown in Table 3.5.

We obtain a positive and significant association between formal institutions, measured as inspections, and enterprises' investment plans to expand production in columns 4 and 5. In contrast, we obtain a negative result for the role of informal institutions, as business association membership is negatively related to investment plans in the next two years, which could indicate that SMEs seek association membership perhaps as a way of attempting to keep the business running rather than as a means for firm expansion.

We also obtain that direct bribe payments may hamper firm expansion plans in columns 2 and 3, but this is no longer statistically significant in the estimation with firm fixed effects in columns 4 and 5. Consistent with Figure 3.5, we obtain that the expansion plans decline with firm size, but not for firms that have increased size in the observed period. The investment plans to expand production do not significantly depend on the gender of the firm owner, or the fact that the owner may be a foreign citizen. Similarly, perceived competitive pressure does not play a role.

As these are estimations with firm fixed effects, the result captures the change within, not across firms. In other words, only firms that have experienced an increased intensity of interaction with formal institutions in the observed period will make plans to increase production. There is no

significant effect for firms that are inspected sometimes compared to firms that are never inspected. Some bias may be present in the results, namely if firms get more inspected and firms do not engage with business associations precisely because they make plans to expand production.

Table 3.5: Determinants of investment plans to expand production

	(1) Pooled LPM	(2) Pooled LPM	(3) Pooled LPM	(4) Firm FE	(5) Firm FE
Firm size	-0.041***	-0.035**	-0.032*	-0.011	-0.011
	(0.014)	(0.017)	(0.017)	(0.034)	(0.034)
Female owner		0.006	-0.005		
		(0.059)	(0.062)		
Foreign		-0.000	-0.007		
		(0.086)	(0.089)		
Inspections by public officials		0.004	0.006	0.008*	0.009*
		(0.004)	(0.004)	(0.004)	(0.005)
Time spent on bureaucracy		0.001	0.001	-0.001	-0.001
		(0.002)	(0.002)	(0.003)	(0.003)
Direct bribe		-0.138**	-0.126**	-0.085	-0.083
		(0.059)	(0.059)	(0.071)	(0.071)
Business association member		-0.063	-0.070	-0.132*	-0.133*
		(0.049)	(0.050)	(0.076)	(0.075)
Moderate/Severe competition			0.031		0.029
			(0.057)		(0.066)
Constant	0.607***	0.595***	0.566***	0.543***	0.541***
	(0.041)	(0.044)	(0.070)	(0.080)	(0.080)
Sector FE	No	No	Yes	No	No
Region FE	No	No	Yes	No	No
Year FE	Yes	Yes	Yes	Yes	Yes
Firm FE	No	No	No	Yes	Yes
Observations	1,065	1,065	1,065	1,065	1,065
R^2	0.04	0.05	0.06	0.06	0.06

*Note: LPM stands for linear probability model. Dependent variable is a dummy for planning to expand production in the next two years. Balanced panel. Estimations with firm fixed effects (columns 4 and 5) exclude control variables that are not changing over time such as owner's gender and foreign ownership. Robust standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

3.5 Conclusion

To craft effective policies for improving the business environment, policymakers need to understand crucial institutional factors that drive enterprise development. This chapter therefore looked into selected characteristics of the business environment in which private SMEs operate, focusing on different forms of interaction of SMEs with formal institutions, their competitors and peers (i.e., business association membership). It also explored how these factors determine enterprises' plans to expand production in the next two years.

Interactions with formal institutions are captured through time spent on dealing with public administration, inspections by various public authorities and informal payments made to the public sector. There is no doubt that the level of interactions with the public sector increases with firm size,

both in terms of the number of inspections and management time spent on dealing with public administration, reflecting the greater visibility with size hypothesis. However, small enterprises are the ones most likely to make informal payments according to both the direct and the indirect bribe measure. They are also most likely to report the highest estimated values of bribes, which can indicate that the burden of corruption falls disproportionately on small enterprises which also reported the highest perceived pressure from competitors. Both the direct and the indirect bribe measures show an upward trend over the past 10 years, indicating worsening performance of the public sector, which is reflected negatively the overall conditions of the business environment in Mozambique. This finding is consistent with the conclusions of a recent broader assessment of Mozambique's institutional performance (Cruz et al., 2020a). The increasing level of informal payments could be a consequence of a cumbersome regulation system, which encourages bureaucrats and businesses to be involved in corruption, in particular if the chances of being detected and punished are low (Bah and Fang, 2015).

Our data show a low reliance on informal institutions, such as membership in business associations, which was found to be at 15 per cent. Moreover, satisfaction with business associations declines in firm size and they appear least beneficial to micro enterprises. The engagement of private enterprises with formal institutions seems to be a comparatively more important determinant of the production expansion plans than the interactions with informal institutions. This indicates limited prospects for informal interactions to correct for imperfections in the functioning of formal institutions.

Our results show that the public sector plays a strong role in shaping the private sector outcomes in Mozambique and that the mechanisms for dealing with the public sector inefficiencies are limited. This calls for a serious consideration of current policies and rules governing the private sector and invites efforts for devising more effective strategies and policies to eliminate obstacles for SME growth. Firms that are growth-oriented will benefit from simplified bureaucracy, making them more efficient and potentially supporting more rapid growth. Reforming the judicial system to make it more efficient in punishing corrupt public officials and private sector enterprise owners can decrease levels of corruption (Bah and Fang, 2015).

Our findings indicate that female- and male-owned enterprises share similar conditions in terms of interactions with the public sector, business associations and informal payments. However, we note a very low prevalence of women-owned businesses in Mozambique (women own or manage only 8 per cent of surveyed firms). It is a worthwhile future exercise but at present beyond the scope of this chapter to explore why this is the case given the high potential women-owned business have for increasing economic growth (Hallward-Driemeier, 2013; Terjesen, 2016). Our results do not give an indication that a gender-based industrial policy is required. Instead, there is more evidence in favour

of policy action directed towards micro firms. They seem to face constraints from bureaucracy and the private sector collective action initiatives such as business associations do not seem to cater for their needs.

In brief, comparing the business environment in Mozambique in 2022 with 2012, this chapter finds:

- Worsening conditions in the business environment, as indicated by the growing incidence of direct and indirect bribes;
- Even though some reduction in the administrative burden in terms of inspections is detected, there was no substantial change in time spent dealing with bureaucracy, which has in fact increased for otherwise constrained micro firms;
- Informal institutions such as business associations do not seem to contribute by much to the private sector development; instead, the formal institutions of the public sector play the main role;
- Female- and male-owned businesses fare similarly in terms of interactions with the public sector, business associations and informal payments, but as the number of female-owned enterprises is so low, the question remains whether the obstacles for women are so large that they do not even try establishing private enterprises.

Policy implications are to:

- Reduce administrative burden of the public sector by implementing in practice the regulations of simplification of the regulatory environment (e.g. decrease the number of licenses and inspections required for businesses), especially for micro firms;
- Reform the judicial system to make corruption a more easily detectable and punishable offence for both public officials and private sector actors;
- Even if many firms do not rely on business associations as a source of knowledge and technology transfer, it is still desirable to support their work as collective engagement could motivate a development of a more efficient bureaucratic and legislative system;
- Investigate low prevalence of female-owned enterprises and create a conducive environment for development of more women-owned businesses given its high potential for contributing to economic growth.

4 Economic accounts

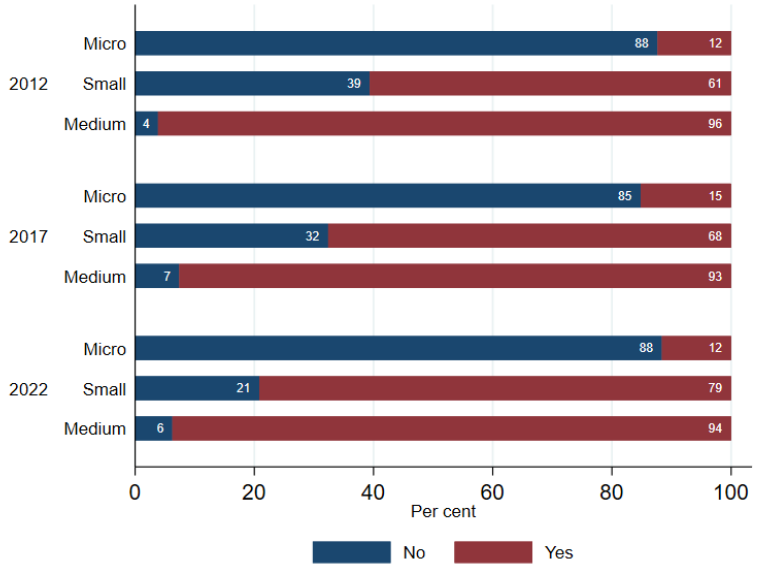
This chapter provides an overview of the economic structure and financial development of the Mozambican manufacturing sector. Using our balanced panel sample, we explore the maintenance of formal accounts, financial and perceived performance, productivity and potential explanations for observed differences in productivity, and finally, the impact of COVID-19 on the manufacturing sector. While this sample is not representative of the whole manufacturing sector in Mozambique, it provides a unique insight into the main challenges, the current state of affairs, and how the manufacturing industry has progressed over the years.

It is suggested that the African continent recovers from the shocks of COVID-19 by employing strategies that favour local production through regional value chains (OECD, 2022). Developing intra-African trade, i.e., strengthening the African Continental Trade Area (AfCFTA), would favour the institutionalization of efficient regional value chains that, in turn, foster local industries and production. Instead of focusing on local institutions, we still observe many countries that pursue international solutions. For instance, the Mozambican government's development strategy focusses on foreign investment in coal, gas and public infrastructure. However, evidence suggests that downstream segments of manufacturing value chains can generate non-farm jobs in higher-value productive activities such as packaging, transport and retail. In Mozambique, among other countries from the East African region, labour productivity in food manufacturing is about eight times higher than in farming (Tschirley, 2015). Nevertheless, most employment remains in agriculture (OECD, 2022). Thus, there is potential for broad-based economic and social upgrading through reliable and productive regional value chains in the manufacturing sector.

4.1 Accountancy

Of the 475 enterprises surveyed in 2022, only 148 (31 per cent) keep formal accounts of their finances. Of the 355 firms in the balanced sample, the figure is even lower at 29 per cent. Figure 4.1 shows the distribution of formal bookkeeping over time by size category and province. It illustrates large differences across micro, small and medium-sized firms and some variation across provinces. While the shares are relatively stable over time, enterprises in the category 'small' have progressed towards having formal accounts between each survey round, while both 'micro' and 'medium' have stayed at more-or-less the same level.

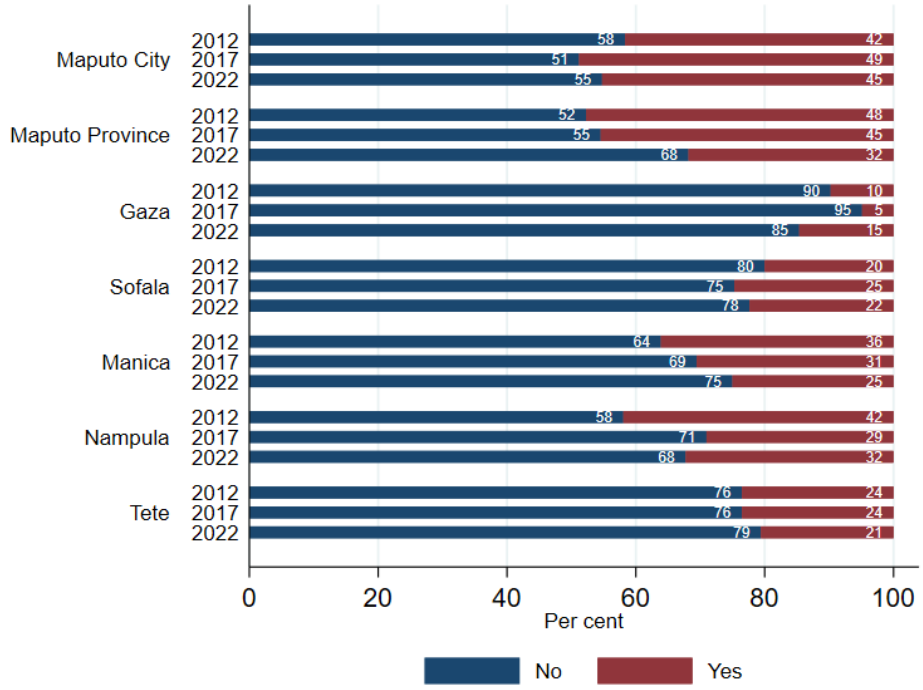
Figure 4.1: Economic accounts by size and province over time



Note: Balanced sample
Source: Authors' own calculations using IIM 2012, 2017 and 2022 data.

Figure 4.2 illustrates the share of firms that maintains formal accounts by survey round and province. Maputo City is the province where most firms (44 per cent) keep formal track of their finances, while Gaza Province is home to the lowest share (15 per cent). The most significant development since 2017 has taken place in Maputo Province (a drop of 13 percentage points) and Gaza Province (a 10 percentage points increase).

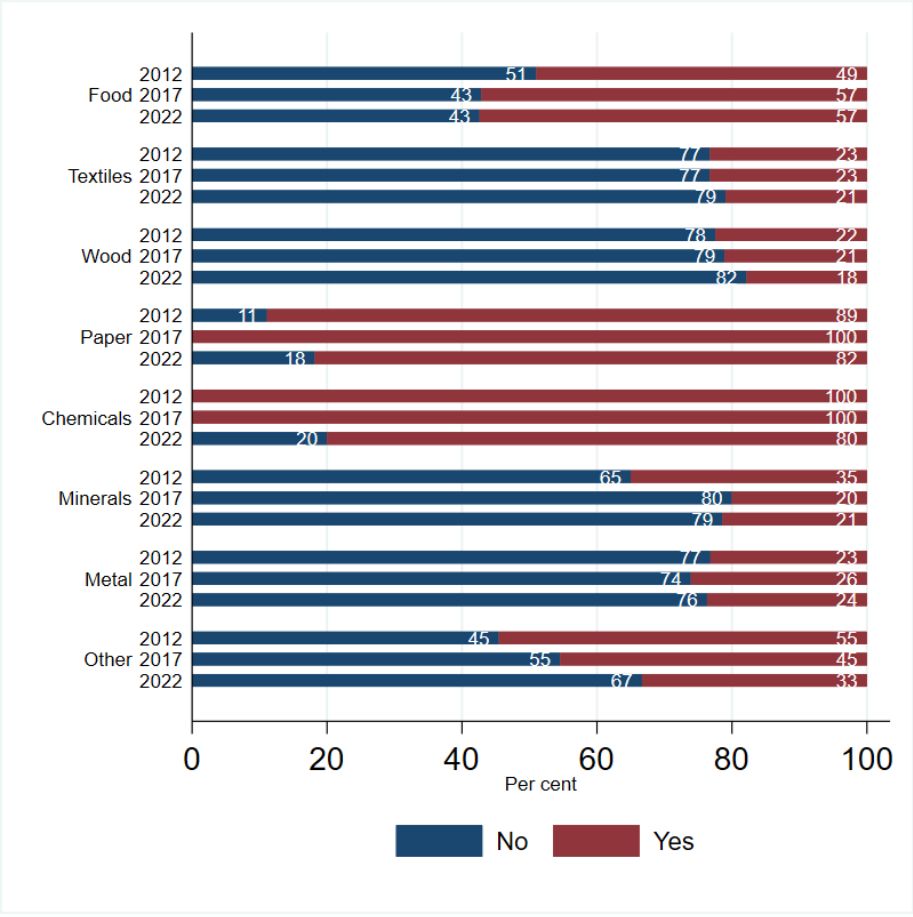
Figure 4.2: Economic accounts by survey round and province



Note: Balanced panel
Source: Authors' own calculations using IIM 2022 data

Figure 4.3 illustrates the share of firms that maintains formal accounts by survey round and manufacturing industry. Firms in the paper (bookbinding) and chemicals sectors are much more likely to keep formal accounts than the average. This is logical, as bookbinders and chemical firms tend to be bigger and pursue complex industrial processing than the average firm of the sample. A majority of firms in textile (tailors), wood (carpenters), minerals (brick makers), and metal (black smiths) do not track their finances formally, and this is in line with these firms being small and informal. Over time, the shares are stable, but firms in the textile, wood and other categories have slightly decreasing shares of keeping formal accounts in the latest compared to previous survey rounds.

Figure 4.3: Formal accounts by survey round and industry



Note: Balanced panel
Source: Authors' own calculations using IIM 2012, 2017 and 2022 data.

Table 4.1 is a transition matrix showing movements in and out of the practice of formal financial bookkeeping between the survey rounds of 2017 and 2022. It shows that out of 112 firms that did keep formal accounts in 2017, only 81 continued to do so in 2022, while 31 stopped the practice. On

the other hand, just 22 out of 243 firms that did not keep formal accounts in 2017 had started doing so in the 2022 survey round. This clearly shows a tendency for less formal bookkeeping among the manufacturing firms in the panel survey, in particular for smaller firms. More often than not, SMEs are characterized by resource poverty, which in most cases highlights their lack of human capital, knowledge, or business goals to adopt the best financial management practices. In general, informal business practices with known community members and close relatives added to family or sole proprietorship hinders the capacity of business owners to maintain formal economic accounts.

Table 4.1: Transition matrix of economic accounts 2017-2022

		2022		
		Yes	**No**	**Total**
2017	**Yes**	81	31	112
	No	22	221	243
	Total	103	252	355

Source: Authors' own calculations using IIM 2017 data (IIM 2017).

4.2 Profits, losses, and perceptions

As an indirect way of measuring the economic performance of the manufacturing sector, we asked the enterprises to assess their own performance in the previous year on a scale from large losses to large profits. This question was not asked in 2012, such that we can only analyse the changes of self-assessed performance between 2017 and 2022.

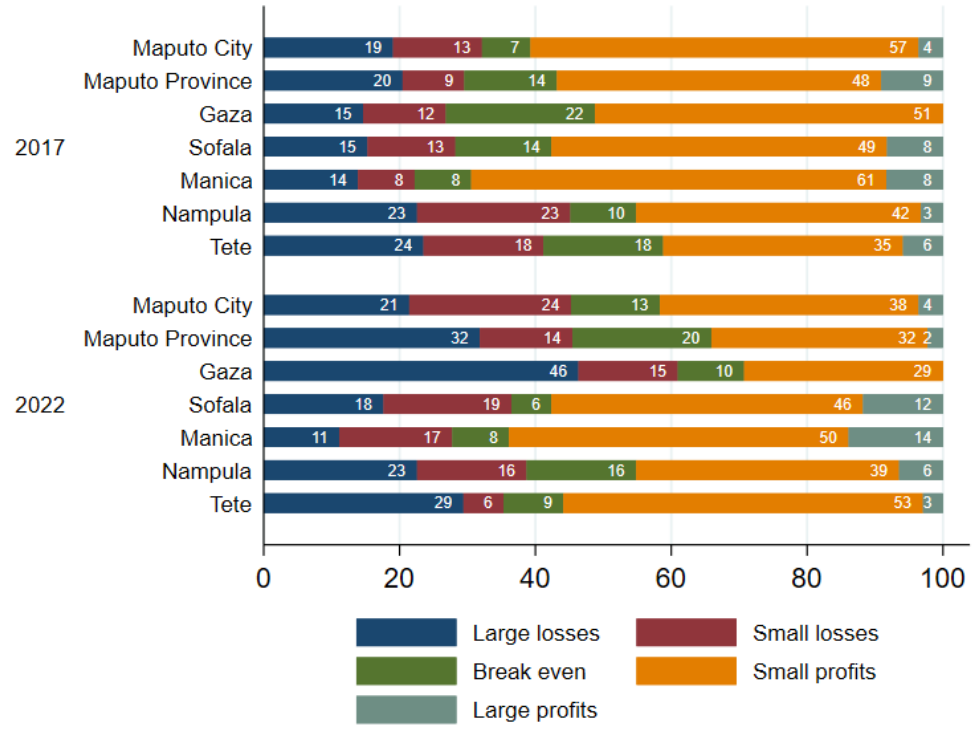
Figure 4.4 shows the self-assessed firm performance by firm size category in the 2017 and 2022 survey rounds. Over time, there is a clear increase in the share of firms that state they suffered large losses. Micro and medium-sized firms in particular reported that their situation became worse between 2017 and 2022. Specifically, more than half of the medium sized firms experienced losses in 2022, while this number was around a third for 2017. Among micro firms, 44 per cent stated losses against only 31 per cent in 2017.

We turn to the distribution of self-assessed performance by province in Figure 4.5. Firms in Gaza saw by far the largest increase in reports of losses between 2017 and 2022, from 15 per cent to 46 per cent. Maputo City is second with a 12 percentage points increase, from 20 to 32 per cent of firms indicating large losses. Firms in Manica, Sofala, and Tete, on average, experienced more profits than firms in other provinces. The most notable improvement happened in Tete, with an increase from 35 to 53 per cent of firms reporting small profits.

Figure 4.4: Firm performance by size in 2017 and 2022

Note: Balanced panel
Source: Authors' own calculations using IIM 2017 and 2022 data.

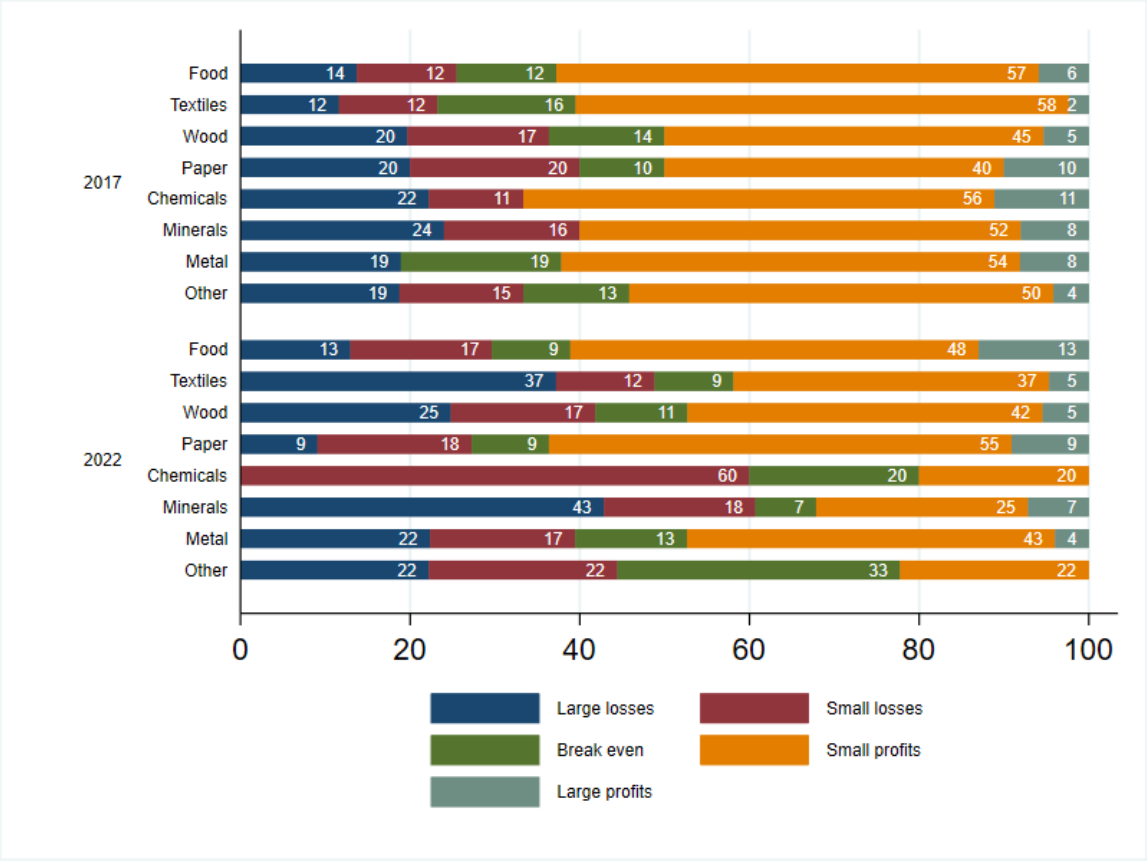
Figure 4.5: Self-assessed firm performance by survey round and province



Note: Balanced panel
Source: Authors' own calculations using IIM 2017 and 2022 data

Across manufacturing industries, there were substantial movements between the 2017 and 2022 survey rounds. Enterprises producing textiles (tailors) or non-metallic minerals (brick makers) were far more likely to report large losses in 2022 compared to 2017. In the textiles sector, 49 per cent of respondents stated losses in 2021 compared to 24 per cent in 2016. For producers of non-metallic minerals (brick makers) the share went from 40 per cent to 61 per cent. A likely explanation for this negative development might be a drop in demand for the services of tailors and brick makers. As a result of the COVID-19 pandemic, people cannot afford anymore to get their clothes repaired or to purchase bricks to build houses. Manufacturers in the food sector overall reported a similar distribution of losses and profits in 2022 as in 2017. This makes sense as people will always purchase food, even during crisis times. Only firms in the paper sector (book binders) reported higher profits in 2022 than in 2017.

Figure 4.6: Self-assessed firm performance by survey round and industry



Note: Balanced panel
Source: Authors' own calculations using IIM 2017 and 2022 data.

4.3 Main economic indicators

This sub-section looks into firms' financial performance. Table 4.2 includes the main economic indicators total value added and gross profits for 2015, 2016, 2020, and 2021. To be able to compare values across time and space, the numbers reported are deflated both temporally and spatially using the most recent inflation data from Mozambique's National Institute of Statistics (Instituto Nacional de Estatística, INE) as well as the Household Budget Survey (Inquérito ao Orçamento Familiar, IOF) 2014/15. The figures are deflated using an index that takes Maputo City in 2015 = 100 as a point of reference. The spatial weights are constructed from the IOF 2014/15 based on 10 so-called domains, roughly representing urban-rural divisions across one or two provinces. To account for the developments since 2015, we rely on INE's consumer price index, published for each province individually. On top of spatial and temporal deflation, to avoid outlier bias, the top and bottom 1 per cent of each variable are winsorised, i.e., set to the values of the 1st and 99th percentile.

Table 4.2: Main economic indicators, no outliers, MT millions (Maputo 2015 = 100)

	Value added				Gross profit			
	2015	**2016**	**2020**	**2021**	**2015**	**2016**	**2020**	**2021**
Micro in 2022	0.95	3.5	14.3	11.2	0.7	3.2	14.2	11.0
Small 2022	6.8	5.8	166.7	105.4	3.4	3.0	117.4	90.0
Medium 2022	32.8	59.0	673.3	823.7	18.0	49.2	663.4	751.2
Maputo City	1.9	11.1	59.7	70.7	1.1	9.1	58.5	57.9
Maputo Province	7.8	12.3	114.0	11.7	4.6	11.1	35.2	10.8
Gaza	2.3	2.0	72.2	136.1	1.5	1.6	72.0	110.7
Sofala	4.6	6.1	109.6	69.9	2.6	5.4	108.1	69.3
Manica	6.6	12.6	11.0	12.8	3.2	11.0	10.5	12.3
Nampula	10.7	10.4	31.4	77.3	5.8	6.2	29.7	75.7
Tete	1.8	1.4	86.2	85.7	0.6	0.3	87.1	85.2
Food	9.2	17.3	24.3	51.4	5.39	13.7	22.7	49.9
Textiles	0.5	0.4	1.7	1.5	0.08	-0.01	1.4	1.1
Wood	3.7	3.9	40.3	48.7	1.88	3.4	40.0	40.3
Paper	2.4	3.4	426.7	12.9	0.96	2.3	113.7	11.1
Chemicals	24.3	28.4	15.3	16.2	17.45	17.2	14.0	15.6
Minerals	5.7	4.2	166.0	48.0	4.59	2.4	165.6	47.4
Metal	3.7	16.1	133.8	134.6	1.82	14.6	132.3	120.4
Other	2.8	2.7	46.2	314.2	0.54	0.7	45.9	313.9
Total	4.6	8.2	74.9	66.9	2.5	6.7	64.4	60.4

Note: Balanced panel
Source: Authors' own calculations using IIM 2017 and 2022 data. All values are spatially and temporally deflated and winsorised at the 1st and 99th n=355

Generally, there is a large shift in the financial accounts between the two survey rounds, i.e., when comparing numbers from 2015 and 2016 to 2020 and 2021. How much of this is caused by potential

technical variance in the survey instrument, enumerator effects, or real economic changes is uncertain. Comparing within survey rounds, i.e,. developments from 2020 to 2021, is more consistent, as all potential confounding factors should be constant within the replies. The same goes for the relative distribution of the figures between groups of firms, i.e., size categories, provinces and sectors since all firms were exposed to the same questionnaire and pool of interviewers within each survey round.

In terms of total value added, only the medium-sized firms managed to grow between 2020 and 2021 – micro and small firms experienced a relatively large drop in value added between the two financial years. The same pattern is evident for gross profits. Across provinces, the picture is a bit blurrier. Firms in five out of seven provinces saw an increase in value added between 2020 and 2021, while there are also notable large decreases in Maputo province and Sofala. These drops are likely caused by a few larger firms that experienced fluctuations due to COVID-19 and the subsequent supply chain crisis. Gross profits increased in only three out of seven provinces between 2020 and 2021.

Firms in the food sector have seen a steady and gradual increase of both value added and gross profits in each reported year since 2015. The same, albeit to a lesser extent within survey rounds, is the case for the wood sub-sector, which includes many carpenters and furniture makers. Other sectors, such as paper, which consists of book binders, seem to be affected by outliers (especially in 2020) while firms in the textiles sector, which are small-scale tailors, are generally struggling.

Table 4.3 shows the remuneration of labour and capital in terms of wages and gross profits compared to value added. First, wages over value added have increased, meaning that a larger share of the value produced in the manufacturing sector now goes to wages compared to 2017. Especially for small firms, wages now comprise 89 per cent of total value added compared to 57 per cent in 2015. Micro and medium sized firms decreased their wages over value added slightly between 2020 and 2021, which is in line with numbers for value added, profits, and self-reported firm performance. Second, profits constitute a lower share of value added in the latest survey round.

Table 4.3: Remuneration of labour and capital

	Wages/value added				Gross profit/value added			
	2015	**2016**	**2020**	**2021**	**2015**	**2016**	**2020**	**2021**
Micro 2017	0.56	0.59	0.67	0.63	0.88	1.17	0.50	6.10
Small 2017	0.57	0.55	0.72	0.89	0.75	0.67	0.36	0.39
Medium 2017	0.50	0.54	0.95	0.74	0.51	0.52	0.38	0.31
Total	0.56	0.57	0.70	0.69	0.83	1.01	0.47	4.53
Observations	259	244	343	345	300	284	323	320

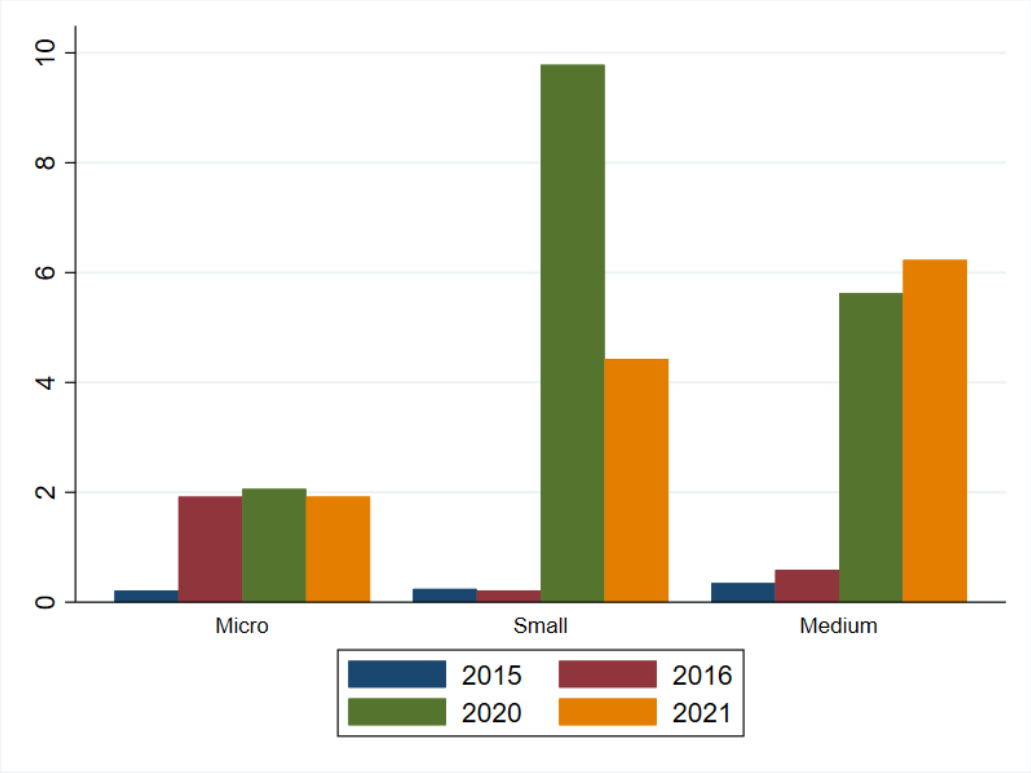
Source: Authors' own calculations using IIM 2017 and 2022 data.

4.4 Productivity

This sub-section considers two definitions of productivity: value added per full-time worker and total factor productivity (TFP). Both measures are calculated using the temporally and spatially deflated economic accounts where outliers are winsorised. TFP is determined as the residuals of a regression with (the log of) value added as left-hand side variable and logged assets and firm size on the right-hand side instead of capital and labour.

Figure 4.7 and 4.8 show value added by full time worker and TFP by size category in 2015, 2016, 2020, and 2021. Micro firms had a lower productivity in the latest survey round than small and medium firms. In the category 'small', some firms experienced a boost in 2020, while medium sized firms had good labour productivity while TFP was negative. This might be explained by the COVID lockdowns, where production and the number of workers were temporarily lower in larger operations.

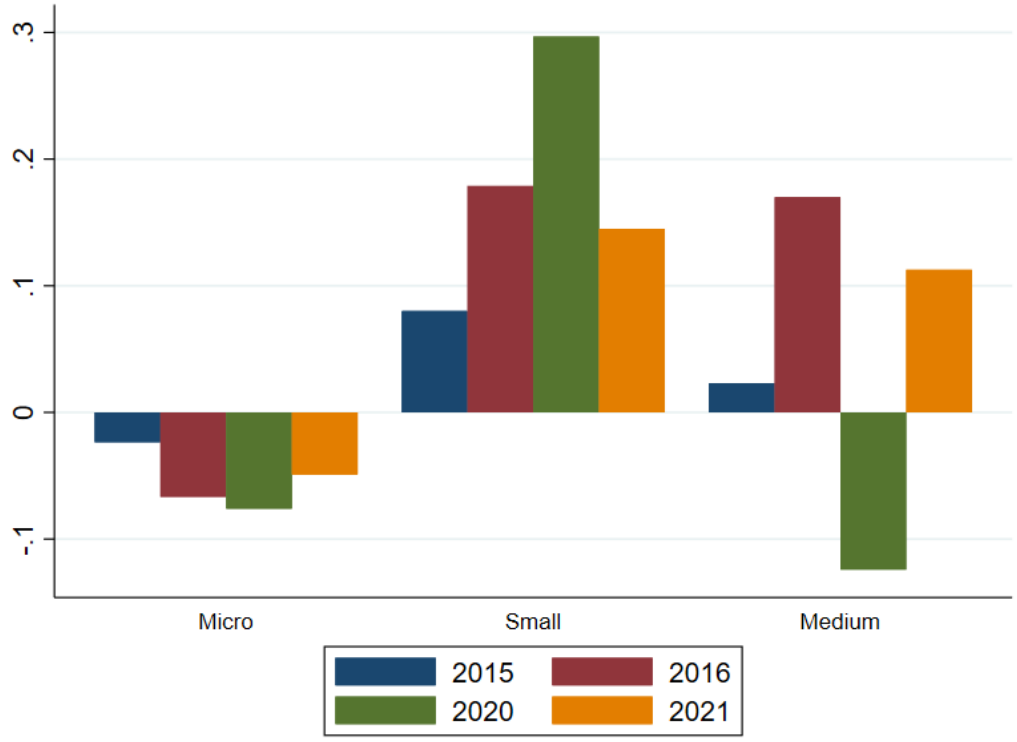
Figure 4.7: Value added per worker by size category and year



Note: Labour productivity is defined as value added divided by the number of full-time workers. TFP is defined as the residual in a production function estimation including firm size and assets.
Source: Authors' own calculations using IIM 2017 and 2022 data.

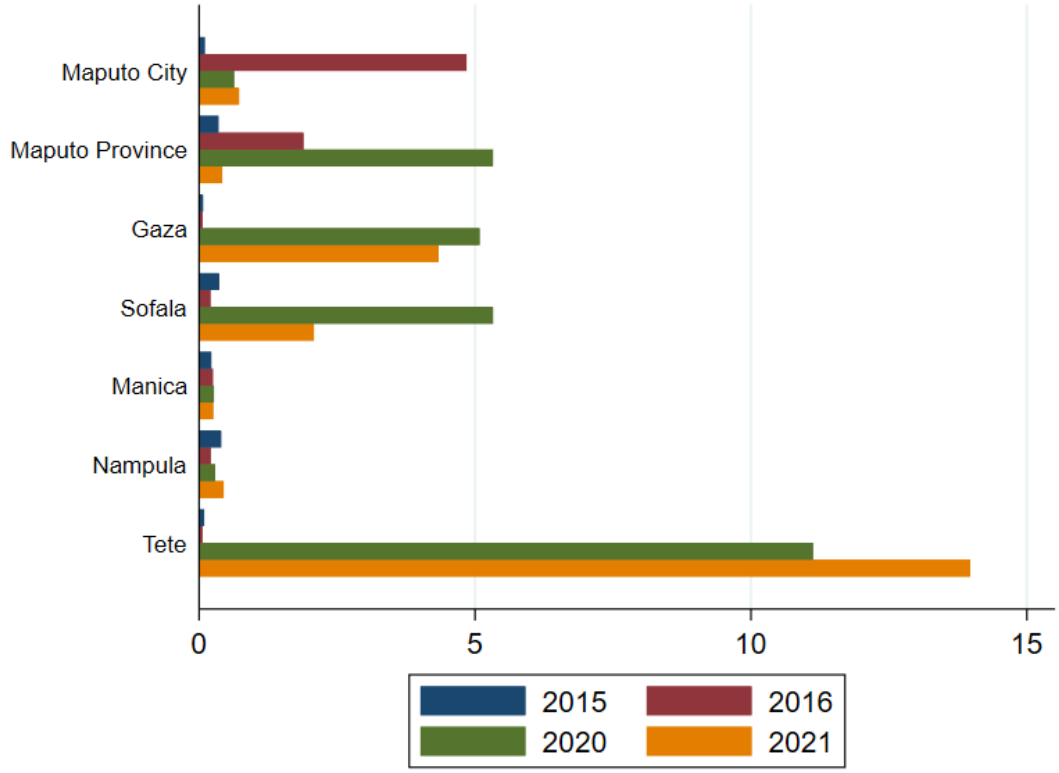
Looking across provinces in Figure 4.9, large differences appear in productivity. Labour productivity took a large jump between survey rounds in Tete, Gaza and to some extent Sofala, while in Maputo city, 2016 was the year with the highest productivity.

Figure 4.8: Total factor productivity by size category and year



Note: Labour productivity is defined as value added divided by the number of full-time workers. TFP is defined as the residual in a production function estimation including firm size and assets.
Source: Authors' own calculations using IIM 2017 and 2022 data.

Figure 4.9: Value added per worker by province



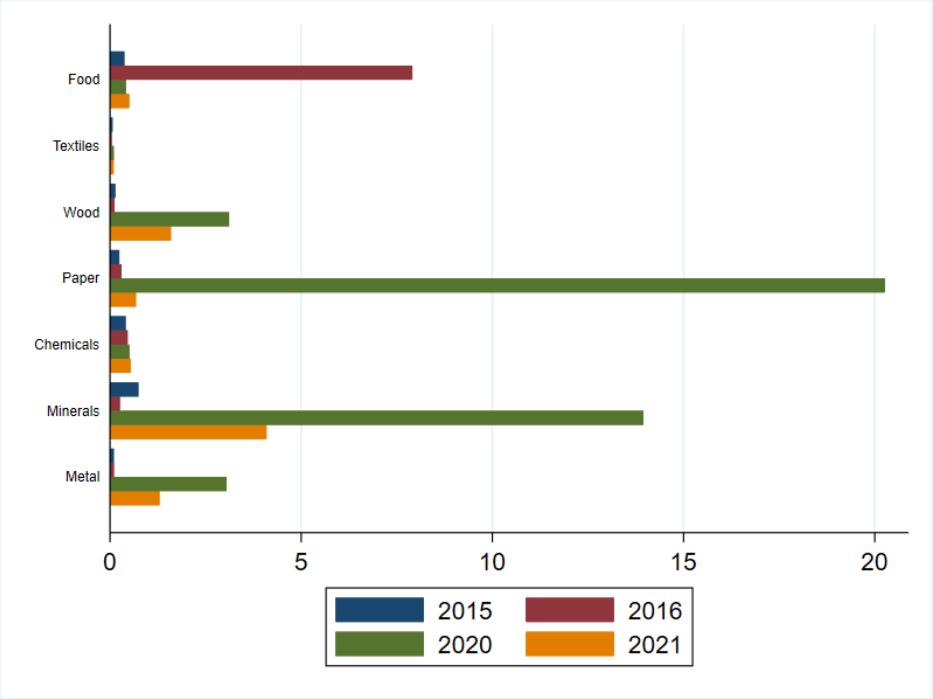
Source: Authors' own calculations using IIM 2017 and 2022 data.

Figure 4.10: Total factor productivity by province

Source: Authors' own calculations using IIM 2017 and 2022 data.

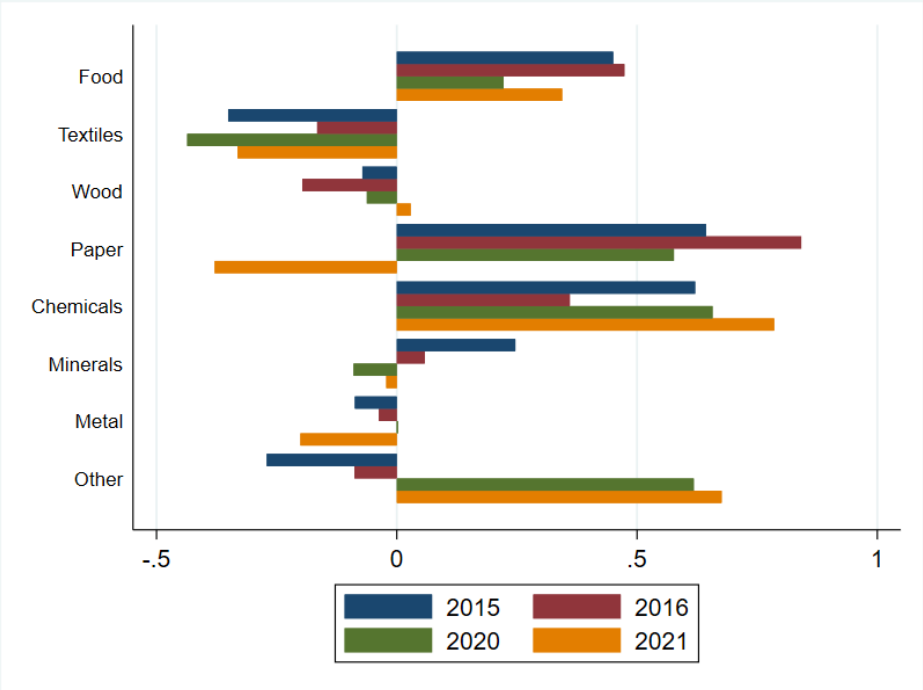
Figure 4.11 and 4.12 depict productivity (value added per worker and TFP) by manufacturing industry. As previously seen, firms in some sectors have experienced large shifts in value added, especially the paper sector in 2020. However, the overall picture of the food sector doing relatively well and the textile sector (tailors) in decline remains. The few firms in the chemicals sector have a strong TFP, while firms in the wood sector (carpenters) seem to be recovering compared to the previous round.

Figure 4.11: Value added per worker by sector



Source: Authors' own calculations using IIM 2017 and 2022 data.

Figure 4.12: Total factor productivity by sector



Source: Authors' own calculations using IIM 2017 and 2022 data.

4.5 What explains firm performance?

We turn to trying to understand which firm characteristics explain firm performance. Understanding which characteristics and contexts facilitate firms in achieving higher performance allows us to develop policy recommendations. For this aim, we run regressions with three performance indicators as outcome variables: revenue, value added (VA) and labour productivity (LP). In the case of each outcome variable, we run three OLS regressions that differ by the explanatory variable and control variables added to the regression. As a last step, we run 2-way fixed effects (FE) regressions, which means that we control for firm and year fixed effects to investigate whether unobserved time-invariant firm characteristics drive the OLS results.

Starting with firm revenue as an indicator of firm performance, we first run a regression with all control variables that we include in all subsequent OLS regressions (see column 1 of Table 4.4). We find that larger firms have higher revenue. Further, we obtain two surprising results. First, enterprises with a female owner or manager perform better than enterprises with a male owner or manager. This is surprising because previous studies have shown that female-led businesses are, on average, less productive than male-led businesses. After all, most women have family obligations, which do not allow them to focus on their businesses fully. We dig deeper into the differences between female and male-owned/managed enterprises in Chapter 6.

Second, enterprises in the South (Maputo City, Maputo Province and Gaza) are not performing better than firms in the Centre (Sofala and Manica) and North (Nampula, Tete). This is surprising because the South of Mozambique is the country's most economically active part. An explanation for these results might be that the most productive firms are more likely to be known by the Mozambican government from which we originally obtained firm lists to create the sample. Thus, in our survey, there are no big firm performance differences between the South, Centre, and North of the country because the firms we are examining are the most productive firms in Mozambique regardless of their location. We dig deeper into geographical performance differences by looking at each province instead of combining several provinces into one geographic variable. However, none of the provinces stands out in terms of performance.[2]

Regarding performance differences by industry, being a tailor (textiles industry), carpenter (wood industry) or black smith (metal industry) is associated with significantly lower performance. Tailors, carpenters, and black smiths also form the biggest industries in Mozambique, which means that there

[2] The regression results including dummies for each province instead of combining all provinces from the South, all from the Centre and all from the North are not reported here but can be obtained upon request.

is probably high competition in these industries such that it is more challenging to perform well than in other industries.

Moving towards value added as an indicator of firm performance, we obtain similar results as for revenue. Larger firms and female-led firms are performing better. Firms in the southern part of Mozambique are not performing better than those in the Centre or North. Tailors, carpenters and black smiths have particularly low value added relative to firms in other industries. Obtaining the same trends with two different financial performance variables is reassuring.

The third performance indicator is labour productivity. As before, we obtain similar trends but with a few differences that are likely related to labour productivity being a performance indicator that differs from the financial indicators of revenue and value added. First, larger firms tend to be more labour productive, but the association is slightly smaller than the association between firm size and financial performance. Thus, larger firms do much better in terms of financial performance than in terms of labour productivity relative to smaller firms. Further, the statistically significant association between labour productivity and firm size disappears when adding firm and year fixed effects. Thus, we conclude that there are no statistically significant labour productivity differences across firm sizes. These findings are in line with the results of previous research on SME development. The low productivity of firms, irrespective of their size, may be attributed to weak management practices. This is especially detrimental to bigger firms that are far more operationally complex and usually require formal management practices to make an efficient use of their resources (Bloom et al., 2010).

Second, the OLS regressions reveal that female-led businesses are more labour productive. However, the statistical significance disappears in the FE regression. Thus, firm size and the owner/manager's gender are no strong determinants of labour productivity. Chapter 8 explores other potential determinants of labour productivity in more depth.

As described previously, we follow the same 355 enterprises over 10 years. These 355 enterprises form the balanced sample, which is the focus of our analysis. In addition, 376 firms left the sample between the survey rounds and 120 firms were added for the first time in 2022. Firms in the balanced sample might differ from both the firms that left the sample and the newly added firms. In columns 2 and 3 of Table 4.4, we, therefore, examine whether the performance results described in the previous paragraphs differ by sample type.

Column 2 of Table 4.4 confirms that larger firms and female-led enterprises have higher revenue and value added. Being located in a southern province does not make a statistically significant difference in performance. Tailors, carpenters, and black smiths tend to perform lower in revenue and value

added than other industries. Regarding firm revenue, the balanced sample is not statistically different compared to all other firms combined. In contrast, firms in the balanced sample tend to have lower value added and labour productivity. These results seem to be driven by differences across years, i.e., value added and productivity were lower in 2017 than in 2022. Column 3 shows that in 2022, there were no statistically significant differences between the balanced panel and the newly added firms in revenue, value added (VA) and labour productivity (LP). Thus, overall, the samples appear to follow similar trends in terms of firm performance, which is reassuring in terms of relevance to capturing overall trends about the Mozambican manufacturing sector instead of just focusing on a few particular manufacturing firms. Expressed differently, we are convinced that this report describes generalizable trends of the Mozambican manufacturing sector.

Table 4.4: Performance indicators as outcome variables: revenue, value added (VA) and labour productivity (LP)

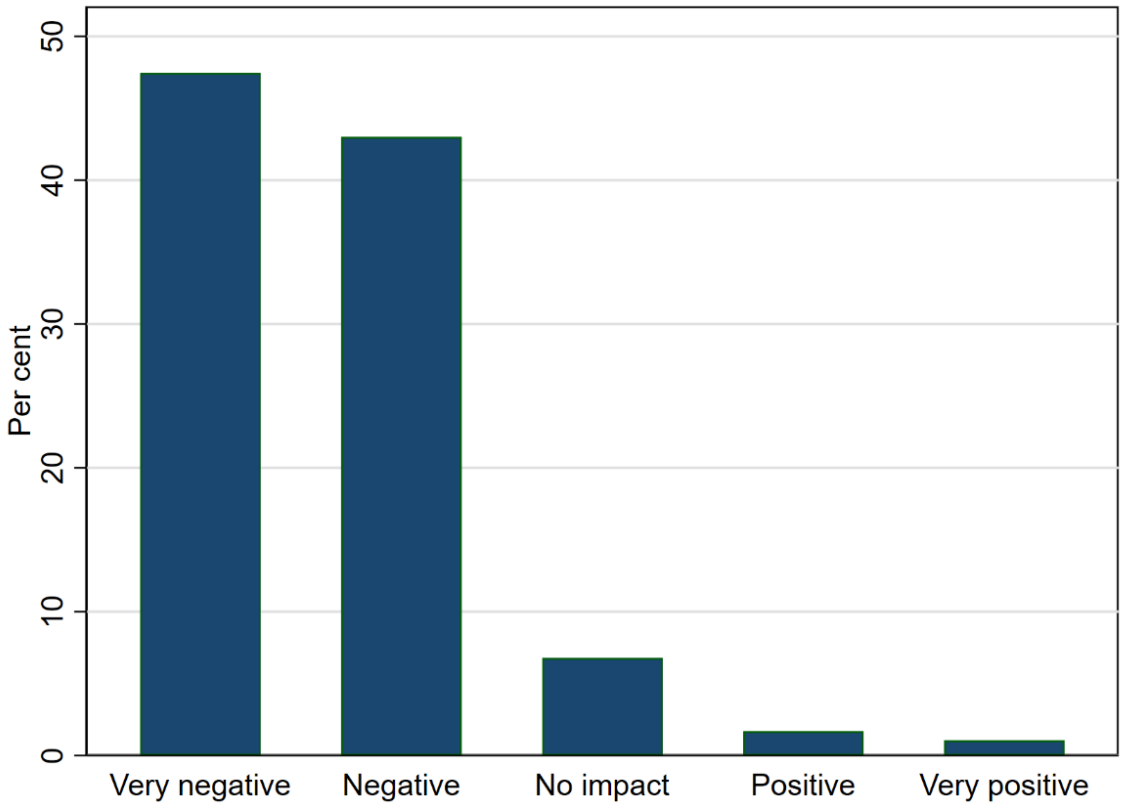
	Revenue				Value Added (VA)				Labour Productivity (LP)			
	(1) OLS	(2) OLS	(3) OLS only 2022	(4) FE	(1) OLS	(2) OLS	(3) OLS only 2022	(4) FE	(1) OLS	(2) OLS	(3) OLS only 2022	(4) FE
Firm size	1.198***	1.235***	1.436***	0.687**	1.159***	1.242***	1.447***	0.885**	0.228*	0.295***	0.368***	-0.074
	(0.130)	(0.117)	(0.126)	(0.304)	(0.170)	(0.135)	(0.128)	(0.393)	(0.138)	(0.109)	(0.113)	(0.326)
Woman-led	1.262***	1.022***	0.740**	0.795*	1.556***	1.055***	0.776**	1.128	1.262***	0.897***	0.707**	0.749
	(0.319)	(0.252)	(0.368)	(0.424)	(0.409)	(0.309)	(0.360)	(0.730)	(0.356)	(0.274)	(0.323)	(0.564)
South	0.059	-0.058	-0.072		0.172	0.031	-0.021		-0.195	-0.318*	-0.421**	
	(0.188)	(0.161)	(0.199)		(0.266)	(0.207)	(0.206)		(0.226)	(0.179)	(0.189)	
Food	-0.466	-0.828*	-1.027		-1.079*	-1.093**	-1.150		-0.939	-0.998*	-1.145	
	(0.531)	(0.467)	(0.678)		(0.634)	(0.518)	(0.731)		(0.585)	(0.486)	(0.719)	
Textiles	-1.428***	-1.661***	-1.888***		-2.049***	-1.971***	-1.919**		-1.803***	-1.781***	-1.854**	
	(0.511)	(0.451)	(0.699)		(0.606)	(0.498)	(0.747)		(0.561)	(0.471)	(0.715)	
Wood	-1.452***	-1.688***	-1.621**		-2.188***	-2.121***	-1.806**		-1.976***	-1.952***	-1.777**	
	(0.496)	(0.429)	(0.664)		(0.562)	(0.468)	(0.716)		(0.530)	(0.448)	(0.702)	
Paper	-0.928	-1.074*	-1.106		-2.148*	-1.741**	-1.696*		-1.533*	-1.375**	-1.381*	
	(0.856)	(0.584)	(0.769)		(1.129)	(0.739)	(0.912)		(0.874)	(0.611)	(0.816)	
Chemicals	0.142	0.230	-0.162		-1.053	-0.605	-0.192		-0.687	-0.578	-0.522	
	(0.734)	(0.780)	(1.184)		(1.511)	(1.287)	(1.304)		(1.135)	(0.951)	(1.012)	
Minerals	-0.642	-0.877*	-1.155		-1.020	-0.963*	-1.425*		-0.991	-0.970*	-1.414*	
	(0.573)	(0.502)	(0.777)		(0.620)	(0.530)	(0.818)		(0.603)	(0.518)	(0.808)	
Metal	-1.205**	-1.431***	-1.636*		-1.773***	-1.763***	-1.791**		-1.706***	-1.732***	-1.824**	
	(0.516)	(0.445)	(0.686)		(0.578)	(0.486)	(0.735)		(0.547)	(0.466)	(0.715)	
Balanced		-0.147				-0.729***				-0.532***		
		(0.183)				(0.187)				(0.165)		
New firms			0.132				0.223				0.082	
			(0.228)				(0.239)				(0.224)	
Firm and Year Fes	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Obs	710	935	475	710	710	926	475	710	710	926	475	710
R^2	0.32	0.34	0.44	0.08	0.21	0.26	0.44	0.14	0.07	0.09	0.13	0.11

4.6 COVID-19 pandemic and the effect on business practices

This sub-section explores the effects of the COVID-19 pandemic on the Mozambican manufacturing sector. As we referenced before, lockdowns and other emergency policy measures implemented during the COVID-19 pandemic have undeniably impacted MSMEs worldwide, and businesses in Mozambique were not spared. Evidence illustrating the macroeconomic effects of COVID-19 suggests that the country's growth decreased by 3.6 per cent in 2020 and that the employment rate is 1.9 per cent down due to the pandemic (Betho et al. 2021).

Using the unbalanced instead of the balanced sample allows us to observe how COVID-19 might have affected the performance of the Mozambican manufacturing sector. Between 2020 and 2021, larger firms in Maputo Province and Sofala experienced notable decreases in value added affected by the global supply chain crisis. Medium-sized firms, the largest firms in our sample, also experienced a lower total factor productivity in 2020, most likely due to measures implemented to combat the global pandemic that restricted the number of workers in larger operations.

Figure 4.13: Firms' self-reported impact of COVID-19

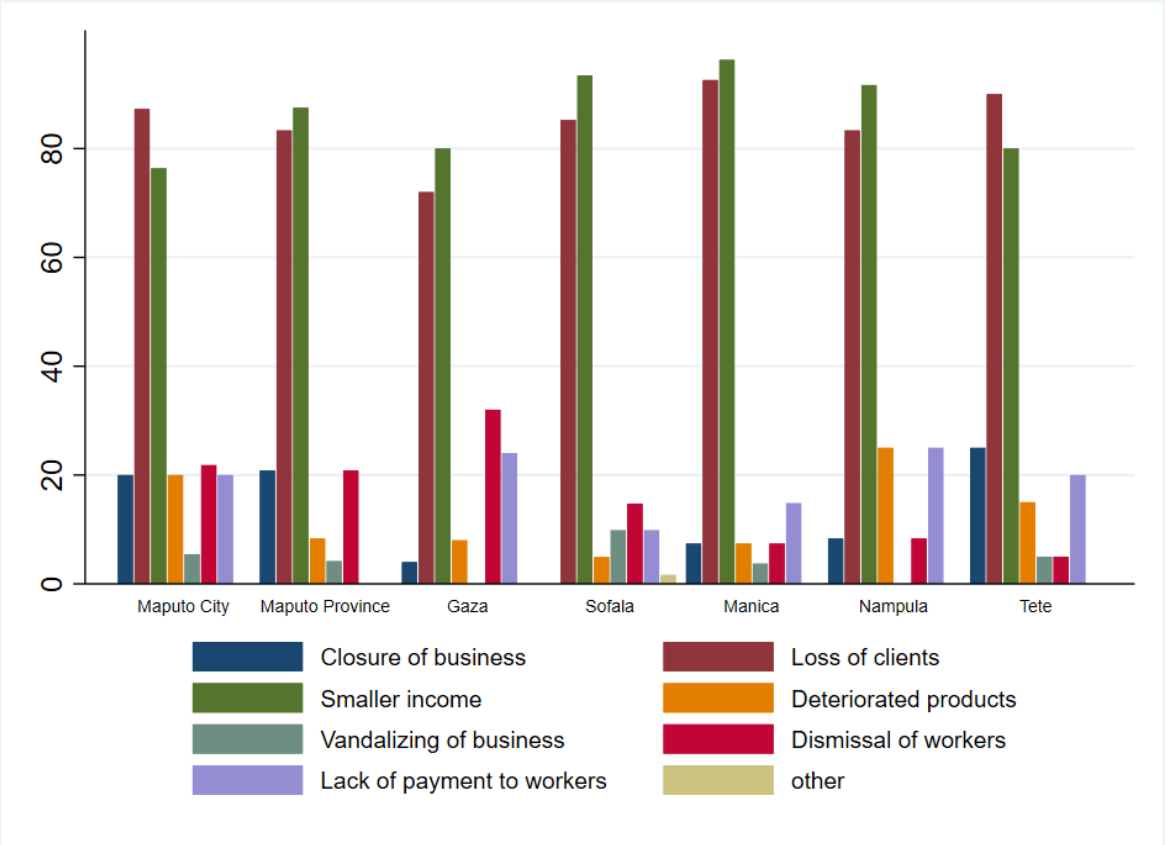


Source: Authors' calculations based on IIM 2022 data.

Enterprise owners and managers explain that COVID-19 predominantly affected them negatively (see Figure 4.13). Almost 90 per cent of the sample report that the pandemic had negative or very negative impacts for their businesses. In contrast, only 6.8 per cent of respondents perceive no impact on their activities, and 2.7 per cent even report a positive or a very positive impact.

To understand these impacts in detail, we asked follow-up questions about COVID-19. We asked firms about the specific negative impacts that COVID-19 had on their operations, and classify the results by province (Figure 4.14), business size (Figure 4.15) and manufacturing sector (Figure 4.16).

Figure 4.14: Negative impact by province



Source: Authors' calculations based on IIM 2022 data.

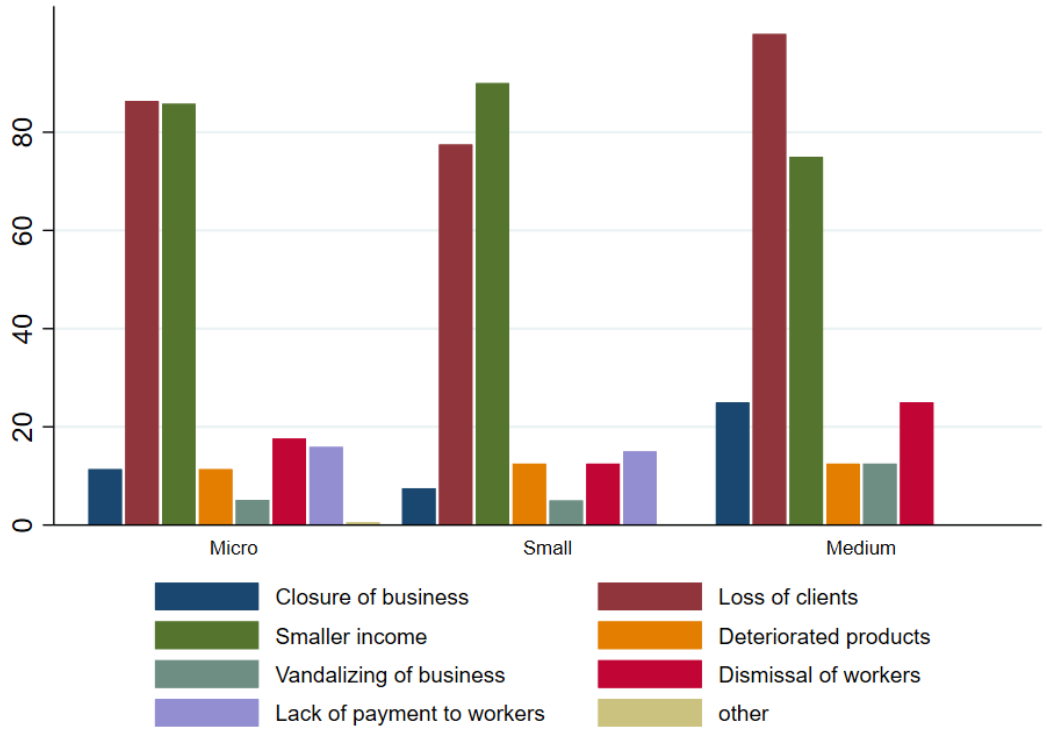
The most prevalent effects of COVID-19 among all enterprises were the loss of clients and a smaller income. Manica Province presented the highest percentage of both, 92.6 per cent and 96.3 per cent, respectively. Other prevalent effects are the dismissal of workers and the lack of payment to workers. The reported dismissal of workers is consistent with the decrease in firm size that is outlined in Chapter 8. The province with the harshest dismissal of workers and lack of wage payment was Gaza, with 32 per cent of enterprises reporting the first and 24 per cent the second one. Regarding the lack of payment to workers, however, Nampula presents the highest percentage of 25 per cent. In this

case, the effect appeared to be less related with dismissal of workers than in the other provinces, since it only accounted for 8.3 per cent.

Surprisingly, most firms remained open during the pandemic, probably because the business was the only way of survival. Maputo City, Maputo Province and Tete were the provinces where most enterprises closed for some time, with shares between 20 and 25 per cent. Moreover, Figure 4.9 shows how Maputo City has relatively high percentages for every category, reporting 20 per cent or above for all categories but vandalism of business. This could imply that Maputo City suffered the worst overall impact compared to other Mozambican provinces. In fact, in the self-assessed performance section (Figure 4.3) enterprise owners in Maputo City reputed the second largest increase in reported losses, only after Gaza Province.

We turn towards the self-reported negative effects of the pandemic by firm size in Figure 4.15. Medium enterprises appeared to be the most vulnerable to business closure, with 25 per cent of enterprises reporting this effect. This result is consistent with our finding that medium firms, in particular, closed for good during the pandemic (see Chapter 3 on firm exit). The second most vulnerable to closure were micro enterprises (11.4 per cent), followed by small enterprises with 7.4 per cent.

Figure 4.15: Negative impact by firm size classification (%)



Source: Authors' calculations based on IIM 2022 data.

Once again, we spot the same trend as before, i.e., the most prevalent negative effects of COVID-19 were loss of clients, oscillating between 100 per cent for medium enterprises and 77.5 per cent for small enterprises, and smaller income oscillating between 90 per cent for small enterprises and 75 per cent for medium enterprises. For micro firms, both effects were very similar, 86.4 per cent and 85.8 per cent, respectively.

Deterioration of products was similar for all enterprise sizes, 11.4 per cent for micro, 12.5 per cent for small and 12.5 for medium firms. Other effects were prevalent among all enterprises, too, such as dismissal of workers, 17.6 per cent for micro, 12.5 per cent for small and 25 per cent for medium-sized firms.

Other effects were common among micro and small enterprises, such as vandalism toward business, 5.1 and 5 per cent, and in this case, much higher for medium enterprises with 12.5 per cent. Conversely, lack of payment was common among micro and small enterprises 15.9 per cent and 15 per cent, still virtually non-existent for medium enterprises, which have no report of this effect (0 per cent).

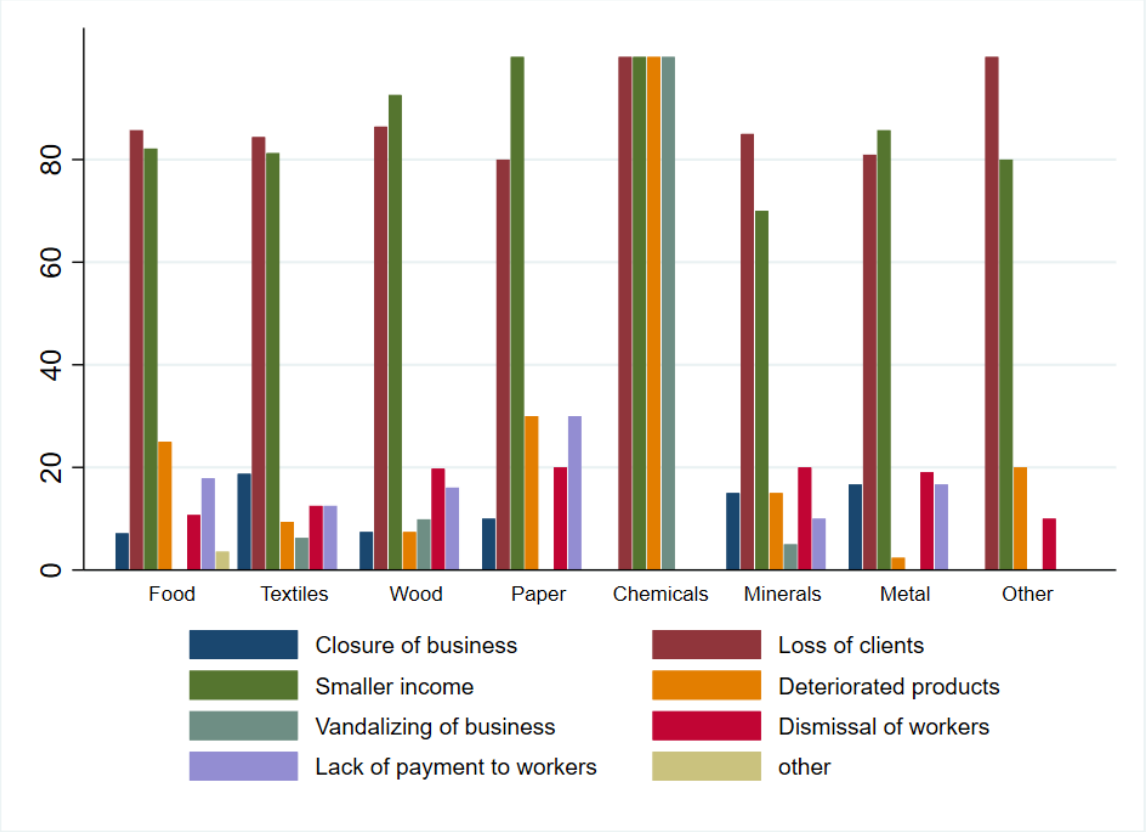
All in all, medium firms appear to have suffered the worst impact of COVID-19, especially considering the high percentage of business closure and the relatively high percentages they present in most categories of the pandemic effects relative to micro and small firms, except for smaller income and lack of payment.

When we observe the results by manufacturing sub-sector in Figure 4.16, we identify that business closure is most prevalent across the textile sector (tailors) with 18.8 per cent, followed by the metal sector (black smiths) with 16.7 per cent. Regarding business closure, the wood sector (carpenters) reported 86.4 per cent of firms that had to close for a period due to the pandemic, followed by the mineral sector (brick makers) with 85 per cent. The wood sector was one of the most affected by the COVID-19 pandemic, and this trend can be observed across many variables.

Both the food sector and the paper sector were very affected by deteriorated products with 25 per cent and 30 per cent of enterprises respectively reporting this effect. Dismissal of workers is relatively high for the wood, paper, and mineral sector with all reporting percentages of approximately 20 per cent of enterprises being affected. The wood sector, the paper sector, the mineral sector, and the food sector were also very affected by the lack of payment to workers, with results oscillating between 16 per cent and 30 per cent.

For the chemical sector and the category "Other industry", our chosen sample contains very few observations, which is why the results observed can be relatively misleading. In particular, we observe very strong effects in terms of loss of clients, smaller income, dismissal of workers and vandalizing of the business in the chemical sector.

Figure 4.16: Negative impact by manufacturing sector (%)



Source: Authors' calculations based on IIM 2022 data.

4.7 Conclusion

In this chapter, we examined the reasons for the largest increases and decreases in performance and in which cases this is consistent across subjective and objective measures. We find that small firms are doing best, while micro and medium firms are struggling. In fact, there is a notable increase in productivity for small firms. One of the striking observations is that micro and medium firms self-assess their performance much worse than what the hard numbers (value added and profits) imply. Regarding the manufacturing sub-sectors, the wood (carpenters), metal (black smiths) and paper (book binding) industries are performing better than the food, textile (tailors) and chemical industry. Regarding differences across provinces, Sofala and Tete show positive developments. Despite these relative improvements, our report shows that there is no evidence of significant industrialization in the Mozambican manufacturing sector. This is not in line with the country's Industrial Strategy, which

already in the 1990s set the objective to make the manufacturing sector a priority and, thereby, contribute to structural transformation.

The last round of our survey sheds light on the tough reality faced by Mozambican enterprises, and especially how vulnerable medium-sized manufacturing firms have been to the effects of COVID-19. More than half of the firm owners suffered big losses in 2021, while this was only one-third of the total sample in 2016. It is therefore advisable to assist otherwise productive businesses to overcome the exceptionally tough conditions of COVID-19.

Emergency measures taken to face the COVID-19 pandemic, such as lockdowns and restricting people's circulation were very challenging for the Mozambican economy. Shifts in public budgets with more funds oriented towards public health meant less money to be invested in protecting Mozambican industries, i.e., the manufacturing sector (Lone and Ahmad, 2020). COVID-19 hampered productivity overall and made product imports difficult (Lone and Ahmad, 2020). The textile and mineral sectors were more vulnerable than other sectors; this could be a result of the rise in the prices of primary goods. At the same time, and very importantly, workers' wages are higher than productivity. This could undermine the business environment where there are no incentives to create new companies or new job positions in the market. It is paramount now – as soon as the local economy recovers from the COVID-19 shock – to redistribute public expenditures accordingly to stimulate industrial growth.

The story of the industrialization of Mozambique is far from over; in fact, we do see a somewhat worsened situation. On a positive note, better results can be expected in the years to come as a part of the recovery process after the global pandemic. There is much potential in "industries without smokestacks", particularly in manufactured agroindustry goods. Thus, it is recommended to favour business development and the production of manufactured goods in diverse sectors by promoting sustainable foreign investments which could prompt and consolidate this kind of incoming capital flows.

5 Sample exits, firm deaths and new firms

One of the main objectives of the IIM project is to understand the development of the same manufacturing enterprises over time. However, an important aspect of a well-functioning economy is firm death. If firms are too unproductive to survive such that they have to close, i.e., they "die" resources and customers can be channelled to more efficient enterprises, thereby increasing aggregate productivity (McKenzie and Paffhausen, 2019). The first aim of this chapter is to analyse the firms that left the sample over time to understand if these firms are different in terms of productivity and firm characteristics compared to surviving firms. Further, the firms that left the sample might have been replaced by younger, more innovative and productive enterprises. Finding out if this is indeed the case is the second aim of the chapter. To obtain answers, we examine firms that were newly added to the sample in 2022.

5.1 Firm exit

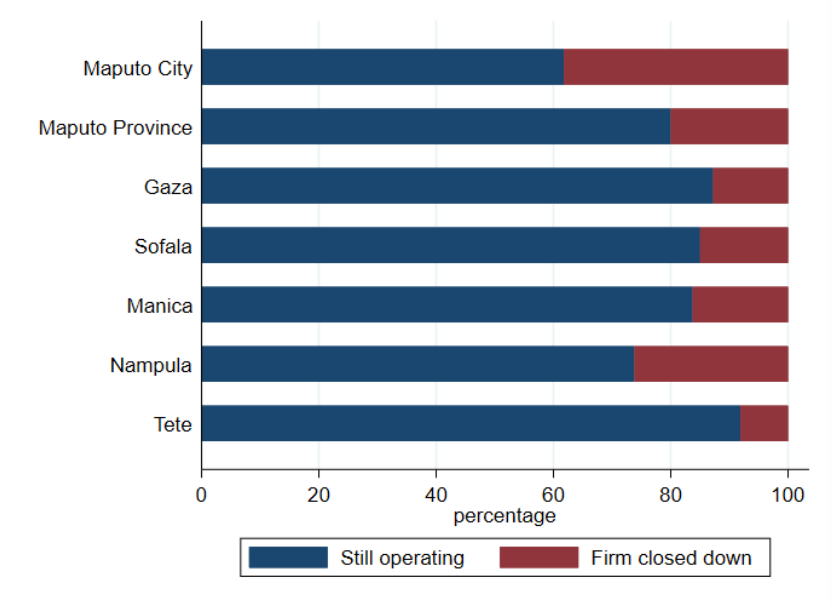
The IIM surveys aim at re-interviewing as many firms as possible from previous rounds. In 2022, 105 firms that were interviewed in 2012 and 2017 could not be re-interviewed, either because they had closed, or the enumerators could not find them. This sub-section takes a detailed look at the characteristics of these 105 exit firms to understand why they did not continue their operations and investigates whether they are different from firms that survived.

In 2017, 460 firms were interviewed and of these, 105 enterprises had left the sample by 2022. This implies an exit rate of 23 per cent over five years, and an annual average exit rate of 4.6 per cent. This is almost equivalent to the exit rate of 4.5 per cent obtained in another enterprise survey in Myanmar (Hansen et al., 2019). When also taking into account the 2012 survey round, we get an annual average exit rate that is slightly higher, 6.7 per cent, respectively. Nevertheless, this exit rate is lower than the exit rate of 9 to 10 per cent that has been found in other developing countries (Liedholm and Mead, 1999). Thus, the IIM 2022 has a very low exit rate, which is a successful result in itself.

Figure 5.1 illustrates the share of firms that left the sample between 2017 and 2022 by province. Maputo City and Nampula are the two provinces with the highest amount of firms exiting the survey. Around 38 per cent of the firms in Maputo City and 26 per cent in Nampula stopped operating or could not be re-interviewed. Maputo City and Nampula also belong to the provinces that perform best in terms of revenue and value added. The market in these provinces might be working more efficiently than in the other provinces, and in an efficient market, firm death is normal because only the most productive firms manage to survive. Tete and Gaza are the provinces with the fewest firms exiting,

with only 8 and 13 per cent leaving the sample between 2017 and 2022. At the same time, these are also the provinces with the lowest financial performance. "Firm death can improve aggregate productivity if less productive firms die and reallocate resources and customers to more efficient competitors" (McKenzie and Paffhausen, 2019, p. 645). But are the less productive firms the ones that are leaving the sample over time? And, in what other characteristics are the firms that left the sample different from the firms that survived over 10 years? These are the questions this sub-section attempts to address.

Figure 5.1: Survival by province



Source: Authors' calculations based on IIM 2017 and 2022 data.

Table 5.1 summarizes the exit share by various firm characteristics. It shows that the exit rate increases with firm size category. Around 20 per cent of micro firms, 28 per cent of small firms and 33 per cent of the medium-sized firms closed between 2017 and 2022. This finding is not in line with previous literature, which usually finds a higher likelihood for micro firms to exit because they face more challenges and receive less support than bigger enterprises (Bigsten et al., 2004; Frazer, 2005). The reason why micro firms in Mozambique are less likely to exit probably stems from the fact that there are no other employment opportunities and, therefore, firm owners are obliged to remain in business as subsistence firms to provide for their families, but without ever growing.

The gender of the manager/owner is correlated with the likelihood of survival for a firm. Firms owned/managed by a female had an exit rate of 40 per cent, which is almost double of the exit rate of firms owned/managed by a man. The literature on firm survival and gender is ambiguous, showing evidence of female owners having a higher exit rate (Fairlie & Robb, 2009; Robb, 2002) and others

finding no significant differences between men and women (Robb & Watson, 2012). Goldstein et al. (2022) argue that gender differences may be explained by women with children being more likely to close their business in response to school closures due to COVID-19.

Table 5.1: Firm characteristics of exits and survivors

	Exits		Survivors		Total
	Obs	Perc	Obs	Perc	
Firm size					
Micro	64	19.9	257	80.1	321
Small	28	28.3	71	71.7	99
Medium	13	32.5	27	67.5	40
Gender					
Male	86	20.9	326	79.1	412
Female	19	39.6	29	60.4	48
Legal status					
Sole proprietorship	69	19.4	287	80.6	356
Other	36	34.6	68	65.4	104
Management (index)					
0-20	11	20.8	42	79.3	53
21-40	24	20.5	93	79.5	117
41-60	28	22.8	95	77.2	123
61-80	25	27.5	66	72.5	91
81-100	17	22.4	59	77.6	76
Education					
Primary	26	19.9	105	80.2	131
Secondary	36	19.3	151	80.8	187
Tertiary	24	36.9	41	63.1	65
Other	19	24.7	58	75.3	77
Total	105		355		460

Source: Authors' calculations based on IIM 2017 and 2022 data.

In Mozambique, formal firms can register for different types of legal statuses. The easiest way of becoming a formal business is to register as a sole proprietorship, and this is why a majority of firms (81 per cent) in our sample are sole proprietorships. The legal status of limited liability comes with more benefits in the sense that the owner is not held responsible for the firm's losses and debts. However, in terms of money and requirements it is challenging to become a limited liability firm in Mozambique. Table 5.1 shows that the share of sole proprietorships among exit firms is much smaller than among the surviving firms. Thus, at a first glance, firms with a higher legal status seem to have a higher likelihood to leave the sample. This can be explained by the fact that it is generally more difficult to get hold of and re-interview larger firms that also tend to have a higher legal status. Thus, not all firms with a higher legal status that left the sample have stopped their operations, but some have refused to participate in the survey.

We asked firms whether they apply specific management practices. In other developing countries, better management is associated with higher firm productivity. These management practices can be

grouped into four sub-categories: i) marketing, ii) stock & buying control, iii) record keeping, and iv) financial planning. Together, they are added into a management index (see more details in Chapter 8). We find no clear management differences between exits and survivors, except for a slightly higher exit rate for firms with above average management practices (on the management index that we create in Chapter 7, they have a value of 61-80). This is also in contrast to previous literature that finds that firms that apply more management practices are more likely to survive (Aga et al. 2021, Bloom et al. 2013, Biggs and Shah 2006).

Examining the educational differences between exits and survivors, we find a high exit share among owners/managers with a university degree. This is in line with the previous observations of firms with a high legal status and good management being more likely to leave the sample. It makes sense that firms with a high legal status and good management probably also have owners with higher educational levels. These firm owners/managers with a university education probably did not want to be re-interviewed as they are very occupied with their businesses or had other employment opportunities such that they closed the firm entirely.

To see if there are statistically significant differences between the exits and survivors, we run t-tests. Specifically, we examine if the means of multiple financial accounts and firm characteristics between the two groups are statistically different from each other in 2017 (see Table 5.2). Surprisingly, we find that in 2016, the exit firms did slightly better in terms of revenue, profits, value added, assets and wages than survivors. However, the differences are statistically insignificant. The higher financial performance of exit firms seems to be driven by firm size, as the exit firms were larger than the survivors. The statistically significant difference between exit and survivors in terms of labour productivity (measured as VA divided by firm size) also hints to this. Overall, our analysis suggests that neither poor financial performance nor low labour productivity are the main reason for leaving the sample. Hence, we continue exploring other potential reasons why firms stopped their operations between 2017 and 2022.

In 2017, the firms that exited until 2022 were bigger, had a higher legal status, were more likely to be led by a woman and their owners had a higher educational background than the firms that survived. Specifically, the exit firms were considerably larger, as they had, on average, 28 employees in 2017, than the firms that survived which had close to 17 employees, on average. About 12 per cent of the exit firms were led by a woman, and this was only the case for 8 per cent of the survival firms. More than one-third of the exit firms had a high legal status, whereas this was so for only 19 per cent of the survivors. Lastly, more than 20 per cent of the exit firms' owners/managers had a university degree but only 12 per cent of the surviving firms' owners/managers had one.

Table 5.2: Firm characteristics in 2017

	Means		Statistical difference
	Survivors	Exits	
Economic accounts[1]			
Log Revenue	13.29	13.61	
Log Profits	12.23	12.58	
Log Value added	8.15	9.06	
Log Assets	14.75	15.92	
Log Wages	1.40	2.18	
Log Labor productivity (=VA/firm size)	9.78	10.84	***
Firm characteristics			
Firm size	16.81	28.46	*
Firm age	19.19	21.71	
Management	53.03	54.81	
Male owner	0.92	0.82	***
Sole proprietorship	0.81	0.66	***
Primary education	0.30	0.25	
Secondary education	0.43	0.34	
Tertiary education	0.12	0.23	***
Observations	355	105	

*Note: * p<0.10, ** p<0.05, *** p<0.01;*
[1] In million Meticais, all financial variables are deflated and winsorised
Source: Authors' calculations based on IIM 2017 and 2022 data.

Overall, our analysis suggests that firm size, gender, legal status, and educational background differentiate the exit from the survival firms. There are no statistically significant differences between the exit and survival firms regarding financial performance, firm age, and management. However, the analysis has been rather descriptive so far. Thus, we continue exploring these differences between exits and survivors with more sophisticated statistical techniques.

To statistically analyse the determinants of firm exit, we run a probit model. A probit model estimates the probability that a firm with particular characteristics is an exit firm. We examine whether higher firm performance (measured either as revenue, value added or labour productivity), larger firm size, being led by a female owner/manager, being a sole proprietorship, and having primary, secondary or tertiary education increases the likelihood of being an exit firm.

Table 5.3 shows that higher revenue does not explain firm exit. However, higher value added, and higher labour productivity make it more likely for a firm to leave the sample. This is surprising because it means that low firm performance is not an indicator for firm exit, which is the case in many other countries. Instead, it is firms that perform better that left the sample. An explanation for this is that not all firms that left the sample necessarily closed down. Some of the firms that left the sample did not have time or did not want to be interviewed. The firms that did not want to be interviewed again generally performed better which is an indicator of being "too busy" to participate in surveys. As

previously observed, firms owned by women had a higher likelihood of leaving the sample. This might be related to the COVID-19 pandemic during which women had to take care even more of their children than during normal times because schools were closed.

Table 5.3: Determinants of firm exit

	Log Revenue		Log Value added		Log Labour productivity	
	(1)	(2)	(1)	(2)	(1)	(2)
Performance (Rev or VA or LP)	0.015	-0.003	0.077***	0.065***	0.074***	0.059**
	(0.025)	(0.025)	(0.026)	(0.025)	(0.027)	(0.027)
Firm size	0.108*	0.031	0.014	-0.058	0.089	0.003
	(0.061)	(0.070)	(0.068)	(0.077)	(0.058)	(0.071)
Woman-led		0.461**		0.448**		0.461**
		(0.204)		(0.204)		(0.204)
Sole proprietorship		-0.321*		-0.237		-0.243
		(0.180)		(0.187)		(0.186)
Primary education		-0.044		-0.038		-0.045
		(0.210)		(0.221)		(0.220)
Secondary education		-0.140		-0.146		-0.145
		(0.192)		(0.200)		(0.199)
Tertiary education		0.199		0.236		0.230
		(0.233)		(0.241)		(0.240)
Pseudo R^2	0.01	0.04	0.00	0.06	0.00	0.05
Observations	460	460	451	451	451	451

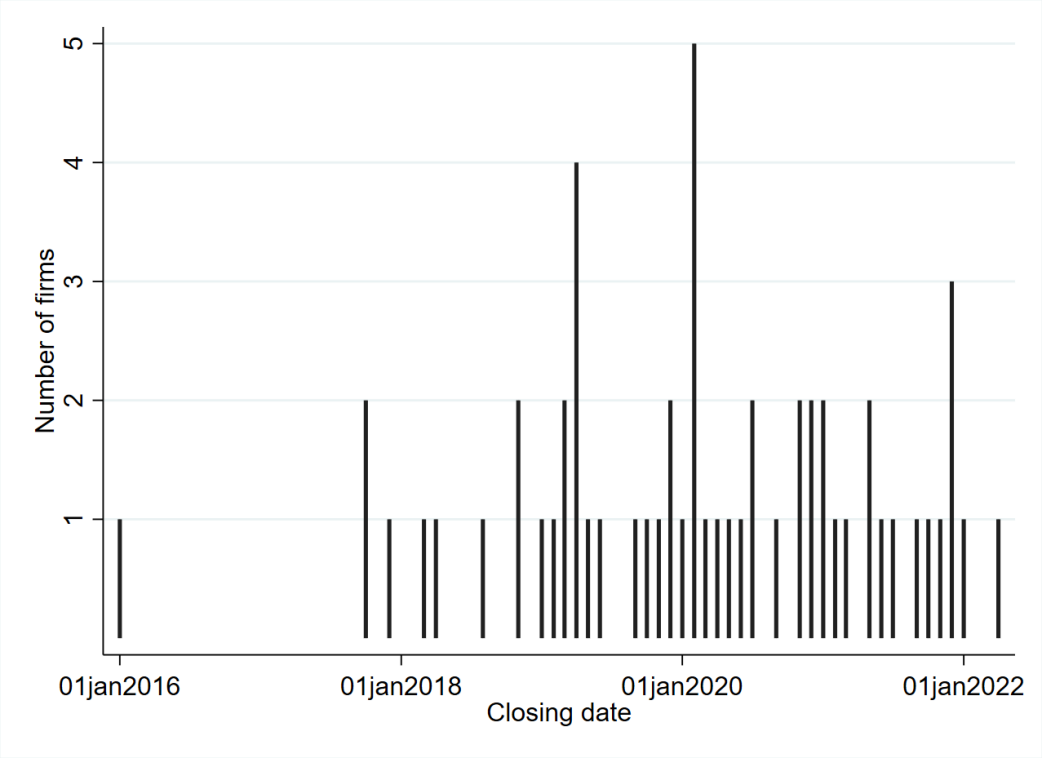
*Note: * p<0.10, ** p<0.05, *** p<0.01.*
Probit regressions. We do not include all 460 observations due to missing responses to value added.
Dependent variable: Firm closure =1 if the firm closed its operations between 2017 and 2022.
Source: Authors' calculations based on IIM 2017 and 2022 data.

Until now, we have analysed specific firm characteristics as possible determinants of firm closure. Additionally, we interviewed 57 of the 105 firms that left the sample about their reasons for exiting. Figure 5.2 shows the date on which the firms stopped operating. Most of the firms shut down in 2020, with 17 out of the 57 firms reporting 2020 as the year they shut down. This is closely followed by 2019, with 15 firms exiting that year and 14 firms in 2021. A majority of closures happening in 2019 and 2020 corresponds to most firms probably being affected by the global COVID-19 pandemic.

Figure 5.3 shows that the most common reason for firm closure was financial issues, with 16 out of the 57 firms indicating that to be the reason for the closure. Financial issues include financial deficits and bankruptcy. This is in contrast to what we have found before: financial issues did not seem to be the main reason for leaving the sample. On the contrary, the firms that left the sample were, on average, performing better than the firms that remained in the sample. However, note that the financial information we have obtained from the firms stems from 2017. This means that the firms that left between 2017 and 2022 might have been performing well in 2017, and only when the pandemic hit did their financial performance deteriorate such that they had to stop their operations. The firms that performed best in 2017 were also larger and had a high legal status. This means that

they were probably also better linked to global markets and, therefore, more impacted by the pandemic than smaller, disconnected firms that managed to continue business as usual.

Figure 5.2: Frequency of exit date

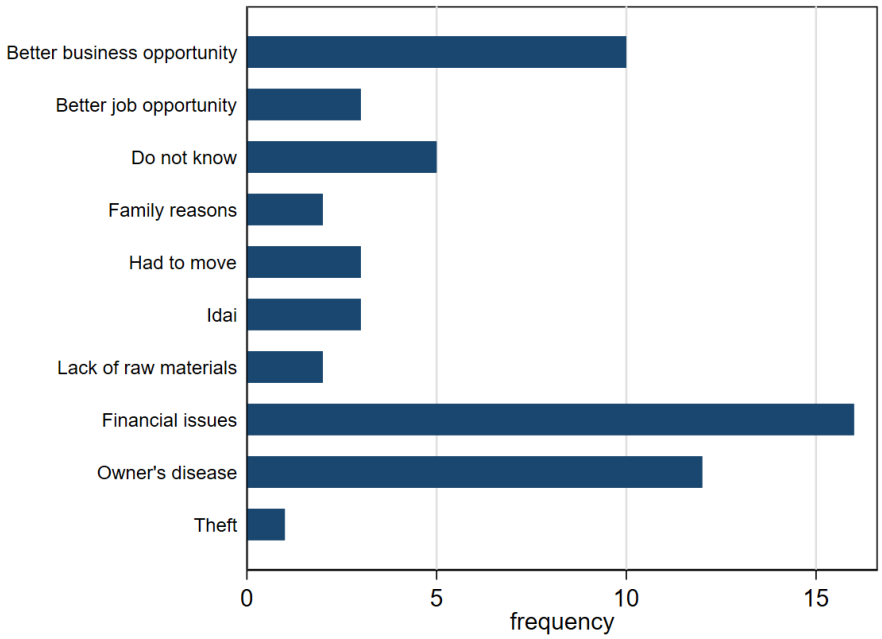


Source: Authors' calculations based on IIM 2022 data.

The second most common reason for closure was the owner's sickness. Södersbom et al. (2006) confirm that small firms often stop doing business due to personal circumstances despite the firm being productive. This is another explanation why we do not obtain any statistically significant differences in productivity between exit and survivor firms in the previous analyses. Some of the firm owners that closed their businesses might even have had COVID-19 such that they had to stop operating.

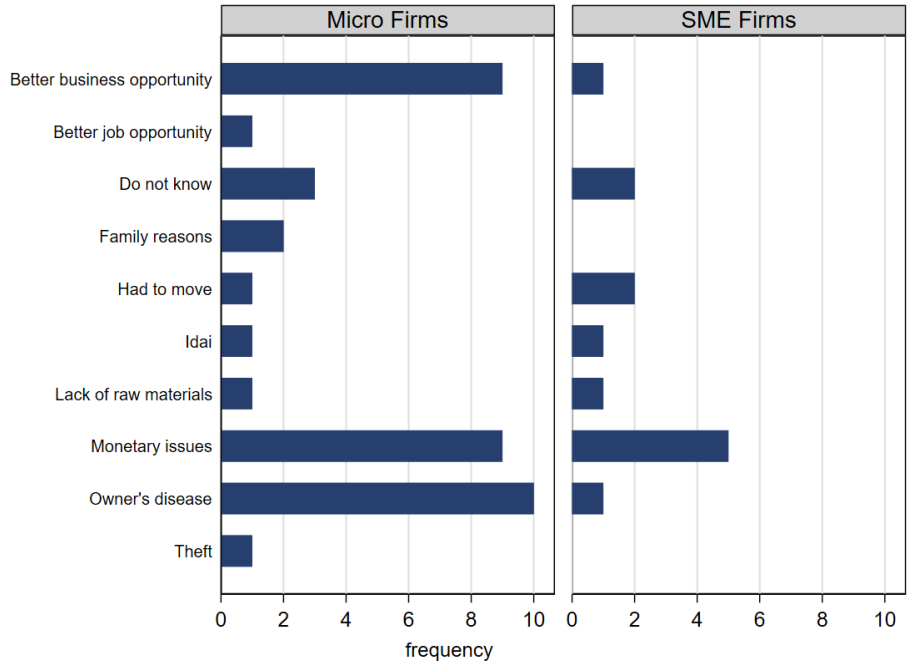
When looking at the reason for closure for micro firms and SMEs separately (see Figure 5.4), we find that the main reason for the closure of the micro firms is the owner's sickness or death. In contrast, the most common reason for the closure of SMEs is financial issues. This is in line with the literature by Liedholm et al. (1994), and Davies and Kerr (2018), who find that small firms exit due to personal circumstances and large firms due to increasing costs.

Figure 5.3: Exit reason



Source: Authors' calculations based on IIM 2022 data.

Figure 5.4: Exit reason by firm size



Source: Authors' calculations based on IIM 2022 data.

We go on to compare the firms that exited between 2012 and 2017 to the firms that exited between 2017 and 2022. The exit rate of 45 per cent is larger for firms leaving the sample between 2012 and

2017 than the exit rate of 23 per cent in case of the firms that left between 2017 and 2022. This is probably because it was more difficult to locate firms in 2017 than in 2022, as we learned a lot and improved our performance during each data collection. For example, the GPS coordinates we collected in 2017 were more precise than the ones in 2012 such that it was easier to find firms in 2022 than in 2017. Further, the quality and quantity of the firms' contact details were better in 2022 than in 2022 such that it was easier to re-connect in 2022.

Table 5.4 compares the firm size, gender of the firm owner/manager and legal status between firms that exited and firms that survived between 2012 and 2017. We do not report the differences in terms of financial performance and management as this information was not collected in 2012. We find that the differences between survivors and exits are less pronounced in the period 2012-17 than in 2017-22. In 2012-17, the three firm size classifications had similar probabilities of leaving the sample, whereas the likelihood of exiting was much higher for small and medium firms than for micro firms in 2017-22. Similarly, the likelihood of firms with a high legal status such as limited liability to exit was higher than for firms of sole proprietorship in 2017-22. A higher legal status and larger firm size are significantly correlated.

Table 5.4: Firm survival by firm characteristics

	Firms exits 2017			Firms exits 2012		
	Obs	**Perc**	**Total obs**	**Obs**	**Perc**	**Total obs**
Firm size						
Micro	64	19.9	321	215	43.0	500
Small	28	28.3	99	119	47.8	249
Medium	13	32.5	40	37	45.1	82
Gender						
Male	86	20.9	412	337	43.7	772
Female	19	39.6	48	34	57.6	59
Legal status						
Sole proprietorship	69	19.4	356	272	42.2	645
Other	36	34.6	104	99	53.2	186
Total	105	22.8	460	371	44.6	831

Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

A higher likelihood for larger firms and firms with a high legal status to close down in 2017-22 is likely associated with COVID-19, during which the smallest and sole-proprietorship firms had to continue their operations for their families to survive. Further, it might have been easier for the smallest firms to continue their operations as they are less visible in public than larger firms that were probably inspected during the pandemic, and they are less connected with the world market such that their situation did not change as much as the situation of larger firms which are also more impacted by trends of the world economy.

Male owners were more likely to survive in both 2012-17 and 2017-22, but the gender gap in survival was smaller in the former period than in the latter. For the firms exiting between 2012 and 2017, there was a 58 per cent exit rate for businesses owned or managed by a woman and a 44 per cent rate for firms run by a man. As outlined before, the larger exit rate for women in 2017-22 may be explained by women being forced to close their businesses to take care of children as schools closed due to COVID-19.

Overall, we find that more firms left the sample between the first and the second survey round (2012-17) than between the second and the third survey round (2017-22). This can partly be explained by our data collection performance improving over time such that we managed to re-locate more firms in 2022 than in 2017. Exit and survival firms were more similar in 2012-17 than in 2017-22 in terms of firm size, gender and legal status. In 2017-22 and in contrast to the literature, larger and more formally established firms were more likely instead of less likely to exit the sample. There are two main reasons for a higher exit share among larger, more formally established firms. First, it was challenging to re-interview these firms because their owners and managers are very busy such that they refused participating. This implies that they have not necessarily closed their operations but that they just did not participate in the survey. Second, the COVID-19 pandemic is a likely explanation for a higher exit share among well-performing, larger enterprises. Larger firms are more connected with the world market such that the impact of COVID-19 was stronger on them than on smaller firms that mostly produce for and are only connected with local markets. Further, most small firms are subsistence firms and do not have any other employment opportunities such that they cannot afford closing down as they have to take care of their family's survival. This is in line with larger firms reporting that they stopped their operations due to financial issues, whereas smaller firms only close in case of the owner's sickness or death. Moreover, female-led businesses were also more likely to exit the survey than male-led businesses in 2017-22, probably because they had to take even more care of their families than during normal times because schools closed during the pandemic.

It is worrisome that larger and more productive firms left the sample or closed during the pandemic due to financial reasons. These usually have a higher potential to become more productive than subsistence firms. It is important to have information about larger firms and it is important for them to continue operating in order to support the Mozambican economy. Without large and productive firms, it will be difficult for the Mozambican economy to grow. Further, in terms of gender inequality, it is worrisome to witness that female-led businesses were more likely to close during the pandemic than male-led businesses.

5.2 Newly added firms

Apart from the 355 firms that survived for the entire study period, we interviewed 120 firms for the first time in 2022. These newly added firms were randomly selected from the most recent Mozambican enterprise census (CEMPRE), which means that, to a certain extent, these firms are formally registered with the government, or at least they have been in contact with a government institution. These newly added firms are likely part of the more productive manufacturing enterprises relative to firms that have never been in contact with any government institution, i.e., informal firms.

We analyse whether the newly added firms are different from the firms that have been taking part in our study for 10 years. The newly added firms are different from firm in the balanced panel. Specifically, the newly added firms are younger, 15 years on average, than the firms that we have tracked for 10 years, which have an average age of 22 years. Moreover, the newly added firms report higher revenue, profits, value added and labour productivity, and the differences are close to statistical significance. The newly added firms are slightly bigger in terms of employees but the difference relative to the firms in our balanced panel is statistically insignificant. Lastly, the owners and managers of the newly added firms have higher educational levels than the firms of the balanced sample. Specifically, 26 per cent of the owners/managers in the balanced sample attended primary or finished primary education, whereas this is only the case for 15 per cent of the newly added firms. The owners and managers of the newly added firms are more likely to have attended or finished secondary school, as about half of them have done so, while only 41 per cent of the balanced sample attended secondary school. There is no statistically significant difference in terms of tertiary education between the balanced and the newly added sample.

The newly added firms appear to be performing better in several dimensions than the firms that we have tracked over 10 years. This is a positive finding in the sense that there seem to exist more productive and younger firms in the Mozambican manufacturing sector. These younger firms will hopefully have the potential to positively contribute to the Mozambican economy in the coming years. It also means that the findings that we obtain for the 355 firms that we have tracked over 10 years are not fully representative of the entire Mozambican manufacturing sector, and that the picture we paint about the balanced panel in this report might not be quite as bleak for the entire manufacturing sector. The firms in the balanced sample are older and stagnating in productivity over time. However, even though the newly added firms are more productive and have owners/managers with higher educational levels, the differences are small. We dig deeper into the differences between the balanced and the newly added sample in the following chapters. There is a lot of scope for improvement in the Mozambican manufacturing sector, and only if the sector improves will the economy benefit.

Table 5.5: Firm characteristics in 2022

	Means		Statistical difference
	Balanced panel	Newly added firms	
Economic accounts[1]			
Revenue	93.03	223.35	
Profits	60.41	117.50	
Value added	66.89	178.06	
Assets	18.89	25.94	
Wages	0.65	0.89	
Labor productivity **(=Revenue/firm size)**	3.34	7.92	
Firm size	14.51	17.68	
Male owner	0.10	0.08	
Firm age	22.07	14.61	***
Management	52.87	56.75	
Sole proprietorship	0.77	0.72	
Primary education	0.26	0.15	**
Secondary education	0.42	0.51	*
Tertiary education	0.01	0.01	
Observations	355	120	

*Note: * p<0.10, ** p<0.05, *** p<0.01.*
[1] In million Meticais, all financial variables are deflated and winsorised
Source: Authors' calculations based on IIM 2017 and 2022 data.

5.3 Conclusion

About 6.7 per cent of the IIM firms left the sample over ten years. This share is lower than in many other developing countries. On the one hand, this is positive because it means that we were successful in tracking firms. On the other hand, a low exit share is a signal for an inefficient economy, in which unproductive firms are not replaced by new, more productive enterprises. Thus, in terms of firm dynamics and a healthy economy, Mozambique still has a long way to go.

Between 2017 and 2022, the likelihood of leaving the sample was higher for larger, more formally established firms. This can be explained by two main facts. First, more established firms were more reluctant to participate in the interviews, i.e., they refused their participation and did not necessarily close down their operations. Second, larger firms are more connected to the world markets, such that they were impacted strongly by the COVID-19 pandemic, whereas smaller firms were able to continue subsistence business as usual and had no other chance to continue operating due to a lack of alternative employment opportunities.

Among those firms that did die between 2017 and 2022, larger firms gave financial issues as the main reason, whereas smaller firms closed due to the owner's death or sickness. This is in line with development in other countries. Unfortunately, female-led businesses had a higher likelihood of

closing as a result of COVID-19, which required giving full attention to their children who stayed at home instead of going to school during the pandemic.

On a positive note, there seem to be some positive dynamics in the Mozambican manufacturing sector in the sense that firms that die are replaced by younger more productive firms. However, the productivity differences between dying and new firms are somewhat small, i.e., there is a lot of scope for improvement.

In the following years, it is important to ensure that larger, formally established firms thriveto make sure that not more of them close their operations. These larger, formally established firms provide important job opportunities and have the potential to boost the Mozambican economy. They have the capacities to work efficiently and grow, but during informal conversations they told us that they do not feel supported and are confronted with multiple challenges. Especially younger firms merit attention, as these are likely to replace older, less productive enterprises, thereby contributing to a more efficient economy. Moreover, female-led enterprises need to receive extra support, as the owner/manager gender gap is already large and seems to have grown during the pandemic.

6 Owner characteristics

Many factors can influence the development of an enterprise and its ability to survive and grow. Among these factors, the characteristics of the firm owners can play a central role. This includes demographic characteristics, such as age and gender, individual characteristics, such as the level of education attained or the managerial experience, the owner/manager's personality traits (for example, risk adversity and level of trust), and entrepreneurial orientation (Islam et al., 2011).

Studies that look at the role of the owner/manager gender generally find that women-owned/managed enterprises are less successful or grow more slowly than male-owned/managed enterprises (Barbieri and Mshenga, 2008; Fairlie and Robb, 2009; Jasmin and Krizan, 2010).

Regarding education, Butha et al. (2008), find a positive correlation between the level of education attained by the owner and SME performance as measured in sales and sales per employee. Woldie (2008) finds similar results in terms of formal education for Nigerian SMEs, while Isaga (2015) finds that attending workshops equips entrepreneurs with the skills needed to successfully run a business. Additionally, Ussif and Salifu (2020) point to the low level of education of managers/owners as one of the biggest challenges for SMEs in sub-Saharan Africa. Other studies look into the relationship between management experience and firm growth and success, and generally find a positive relationship (e.g. Kor, 2003; Janssen, 2006; Woldie et al., 2008). Further studies find that management experience has a mediating role, for example, Mabula et al. (2020) find that it mediates the relationship between innovation and firm performance.

Sharma and Tarp (2018) use data from SMEs in Vietnam to analyse the relationship between behavioural and personality traits of owners/managers and firm performance as well as firm-level decisions. Their results show that risk aversion is correlated with lower revenue and lower levels of growth. Firms that have owners with an internal locus of control and higher levels of innovation, on the other hand, are more likely to have higher revenue and higher investment as well as innovate and train their workers. Rahaman (2021) finds that age of business, propensity to take risks, and innovation positively impact on SME performance in Bangladesh. Danso et al. (2016) conclude that high levels of risk-taking on the part of business-entrepreneurs improve enterprise performance in Ghana. The literature on Entrepreneurial Orientation[3] (EO) generally finds a positive association between EO and firm performance (see for example Engelen et al., 2021; Lee and Chu, 2017; Gupta and Batra, 2012).

[3] Entrepreneurial Orientation (EO) Is an important element to measure firms' competitive advantage, growth, and performance based on indicators such as innovativeness, risk-taking, and being proactive.

Looking at the South African context, Neneh and Van (2017) examine the impact of EO and its dimensional variables (innovation, risk taking and proactivity) on SME growth and find that despite EO having a significant positive association with SME growth, most SMEs still demonstrate a moderate level of EO.

The latest National Development Strategy of Mozambique (Estratégia Nacional de Desenvolvimento, ENDE, 2015-2035) states that human capital is crucial for the development process of the country and for its industrialization. In particular, the ENDE includes references to the importance of technical and professional education and states the goal of increasing technical and management skills for entrepreneurs of small and medium enterprises. Similar remarks can also be found in the latest Five-Year Programme of the Government (Programa Quinquenal do Governo, PQG, 2020-2024), which stresses the importance of providing trainings and creating incubators to increase the productivity of SMEs. However, neither the ENDE nor the latest PQG pay particular attention to the role of female entrepreneurs or to supporting women-led firms.

In this chapter, we look at the characteristics of owners/managers in the balanced sample including 355 firms interviewed in 2012, 2017 and 2022. In particular, we present descriptive tables including gender, age, nationality, education, and management experience of the owner/manager. In addition, we also present results concerning the level of risk propensity and trust of the entrepreneurs, as well as the entrepreneurial orientation of the respondents and their attitudes towards migrant workers and foreign enterprises. Finally, we look into the relationship between a firm being female-owned and its economic accounts, to assess whether female-owned firms have higher or lower revenues, value added, and labour productivity compared to their male-owned counterparts. We conclude by summarizing the main findings and listing some key policy recommendations.

6.1 Demographic characteristics

Table 6.1 looks at gender differences in firm ownership and management from 2012 to 2022 by firm size category.[4] In the balanced sample, the share of female-owned enterprises has slightly increased from 8 per cent in 2012 to 9 per cent in 2022. The trend, however, is not uniform. The total share of female-owned/managed enterprises has decreased from 2012 to 2017, while the trend is reversed from 2017 to 2022. In the unbalanced sample, on the contrary, the share of female-led firms

[4] In this report we define as micro a firm with less than 10 employees, as small a firm with 10 to 49 employees, and as medium a firm with 50 to 300 employees.

decreased from 2012 (11 per cent) to 2022 (9 per cent). Relative to other countries, the share of female-led firms is very small.

Looking at gender and firm size categories, Table 1 panel a shows that the share of micro enterprises owned or managed by females remained almost the same for 10 years – about 6 per cent in 2012 and 2022 – while the share of female owners/managers in the medium enterprises category almost doubles.

Table 6.1: Gender of the owner/manager by firm size

Panel a: Balanced panel

2012

	Micro %	Small %	Medium %	Total %
Male	94.2	85.0	89.5	91.9
Female	5.8	15.0	10.5	8.1
Total	100.0	100.0	100.0	100.0

2017

	Micro %	Small %	Medium %	Total %
Male	93.5	98.0	94.7	94.3
Female	6.5	2.0	5.3	5.7
Total	100.0	100.0	100.0	100.0

2022

	Micro %	Small %	Medium %	Total %
Male	93.4	84.6	73.3	90.9
Female	6.6	15.4	26.7	9.1
Total	100.0	100.0	100.0	100.0

Panel b: Unbalanced panel

2012

	Micro %	Small %	Medium %	Total %
Male	90.7	83.6	90.0	88.8
Female	9.3	16.4	10.0	11.2
Total	100.0	100.0	100.0	100.0

2017

	Micro %	Small %	Medium %	Total %
Male	92.4	89.2	95.8	92.0
Female	7.6	10.8	4.2	8.0
Total	100.0	100.0	100.0	100.0

2022

	Micro %	Small %	Medium %	Total %
Male	93.3	85.9	81.0	91.2
Female	6.7	14.1	19.1	8.8
Total	100.0	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding.
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

In the unbalanced panel, there is a decrease in the share of micro enterprises led by females (from 9 per cent to 7 per cent in 2022), while here too the share of medium enterprises owned or managed by females almost doubles to 19 per cent.

Overall, the disaggregation by firm size category indicates a drop in female ownership/management in 2017 across all firm size categories. The slight increase in female owners/managers between 2012 and 2022 in the balanced panel is driven by the substantial increase in female owners/managers of medium sized enterprises. Micro firms, the largest group of firms in the sample, have only seen a marginal increase over the years in the balanced sample. In the unbalanced sample, however, there is a decrease in the share of female-led micro-firms, and the increase in female-led medium firms does not make up for this drop, leading to an overall reduction of female managed or owned firms.

Table 6.2: Age categories of the owner/manager by firm size

Panel a: Balanced panel

	2017				2022			
	Micro %	**Small %**	**Medium %**	**Total %**	**Micro %**	**Small %**	**Medium %**	**Total %**
<20 years	0.8	0.0	0.0	0.6	1.2	0.0	0.0	0.9
20–34 years	20.4	23.5	5.3	20.0	21.1	26.2	40.0	22.9
35–49 years	39.2	31.4	36.8	37.8	35.2	33.9	26.7	34.5
50–64 years	30.2	39.2	47.4	32.7	27.7	33.9	20.0	28.6
>=65 years	9.4	5.9	10.5	8.9	14.8	6.2	13.3	13.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Panel b: Unbalanced panel

	2017				2022			
	Micro %	**Small %**	**Medium %**	**Total %**	**Micro %**	**Small %**	**Medium %**	**Total %**
<20 years	0.7	0.0	0.0	0.5	1.2	0.0	0.0	0.9
20–34 years	18.8	20.3	4.2	18.2	25.0	31.5	33.3	26.7
35–49 years	38.8	35.1	37.5	38.1	36.2	33.7	38.1	35.8
50–64 years	31.6	36.5	45.8	33.3	25.9	30.4	19.1	26.5
>=65 years	10.2	8.1	12.5	10.0	11.8	4.4	9.5	10.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding
Source: Authors' calculations based on IIM 2017 and 2022 data

Table 6.2 presents the age categories of firm owners and managers by firm size category. Data on the age of owners and managers was not collected in 2012, therefore the table only presents data based on the two latest survey waves (2017 and 2022). Table 2 panel a shows that most owners/managers in the total balanced panel are between 35 and 64 years old, with almost 63 per cent of the owner/managers belonging to either the 35-49 years old or the 50-64 years old categories in 2022. This shows a slight reduction against the about 70 per cent verified in 2017 for the same age groups, while the share of owners/managers aged between 20 and 34 years old has slightly increased. Trends

are similar in the unbalanced panel, with a more marked increase in the share of owners in the 20–34 years category (27 per cent in 2022).

Furthermore, Table 6.2 shows that in 2022 owners of micro and small enterprises tend to be older than the owners of medium enterprises. While the majority of the owners of the two smaller categories belongs either to the 35-49 category or to the 50-64 category, the majority of the owners and managers of middle-sized firms are 20 to 34 years old. This was not the case in 2017, when most medium-sized enterprise owners where older than 35 years old. The balanced sample is different in this case, that is, medium firms do not appear to be older than small and micro firms.

Table 6.3 looks at the nationality of owners and managers. The number of owners/managers whose nationality is Mozambican has increased from close to 95 per cent in 2012 to 98 per cent in 2017, and then decreased slightly in 2022 (97 per cent).

Conversely, the share of owners/managers of other nationalities decreased across the three rounds, as is the case of the category "Other African", which has fallen from 2 per cent in 2012 to close to 0 per cent in 2022. A similar pattern occurs for owners/managers of European nationality. The trends are similar in the unbalanced panel, however the share of non-Mozambican owners and managers is slightly higher compared to the balanced panel throughout the years.

Table 6.3: Nationality of the owner/manager/respondent

Panel a: Balanced panel

	2012 %	2017 %	2022 %
Mozambican	94.4	98.1	97.4
Other African	2.1	1.0	0.3
European	2.1	1.0	0.9
Asian	1.4	0.0	0.9
Other	0.0	0.0	0.6
Total	100.0	100.0	100.0

Panel b: Unbalanced panel

	2012 %	2017 %	2022 %
Mozambican	91.4	97.5	96.1
Other African	2.4	1.3	0.4
European	3.9	1.3	1.3
Asian	2.1	0.0	1.1
Other	0.2	0.0	1.1
Total	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

6.2 Individual characteristics: education and management experience

Table 6.4 illustrates the level of education attained by the owners/managers across the three survey waves. In 2022, the highest percentage of the owners has completed an ESG2 secondary education (almost 22 per cent), while in the previous rounds, the category with the highest share was that referring to having completed only ESG1. That is, there is a progressive increase in the share of owners that have completed secondary education (ESG2). This trend is confirmed in the unbalanced sample. A similar pattern occurs in the balanced sample at higher levels of education: the percentage of the owners/managers who have a higher academic level ("Superior") corresponds to 13 per cent in 2022, steadily increasing from about 8 per cent in 2012. The increase is less substantial in the unbalanced sample. Only a minority of less than 1 per cent is illiterate in 2022.

Table 6.4: Education of the owner/manager/respondent

Panel a: Balanced panel

	2012	2017	2022	Total
	%	%	%	%
Illiterate	0.4	1.3	0.9	0.9
Literacy	0.0	1.0	3.5	1.6
Primário EP1	17.5	20.3	12.1	16.5
Primário EP2	21.4	12.7	13.9	15.8
Secundário ESG1	24.2	22.9	20.7	22.5
Secundário ESG2	16.8	20.0	21.8	19.7
Técnico Básico	0.0	4.1	2.4	2.2
Técnico Elementar	4.9	0.3	1.5	2.1
Técnico Médio	6.3	8.3	9.4	8.1
Superior	8.1	8.9	13.0	10.1
Teacher training	0.0	0.0	0.9	0.3
Don't know	0.4	0.3	0.0	0.2
Total	100.0	100.0	100.0	100.0

Panel b: Unbalanced panel

	2012	2017	2022	Total
	%	%	%	%
Illiterate	0.2	1.2	0.9	0.7
Literacy	0.0	1.0	3.1	1.2
Primário EP1	16.6	19.7	10.1	15.4
Primário EP2	19.3	12.4	13.2	15.6
Secundário ESG1	19.9	21.4	20.2	20.4
Secundário ESG2	19.0	19.4	24.3	20.7
Técnico Básico	0.0	3.7	3.3	2.0
Técnico Elementar	3.8	0.5	1.1	2.1
Técnico Médio	7.5	9.2	10.1	8.8
Superior	12.5	11.2	12.9	12.3
Teacher training	0.0	0.0	0.9	0.3
Don't know	1.4	0.3	0.0	0.7
Total	100.0	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

The increase in average education in the balanced sample stems either from owners/managers continuing with their education or from owners/managers with higher educational levels substituting owners/managers with lower educational levels over time.

According to Table 6.5, the majority of owners/managers have 11 to 35 years of management experience, with about 30 per cent of owners/managers in both the 11-20 years and 21-35 years categories in 2022. The years of total management experience have increased in comparison to previous years, as would logically happen when assuming that the majority of owner/managers remained the same across the three waves. In particular, in the balanced panel there has been a substantial decrease in the category 3-5 years, with a share of 21 per cent of owners belonging to this category in 2012 and only 7 per cent in 2022.The share of owners with 21-35 years of management experience has increased steadily from almost 14 per cent in 2012 to 30 per cent in 2022. The share of owners/managers with more than 35 years of management experience has increased sharply from 2012 to 2017, more than doubling from about 8 per cent to more than 17 per cent. In 2022, however, the share of owners in the highest category decreased again, which hints to turnover in management/ownership, potentially favoured by a new retirement law.[5] Trends and levels are comparable in the unbalanced panel.

Table 6.5: Years of total management experience

Panel a: Balanced panel

	2012 %	2017 %	2022 %	Total %
0-2 years	4.9	2.5	2.7	3.3
3-5 years	21.1	3.8	6.8	10.1
6-10 years	22.8	17.1	20.7	20.1
11-20 years	29.1	36.2	29.8	31.7
21-35 years	13.7	22.9	30.4	22.8
>35 years	8.4	17.5	9.7	11.9
Total	100.0	100.0	100.0	100.0

Panel b: Unbalanced panel

	2012 %	2017 %	2022 %	Total %
0-2 years	9.4	2.9	3.8	5.2
3-5 years	20.1	3.8	6.7	9.9
6-10 years	21.7	17.1	20.4	19.7
11-20 years	27.8	36.1	29.5	31.1
21-35 years	13.0	22.8	30.0	22.3
>35 years	8.0	17.4	9.6	11.7
Total	100.0	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

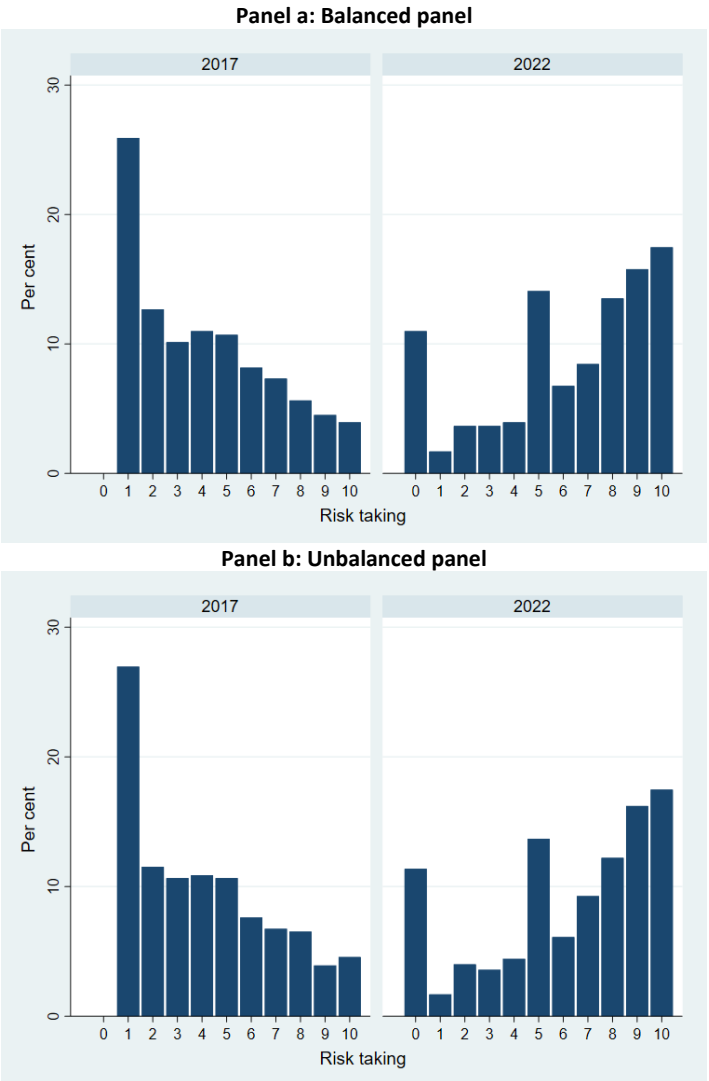
[5] See Art. 28 - 31 of the Decree n º 53/2007

6.3 Owner/Manager's personal traits

Figure 6.1 shows risk propensity, defined as an individual's tendency towards taking or avoiding risks (Wang et al 2016), in 2017 and 2022. In our IIM questionnaire, the question about risk propensity is answered on a scale from 0 to 10, where 0 corresponds to "I avoid every risk" and 10 corresponds to "I am completely willing to take risks".

In 2017, approximately 25 per cent of entrepreneurs avoided taking every risks (0) and less than 5 per cent of entrepreneurs were completely willing to take risks (10). Conversely, when analysing the situation in 2022, only about 11 per cent of business managers define themselves as completely risk averse (0), and there is a much higher average propensity to take risks compared to 2017, with almost 20 per cent of respondents completely willing to take risks (10) in 2022. This shift towards higher risk propensity is also reflected in the unbalanced panel.

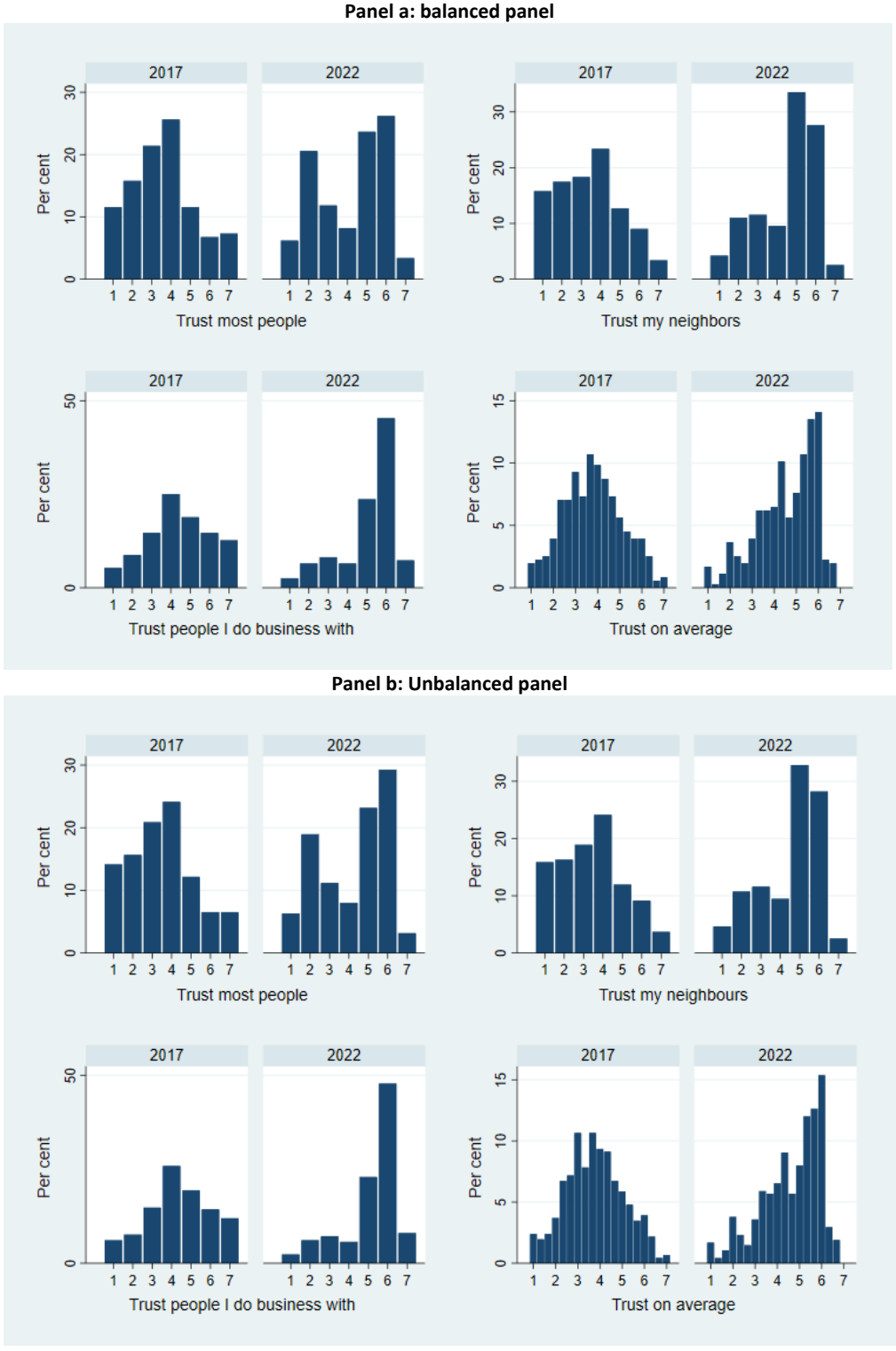
Figure 6.1: Risk propensity of firms



Note: In the questionnaires, the questions related to risk propensity is answered on a scale from 0 to 10, where 0 corresponds to "I avoid every risk" and 10 corresponds to "I am completely willing to take risks". In 2017, an error occurred in the coding of the answer, i.e. answers 0 and 1 were coded jointly in the category 1.

Source: Authors' calculations based on IIM 2017 and 2022 data

Figure 6.2: Firms trust levels



Note: In the questionnaires, the questions related to trust are coded on a 7-points scale from "I completely disagree" to "I completely agree".
Source: Authors' calculations based on IIM 2017 and 2022 data

Figure 6.2 looks at the answers to the affirmations "In general, I trust most people" (panel a), "I trust my neighbours" (panel b), and "I trust the people I do business with" (panel c), whose answers are coded on a 7-points scale from "I completely disagree" to "I completely agree". We also present an

average of the answers to the three questions mentioned above for the two years (panel d). When comparing 2017 and 2022, the distribution shifted to the right, indicating an increase in the respondents' trust on average. This is especially true for the affirmations related to neighbours and to business contacts, while the distribution in respondents' trust in most people did not change as dramatically. In particular, looking at trust in neighbours and business contacts, the distribution is more skewed in 2022 than in 2017, with a much higher share of respondents choosing the values 5 "I somewhat agree" and 6 "I agree". The same is valid for the unbalanced panel.

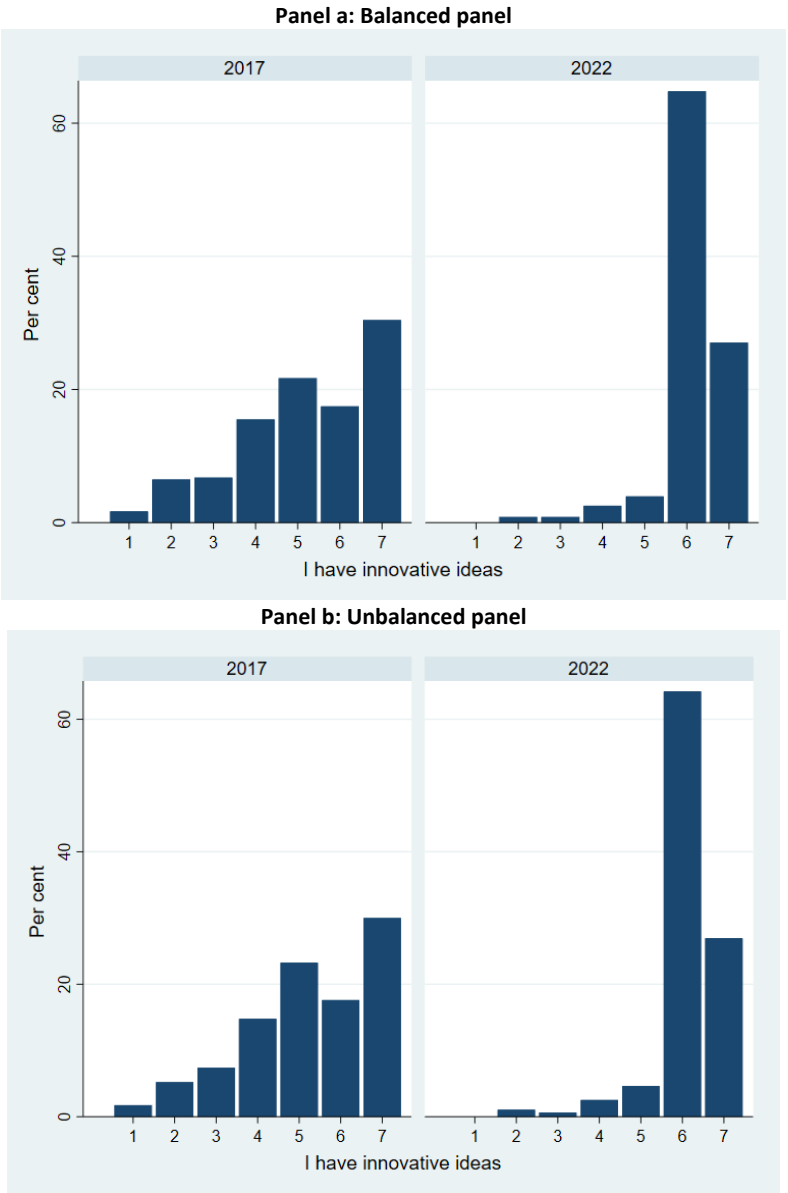
We measure Entrepreneurial Orientation (EO) with a set of three affirmations ("I have innovative ideas", "If something can't be done I find a way", and "I often find more than one solution to a problem") answered on a 7-points scale from "Very false" (1) to "Very true" (7). We discuss the trends and levels in the balanced and unbalanced panel jointly since they are very similar.

Figure 6.3, 6.4 and 6.5 present the distribution of the answers to these affirmations in 2017 and 2022. While the answers given in 2017 were more evenly distributed across the categories, in in 2022, the share of answers is much more concentrated in the category "True" (6). This could reflect higher agreement with the questions in 2022 compared to 2017, but it could also indicate lower accuracy on the part of the enumerators or the respondents. In particular, regarding the first affirmation, "I have innovative ideas", in 2017 about 30 per cent of the interviewees responded "Very true", while 10-20 per cent of the respondents chose one of the three answers from "Undecided" to "True". In 2022, the category with the highest share of responses is "True", with more than 60 per cent of the respondents choosing this answer.

As for the affirmation "If something can't be done I find a way", the vast majority of respondents agreed, with about 20 per cent choosing one of the categories between "Somewhat true" and "Very true". In 2022, again more than 60 per cent of the respondents chose the answer "True".

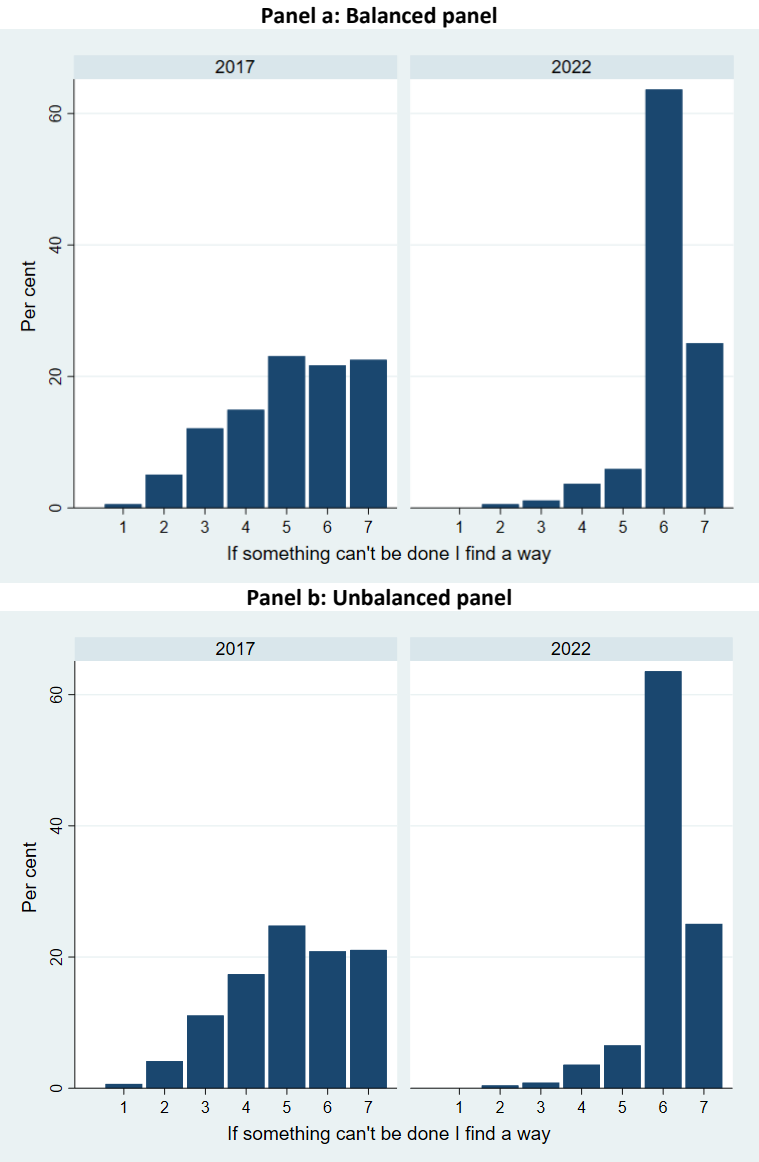
The development of the answers to the affirmation "I often find more than one solution to a problem" is similar to the two previously described, with most stating "Somewhat true" in 2017 (about 25 per cent) and the vast majority of respondents choosing the option "True" in 2022 (about 60 per cent).

Figure 6.3: Respondent characteristics based on innovative ideas



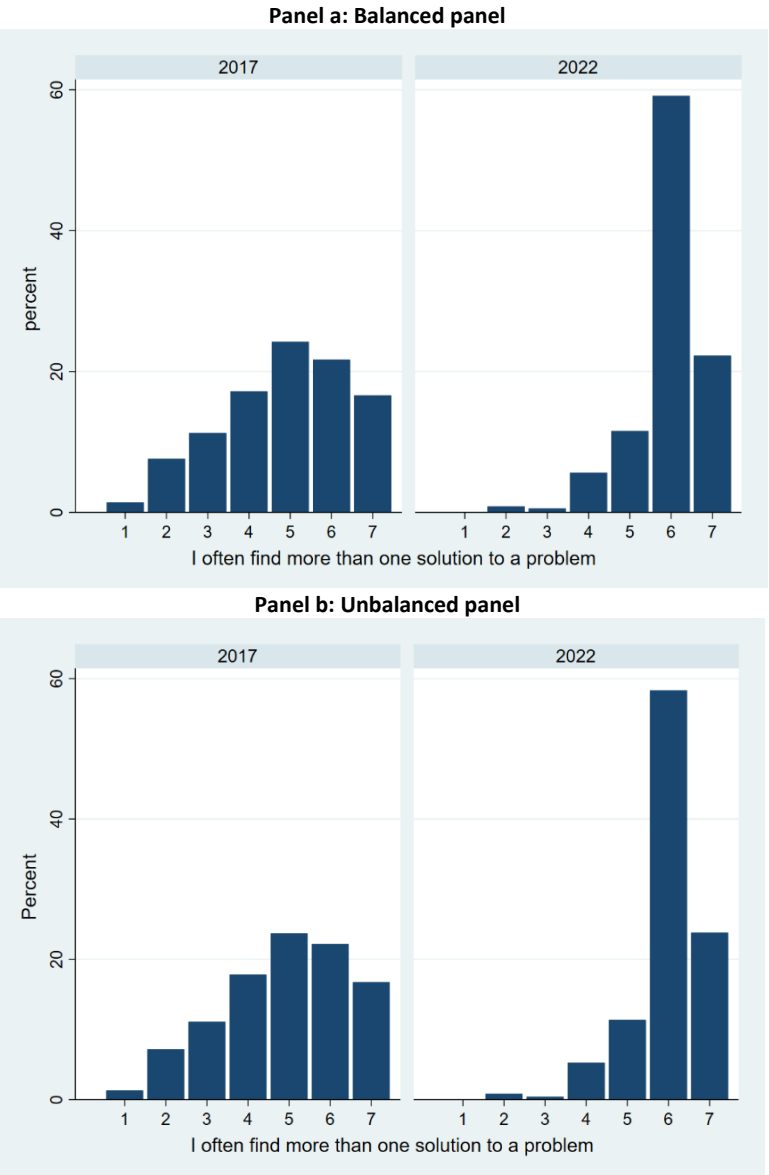
Note: In the questionnaires, the questions related EO, measured with a set of three affirmations ("I have innovative ideas", "If something can't be done I find a way", and "I often find more than one solution to a problem") are answered on a 7-points scale from "Very false" (1) to "Very true" (7).
Source: Authors' calculations based on IIM 2017 and 2022 data.

Figure 6.4: Respondent characteristics based on ability to find alternatives



Note: In the questionnaires, the questions related EO, measured with a set of three affirmations ("I have innovative ideas", "If something can't be done I find a way", and "I often find more than one solution to a problem") are answered on a 7-points scale from "Very false" (1) to "Very true" (7).
Source: Authors' calculations based on IIM 2017 and 2022 data

Figure 6.5: Respondent characteristics based on ability to find more than one solution to problems



Note: In the questionnaires, the questions related EO, measured with a set of three affirmations ("I have innovative ideas", "If something can't be done I find a way", and "I often find more than one solution to a problem") are answered on a 7-points scale from "Very false" (1) to "Very true" (7).
Source: Authors' calculations based on IIM 2017 and 2022 data

6.4 Perception of migrant workers and foreign enterprises

Table 6.6 shows the opinion of the respondents on the impact of migrant workers on the development of Mozambique, based on a 7-point scale ranging from "Extremely bad" to "Extremely good". Table 6.6 shows that the majority of micro, small, and medium enterprises consider the impact of migrants on the development of the country to be positive. In the balanced panel, about 51 per cent of micro firms, 46 per cent of small firms, and 56 per cent of medium firms answer "Good" and about 15-20 per cent of micro and small firms answer "Very good" or "Extremely good". The percentage of medium

firms answering “Very good” is much higher, at 38 per cent. A very low share of respondents believes that migrants have a negative impact on the country’s development with a cumulative percentage below 8 per cent answering “Bad”, “Very bad” or “Extremely bad” in the balanced sample.

Table 6.6: Opinion on the impact of migrant people/workers on the development of Mozambique by firm size

Panel a: Balanced panel

	Micro	Small	Medium	Total
	%	%	%	%
Extremely bad	0.4	0.0	0.0	0.3
Very bad	2.6	1.4	0.0	2.3
Bad	6.4	1.4	0.0	5.1
Neither bad nor good	18.7	34.7	6.3	21.4
Good	51.3	45.8	56.3	50.4
Very good	18.7	15.3	37.5	18.9
Extremely good	1.9	1.4	0.0	1.7
Total	100.0	100.0	100.0	100.0

Panel b: Unbalanced panel

	Micro	Small	Medium	Total
	%	%	%	%
Extremely bad	0.3	0.0	0.0	0.2
Very bad	2.3	1.0	0.0	1.9
Bad	6.0	2.0	0.0	4.8
Neither bad nor good	18.1	33.0	4.6	20.6
Good	50.4	46.0	63.6	50.1
Very good	21.0	17.0	31.8	20.6
Extremely good	2.0	1.0	0.0	1.7
Total	100.0	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding
Source: Authors’ calculations based on IIM 2022 data.

Table 6.7 presents the respondents’ views on what the government’s position should be regarding the entry of migrant workers in the country. Even though a large majority of the respondents finds the impact of migrants on the country’s development to be either “Good”, “Very good” or “Extremely good” (see Table 6.6), the option most selected by micro firms is “Set strict limit in the number of people allowed in”, both in the balanced and unbalanced panel. In addition, 2 per cent of the respondents of micro firms think that the government should “Forbid entrance to people of other nationalities”, while no respondents from either small or medium enterprises selected that option. In panel a and panel b, about 40 per cent of small enterprises chose the option “allow everybody in, as long as there is employment”, while almost a third of medium-sized firms chose the option “Allow everybody in, as long as there is employment”, “Set strict limit on the number of people allowed in” or “Set strict limit in the nationality of people allowed in”. In the unbalanced panel, the share of medium firms that select the option “Set strict limit in the nationality of people” is higher.

Table 6.7: What should the Government do regarding migrants coming to work in Mozambique by firm size

Panel a: Balanced panel

	Micro %	Small %	Medium %	Total %
Allow everybody in	7.1	6.9	6.3	7.0
Allow everybody in, as long as there is employment	26.6	40.3	31.3	29.6
Set strict limit in the number of people allowed in	39.7	34.7	31.3	38.3
Set strict limit in the nationality of people allowed in	24.7	18.1	31.3	23.7
Forbid entrance to people of other nationalities	1.9	0.0	0.0	1.4
Total	100.0	100.0	100.0	100.0

Panel b: Unbalanced panel

	Micro %	Small %	Medium %	Total %
Allow everybody in	7.4	8.0	4.6	7.4
Allow everybody in, as long as there is employment	27.5	39.0	31.8	30.1
Set strict limit in the number of people allowed in	38.0	31.0	22.7	35.8
Set strict limit in the nationality of people allowed in	25.2	22.0	40.9	25.3
Forbid entrance to people of other nationalities	2.0	0.0	0.0	1.5
Total	100.0	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding
Source: Authors' calculations based on IIM 2022 data

While Table 6.6 and 6.7 display the attitude of respondents towards migrant workers, Tables 6.8 and 6.9 below focus on the respondents' opinions on foreign enterprises operating in Mozambique. In particular, Table 6.8 portrays the opinion on the impact of foreign enterprises on the development of Mozambique, while Table 6.9 looks into what the respondents think the government should do regarding foreign enterprises looking to set up a business in Mozambique. Similarly to what has been discussed regarding migrant workers, Table 6.8 panel a (balanced) shows that, for both micro-, small-, and medium-sized firms, the owners/managers believe that foreign enterprise have a "good" impact (54 per cent of micro firms, 51 per cent of small firms and 50 per cent of medium firms, respectively). Only about 6 per cent of micro companies and 3 per cent of small companies consider the impact of foreign companies to be either "Bad", "Very bad", or "Extremely bad", and medium-sized enterprises cannot see any negative influence. A considerable percentage of respondents (almost 20 per cent in the total sample) consider the impact of foreign enterprises neither to be bad nor good. The levels are comparable in the unbalanced panel.

Table 6.8: Opinion on the impact of foreign enterprises on the development of Mozambique by firm size

Panel a: Balanced panel

	Micro	Small	Medium	Total
	%	%	%	%
Extremely bad	1.1	0.0	0.0	0.9
Very bad	0.8	0.0	0.0	0.6
Bad	4.5	2.8	0.0	4.0
Neither bad nor good	18.4	26.4	12.5	19.7
Good	54.3	51.4	50.0	53.5
Very good	20.6	16.7	37.5	20.6
Extremely good	0.4	2.8	0.0	0.9
Total	100.0	100.0	100.0	100.0

Panel b: Unbalanced panel

	Micro	Small	Medium	Total
	%	%	%	%
Extremely bad	1.4	0.0	0.0	1.1
Very bad	1.1	0.0	0.0	0.8
Bad	4.5	2.0	0.0	3.8
Neither bad nor good	16.7	25.0	13.6	18.3
Good	53.8	52.0	54.6	53.5
Very good	21.5	19.0	31.8	21.5
Extremely good	0.9	2.0	0.0	1.1
Total	100.0	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding
Source: Authors' calculations based on IIM 2022 data

Although the majority of respondents considers the impact of foreign firms to be positive for development (Table 6.8), many respondents still believe that their entry should be controlled and conditioned. In particular, 34 per cent of owners/managers of micro firms believe that the government should set a strict limit on the number of people allowed in, while more than one-third of respondents from small-sized firms (38 per cent) selected the option "Allow everybody in, as long as there is employment". About 37 per cent of respondents in medium-sized firms (45 per cent in the unbalanced panel) selected the option "Set strict limit in the nationality of people allowed in". The percentage of respondents thinking that the government should allow foreign enterprises in unconditionally is highest among micro enterprises (8 per cent in both the balanced and unbalanced sample), while it is only 4 (balanced panel) per cent among small enterprises and 0 per cent among medium enterprises.

Table 6.9: What should the Government do regarding foreign enterprises coming to Mozambique by firm size

Panel a: Balanced panel

	Micro %	Small %	Medium %	Total %
Allow everybody in	7.9	4.2	0.0	6.8
Allow everybody in, as long as there is employment	25.8	37.5	31.3	28.5
Set strict limit in the number of people allowed in	34.1	31.9	31.3	33.5
Set strict limit in the nationality of people allowed in	30.7	26.4	37.5	30.1
Forbid entrance to people of other nationalities	1.5	0.0	0.0	1.1
Total	100.0	100.0	100.0	100.0

Panel b: Unbalanced panel

	Micro %	Small %	Medium %	Total %
Allow everybody in	8.2	7.0	0.0	7.6
Allow everybody in, as long as there is employment	26.9	36.0	31.8	29.1
Set strict limit in the number of people allowed in	32.9	27.0	22.7	31.2
Set strict limit in the nationality of people allowed in	30.3	30.0	45.5	31.0
Forbid entrance to people of other nationalities	1.7	0.0	0.0	1.3
Total	100.0	100.0	100.0	100.0

Note: Share might not add up to 100 per cent due to rounding
Source: Authors' calculations based on IIM 2022 data

6.5 Owner/Manager's gender and firm performance

The academic literature shows that there exist differences in male and female entrepreneurship, and in particular that the gender of the owner or manager can influence the performance of the firm. The empirical evidence, however, reports mixed results, with some studies concluding that firm owned or managed by females underperform (Robb and Wolken, 2002; Klapper and Parker, 2010; Khalife and Chalouhi, 2013; Tandrayen-Ragoobur and Kasseeah, 2016) while other studies challenge this finding (Robb and Watson, 2012; Zolin et al., 2013; Milanov et al, 2015). Some studies explain the female under-performance hypothesis with structural constraints (such as difficulties in accessing finance) or social contexts and gender norms (see Tandrayen-Ragoobur and Kasseeah, 2016). We investigate whether there are differences in the performance of firms owned or managed by females (women-led) compared to male-led firms.

The OLS regressions in column 1 illustrate that women-led firms have higher revenue, value added and labour productivity. This is a surprising result and speaks against the findings of the literature mentioned above. However, we can only say that women-led firms are generally more productive but

not that having a female owner or manager causes the firms to have higher performance. To further explore this relationship, we focus on revenue (Table 6.10) and interact the variable women-led with a dummy that assumes the value of one when the firm is either small (10 to 49 employees) or medium (more than 49 employees), and value of 0 when the firm is micro (less than 10 employees). Looking at the coefficient of the interaction between the two terms (1) women-led and (2) SME we can see that the revenues obtained by women-led firms depend on the size of the firm. That is, small and medium firms with a female owner/manager have higher revenues compared to male-led SMEs, while the same is not true for female-led micro firms. However, this first result cannot be interpreted as causal either.

Table 6.10: Gender of the owner/manager and revenue

	(1) Revenue OLS	(2) Revenue OLS	(3) Revenue OLS	(4) Revenue FE
SME = 1			2.332***	
			(0.298)	
Woman-led = 1			0.103	
			(0.333)	
SME# Woman-led			3.054***	
			(0.846)	
South	0.067	-0.052	-0.013	
	(0.189)	(0.162)	(0.198)	
Food	-0.460	-0.828*	-0.551	
	(0.531)	(0.467)	(0.526)	
Textiles	-1.388***	-1.616***	-1.883***	
	(0.511)	(0.449)	(0.512)	
Wood	-1.421***	-1.667***	-1.588***	
	(0.495)	(0.428)	(0.497)	
Paper	-0.620	-0.909	-0.529	
	(0.842)	(0.577)	(0.804)	
Chemicals	0.119	0.204	0.653	
	(0.739)	(0.782)	(0.674)	
Minerals	-0.646	-0.866*	-0.677	
	(0.573)	(0.502)	(0.569)	
Metal	-1.195**	-1.416***	-1.441***	
	(0.516)	(0.445)	(0.531)	
Women-led	1.208***	0.976***		1.004**
	(0.366)	(0.285)		(0.479)
Firm size	1.217***	1.255***		0.701**
	(0.131)	(0.116)		(0.307)
Balanced		-0.138		
		(0.184)		
year = 2022				0.824***
				(0.189)
Firm and Year Fes	No	No	No	Yes
Observations	710	935	710	710
R^2	0.315	0.337	0.258	0.080

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

To control for unobserved time-invariant firm characteristics that might be the actual determinants of higher firm performance instead of having a female owner/manager, we run FE regressions (Table

6.10 column 4; Table 6.11 and 6.12 column 3). Looking at Table 6.10 column 4, we see that, even after removing the effect of those unobserved characteristics, women-led firms have significantly higher revenue. In the case of the other two performance indicators, that is value added and labour productivity, we see that the association between women owners/managers and performance is statistically insignificant. This means that the actual determinants of higher value added and higher labour productivity are unobserved firm characteristics and not that the firm is owned or managed by a female.

Table 6.11: Gender of the owner/manager and value added

	(1) Value added OLS	(2) Value added OLS	(3) Value added OLS
Women-led	1.396***	1.889***	1.065
	(0.460)	(0.406)	(0.698)
Firm size	1.182***	0.743***	0.908**
	(0.170)	(0.158)	(0.361)
South	0.182	-0.052	
	(0.266)	(0.274)	
Food	-1.062*	-0.639	
	(0.632)	(0.828)	
Textiles	-1.997***	-1.440*	
	(0.602)	(0.777)	
Wood	-2.150***	-1.687**	
	(0.559)	(0.756)	
Paper	-1.758	-2.412**	
	(1.120)	(1.100)	
Chemicals	-1.061	-0.290	
	(1.520)	(1.686)	
Minerals	-1.030*	-0.651	
	(0.618)	(0.888)	
Metal	-1.763***	-1.149	
	(0.576)	(0.780)	
Balanced		-1.915***	
		(0.234)	
year = 2017			11.58***
			(0.387)
year = 2022			13.27***
			(0.373)
Firm and Year Fes	No	No	Yes
Observations	710	996	780
R^2	0.201	0.111	0.657

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

Table 6.12: Gender of the owner/manager and labour productivity

	(1) Labour productivity OLS	(2) Labour productivity OLS	(3) Labour productivity OLS
Women-led	1.118***	0.820***	0.655
	(0.406)	(0.308)	(0.607)
Firm size	0.246*	0.313***	-0.078
	(0.138)	(0.108)	(0.329)
South	-0.186	-0.313*	
	(0.227)	(0.179)	
Food	-0.924	-0.992**	
	(0.583)	(0.486)	
Textiles	-1.761***	-1.737***	
	(0.558)	(0.468)	
Wood	-1.945***	-1.932***	
	(0.527)	(0.447)	
Paper	-1.216	-1.220**	
	(0.870)	(0.604)	
Chemicals	-0.690	-0.595	
	(1.143)	(0.954)	
Minerals	-1.000*	-0.960*	
	(0.601)	(0.516)	
Metal	-1.698***	-1.719***	
	(0.545)	(0.465)	
Balanced Panel		-0.527***	
		(0.165)	
year = 2022			1.293***
			(0.216)
Firm and Year Fes	No	No	Yes
Observations	710	926	710
R^2	0.060	0.086	0.110

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

6.6 Conclusion

This chapter presented the levels and trends of some key characteristics of firm owners and managers, both in terms of demographic characteristics and in personality traits. The level of education attained by owners and managers increased in between 2012 and 2022, and the same goes for the levels of risk propensity and of trust. The share of firms owned or managed by females has only slightly increased in the balanced sample, driven by an increase in the share of firms managed by women, while it has decreased in the unbalanced sample. Importantly, the analysis presented revealed that women-led firms have higher performance compared to male owned/managed firms. In particular, firms led by females have higher revenues even when controlling for unobserved firm characteristics.

Given the stagnation of women participation in the manufacturing sector and the very promising results in terms of performance, it is key to support women entrepreneurship with targeted programmes, trainings, and support schemes. In addition, the development of human capital must remain a critical focus of government policy. This not only means to increase the participation in education, but also to develop professional and technical programmes that reflect the needs of the market and of the targeted population. This must also go hand-in-hand with the provision of programmes and trainings that aim at developing the entrepreneurial and management skills of business owners.

7 Management practices

The importance of firm management was already given consideration by the Mozambican government in its Industrial Strategy from 1997 (GoM, 1997). In the strategy, it made "training which develops management capabilities and entrepreneurial spirit" a priority action to support the Mozambican industry (ibid). The structural transformation of an economy typically combines within-sector productivity growth and the rapid movement of labour from low-productivity employment in agriculture to high-productivity employment in manufacturing (Newfarmer et al., 2018). The level of management quality constitutes an important lever for spurring such within-sector productivity growth and driving the structural transformation.

In the academic literature, management is known to be an important determinant of firm productivity in large firms (Bloom and van Reenen 2007; Bloom et al. 2016). According to Bloom et al. (2013), a natural explanation for the "astounding differences" in productivity across both firms and countries lies in the variation in management practices. More recently, McKenzie and Woodruff (2017) provide evidence that management is also important for micro and small enterprises in emerging economies. Building on their previous research, Bloom et al. (2021) conducted the first large-scale analysis of the role of management practices for export performance, and find that better-managed firms are more likely to export, sell more products to more destinations, and earn higher export revenues and profits. This evidence indicates that firm management could play an important role in supporting Mozambique to achieve its goal of industrialization through strengthening manufacturing enterprises.

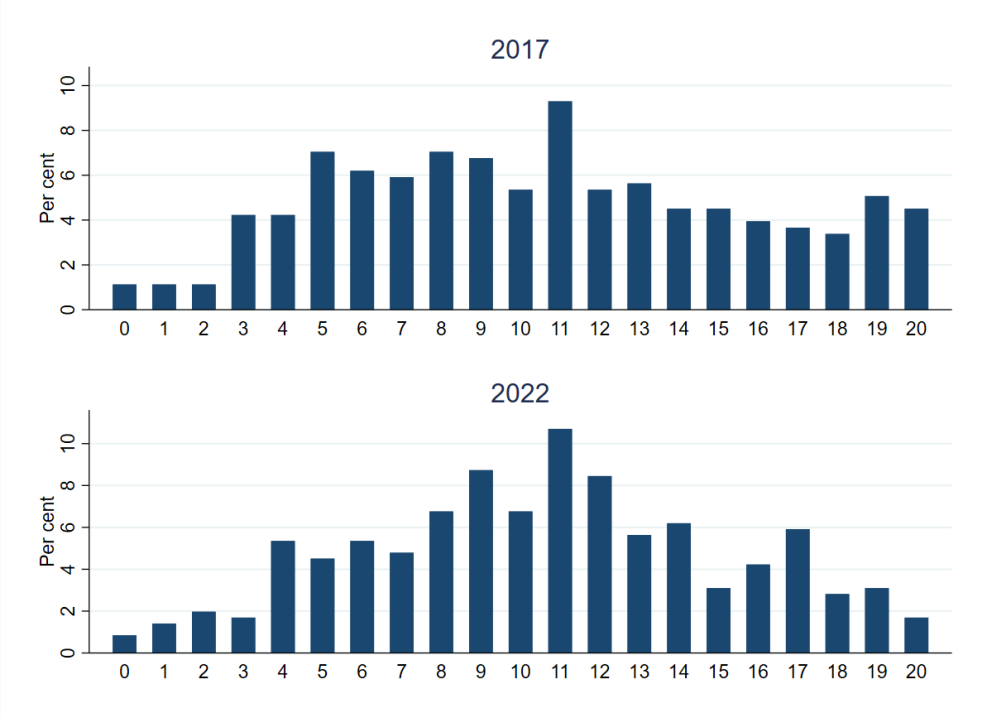
Despite the early policy focus on manufacturing MSMEs, including their management capabilities, and strong economic growth in the country between 1993 and 2014, the Mozambican economy has not undergone structural transformation (Cruz and Mafambissa, 2018). In this context, it is important to investigate what the current level of management quality among micro, small and medium-sized firms in Mozambique's manufacturing sector is and how it has developed over time. A low level or a lack of improvements over time may help explain why the manufacturing sector has failed to see productivity growth and to drive the structural transformation of the country. In this chapter, we also look into whether we can confirm the positive relationship between management and firm performance that has been found in the literature in the case of the Mozambican manufacturing firms. By shedding some light on these issues, this chapter aims to inform Mozambique's current industrial and development policies and give insight into whether a stronger focus on management is needed.

7.1 Business practices

This chapter makes use of a business practice index developed by McKenzie and Woodruff (2017). The business practice index is based on a set of 26 questions that measure key business practices used in the day-to-day running of small businesses and that should be seen as "best practices" (McKenzie and Woodruff, 2017). We only consider 20 of these questions since the questionnaire did not enquire about all 26.

The 20 questions following McKenzie and Woodruff (2017) are grouped into four sub-indices: i) marketing, ii) stock & buying control, iii) record keeping, and iv) financial planning. They include questions about advertisement, the firm's relationship to the supplier, whether the firm has visited competitors to see products and prices, and whether the firm keeps records of purchases and sales (Table 7.2 provides a full list). The activities are recorded as "yes" or "no", and we code these as 1 and 0. All of the activities are meant to be practices that can be learned rather than reflect innate entrepreneurial abilities.

Figure 7.1: Number of business practices applied in 2017 and 2022



Note: Balanced panel for the survey rounds 2017 and 2022.
Source: Authors' calculations based on IIM 2017 and 2022 data.

On average, the surveyed firms applied around 11 of the 20 business practices (55 per cent) considered in the business practice index in both 2017 and 2022. Hence, over the five-year period, the average number of practices applied did not increase. Figure 7.1 shows that only very few firms,

around 1 per cent, did not use any of the practices in both 2017 and 2022. Moreover, the number of firms that use less than 4 practices decreased from around 8 per cent in 2017 to 6 per cent in 2022. At the same time, the number of firms who made use of all business practices decreased from 16 to 6 between the two survey rounds. Overall, there is no clear trend. While fewer firms apply only very few practices, fewer firms in 2022 also use many business practices compared to 2017. These results indicate that there is some room for improvement in terms of the level of management quality in the manufacturing sector: firms use around 55 per cent of the business practices we inquired about and there has been no increase in usage over time. In comparison, using the same business practice index, McKenzie and Woodruff (2017) find that in Ghana, firms use 44 per cent, in Kenya 52 per cent and Nigeria 76 per cent of the business practices on average.

7.2 Business practices and firm size

Table 7.1 shows the average number of business practices used by the manufacturing firms in 2017 and 2022 and breaks them down by the sub-indices mentioned above. On average, there was a very slight increase over time in the use of marketing and financial planning practices from 3.8 to 34.0 and 2.1 to 2.2, respectively. In contrast, buying and stock control as well as cost & record keeping practices are used slightly less in 2022 than in 2017.

Table 7.1 also indicates that the use of business practices varies across firm size categories. To clearly see the development in the use of business practices over time by firm size category, only the 298 firms that did not change their firm size classification over time are described below. Among these firms, micro firms, on average, employed 9.0 out of the 20 business practices compared to 15.0 and 16.4 for the small and medium sized firms in 2017. This indicates that larger firms also make use of more business practices.

Only micro firms managed to increase their overall use of business practices over time, while small and medium firms saw the reverse effect. The 14 surveyed medium-sized firms, in particular, saw a large decrease in their average use of business practices from 16.4 to 14.0, driven by a decrease in the use of marketing practices. This might be related to not having sufficient financial capital to do marketing during the COVID-19 pandemic. Micro firms, the largest group of surveyed firms, lack behind in particular in applying cost & record keeping as well as financial planning practices. This is likely explained by the owners of micro firms not having sufficient knowledge on how to financially manage a business. While in 2022 micro firms are using cost & recording keeping and financial planning practices slightly more, they still employ on average less than 2 out of 5 practices for these two categories. On the other hand, micro firms used more buying and stock control practices than

small firms in 2017, and, in 2022, use more of them than both small and medium firms. Micro firms also apply more marketing practices than medium firms in 2022.

If we look at the whole sample of 355 firms including those that changed their firm size classification, these trends are not much affected. The average for the main index is higher for micro firms (9.2 out of 20 in 2017) and lower for small and medium firms (13.9 and 15.4, respectively, in 2017). The lower average reported in Table 7.1 for micro firms likely arises because 18 firms who were micro in 2017 and grew to become small firms in 2022 were excluded. Presumably, these performed well compared to other micro firms in their use of management practices, which allowed them to grow. Similarly, the less well performing small and medium sized firms who shrunk in size over time were excluded, thus inflating the results for small and medium firms in 2017 reported in Table 7.1.

Table 7.1: Average use of business practices by year, sub-indices and firm size

	All Mean	Micro Mean	Small Mean	Medium Mean
2017				
Main index: Business Practice Index	10.6	9.0	15.0	16.4
Sub-index A: Marketing	3.8	3.7	4.5	4.9
Sub-index B: Buying & stock control	2.2	2.2	2.1	2.4
Sub-index C: Cost & record keeping	2.4	1.7	4.3	4.6
Sub-index D: Financial planning	2.1	1.4	4.2	4.5
Observations	355	239	45	14
2022				
Main index: Business Practice Index	10.6	9.3	14.3	14.1
Sub-index A: Marketing	3.9	3.9	4.0	3.0
Sub-index B: Buying & stock control	2.1	2.1	2.0	2.1
Sub-index C: Cost & record keeping	2.3	1.8	4.1	4.5
Sub-index D: Financial planning	2.2	1.5	4.1	4.5
Observations	355	239	45	14

Note: Balanced panel for the survey rounds 2017 and 2022.
Source: Authors' calculations based on Mozambique IIM 2017 and 2022 data.

Table 7.2 further breaks down the results and indicates how many firms (percentage of sample) used the individual business practices in 2017 and 2022. Overall, manufacturing firms in Mozambique in 2017 most frequently used the following business practices: comparing alternative suppliers (87 per cent of firms), negotiating with suppliers for lower prices (83 per cent) and visited competitors to see prices (67 per cent). In 2022 this changes slightly: negotiating with suppliers for lower prices (80 per cent), comparing alternative suppliers (76 per cent) and using special offers to attract customers (66 per cent). The least used practices in 2017 and 2022, respectively, were in this order: having annual profit and loss statements and cash flow statements (32 per cent and 31 per cent), having an annual income/expenditure sheet (34 per cent (unchanged)) and knowing the detailed costs of each product (38 per cent and 40 per cent, respectively). In terms of business practices categories, one can see that buying and stock control practices were used most often in both years, followed by marketing

practices. Cost & record keeping as well as financial planning practices were used less frequently. As already pointed out above, this overall trend is driven by the behaviour of micro firms who make up around three quarters of the sample.

The disaggregation by firm size classification – again only looking at the 290 firms that did not change their firm size – shows that the picture for small and medium firms looks a bit different from the overall trend. In 2017, around 93 per cent of small firms kept formal accounts and had an annual income/expenditure sheet but only slightly more than half advertised in any form and mentioned that they do not run out of stock frequently. In 2022, the most used practices among small firms change and are about cost & record keeping – the number of sales and costs of each product. Medium-sized firms used many business practices across the different categories. Only marketing practices were not used much, relatively speaking. The least commonly used practice in 2017 was to frequently ensure that one does not run out of stock. The decrease in the use of business practices over time by medium-sized firms was driven by a further decrease in the use of marketing practices. For example, less than one quarter of the medium-sized firms talks with customers to see why they stopped buying their products in 2022.

In 2022, one additional Mozambique-specific question that is not part of the business practices index was asked about whether firms provide formal invoices to clients. Answers were coded on a 5-points scale from “Never” to “Always”. Around 41 per cent of the firms state that they never apply this business practice, 18 per cent rarely do so, 16 per cent do it sometimes, 9 per cent do it often, and 16 per cent mention that they always do so. Again, the micro firms drive this average. Out of the micro firms, 53 per cent never provide formal invoices and only 7 per cent always provide them. In comparison, only 6 per cent of small firms and no medium firms never provide formal invoices. 36 per cent of small firms and the majority of medium firms state that they always do it. This indicates that cost & record keeping as well as financial planning practices are more relevant for larger firms.

Overall, these results suggest that as firms grow in size, the use of marketing, buying, and stock control practices, which includes interacting with customers as well as suppliers, loses in importance relative to internal practices such as keeping records and setting targets. Smaller firms may depend more on personal interactions with the same clients to successfully do business, whereas larger firms already have a large pool of clients. At the same time, due to the larger quantity of activities of larger firms, it becomes more important for them to have formally organized records and set specific targets, while smaller firms are able to organize their expenses and targets in a more informal way.

Table 7.2: Use of business practices: firm share by year and size classification (per cent)

Business Practices	2017 All	2022 All	2017 Micro	2017 Small	2017 Medium	2022 Micro	2022 Small	2022 Medium
Marketing 1: Visited competitor to see prices	67.3	61.7	67.8	71.1	57.1	61.1	71.1	35.7
Marketing 2: Visited competitor to see products	65.1	60.3	64.4	71.1	57.1	63.2	57.8	28.6
Marketing 3: Asked customers about offer of other products	59.4	59.4	59.4	64.4	57.1	59.4	55.6	35.7
Marketing 4: Talked with customer to see why stopped buying	48.5	45.9	44.8	60.0	78.6	45.2	44.4	21.4
Marketing 5: Used special offer to attract customers	57.7	66.2	55.2	60.0	85.7	66.9	57.8	78.6
Marketing 6: Asked supplier which products sell well	46.2	42.3	41.4	68.9	64.3	43.1	44.4	42.9
Marketing 7: Advertises in any form	39.4	55.2	32.6	53.3	85.7	50.2	71.1	57.1
Buying & stock control 1: Negotiation with supplier for lower prices	82.8	80.0	81.2	77.8	100.0	79.1	84.4	78.6
Buying & stock control 2: Compare alternative suppliers	87.3	76.3	86.2	82.2	92.9	74.1	82.2	100.0
Buying & stock control 3: Don’t run out of stock frequently	53.2	56.3	51.5	51.1	50.0	61.5	37.8	28.6
Cost & record keeping 1: Keep formal accounts	50.4	50.7	33.9	93.3	92.9	39.7	82.2	92.9
Cost & record keeping 2: Record every purchase and sale	47.3	41.1	34.7	86.7	92.9	28.9	77.8	92.9
Cost & record keeping 3: Able to document cash balance	40.0	42.0	25.1	84.4	92.9	29.3	82.2	85.7
Cost & record keeping 4: Use financial records to know whether sales of product increase or decrease	64.8	60.8	57.7	82.2	92.9	53.1	84.4	92.9
Cost & record keeping 5: Detailed costs of each product	38.0	39.7	23.0	80.0	85.7	25.1	86.7	85.7
Financial planning 1: Review financial performance monthly	54.6	54.1	40.6	88.9	92.9	43.5	82.2	92.9
Financial planning 2: Have sales target for next month	42.5	49.6	32.2	66.7	85.7	38.9	86.7	85.7
Financial planning 3: Compare actual sales to target set	49.3	51.0	38.5	80.0	92.9	41.4	80.0	85.7
Financial planning 4: Have annual profit and loss statements and cash flow statement	32.4	30.7	13.4	88.9	85.7	13.8	84.4	92.9
Financial planning 5: Have annual income/expenditure sheet	34.1	34.1	14.2	93.3	92.9	17.2	77.8	92.9
Mozambique specific: Provision of formal invoices to clients		1.4				1.0	2.8	3.5
Observations	355	355	239	45	14	239	45	14

Note: Balanced survey rounds 2017 and 2022.
Source: Authors’ calculation based on Mozambique IIM 2017 and 2022 data.

7.3 Other firm characteristics

So far, we focused on how firm size affects the use of business practices in the Mozambican manufacturing sector. Table 7.3 displays a number of other firm characteristics and looks at how these correlate with management practices in 2017 and 2022.

The analysis by sector reveals that the best-performing sector in 2017 in terms of number of practices applied was the paper sector with 16.6 out of 20. The paper sector mostly includes firms that print and bind books and offer printing services. Most of these printing firms have large machines and employ more workers than the average manufacturing firm (50 per cent of the sampled printing firms are small or medium-sized). As they have more advanced machinery and more workers, it only makes sense that they are also better managed. In 2022, the chemicals sector applies the most business practices, with an average of 14.33 out of 20 practices. Chemical enterprises are the largest (90 per cent are small- or medium-sized) and most technically advanced enterprises of the sample. This correlated with a higher need of good management.

The industry that used the least practices in 2017 was the textiles sector. Textiles firms used slightly more than 9 businesses practices out of 20, on average. Most firms in the textiles sector are tailors with few employees (80 per cent have fewer than 10 employees). They do not produce clothes, but their main activity is to mend and patch their clients' used clothes, for which they earn tiny amounts of money. From time to time, individual clients order a piece made of the traditional fabric called "capulana", but this is not a large-scale production. Many tailors do not even have electricity, i.e., they use manually-driven sewing machines. For these activities, no sophisticated management practices are required. It therefore only makes sense that tailors belong to the firms that use the least business practices.

The sector applying the least business practices is in 2022 taken over by the wood sector, with close to 10 (9.6) out of 20 practices. A majority of firms in the wood sector are small-scale carpenters. Often, their businesses are not located in a cement house, but they rather have a few wooden planks put together under which they store their equipment. They mostly work open-air and do not have many power-driven machines. Some of the carpenters do not even have power-driven machines, i.e., all their hard work happens manually. There is a lot of potential to grow and use advanced machinery, but it is expensive to acquire advanced machinery. Due to the rather small and informal scale of their production, it only makes sense that they use few businesses practices. However, with some investment in equipment and better management, carpenters would probably be able to significantly increase their income and productivity.

Overall, only three sectors have increased their use of business practices or remained the same, while five sectors use less practices in 2022. Table 7.3 also shows that sectors dominated by micro firms such as the textiles, wood, minerals, and metal sectors focus mostly on marketing and buying and stock control practices (sub-indices A and B). Sectors with more large firms such as the food, paper, and chemicals sector focus relatively more on cost & record keeping and financial planning practices (sub-indices C and D). This is in line with the trends described earlier. Table 7.3 also indicates that those firms that used the most business practices, on average, were located in Manica Province in 2017. In 2022, firms located in Maputo City employ the most business practices with an average score of 11.5 in the business practices index. In both years, the provinces of Gaza, Nampula and Tete lacked behind with averages of below or just above 10 in the business practices index. These results make sense since the most complex and many large firms belong to the paper and chemicals sectors and are located in the South of Mozambique, which tends to be more productive.

Table 7.3: Average use of business practices in 2022 by other firm characteristics

	2017	2022	Sub-index (2022)			
Industry	**Main Index**	**Main Index**	**A**	**B**	**C**	**D**
Food	11.1	11.6	3.4	2.0	3.3	2.9
Textiles	9.3	9.9	3.9	2.1	2.1	1.8
Wood	10.3	9.6	3.8	2.0	2.0	1.8
Paper	16.6	13.8	4.6	2.2	3.4	3.6
Chemicals	16.0	14.3	4.3	2.3	4.0	3.7
Minerals	10.6	10.3	4.2	2.4	1.9	1.9
Metal	9.8	10.0	4.0	2.3	1.9	1.9
Other	12.4	11.6	3.4	2.4	3.4	2.4
Observations	319	319	319	319	319	319
Province						
Maputo City	11.3	11.5	3.8	2.2	2.8	2.7
Maputo Province	11.0	11.0	3.9	2.2	2.5	2.4
Gaza	9.4	10.0	4.1	1.9	2.1	1.9
Sofala	11.1	10.3	4.4	2.1	2.0	1.8
Manica	11.4	11.4	4.3	2.3	2.5	2.4
Nampula	8.8	8.9	2.5	1.7	2.6	2.0
Tete	9.2	9.7	3.4	2.6	1.9	1.9
Observations	355	355	355	355	355	355
Informality Index						
Informal	7.9	8.5	3.9	2.1	1.3	1.2
Formal	11.6	11.8	3.9	2.1	3.0	2.8
Observations	355	355	355	355	355	355
NUIT						
No	8.1	9.2	3.9	2.1	1.6	1.5
Yes	12.1	12.8	3.9	2.1	3.5	3.3
Observations	355	355	355	355	355	355

Note: Balanced panel for the survey rounds 2017 and 2022.
Source: Authors' calculations based on Mozambique IIM 2017 and 2022 data.

We examine whether a firm's registration status (formality) affects its management style. We find that in both years formal firms, as measured by an informality index, use a lot more management practices on average – around 3.5 more. Here, a firm is considered formal if it has at least one of the following:

firm is registered with the local tax office (Repartição de Finanças), employees are registered with the National Institute of Social Security (INSS), firm is registered with the Registry of Legal Entities (Registro de Entidades Legais, CREL), the firm has an Alvará (formal business certificate), employees are registered with the Ministry of Labour and Social Security (Ministério de Trabalho e Segurança Social, MITSS). Formal firms use more than twice as many cost & record keeping and financial planning practices than informal firms in 2022. This makes sense, since registration requires firms to be able to present their financial and sales records, among other things.

Separately, we looked at whether having a tax identification number (NUIT) influences the use of management practices. Firms with a NUIT used around 4 more business practices on average than informal firms with 12.08 in 2017 compared to 8.06. In 2022, this difference decreased slightly as both formal and informal firms saw an increase in the use of business practices to 12.78 and 9.22, respectively. The greater overall use of business practices by formal firms is driven by a higher use of cost & record keeping and financial planning practices (around two practices more, on average, in both categories). These findings show that formal firms – those that have a tax identification number or are registered in some way – benefit from better management quality. This is particularly pronounced in the management categories cost & record keeping and financial planning.

7.4 Firm owner characteristics

Besides the previously discussed firm characteristics, we investigate whether there are gender differences in management quality. We only consider firms where an owner/majority shareholder or manager responded because employees might not be fully informed about all management practices that a firm deploys and have characteristics that are different from owners and managers. Table 7.4 displays the results from T-tests on whether there are differences between female and male-led businesses in regards to management quality as reflected by the business practice index and the four sub-indices.

In 2017, female managed/owned firms used around 1.3 business practices less than male managed/owned firms on average with 8.9 compared to 10.2 out of 20. In fact, the results in the "difference" column indicate that these firms used less business practices in all four management categories. However, the difference is not statistically significant. Due to the low number of firms that are female-managed/owned (18 firms) we cannot draw any conclusions. In 2022 there are a few more such firms – 31 firms – and the results are quite different. Female-owned/managed firms have a lower mean only in two management categories – marketing and buying & stock control – compared to their male counterparts, and this difference remains statistically insignificant. In the other two management categories, they now have a statistically significant higher average than male-managed/owned firms

do. Overall, they use 11.7 business practices while the male-led firms use 10.3 – a difference of around 1.4 practices.

Table 7.4: Male- and female-managed/owned firms (T-test)

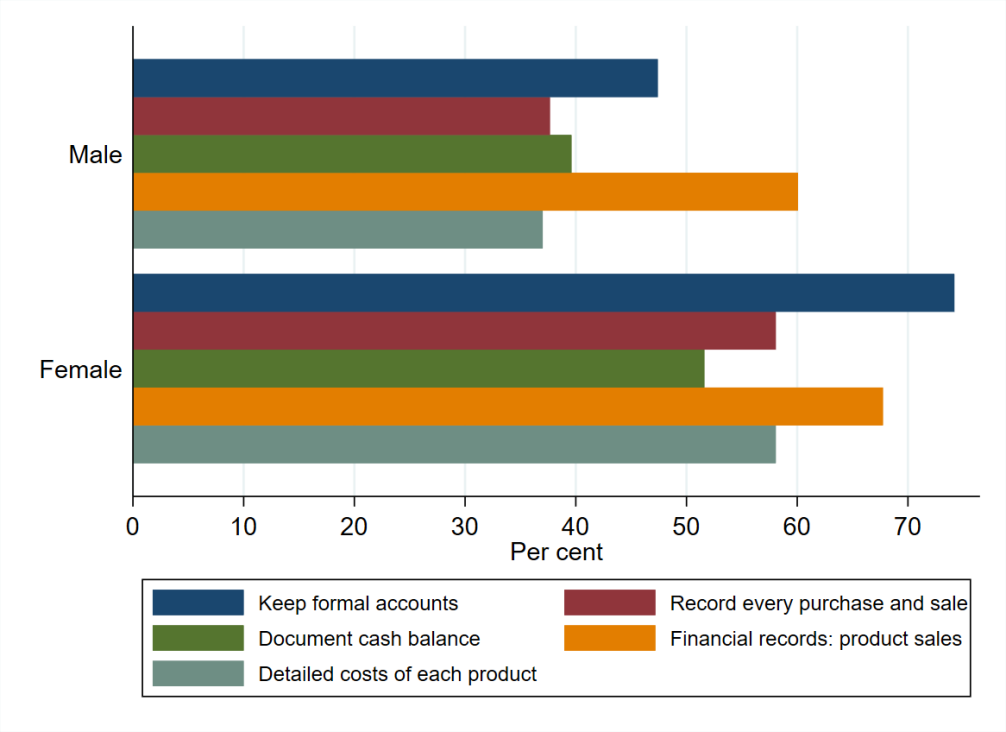
	Female	Obs	Male	Obs	Difference	t-value
2017						
Main index: Business Practice Index	8.9	18	10.2	297	-1.313	-1.09
Sub-index A: Marketing	3.2	18	3.8	297	-0.569	-1.02
Sub-index B: Buying & stock control	2.2	18	2.2	297	-0.076	-0.37
Sub-index C: Cost & record keeping	1.6	18	2.2	297	-0.638	-1.41
Sub-index D: Financial planning	1.9	18	1.9	297	-0.030	-0.07
2022						
Main index: Business Practice Index	11.7	31	10.3	308	1.417	1.65*
Sub-index A: Marketing	3.7	31	3.9	308	-0.164	-0.44
Sub-index B: Buying & stock control	2.1	31	2.1	308	-0.036	-0.20
Sub-index C: Cost & record keeping	3.1	31	2.2	308	0.879	2.46**
Sub-index D: Financial planning	2.8	31	2.1	308	0.738	2.14**

*Note: Balanced panel for the survey rounds 2017 and 2022. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*
Source: Authors' calculations based on Mozambique IIM 2017 and 2022 data.

We find that particularly in the management categories cost & record keeping and financial planning a noticeably higher share of female-managed/owned firms make use of the respective business practices in 2022 compared to their male counterparts. Figure 7.2 shows that a higher share of female-managed/owned firms use each of the five cost & record keeping practices than their male counterparts in 2022. For example, 74 per cent keep formal accounts while only 47 per cent of male-managed/owned firms do.

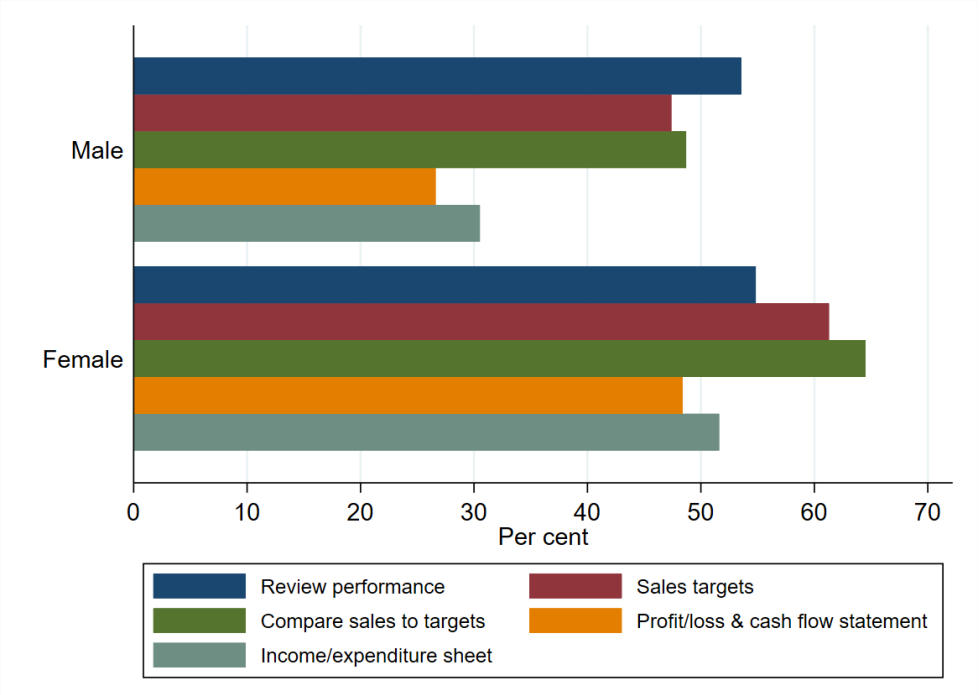
Figure 7.3 illustrates that the same result – a higher share of female-managed/owned firms using all five practices – applies to the financial planning management category. Over 60 per cent have monthly sales targets and compare their actual sales to their sales targets while less than half of male-managed/owned firms do. Similarly, around half of the female-led firms have annual profit/loss & cash flow statements and an income/expenditure sheet whereas for the male-led firms it is only around 30 per cent.

Figure 7.2: Cost & record keeping practices of male- and female-led firms in 2022



Note: Balanced panel for the survey round 2022.
Source: Authors' calculations based on IIM 2022 data.

Figure 7.3: Financial planning practices of male- and female-led firms in 2022



Note: Balanced panel for the survey round 2022.
Source: Authors' calculations based on IIM 2022 data.

Note that, as before, firm size plays an important role. Table 7.5 shows that in both 2017 and 2022 female-owned/managed micro-sized firms on average use less business practices than their male counterparts. In 2017, they use 7.9 compared to 9.1 and in 2022, 8.7 compared to 9.4. When looking at the larger firms in our sample – the small and medium firms -, however, this result is reversed. It appears that larger firms that are managed or owned by a woman have a higher level of management quality. In 2017, there are only two such firms, but these use noticeably more business practices, 17 out of 20 each, than small (13.5) and medium (14.6) firms managed/owned by a man. In 2022, the picture remains the same. Small and medium firms owned/managed by a woman on average use 15.6 and 15.3 practices, respectively – almost two more than firms in the same size category but owned/managed by a man. As already indicated in Figures 8.2 and 8.3, women-owned/managed enterprises mainly outperform male-owned/managed enterprises in the management categories cost & record keeping and financial planning, and they do so across firm size.

The reason why female-led SMEs are better managed than male-led SMEs is probably driven by the fact that the women who work are better educated and trained than the men who work. It is still very common for women in Mozambique to stay at home and primarily work in the household. Those women who work outside of the household belong to a minority of women who often attended university. Men, on the other hand, have the traditional role of being the breadwinners for the household, even if they did not have the opportunity to receive a higher education. In sum, women who own or manage SMEs are better educated and, therefore, also better at management than men who own or manage SMEs.

Table 7.5: Average use of business practices by female- and male-owned/managed firms and firm size

		Male			Female	
2017	**Micro**	**Small**	**Medium**	**Micro**	**Small**	**Medium**
Main index: Business Practice Index	9.1	13.5	15.4	7.9	17.0	17.0
Sub-index A: Marketing	3.7	4.2	4.1	3.0	5.0	5.0
Sub-index B: Buying & stock control	2.2	2.3	2.3	2.1	3.0	2.0
Sub-index C: Cost & record keeping	1.8	3.5	4.5	1.3	4.0	5.0
Sub-index D: Financial planning	1.4	3.4	4.6	1.5	5.0	5.0
Observations	229	50	18	16	1	1
2022						
Main index: Business Practice Index	9.4	13.8	13.3	8.6	15.6	15.3
Sub-index A: Marketing	3.9	3.9	3.1	3.1	5.1	3.0
Sub-index B: Buying & stock control	2.2	2.1	1.8	1.9	2.2	2.5
Sub-index C: Cost & record keeping	1.7	4.0	4.2	2.0	4.2	5.0
Sub-index D: Financial planning	1.6	3.8	4.2	1.6	4.1	4.8
Observations	242	55	11	17	10	4

Note: Balanced panel for the survey rounds 2017 and 2022.
Source: Authors' calculations based on Mozambique IIM 2017 and 2022 data.

7.5 Business practices and firm performance

In the previous sections, we have depicted the level of management quality, its development between 2017 and 2022, and how management varies with different firm and owner characteristics such as firm size, sector, formality, and gender in the Mozambican manufacturing sector.

In this sub-section, we turn to a more statistical analysis of whether business practices are correlated with firm performance. We measure firm performance in two ways: firm value added and labour productivity. First, we run a simple linear regression of value added and labour productivity on business practices, controlling for key enterprise characteristics (firm size, capital, sector, and region). In a second step, we run a firm fixed effects model to account for time-invariant unobserved firm-specific factors.

Column 1 of Table 7.6 shows a significant positive correlation between business practices and firm value added. An increase in the score by one practice is associated with a 5.5 per cent increase in value added. However, once we control for firm fixed effects this relationship becomes insignificant. In the case of labour productivity, both model specifications – columns 3 and 4 – produce an insignificant result, i.e., the use of business practices does not seem to affect the productivity of the firms' workers.

Table 7.6: Business practices and firm performance

	(1) Value Added OLS	(2) Value Added FE	(3) Labour Productivity OLS	(4) Labour Productivity FE
Main index: Business Practice Index	0.055***	0.008	0.015	0.005
	(0.016)	(0.025)	(0.024)	(0.034)
Firm size (log)	0.765***	0.271*	-0.260*	-0.204
	(0.110)	(0.139)	(0.145)	(0.309)
Capital (log)	0.315***	0.280***	0.453***	0.522***
	(0.048)	(0.068)	(0.058)	(0.073)
Constant	7.436***	8.623***	5.083***	3.925***
	(0.556)	(0.747)	(0.743)	(1.069)
Sector dummies	Yes	No	Yes	No
Region dummies	Yes	No	Yes	No
Year FE	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes
Observations	566	566	626	626
R^2	0.60	0.19	0.28	0.30

*Note: Dependent variables are firm value added and labour productivity (log). Balanced panel for the survey rounds 2017 and 2022. Robust standard errors in parentheses. Results do not change when controlling for answers where "other respondents", i.e. not a manager/owner replied. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*
Source: Authors' calculations based on IIM 2017 and 2022 data.

Table 7.7 analyses the four sub-indices separately. The simple linear regression in column 1 indicates that the cost & record keeping as well as financial planning practices sub-indexes have a statistically significant association with value added. Financial planning practices, in particular, appear to exert a

large effect on firm performance. The use of an additional financial planning practice is associated with a 11.6 per cent increase in value added in the OLS model. After including firm fixed effects this result becomes insignificant, though. As before, we cannot find a significant relationship between management quality, as measured by the use of business practices, and labour productivity. This is also the case when looking at the four sub-indices individually instead of the pooled business practice index.

Table 7.7: Business practices sub-indices and firm performance

	(1) Value added OLS	(2) Value added FE	(3) Labour productivity OLS	(4) Labour productivity FE
Sub-index A: Marketing	0.022	-0.016	-0.014	-0.048
	(0.029)	(0.040)	(0.047)	(0.059)
Sub-index B: Buying & stock control	-0.069	-0.062	-0.126	-0.128
	(0.072)	(0.089)	(0.100)	(0.132)
Sub-index C: Cost & record keeping	0.080*	0.019	0.007	0.042
	(0.046)	(0.071)	(0.071)	(0.117)
Sub-index D: Financial planning	0.116**	0.063	0.112	0.113
	(0.051)	(0.073)	(0.074)	(0.116)
Firm size (log)	0.710***	0.253*	-0.324**	-0.242
	(0.111)	(0.135)	(0.145)	(0.305)
Capital (log)	0.310***	0.283***	0.447***	0.525***
	(0.048)	(0.068)	(0.058)	(0.072)
Constant	7.707***	8.726***	5.424***	4.151***
	(0.568)	(0.744)	(0.774)	(1.081)
Sector dummies	Yes	No	Yes	No
Region dummies	Yes	No	Yes	No
Year FE	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes
Observations	566	566	626	626
R^2	0.60	0.19	0.28	0.31

*Note: Dependent variables are value added and labour productivity (log). Balanced panel for the survey rounds 2017 and 2022. Robust standard errors in parentheses. Results do not change when controlling for answers where "other respondents", i.e. not a manager/owner replied. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.*
Source: Authors' calculations based on IIM 2017 and 2022.

7.6 Unbalanced panel

Until now, we have considered only those firms that were interviewed in all three survey rounds (balanced panel). In this final sub-section, we compare those firms to firms that participated in the survey in 2012 and 2017, but dropped out before 2022 (exit firms), as well as new entrants in 2022 (newly added firms).

Table 7.8 shows that the 105 firms that were surveyed in 2012 and 2017 but dropped out afterwards do not differ much from the firms that participated in all three survey rounds (and were described above) in terms of the overall amount of management practices used. In 2017, the last year that they were surveyed, and the first year that we asked firms about their management practices, they used

slightly more practices on average with 10.96 compared to 10.61 of the firms in the balanced panel in 2017. This result is driven by a somewhat better performance of micro firms in terms of all four sub-indices. The small- and medium-sized firms that dropped out used on average around 2 and 1.5 business practices less overall, respectively.

Table 7.8: Comparison of firms in balanced and unbalanced panel

	only 2012-17 Mean	balanced 2017 Mean	only 2022 Mean	balanced 2022 Mean
Main index: Business Practice Index	11.0	10.6	11.3	10.6
Sub-index A: Marketing	3.7	3.8	4.2	3.9
Sub-index B: Buying & stock control	2.2	2.2	2.1	2.1
Sub-index C: Cost & record keeping	2.7	2.4	2.5	2.3
Sub-index D: Financial planning	2.3	2.1	2.6	2.2
Observations	105	355	120	355

Source: Authors' calculations based on IIM 2017 and 2022.

Taken together, this result does not provide clear evidence that a lack in the use of management practices can explain why these firms dropped out prior to the survey round in 2022. We also looked at whether the use of management practices can explain the performance of these firms, as measured by firm value added and labour productivity (as in sub-section 8.4), in a simple cross-sectional analysis. We do not find any significant relationship, neither for the overall business practice index, nor for the sub-indices.

Turning to the 120 new firms that entered the survey in 2022, we find that these new firms use more business practices on average (11.4) than the firms that participated in all survey rounds (10.6) in 2022, as illustrated in Table 8.8. Both the new micro- and medium-sized firms have higher average usage, only the small firms use less business practices compared to their peers from the panel. The new micro firms use close to one more business practice overall (10.3 versus 9.4), due to a slightly higher use of marketing and cost & record keeping practices and a higher use of financial planning practices. The new medium-sized firms use close to 1.5 practices more (15.5 versus 14.1), driven by a greater use of marketing practices, in particular. Among the new micro firms, it is noticeable that a higher share uses financial planning practices, and this is the case for each of the five financial planning practices that we inquired about. For example, 29 per cent has annual profit and loss statements and cash flow statements compared to only 14 per cent of the micro firms in the panel, and 30 per cent have an annual income & expenditure sheet versus 17 per cent of the latter group.

As with the firms that were surveyed only in 2012 and 2017, we do not find a significant relationship between a higher use of business practices and firm performance among the new entrants. However, overall, the finding that the newly added firms use better management, is in line with the other chapter's findings that they are slightly larger, better educated, younger and, as a result, performing

slightly better than the firms in the balanced panel. However, overall, the differences are not very large.

7.7 Conclusion

In this chapter on the management practices of micro, small and medium enterprises in Mozambique's manufacturing sector, we have found that they use, on average, 55 per cent of the practices that we inquired about in both 2017 and 2022. In other countries in sub-Saharan Africa such as Ghana, Kenya and Nigeria, firms use 44 per cent, 52 per cent and 76 per cent of practices (McKenzie and Woodruff, 2017), measured using the same business practice index. In comparison, this means that Mozambique's manufacturing enterprises do not perform worst in terms of managerial abilities, but there remains significant room for improvement. The practices that we inquired about reflect key business practices used in the day-to-day running of small firms and "best practices" that all firms would benefit from adopting. We have found that there has been no improvement over time in the level of management quality. This is somewhat surprising because, already in the 1990s, the Mozambican government had the goal of improving and supporting firms' management capabilities.

In regard to which firms use the most management practices, we find that overall usage as well as the relative importance of cost & record keeping and financial planning practices increases with firm size. Larger firms that have a female owner/manager are particularly well-managed because these women are generally better educated and trained than men that lead larger firms.

We do not find clear evidence that business practices affect firm performance in the Mozambican manufacturing sector and hence cannot confirm the finding of McKenzie and Woodruff (2017). They find for a sample of firms from seven emerging countries a significant and positive association between firm sales and both the aggregate business practice index and the sub-indices. In their case, marketing practices (sub-index A) and record-keeping practices (sub-index C) have the strongest association with firm outcomes. We find that cost & record keeping (sub-index C) and financial planning practices (sub-index D) affect firm value added. This effect disappears, though, when accounting for time-invariant unobserved firm characteristics. This indicates that better managed and better performing firms in the Mozambican manufacturing sector are fundamentally different from worse managed firms in many dimensions. We do not find that the use of management practices affects labour productivity.

The results presented in this chapter suggest that the Mozambican government should pay more attention to how manufacturing firms in the country are managed. Manufacturing firms are regarded as the primary vehicle for achieving the structural transformation of the economy in its current industrial and development strategies. Thus, better management is one of the aspects that can be

improved and positively contribute to the economy. The general level of management quality could be brought up from the current relatively low level, which in turn could set off productivity growth within the manufacturing sector. Specifically, management training targeted at financial planning practices could be used, for example, since we find some indication that better financial planning could have a large effect on firm performance. In a review of the literature on management training, McKenzie (2021) argues that such trainings typically have a positive but small effect on firm performance. However, if trainings are better targeted and tailored towards different firms' needs, they could likely lead to a much larger impact (ibid).

Another form of policy intervention could be to broaden entrepreneurial training opportunities in schools and universities. While it is still relatively sparse, there is some evidence from other countries in sub-Saharan Africa that such entrepreneurship education, which has been increasing in many African countries, can improve entrepreneurial success (Gielnik et al. 2016; Pedrini et al. 2017; Anosike 2019).

One policy target could also be to promote more women into leadership positions, given that we find that female owners/managers of larger firms (small and medium) use more management practices in the Mozambican manufacturing sector. It is important to keep in mind, though, that micro-sized firms owned/managed by women were outperformed by their male counterparts in terms of managerial abilities. These firms may need special attention in order to raise the general level of management capabilities and entrepreneurial spirit and boost the manufacturing sector, which Mozambique has been trying to achieve since 1997 but still has some way to go to achieve.

Our results show that management practices alone cannot explain why some firms perform better than others do. It appears that better performing firms are different from worse performing firms in many dimensions – the use of management practices being only one of them. Therefore, improving only the level of management quality in the Mozambican manufacturing sector while neglecting these other dimensions will not be sufficient for achieving structural transformation and development goals. A holistic approach is needed that could incorporate some of the above suggested policies targeting firm management but goes beyond that in order to fundamentally help the manufacturing sector in Mozambique.

8 Employment

Since the mid-1990s, Mozambique has been growing much faster than other sub-Saharan African countries. Yet, this rapid economic growth has not been accompanied by an adequate expansion of the relative share of manufacturing in income or employment (Jones and Tarp, 2015). Employment creation is key in Mozambican public policies to deal with the increasing population of young job seekers. In the last two five-year government programmes (GoM, 2015, 2020), job creation is prioritized to foster productivity and increase living standards.

Moreover, structural transformation needs to be encouraged not only in terms of a growing manufacturing sector but also regarding job quality (Lachler and Ricaldi, 2021). Job quality encompasses several economic and non-economic dimensions such as fringe benefits or training provision. Better quality jobs not only enhance the well-being of workers but may also improve enterprise performance (Hall et al., 2016). While not yet focusing on measuring employment quality, the Mozambican Government in its Five-Year Programme 2020-2024 (PQG 2020/2024) emphasizes the need to create positions for professional trainees, thereby targeting the young population and female workforce (GoM, 2020). Further, female human capital is underrepresented in wage-based jobs, such that there remains a lot of scope for improvement regarding labour market opportunities for women (Gradín and Tarp, 2019).

This chapter looks into several aspects related to the workers that the interviewed manufacturing firms employ. It starts analysing the development of the total number of jobs that the sample has provide during the last decade. Second, it explores the participation of women in the manufacturing workforce. Third, it investigates job quality and wage levels of employees. Fourth, the chapter implements a regression analysis to determine whether providing professional training to employees is associated with higher enterprise performance.

8.1 Workforce composition

In the Mozambique Jobs Diagnostic published by the World Bank, Lachler and Ricaldi, (2021) present an overall decrease in the total labour force of the manufacturing sector between 2009 and 2017. The IIM balanced sample shows similar results for the same period. During each survey rounds, we asked about the number of the total workforce in the current year and the two previous years. Thus, we have workforce data from 2010, 2011, 2012, 2015, 2016, 2017, 2020, 2021, 2022. Figure 8.1 presents the development of the total labour force between 2009 and 2022, as well as the total labour force by the

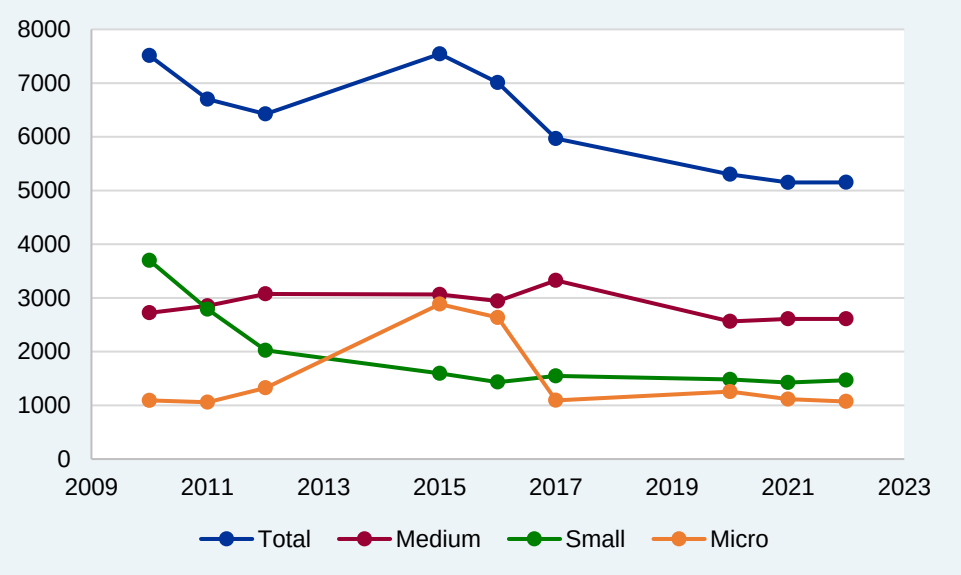
firm size categories micro, small and medium[6] . In 2009, firms in the balanced sample jointly employed more than 7,500 workers. In 2017, this number had dropped by 20 per cent to approximately 6,000 workers. After 2017, the negative trend continued by dropping to slightly more than 5,100 workers in 2022. Over the last decade, the 355 sampled firms have lost close to 2,500 jobs.

Small enterprises were the drivers of the loss of jobs. In 2009, most of the workforce was employed in small enterprises, which provided around 3,700 jobs. In 2022, the number has declined by more than 50 per cent accounting for only 1,500 workers employed in small firms. The decrease in employment among small firms was most severe between 2009 and 2016, during which the economic crisis occurred. From 2017 until 2022, the number of jobs among small firms remained stagnant. Many small firms shrank in size and became micro enterprises, which is reflected by the increase in employment among micro firms between 2011 and 2016. Further, during the COVID-19 pandemic, mostly medium-sized enterprises lost jobs.

In sum, enterprises have decreased in size, with the 2022 survey round accounting for more micro firms and fewer medium firms compared to 10 years ago. These results are against a direction towards a path for structural transformation, as manufacturing firms are reducing in size. However, it is essential to remember that these data are retrieved from the IIM balanced sample, which does not account for all the new enterprises founded after 2012. However, the Mozambican enterprise census (CEMPRE), which is representative of formal manufacturing enterprises in Mozambique, illustrates similar negative employment trends (Lachler and Ricaldi, 2021). Moreover, the firms that were newly added in 2022, only have a slightly larger average workforce than the balanced sample. This means that the manufacturing firms that were founded in more recent years are not replacing the jobs that were lost in the older manufacturing firms. Thus, a general loss of jobs in the manufacturing sector is a valid and generalizable finding for Mozambique.

[6] Note: In this report we are following World Bank size categories definition. Micro firms account for a maximum of 9 employees, small firms up to 49 and medium firms from 49 to 300.

Figure 8.1: Total jobs composition by size categories

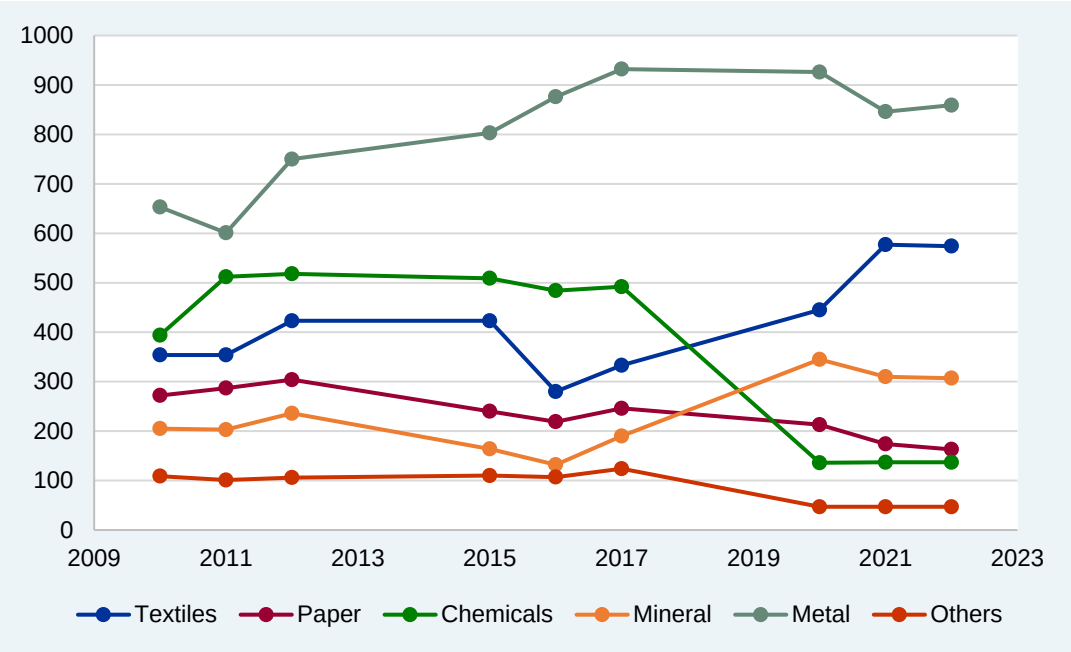


Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

Figure 8.2a and 8.2b present the evolution of the workforce by manufacturing industries. As the number of jobs in the wood and food industries is much higher than in other industries, we create two figures to facilitate the comparison. The food and wood industries provided the highest number of jobs in all three survey rounds. Despite being one of the biggest labour force providers, the wood industry, which mainly consists of carpenters, has lost more than half of its jobs between 2009 and 2022. Jobs in the food industry have remained relatively stable over ten years, implying that food processors belong to the industries with the smallest workforce declines.

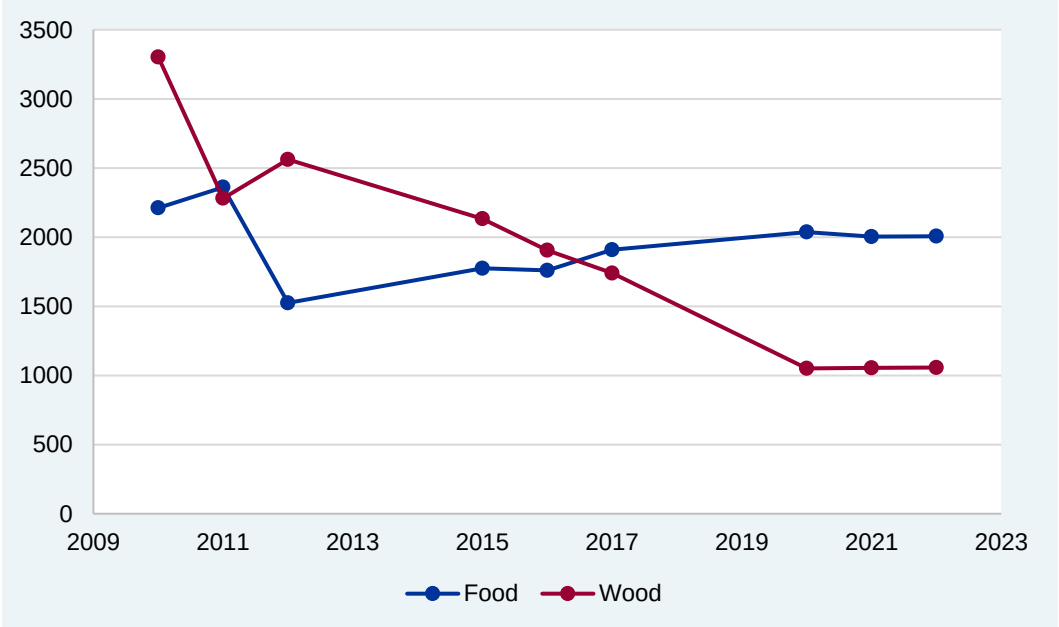
Another industry that lost many jobs is the chemical industry, which experienced a 50 per cent reduction in its workforce. On a positive note, the non-metallic mineral (brick makers), metal (black smiths) and textile (tailors) industries are reporting higher workforce levels in 2022 than in 2009. Meanwhile, the food and paper industries have experienced the smallest workforce declines.

Figure 8.2a: Workforce evolution by sector



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

Figure 8.2b: Workforce evolution by sector



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

It is worrisome that the manufacturing sector has lost a substantial number of jobs over a decade. Unfortunately, chemical enterprises lost a particularly high share of its workers, despite having the potential to grow and employ more sophisticated industrial processes that can contribute to the

economy's structural transformation. Enterprises with the biggest potential to grow and sophisticate their operations seem to be shrinking or dying over time. At the same time, the smallest enterprises with the most basic activities continue to operate because they have no alternative, but even they have lost jobs. The loss of employment is contrary to what Mozambique has to achieve – creating additional jobs – to attain inclusive growth and reduce poverty (Lachler and Ricaldi, 2021).

On a positive note, the number of increasing jobs in the non-metallic mineral sector is somewhat in line with the government's intention to expand the extractive industrial activities, i.e., the non-metallic mineral sector, (GoM, 2020: p.7). Lachler and Ricaldi (2021) present the "prospect of major inflows from the extraction of natural gas and other minerals" as a transformative opportunity to create employment. Thus, in the next years, the non-metallic mineral sector might continue growing.

8.2 Female employment

The persistence of teenage pregnancy (Mozambique ranks fourth in adolescent fertility rate worldwide) and child marriage limits women's capability to join the labour market. Most Mozambican women who work outside their households are employed in lower-paying agricultural jobs (Lachler and Ricaldi, 2021). Unequal access to education similarly explains the lower representation of women in the labour market. This section studies female workers in the manufacturing sector and identifies the firm characteristics that correlate with a higher share of female workers.

Just as the total workforce has decreased over time, the total female workforce has decreased. In 2012, 126 enterprises reported at least one woman among their workforce, whereas this number dropped to 91 in 2022. Not only the number of firms employing women has decreased but also the number of female workers. Specifically, the share of female workers has reduced by 15 per cent in the analysed decade from 692 female employees in 2012 to 587 in 2022. Table 8.1 shows the average share of female labour by size, sector, and formality level. In the past ten years, the average share of female employment in the surveyed enterprises has decreased by one percentage point, from 6.8 per cent to 5.8 per cent of female workers.

Across all surveyed years, medium firms had the highest female labour share. Among the workforce of medium-sized firms, approximately 15 per cent are women, and this share has remained steady over time. The female workforce of small firms has increased, from 9.6 per cent in 2012 to 13.3 per cent in 2022, whereas the female workforce of medium firms dropped from 4.8 to 3.3 per cent in the same period.

Regarding the specific industries, the highest shares (above 10 per cent in each) of female employees are recorded – in a descendent order – in the paper (bookbinding), chemicals, textiles (tailors) and food (bakeries and mills) industries. The wood (carpenters), metal (black smiths) and non-metallic minerals (brick makers) sectors have a very low share of 2 per cent of female labour. Indeed, women are less likely to carry heavy loads, tasks that characterize the industries with few female workers.

Lastly, female employment appears to be more frequent in the formal sector. This finding goes against the literature (Malta et al. 2019, Quak et al., 2022) which shows a particularly high employment rate of women in the informal sector. In the case of Mozambique, it is mostly medium enterprises that employ women, and these enterprises tend to be more formal. Moreover, the firms in the bookbinding and chemicals sectors that employ more women are also more likely to be formal. Mozambican women are more active in non-manufacturing industries, especially in the agricultural sector. Manufacturing is dominated by men.

Table 8.1: Average share of female labour by year and industries (%)

	2012	2017	2022
Female Labour Force	**6.8**	**6.6**	**5.8**
Micro	4.8	5.3	3.3
Small	9.6	10.1	13.3
Medium	14.5	9.8	14.7
Observations	**355**	**355**	**355**
Food	10.7	13.3	10.8
Textiles	20.6	15.5	11.9
Wood	3.0	4.0	2.6
Paper	12.3	14.2	26.2
Chemicals	10.0	11.1	19.0
Minerals	3.9	1.9	2.5
Metal	2.4	2.0	2.1
Others	10.6	4.9	3.2
Observations	**355**	**355**	**355**
Formal	10.1	7.6	8.2
Informal	2.9	4.0	1.8
Observations	**355**	**355**	**355**

Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

8.3 Wages

This section looks at the evolution of wages over the last five years across manufacturing industries. To be able to compare values across time and space, the numbers reported are deflated both temporally and spatially using the most recent inflation data from the National Institute of Statistics (Instituto Nacional de Estatística, INE) as well as the Household Budget Survey (Inquérito ao Orçamento Familiar, IOF) 2014/15. The figures are deflated using an index that takes Maputo City in 2015 = 100 as point of reference. The spatial weights are constructed from the IOF 2014/15 based on 10 so-called

domains, which roughly represent urban-rural divisions across one or two provinces. To account for the developments since 2015, we rely on INE's consumer price index, which is published for each province individually. On top of spatial and temporal deflation, in order to avoid outlier bias, the top and bottom 1 per cent of each variable are winsorised, i.e., set to the values of the 1st and 99th percentile.

The employees' wages have remained stagnant in the balanced sample between 2017 and 2022. The average wage only increased by a bit more than 1 per cent but the median wage has fallen from 4,464 to 4,227 Meticais. When looking at the wage change by province (see Figure 8.3), we find that the sample's stagnant average wage stems from some provinces experiencing a wage increase and others a decrease. Tete is the province where the average wage increased the most (by one-third), followed by a 17 per cent wage increase in Gaza. In contrast, the wages in Manica and Maputo Province declined by 17 and 14 per cent, respectively. Nampula Province holds the highest average wage level in the country.

The wage changes are not in line with the 30 per cent increase in the legally mandatory minimum wage for the manufacturing sector between 2017 and 2021 (Wage Indicator, 2022). In 2017, one-third (33 per cent) of the firms in the balanced sample paid the minimum wage to at least one of their workers. This share fell sharply to only 17 per cent in 2022. This might be explained by the fact that fewer firms were able to pay the minimum wage in 2022 than in 2017, partly because the legal minimum wage has increased in the past five years.

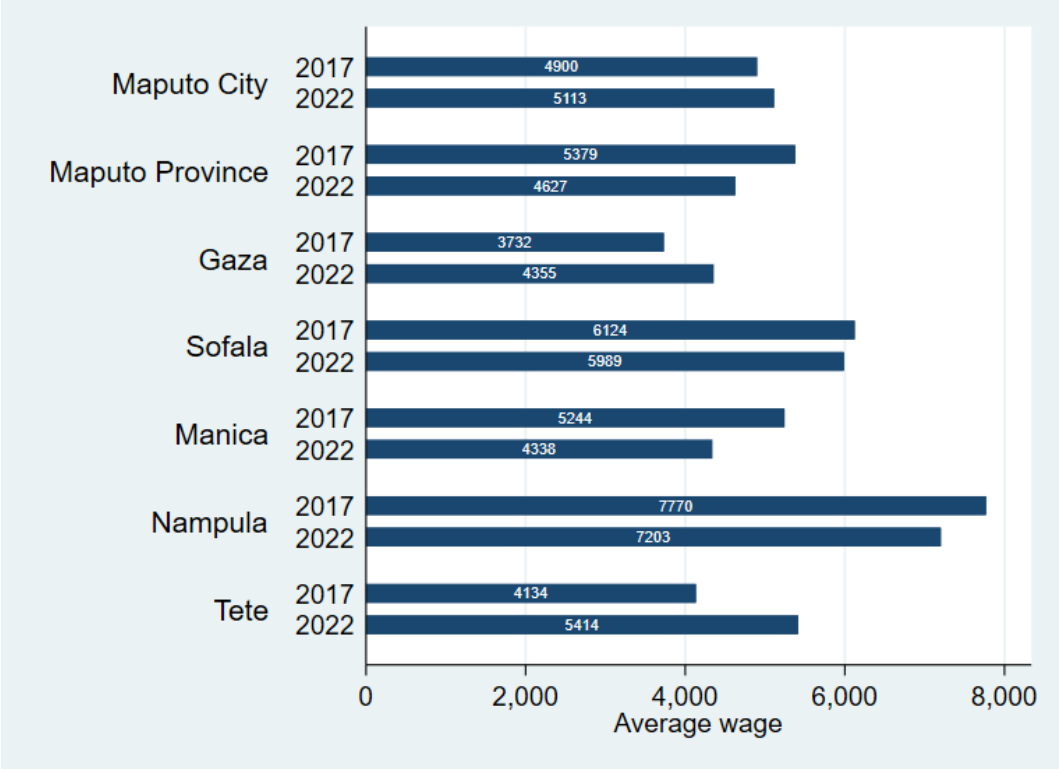
Table 8.2 presents the average wage level by size category, industry, and level of informality in 2017 and 2022. Among medium and small firms, the average and medium wages have significantly decreased in the past five years. Specifically, the average wage of medium firms fell from 9,735 to 6,605 Meticais. Among small firms, the drop from 7,676 Meticais to 7,002 Meticais was a bit less drastic.

In 2017, the paper industry was the most remunerative sector, while in 2022 the non-metallic mineral sector reached the highest salary level. Its noteworthy that, median values from 2022 are lower compared to the 2017 level. It is worrisome to see that the wage levels between 2017 and 2022 have not improved. This implies that the situation of employees has probably worsened as salaries remain the same, but challenges have increased due to the COVID-19 pandemic.

Not surprisingly, the wage level in the informal sector is much lower compared to the formal sector but the gap has decreased in the last five years. In 2017, the average wage in the formal sector was

almost double than in the informal sector. In contrast, five years later, in 2022, the informal sector's average wage was two-thirds of the formal sector wage.

Figure 8.3: Wage level by province and year



Note: Balanced panel
Source: Authors' calculations based on IIM 2017 and 2022 data

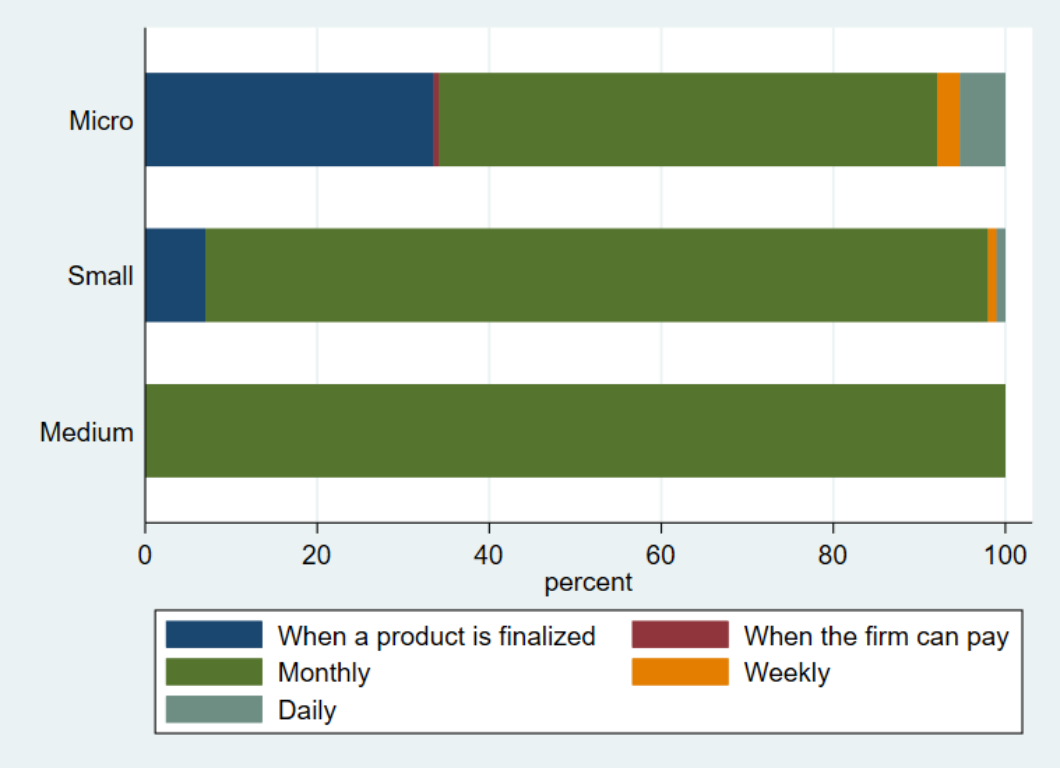
Table 8.2: Wage level by enterprise characteristics and year

	2017		2022	
	Mean	Median	**Mean**	Median
Micro	4,218	3,719	4,884	3,380
Small	7,676	6,036	7,002	5,436
Medium	9,735	6,631	6,605	5,446
Observations	**355**	**355**	**355**	**355**
Food	6,910	5,268	5,755	4,448
Textiles	5,489	4,464	4,149	2,958
Wood	4,712	4,465	5,167	3,877
Paper	9,036	7,439	6,361	6,250
Chemicals	5,035	5,686	6,327	6,944
Minerals	6,041	4,800	6,973	3,958
Metal	4,296	3,018	5,525	3,713
Others	8,255	7,258	4,613	5,071
Observations	**355**	**355**	**355**	**355**
Formal	6,090	4,973	5,915	4,755
Informal	3,332	3,021	4,517	2,893
Observations	**355**	**355**	**355**	**355**

Note: Balanced panel
Source: Authors' calculations based on IIM 2017 and 2022 data

Lastly, in the 2022 round, enterprises were asked with which frequency they pay out their employees' salary. Figure 8.4 presents the distribution of answers across firm size categories. All the sampled medium firms are paying the salary on a monthly basis. In contrast, more than 30 per cent of the micro firms and a bit more than 5 per cent of small enterprises do not pay a fixed salary to their employees. Instead, they pay wages whenever a product is finalized. These results shed light on the low capacity of micro sized firms in terms of financial resources. As micro sized firms represent more than 60 per cent of the sample, it is important to analyse their financial status (Chapter 4) and understand their access to credit (Chapter 11).

Figure 8.4: Type of wage payment across size categories



Source: Authors' calculations based on IIM 2022 data

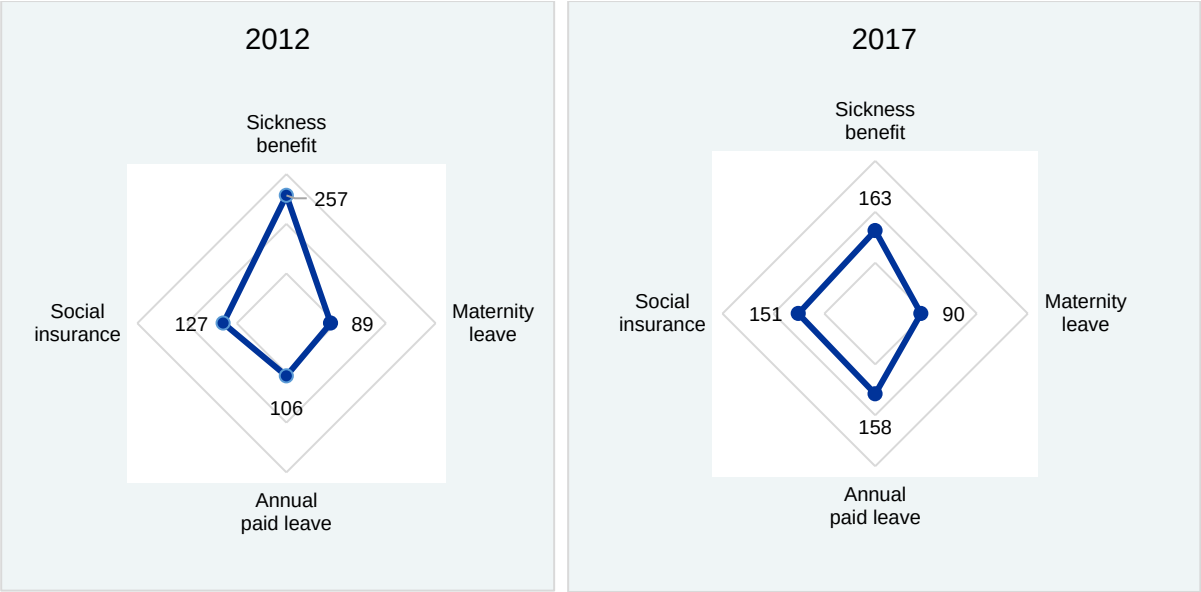
8.4 Job quality

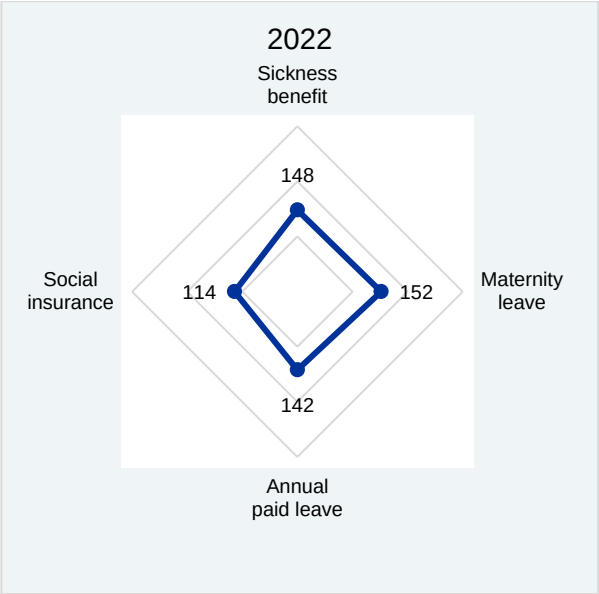
MSME performance is, to a great extent, influenced by the conditions under which employees carry out their tasks. Vice versa, work is often related to the quality of individuals' lives and well-being. Moreover, quality jobs are drivers of increased labour force participation and economic performance (OECD, 2014). The enterprises could offer fringe benefits to their employees to facilitate their working conditions and provide an incentive for longer employment. In line with several literature

contributions, we use the provision of fringe benefits as an indicator of job quality. This section aims to understand better the working conditions offered by Mozambican manufacturing enterprises. Ultimately, an ordered probit model is used to investigate how enterprise characteristics are associated with the quality of jobs.

The IIM questionnaire asked enterprises whether they provide voluntary fringe benefits to their employees. In particular, the questionnaire looked into four types of fringe benefits, namely, maternity leave, contributions to the national social security institute (INSS), sickness benefits and annual paid leave. Figure 8.5 shows the evolution across years of these four allowances among the balanced sample. In the three different panel (2012, 2017 and 2022), the three concentric axes represent respectively 100, 200 and 300 frequency level. In this way, the different frequency levels are comparable across the three survey rounds.

Figure 8.5: Fringe benefit provision across years





Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

The number of enterprises providing sickness benefits, i.e., receiving a share of the salary while being ill or injured, has decreased. The share of firms paying sickness benefits to their employees was extraordinarily high in 2012, around 72 per cent, but this percentage dropped to 46 and 43 per cent in 2017 and 2022, respectively. This decrease might be attributed to a mis-collection of data in 2012, as in our understanding, there are no major explanations for such a drop in sickness benefits provision between 2012 and 2017.

The number of social insurance providers (contributions to INSS) increased from 2012 to 2017, and fell again until 2022. Strengthening basic social welfare services was one of the priorities in the Mozambique National Basic Social Security Strategy (ENSSB2) released in 2016. The publication of this policy might have incentivised enterprises to provide social insurance for employees and thus explain the rise in 2017. After that, the COVID-19 -related crisis might have made it more challenging for enterprises to contribute to the social protection system, resulting in enterprises withdrawing the provision of social insurance for employees. It is disconcerting to see that during the past 10 years, it has been impossible to increase the number of social insurance contributors among the 355 enterprises that are, on average, more formal and bigger than the majority of Mozambican firms. We also find that the share of social insurance contributors is very similar, even among the younger firms that were newly added to the sample in 2022. Thus, the social insurance system is staying at the same size in terms of contributing manufacturing firms.

On a positive note, the number of enterprises providing maternity leave benefits – paid or unpaid – and annual paid leave have increased between 2012 and 2022. In 2012, there were only 89 enterprises

providing maternity leave to their female employees, while in 2022, the number has increased to 142. These results are particularly important in a country where the pregnancy rate is high, and female workers often do not have access to the same opportunities as male workers (Gradín and Tarp, 2019).

In addition to the questions on fringe benefits provision, the IIM survey includes two additional questions related to job quality: whether the firm provides formal work contracts to its workers and whether it provides training to them. While giving training is correlated with better working conditions in the academic literature (Kis, 2016; ILO, 2022), it is less evident that stipulating a formal contract could improve job quality levels.

In Mozambique, where most enterprises operate informally or semi-formally, it is reasonable to believe that the effort to formally agree on employment conditions by itself constitutes an achievement regarding job quality. Table 8.3 reports the share of firms with formal written agreements and the ones who provided training by year and across size categories. It is important to recognize that a formal written agreement alone does not imply a complete enterprise formalisation. Still, it might be an intention to acknowledge workers' rights.

Table 8.3: Provision of training and formal contracts to workers (%)

	2012		2017		2022	
	Training	Formal Contract	Training	Formal Contract	Training	Formal Contract
Balanced Panel						
Total	9.3	41.3	22.5	44.7	9.4	37.9
Micro	5.5	25.1	18.3	31.1	4.8	20.9
Small	17.0	65.8	29.6	74.6	22.2	84.7
Medium	15.3	96.1	44.4	96.3	25.2	93.7
Observations	**355**	**355**	**355**	**355**	**355**	**355**
Unbalanced Panel						
Total	8.4	46.6	22.0	48.5	10.7	37.2
Micro	4.2	26.6	17.5	33.3	6.2	21.5
Small	13.25	71.5	23.2	77.8	21.0	81.0
Medium	19.5	92.7	55.0	97.50	36.4	90.9
Observations	**831**	**831**	**460**	**460**	**475**	**475**

Note: Balanced and unbalanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

Overall, the share of enterprises providing a formal written contract to their employees has slightly decreased over time, from 41.3 per cent in 2012 to 37.9 percent in 2022. The likelihood of having a formal agreement increases with firm size and almost all medium-sized firms have a formal contract with their employees. The shares of firms providing worker training are much lower, but they also increase with size across year. Between 2012 and 2017, there was an increase in worker training, but in 2022 the level has fallen back to the 2012 level (9.4 per cent). Not surprisingly, medium firms provide more training opportunities, likely because they have more resources and need of specialized workers.

Trends in the unbalanced dataset do not differ significantly from the trends in the balanced sample. Yet, the share of medium firms that provide training for employees is slightly higher in the unbalanced sample across all years. The results are probably driven by the different representations of size categories in the two panel datasets. Indeed, the unbalanced sample accounts for a higher number of medium firms (10.7 per cent) compared to the balanced sample (6.5 per cent), and medium sized enterprises are more likely to provide training for their employees.

To assess the overall level of job quality in the manufacturing sector, we create a job quality index (JQI) accounting for all the dimensions analysed previously: four fringe benefits plus worker training and the provision of a formal contract. The job quality index ranges from 0 (not providing any benefits) to 6 (providing all the benefits). Table 8.3 presents the enterprises' share for each value of the index, for both the balanced and the unbalanced sample across years, as well as the average value of job quality. On average, the job quality is low and has not improved over time. It fluctuated around 2 (out of a maximum of 6) in both the balanced and the unbalanced sample, and during all three survey rounds.

Table 8.4: Job Quality Index (JQI) across years (%)

JQI	2012		2017		2022	
	Balanced	Unbalanced	Balanced	Unbalanced	Balanced	Unbalanced
0	16.3	13.4	27.9	25.6	40.3	37.9
1	28.7	25.3	18.3	18.0	13.8	13.5
2	18.8	20.1	11.8	11.1	6.8	7.2
3	11.0	13.0	11.0	11.5	13.5	15.8
4	14.4	14.3	14.1	14.6	8.7	8.6
5	9.0	11.8	11.3	12.6	13.8	12.8
6	1.7	2.2	5.6	6.5	3.1	4.2
Average	2.1	2.3	2.2	2.4	1.9	2.0
Observations	355	831	355	460	355	475

Note: Share might not add up to 100 per cent due to rounding
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

However, the share of enterprises that does not provide employment benefits has strongly increased from only 13 to 16 per cent in 2012 to 38 to 40 per cent in 2022. In contrast, the share of firms offering five or six benefits has slightly increased in the past decade. This result suggests that enterprises that were already providing benefits have decided to increase their employment quality.

Lastly, we run a probit regression to explore the enterprise characteristics that might determine the quality of jobs. In Table 8.5, we regress job quality (JQI) on enterprise characteristics (formality level, presence of female workforce, geographic location, and industry). The first column presents the result for the balanced sample and the second column for the unbalanced sample controlling for the balanced sample. Finally, year fixed effects are added to the analysis in the third column.

In all three regressions, we obtain a positive and statistically significant association between firm size and job quality. Thus, job quality increases with firm size. The association between firm size and formality, on the one hand, and job quality, on the other hand, is logical. Usually, bigger and more formal firms have more resources and are, therefore, able to provide better job quality. Moreover, the labour law also forces them to comply with job quality -related regulations. Second, there is a positive and strong association between employing female workers and job quality. The positive association between female employees and job quality is interesting and can probably be explained by the fact that bigger and more formal enterprises are more likely to employ female employees, while they are also more likely to provide better job quality. Reasonably, the job quality dimension of "maternity leave" feeds into the positive correlation. Only firms that employ women provide maternity leave, such that the index becomes higher for firms that employ more women relative to firms only employing men.

Third, level of firm formality and job quality are statistically significant and positively correlated. Just as with firm size, this makes sense as formal firms have more resources to provide better jobs and are even legally obliged to do so. The employment quality does not seem to significantly depend on the gender of the firm owner/manager or the industry of the firm.

These results are valid for both the balanced and the unbalanced sample, and when year fixed effects are taken into account. This means that our results are generalizable for the Mozambican manufacturing sector, and do not only represent a particular development of the 355 firms of the balanced sample that have survived for more than ten years.

Table 8.5: Job Quality Index (JQI) oprobit regressions

	(1) JQI Balanced	(2) JQI Unbalanced	(3) JQI Year Fixed Effects
Informal	-0.750***	-0.693***	-0.931***
	(0.101)	(0.0885)	(0.0966)
Female workforce	1.089***	1.109***	1.511***
	(0.126)	(0.111)	(0.144)
Firm size	0.362***	0.368***	0.423***
	(0.0456)	(0.0416)	(0.0493)
Woman-led	-0.0522	-0.0647	
	(0.165)	(0.134)	
South	0.0758	0.00346	
	(0.0846)	(0.0727)	
Food	-0.153	-0.0318	
	(0.275)	(0.215)	
Textiles	0.0373	0.361	
	(0.297)	(0.229)	
Wood	-0.504*	-0.328	
	(0.268)	(0.208)	
Paper	0.305	0.397	
	(0.350)	(0.262)	

Chemicals	0.0729	0.167	
	(0.476)	(0.381)	
Mineral	-0.645**	-0.388	
	(0.302)	(0.238)	
Metal	-0.658**	-0.367*	
	(0.275)	(0.214)	
Balanced		-0.0517	
		(0.0851)	
Year FE	No	No	Yes
Observations	710	935	1,065
Psuedo-R^2	0.198	0.200	0.517

Note In regression (1) and (2) the R^2 refers to a pseudo R^2 .
*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

8.5 Performance and training

We use a linear probability regression to understand how providing professional training to employees is associated with firm performance. Revenue, value added, and labour productivity are used as measures of enterprise performance. Tables 8.6-8.8 respectively present the regression results. As in previous chapters, column 1 in each table reports the same simple regression without the variable of interest (worker training) but with all control variables: firm size, female ownership, industries, and geographical area.

In column 2, the dummy variable indicating a firm's provision of training for workers is added to the OLS regression. In column 3, an interaction variable is added to the regression, interacting firms that provide training and are located in the southern region of the country, where most of the job transformation has been concentrated (Lachler and Ricaldi, 2021). A dummy for the balanced sample is added in column 4, to understand whether the firms of the balanced sample are different from firms that left or were newly added to the sample. Lastly, column 5 reports the results of a 2-way fixed effects (FE) regression that controls for firm and year fixed effects. It checks whether unobserved time-invariant firm characteristics drive the OLS results.

Table 8.6 presents the regressions using revenue as the dependent variable. When adding training into the regression, the coefficient is positive and significant in both the balanced (2) and unbalanced sample (4). Firms that provide training to their employees have higher revenue. Yet, when fixed effects (5) are taken into account, the training coefficient loses its significance, meaning that the provision of training cannot causally explain a firm's revenue performance. Thus, the enterprises that provide training to their employees are substantially different from those that do not provide training in terms of revenue performance.

Table 8.6: Revenue and training

	(1) Revenue OLS	(2) Revenue OLS	(3) Revenue Interaction	(4) Revenue Unbalanced	(5) Revenue FE
Training		0.484*	0.244	0.635***	0.616
		(0.269)	(0.336)	(0.244)	(0.446)
South	0.0588	0.0374	-0.0324	-0.0848	
	(0.188)	(0.187)	(0.201)	(0.162)	
Training##South			0.427		
			(0.512)		
Firm size	1.198***	1.160***	1.166***	1.179***	0.668**
	(0.130)	(0.134)	(0.134)	(0.120)	(0.299)
Woman-led	1.262***	1.263***	1.273***	1.020***	0.912**
	(0.319)	(0.317)	(0.318)	(0.250)	(0.413)
Food	-0.466	-0.442	-0.457	-0.804*	
	(0.531)	(0.530)	(0.529)	(0.463)	
Textiles	-1.428***	-1.450***	-1.442***	-1.714***	
	(0.511)	(0.508)	(0.507)	(0.447)	
Wood	-1.452***	-1.426***	-1.440***	-1.670***	
	(0.496)	(0.494)	(0.495)	(0.424)	
Paper	-0.928	-0.950	-0.994	-1.149**	
	(0.856)	(0.855)	(0.859)	(0.580)	
Chemicals	0.142	0.107	0.0711	0.157	
	(0.734)	(0.741)	(0.739)	(0.774)	
Mineral	-0.642	-0.572	-0.577	-0.817	
	(0.573)	(0.572)	(0.572)	(0.497)	
Metal	-1.205**	-1.179**	-1.176**	-1.421***	
	(0.516)	(0.516)	(0.515)	(0.442)	
Balanced				-0.158	
				(0.183)	
Firm and Year FEs	No	No	No	No	Yes
Observations	710	710	710	935	710
R^2	0.32	0.32	0.32	0.35	0.09

*Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1*
Note: Balanced and unbalanced panel
Source: Authors' calculations based on IIM 2017 and 2022 data

In Table 8.7, value added is used as a performance indicator. The training dummy is not significant in the OLS regressions (2) (4), but it has a positive and significant coefficient in the 2-way fixed effects regression (5). This result suggests that providing employee training translates into higher value added, independently of specific firm characteristics. Moreover, the interaction term of south and training in regression (3) is positive and significant. Thus, enterprises that offer training to their employees and are located in the provinces of Maputo City, Maputo Province or Gaza are better performing in terms of value added.

Table 8.7: Value added and training

	(1) Value added OLS	(2) Value added OLS	(3) Value added Interaction	(4) Value added Unbalanced	(5) Value added FE
Training		0.293	-0.521	0.495	1.022*
		(0.369)	(0.617)	(0.309)	(0.577)
Training##South			1.445*		
			(0.793)		
Firm size	1.159***	1.137***	1.156***	1.197***	0.854**
	(0.170)	(0.174)	(0.173)	(0.139)	(0.384)
Woman-led	1.556***	1.556***	1.591***	1.055***	1.322*
	(0.409)	(0.408)	(0.411)	(0.308)	(0.716)
South	0.172	0.159	-0.0775	0.00952	
	(0.266)	(0.269)	(0.271)	(0.210)	
	(0.634)	(0.635)	(0.636)	(0.515)	
Textiles	-2.049***	-2.063***	-2.034***	-2.015***	
	(0.606)	(0.602)	(0.599)	(0.494)	
Wood	-2.188***	-2.172***	-2.220***	-2.108***	
	(0.562)	(0.559)	(0.563)	(0.462)	
Paper	-2.148*	-2.161*	-2.310**	-1.804**	
	(1.129)	(1.127)	(1.135)	(0.736)	
Chemicals	-1.053	-1.074	-1.196	-0.662	
	(1.511)	(1.515)	(1.490)	(1.284)	
Mineral	-1.020	-0.977	-0.995	-0.918*	
	(0.620)	(0.621)	(0.623)	(0.526)	
Metal	-1.773***	-1.757***	-1.748***	-1.755***	
	(0.578)	(0.577)	(0.580)	(0.481)	
Balanced				-0.736***	
				(0.187)	
Firm and Year FEs	No	No	No	No	Yes
Observations	710	710	710	926	710
R^2	0.206	0.206	0.212	0.266	0.149

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*
Note: Balanced and unbalanced panel
Source: Authors' calculations based on IIM 2017 and 2022 data

The last performance indicator is labour productivity, which is assumed to be the closer performance indicator to professional training, as it is the labour force that receives the training, and the indicator refers to their performance instead of the overall firm's performance. Table 8.8 presents the results of the five regressions. Among the OLS regressions, only regression (4) shows a significant and positive training coefficient. So far, we can only confirm that enterprises that provide training are more labour-productive. Thus, we look at the FE regressions (5) to control for unobserved firm characteristics that might be the actual determinants of performance instead of training. The coefficient of training remains positive and significant at the 5 per cent level. This result suggests a causal relationship between training and labour productivity, bringing evidence for creating upskilling opportunities to advance enterprises' productive performance.

Table 8.8: Labour productivity and training

	(1) Labour Productivity OLS	(2) Labour Productivity OLS	(3) Labour Productivity Interaction	(4) Labour Productivity Unbalanced	(5) Labour Productivity FE
Training		0.374	-0.266	0.533**	0.946**
		(0.309)	(0.519)	(0.261)	(0.477)
South	-0.195	-0.211	-0.397*	-0.342*	
	(0.226)	(0.228)	(0.234)	(0.180)	
Training##South			1.137*		
			(0.655)		
Firm size	0.228*	0.199	0.214	0.247**	-0.103
	(0.138)	(0.140)	(0.139)	(0.113)	(0.317)
Woman-led	1.262***	1.263***	1.290***	0.897***	0.929*
	(0.356)	(0.354)	(0.356)	(0.272)	(0.552)
Food	-0.939	-0.921	-0.962	-0.977**	
	(0.585)	(0.583)	(0.584)	(0.481)	
Textiles	-1.803***	-1.820***	-1.798***	-1.828***	
	(0.561)	(0.557)	(0.554)	(0.465)	
Wood	-1.976***	-1.956***	-1.994***	-1.938***	
	(0.530)	(0.526)	(0.530)	(0.441)	
Paper	-1.533*	-1.550*	-1.667*	-1.442**	
	(0.874)	(0.871)	(0.879)	(0.605)	
Chemicals	-0.687	-0.714	-0.809	-0.639	
	(1.135)	(1.142)	(1.122)	(0.952)	
Mineral	-0.991	-0.937	-0.951	-0.921*	
	(0.603)	(0.601)	(0.603)	(0.512)	
Metal	-1.706***	-1.685***	-1.678***	-1.725***	
Training	(0.547)	(0.544)	(0.546)	(0.460)	
Balanced				-0.540***	
				(0.164)	
Firm and Year FEs	No	No	No	No	Yes
Observations	710	710	710	926	710
R^2	0.066	0.068	0.073	0.094	0.124

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*
Note: Balanced and unbalanced panel
Source: Authors' calculations based on IIM 2017 and 2022 data

8.6 Conclusion

This chapter looked into selected characteristics of the labour force of the manufacturing MSMEs operating in Mozambique. It shows that the number of available jobs among firms that have been operating for more than a decade and are more formal than the majority of Mozambican enterprises, has decreased strongly. Specifically, the 355 sampled firms have lost almost 2,500 jobs between 2012 and 2022. New firms do not replace the lost jobs. In a context of a young and growing population in need of employment opportunities, these are very troubling trends.

Of the total workforce, only 6 per cent of the workers are women, and, just as the total number of workers has declined over time, the share of female workers has declined as well. Medium and formal firms are more likely to employ women. The participation of women in the manufacturing sector is extremely low, meaning that there is a lot of scope for improvement. A more inclusive job

transformation for women will require investment in quality education and better jobs matching. It is recommended that the Government of Mozambique adopt policies promoting the participation of women in its industrial sector.

Turning to wage levels, the chapter has drawn a picture of a manufacturing sector with relatively stagnant salaries in the last five years, with some exception for the chemicals, mineral and metal industries. Wage levels remain an important quantitative indicator of employment, and it should be closely monitored and compared with increases in the cost of living. The share of firms paying (at least) the minimum wage to their workers has strongly decreased. Moreover, many firms are unable to pay a regular salary to their employees. This sheds light onto the low financial capacities of firms. It is recommendable to encourage improvement of firms' financial capabilities.

Job quality is another important aspect to be taken into account. Between 2012 and 2022, the average job quality among manufacturing enterprises remained the same. Many enterprises have decreased the number of fringe benefits provided to their employees. An encouraging development is the increase in the share of enterprises providing maternity leave benefits – paid or unpaid - and annual paid leave between 2012 and 2022.

The various reforms and regulations that aimed at incentivizing enterprises to contribute to the national social security system (National Institute of Social Security, INSS) have missed their target among manufacturing sector enterprises. Between 2012 and 2022, the number of INSS contributors among these firms remained stagnant. Thus, encouraging INSS participation continues to be an important policy objective.

Whilst there is a small number of firms proving training to employees, our results demonstrate how upgrading the skill level in the work force is an important part of improving labour productivity. Thus, Mozambican policy makers should incentivize public and private investment in professional training of the labour force, with a specific attention to young and female employees.

9 Inter-firm linkages

In the 1990s, the Government of Mozambique set the objective to create and deepen inter-firm linkages. Inter-firm linkages consist of buying from or selling to other manufacturing firms or to firms in other sectors such as agriculture, as well as buying or selling not only in the district where the firm is located but also to neighbouring districts, provinces or to other countries. There are multiple direct and indirect policy measures to create and deepen inter-firm linkages, among these, the establishment of industrial zones, construction of public infrastructure, the support of business associations, and facilitation of exports. The purpose of this chapter is to examine the development of the manufacturing sector's inter-firm linkages.

Specifically, the academic literature has shown that the quality of inter-firm linkages can positively affect firm performance (Görg and Seric, 2016; Li et al., 2021). Backward linkages, i.e., the relationship firms have with suppliers of raw materials and services, may affect the quality of the goods a firm produces. Forward linkages, i.e., the relationship firms have with the buyers of their products, may improve their knowledge and technical capabilities if the buyers are willing to invest. For the survival and growth of firms, the functioning of input and output markets is essential. Only if firms are connected with one another and if the manufacturing sector is connected with agriculture, will structural transformation be possible. This chapter examines the forward and backward linkages of the manufacturing sector in Mozambique and investigates whether a firm's stronger geographical linkages are associated with a higher likelihood to innovate and invest.

9.1 Forward linkages

Figure 9.1 illustrates the distribution of enterprises' customer groups by firm size categories for the three survey rounds. In 2012, individual clients formed by far the largest customer group (95 per cent of the firms sold to individual clients). Over time and in all three size categories, the share of "individual costumers" has decreased relative to the other customer groups. Micro firms in particular mostly sold to individual clients as 75 per cent of their clients were individual clients in 2012. In 2017, the share of individual clients among micro firms had decreased to 62 per cent and in 2022, it dropped further to 55 per cent. The change in distribution can be explained by micro firms selling to more state-owned enterprises (SOEs), foreign direct investment (FDI) enterprises and non-commercial government authorities. Similarly, small enterprises experienced a large decrease of the individual customers group from 55 per cent in 2012 to 31 per cent in 2022 due to the growth of all other customer groups. Note that the large decrease of the individual customers group relative to other customer groups does not necessarily mean that individual customers have become fewer but that other types of customers have

become more, and that these other customer groups grew more than the group of individual clients. For example, a micro firm may still sell to the same number of individual clients as in 2012 or even to more individual clients, but after 2012, has additionally started selling to SOEs.

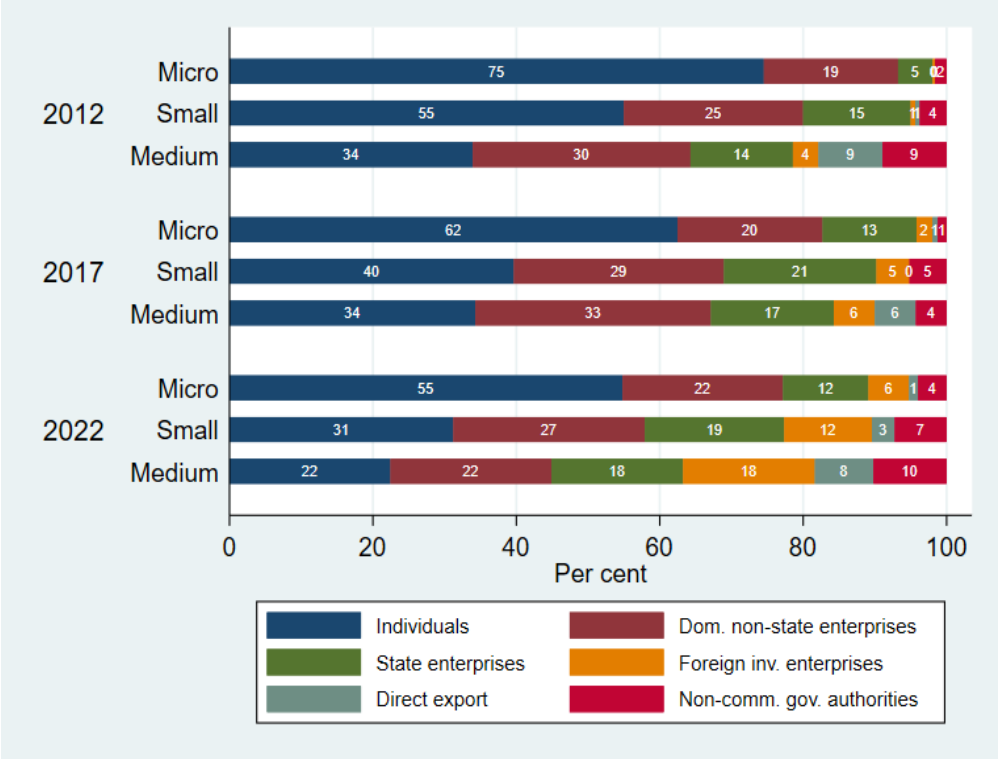
Domestic non-state enterprises, i.e., private enterprises, are the second largest customer group across years and size categories (42 per cent of the sample sell to private enterprises). Relative to the other customer groups, their share has not changed much over time. Among micro and small firms, their share only changed slightly over time, i.e., it increased or decreased by a few percentage points. We observe the most notable change among medium firms, for which the private enterprise share shrank from 33 per cent in 2017 to 22 per cent in 2022 because it became more likely to sell to FDI enterprises and non-commercial government authorities.

State enterprises form the third largest customer group and the group has increased over time (from 13 per cent in 2012 to 31 per cent in 2022). All firm size categories experienced an increase of SOEs as customers. In 2012, SOEs formed 5 per cent of micro firms' customers, 15 per cent for small firms and 14 per cent for medium firms' customers. These shares have decreased to, respectively, 12, 19 and 18 per cent in 2022. Thus, micro firms experienced the biggest increase of 7 percentage points.

Direct exports, i.e., clients in other countries, form the smallest customer group (3 per cent across all years and size categories). Almost no micro or small firms exported in 2012 and 2017. By 2022, a few small firms had started exporting, as direct exports form 3 per cent of their client groups. Among medium firms, the likelihood to export remained almost the same, as it decreased from 9 per cent in 2012 to 8 per cent in 2022. These simple descriptives are a sign that it is extremely challenging for Mozambican manufacturing firms to export their products. This does put the government's objective to stimulate the economy through exports in perspective, a goal that was already set in the 1990s (GoM, 1997).

Medium firms in 2022 have reached a good level of diversification in their forward linkages, with individuals and domestic non-state enterprises having the same share (22 per cent) followed by state enterprises and foreign investment enterprises (18 per cent). Micro firms, however, still have large scope for improvement. Most individual clients are not able to make substantial investments in firms to change and improve the firms' situation. Thus, one specific policy measure is for the Mozambican government to connect firms, and especially micro and small firms, with formal enterprises and non-commercial government authorities. Further, the Government of Mozambique should continue facilitating the exports of goods. However, for this to work, most firms will have to substantially improve the quality and complexity of their products to be competitive in foreign markets.

Figure 9.1: Customer groups by size and year

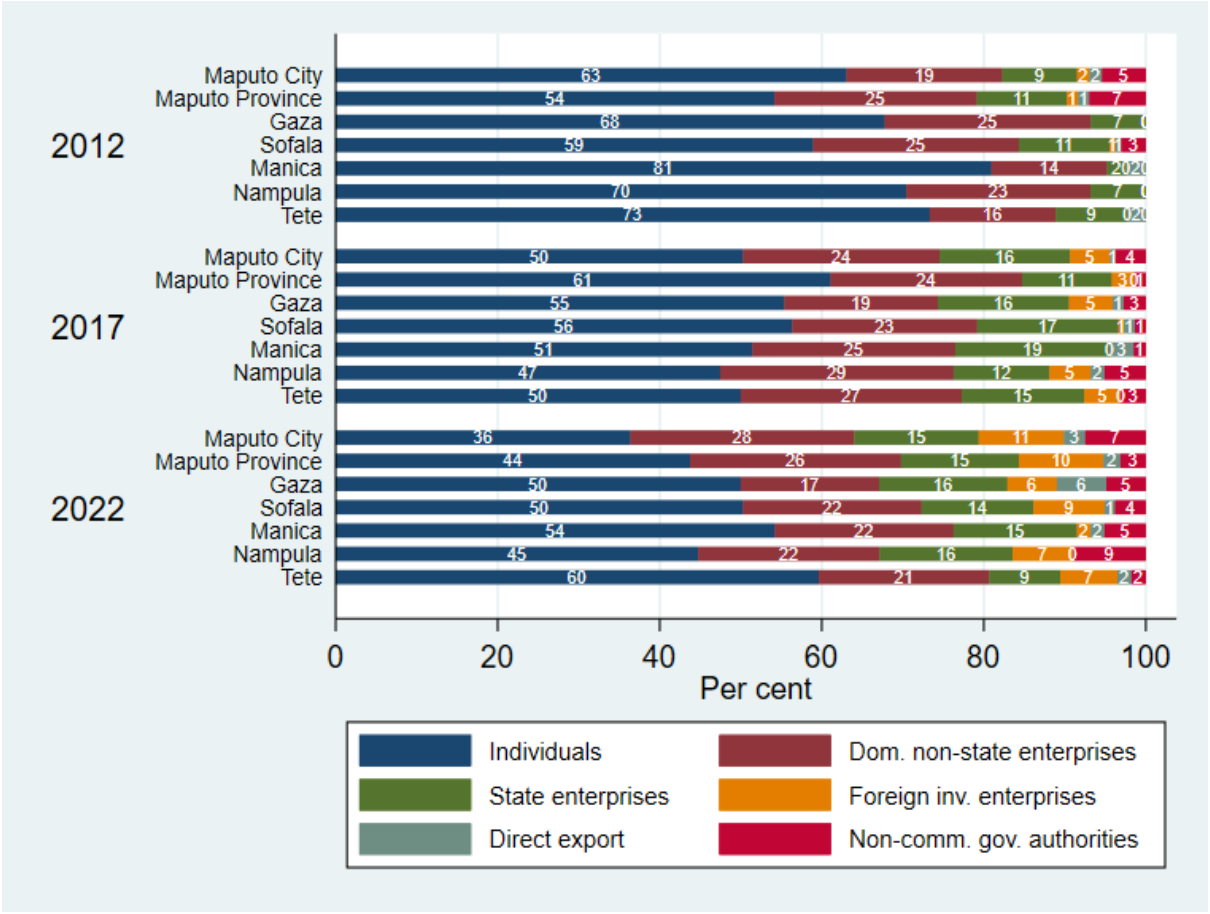


Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

Figure 9.2 provides information about the customer groups by province and time. In all provinces, it has become more common for firms to sell to non-state and state enterprises while the share of the individual clients group shrank over the 10-year period studied. This does not necessarily mean that firms lost customers but that the types of customers to which a firm is selling have become more diverse. Maputo City and Nampula have experienced the strongest shrinkage of the individuals customer groups, a drop from 63 and 70 per cent in 2012 to 36 and 45 per cent, respectively. At the same time, the group of private enterprises increased its share from 19 to 28 per cent in Maputo, but remained almost the same in Nampula. In Nampula, firms started selling to more SOEs and non-commercial government authorities, as their share has increased from 7 per cent and 0 per cent in 2012 to 16 per cent and 9 per cent in 2022 in the customer distribution.

Across all provinces, firms are more likely to sell to FDI enterprises in 2022 than in 2012 and 2017. Overall, all provinces managed to diversify their customer types, which is a positive development.

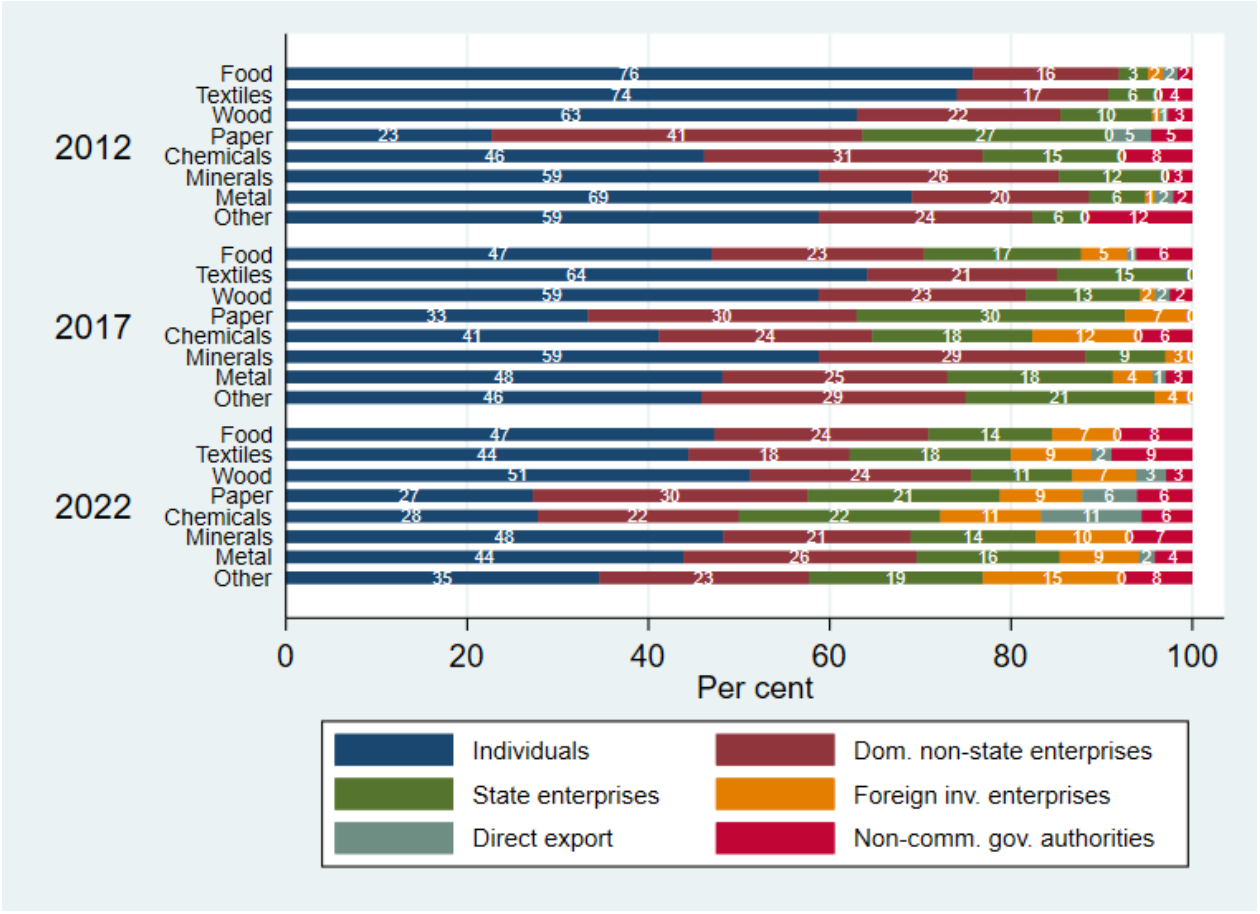
Figure 9.2: Customer groups by province and year



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

We examine the customer types by manufacturing sector and year in Figure 9.3. Unsurprisingly, the chemicals sector, which is one of the sectors with the highest performance, is least likely to sell to individual customers. As chemical products are often used in industrial processes, chemical firms mostly sell to other enterprises. Across all sectors, the share of individual customers has dropped. This is positive as it implies that all sectors have started to sell to more formal economic agents. The group of FDI enterprises as clients has increased in particular. Some FDI firms probably have sufficient investment capacities that could improve the manufacturing industry. Thus, the role of the Government of Mozambique is to encourage FDI enterprises to invest in local manufacturing enterprises, for example through training and provision of machinery.

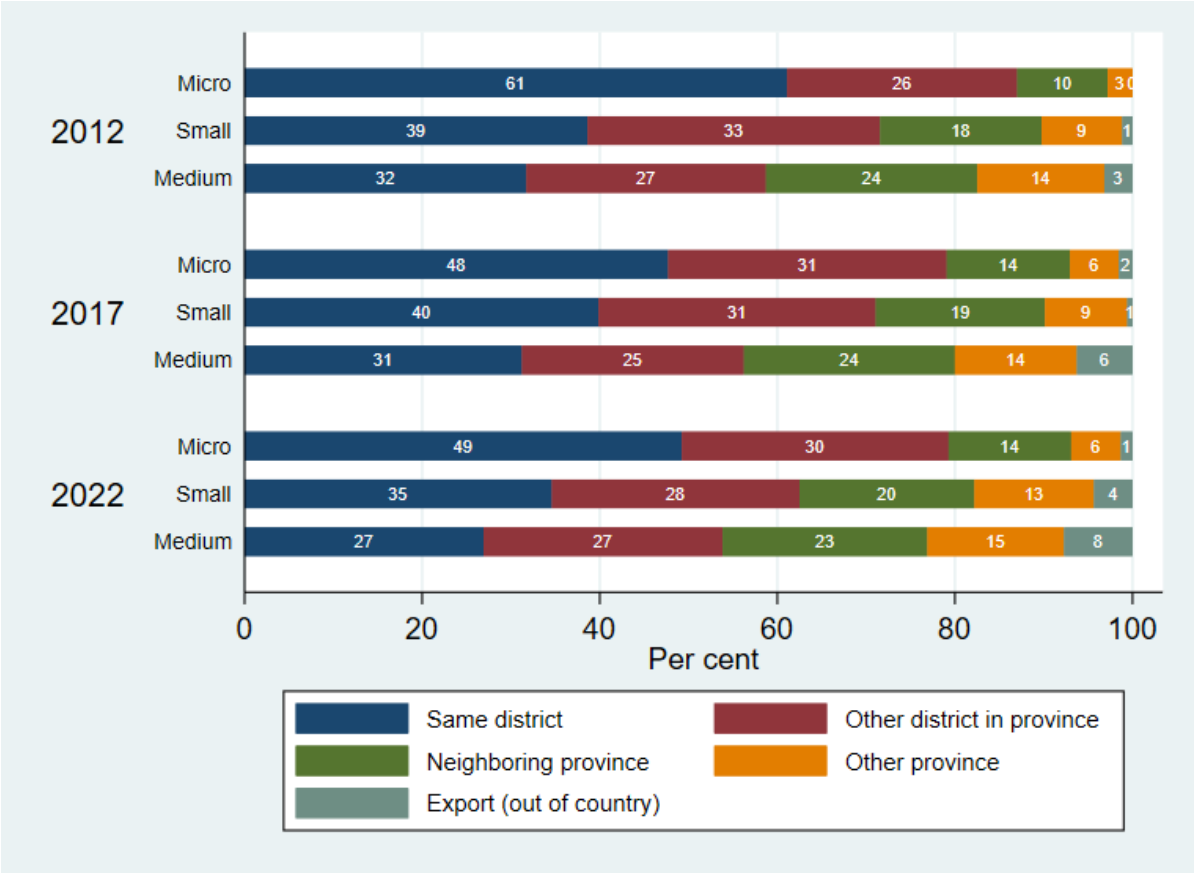
Figure 9.3: Customer groups by sector and year



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

Similar to the diversification of customer types, the locations to which firms sell have become more diverse (see Figure 9.4). Over time, sales to other non-neighbouring provinces and to other countries, i.e., exports, have increased in all size categories, but these increases are tiny. Even though the medium-sized enterprises are most diverse in terms of customer location, there have not been any sizeable changes between 2012 and 2022. The only notable change is that medium-sized enterprises are more likely to export, i.e., to sell to customers outside of Mozambique, in 2022 (8 per cent of medium-sized enterprise) than in 2012 (3 per cent).

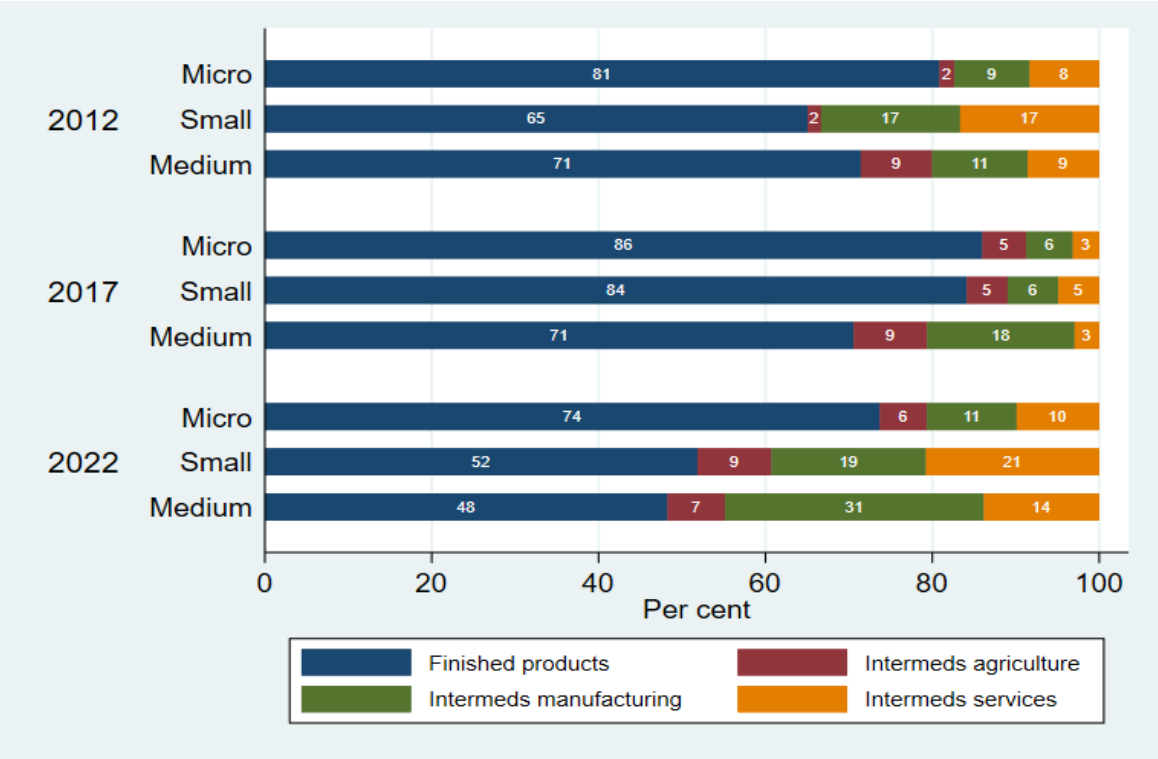
Figure 9.4: Location of clients by size and year



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

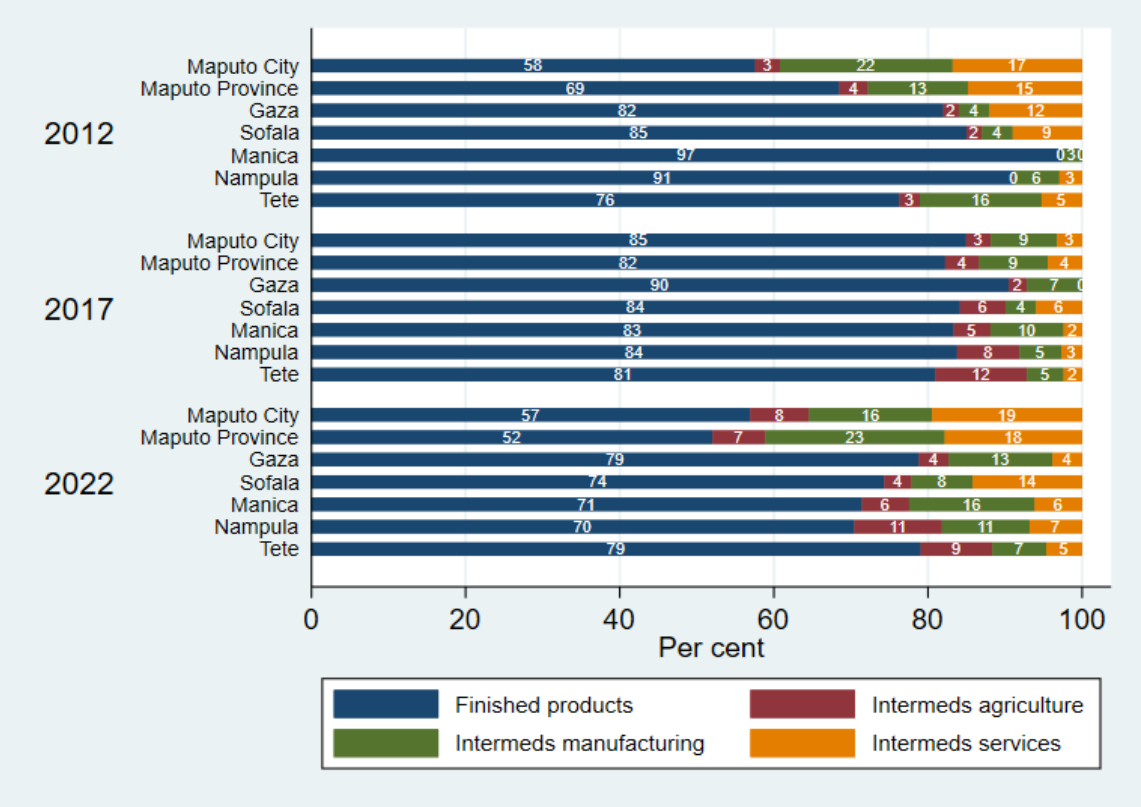
Figure 9.5 shows the type of product that firms sell, i.e., finished or intermediate. All size categories have diversified as they are selling more intermediate products to agricultural, manufacturing or service firms in 2022 than in 2012. Nevertheless, more than two-thirds of the products that micro firms sell and approximately 50 per cent of the products of small and medium enterprises were finished goods in 2022. One again, it is medium enterprises that diversified most, especially in terms of sales of intermediate goods to other manufacturing enterprises (11 per cent in 2012, 19 per cent in 2017, 31 per cent in 2022). Regarding the diversification of specific provinces, Manica is notable. Whereas firms in Manica almost exclusively sold finished products in 2012, this was only the case for 71 per cent in 2022, as sales of intermediate manufacturing goods increased strongly (see Figure 9.6).

Figure 9.5: Product types by size and year



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

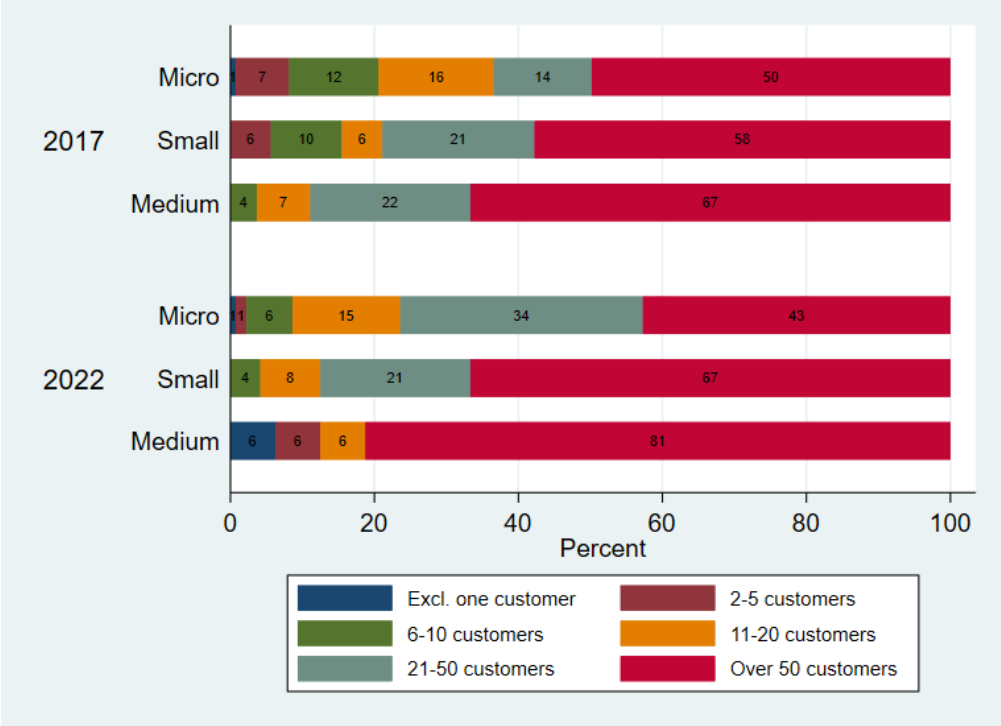
Figure 9.6: Product types by province and year



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

Figure 9.7 explores the number of customers that firms sell to by firm size. Most enterprises have more than one customer. We can identify several differences by size. First, among micro enterprises it has become less common to have more than 50 customers between 2017 and 2022, which is potentially a result of the COVID-19 pandemic. Instead, the share of micro firms selling to 21 to 50 customers is much higher (34 per cent) in 2022 than in 2017 (14 per cent). At the same time, the share of firms selling to a few customers (i.e., only one, 2-5 or 6-10) has decreased among micro firms too (20 per cent to 8 per cent). Among small and medium enterprises, the number of customers has increased starkly. Specifically, in 2017, some 58 per cent of small firms sold to more than 50 customers and this share increased to 67 per cent in 2022. Among medium firms, the share increased from 67 per cent to 81 per cent in five years (2017-22).

Figure 9.7: Number of customers by firm size and year



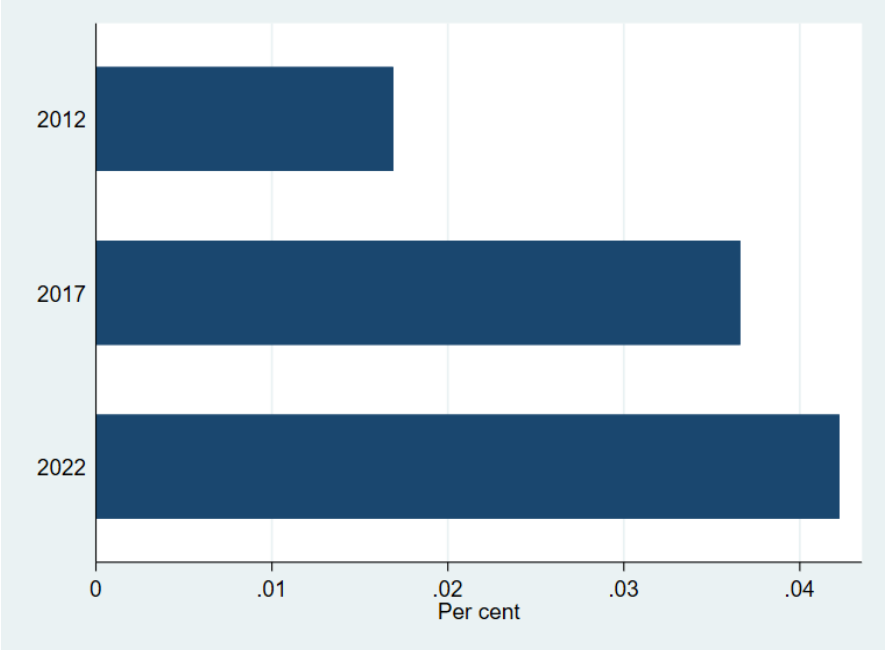
Note: Balanced 2017-22 panel
Source: Authors' calculations based on IIM 2017 and 2022 data.

Exporting can be highly beneficial for a firm. Exporting extends a firm's market beyond its home economy, might increase profits, spread risks and create new knowledge. Despite its many benefits, exporting is extremely rare in Mozambique. Even though the firms we are looking at have been in operation for more than ten years, less than 1 per cent export. On the bright side, Figure 9.8 shows that the frequency of firms that export has increased over time. In 2012, only 6 of the 355 firms said they were exporting, and this number increased to 15 in 2022. Most of the firms that export are located in Maputo City, sell to South Africa or other African countries and are of small or medium size.

In sum, the firms have become slightly more diverse over time in terms of who they are selling their products to. They are more likely to sell to private enterprises or state-owned enterprises (opposed to only selling to individual clients), which means that they are more connected with the formal economy. Further, enterprises diversified in terms of the locations that they are selling to in Mozambique and in terms of selling more intermediate goods instead of finished goods. Overall, they seem to have gained more customers over time. However, these results seem to be driven by the largest and most formal firms that are located in Maputo. This implies that the smallest and informal enterprises have not diversified over time.

On the downside, it continues to be uncommon for manufacturing enterprises to export their products and it seems to have become more difficult to find alternative suppliers.

Figure 9.8: Percentage of exporting firms



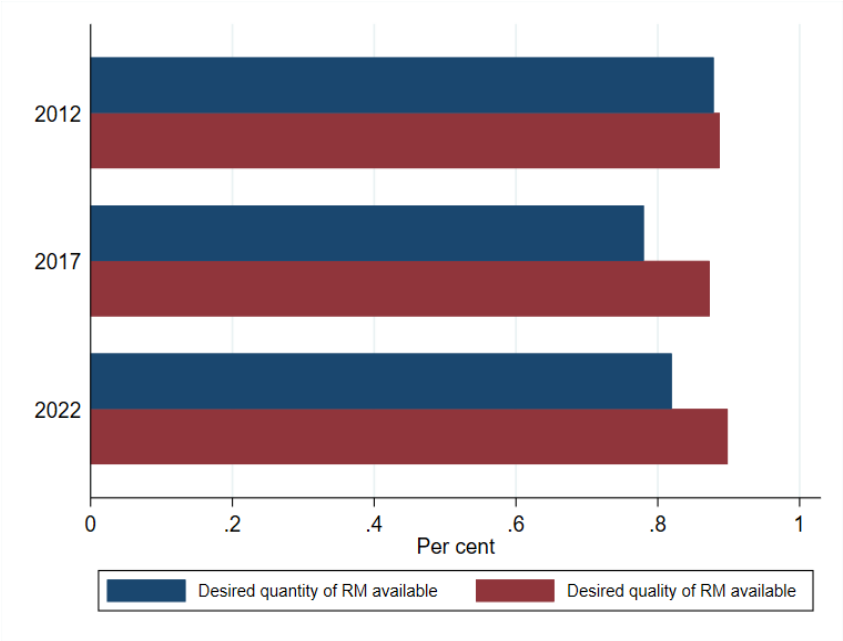
Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

9.2 Backward linkages

We turn towards backward linkages, i.e., the relationship firms maintain with suppliers. We start by looking at the raw materials firms buy. More than 80 per cent indicate that raw materials are generally available in the desired quantity and quality, and that this situation has not changed much over the study period (see Figure 9.9). When asked about the main criteria of selecting suppliers, more than 80 per cent say that a competitive price is important, followed by almost 70 per cent that mention quality standards. Secure supply and geographic proximity matter for about one-third of the sample. It is

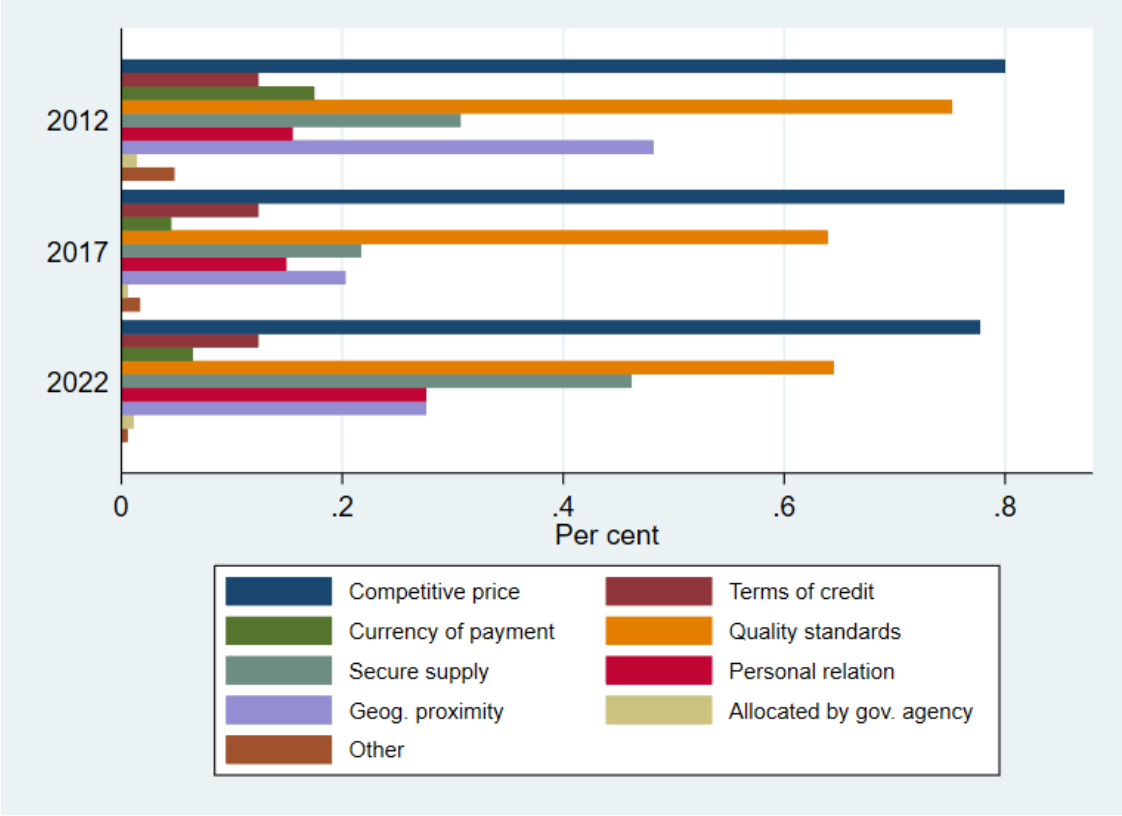
unusual for government agencies to indicate suppliers to firms as only 1 per cent of the firms report this to be a selection criterion (see Figure 9.10).

Figure 9.9: Availability of raw material



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

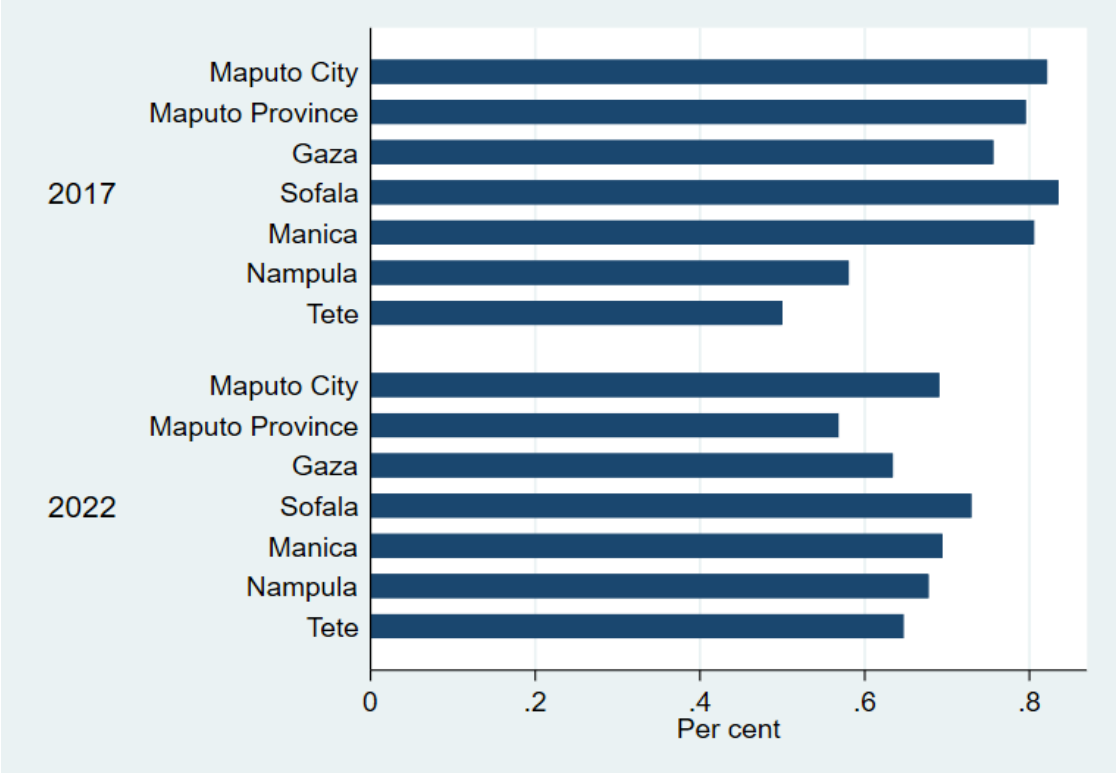
Figure 9.10: Criteria of selecting suppliers



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

In 2017 and 2022, we asked the firms if it was easy to find alternative suppliers in case the current supplier closed down. Figure 9.11 reports the firm's replies by province. In 2017, the replies varied widely from only half of the firms in Tete saying that it would be easy to find an alternative supplier to 85 per cent of the firms in Sofala saying it would be easy. These replies have changed by 2022. In Tete, it has become easier to find an alternative supplier, as 65 per cent said it would be easy. In the other provinces, it has become more difficult. The decrease is especially sharp in Maputo Province (85 per cent to 57 per cent). It seems to be driven by chemical firms, which overly reported in 2022 that it is more difficult to find an alternative supplier.

Figure 9.11: Firms indicating that it would be easy to find an alternative supplier by province (per cent)



Note: Balanced panel
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

Lastly, we asked the firms to evaluate the importance of specific actions they take in the relationship and their satisfaction with the main supplier. The actions can be summarized into two broad categories: communication and long-term orientation, while satisfaction consists of social and economic satisfaction. Firms could reply on a scale from 1 (=strongly disagree) to 7 (=strongly agree). The questions were only posed in 2017 and 2022, which means that we only examine these two survey rounds. Table 9.1 summarizes each of the action and satisfaction types by balanced sample, year and firm size category.

Firms neither fully disagree nor fully agree to the communication and long-term orientation actions they take in the relationship with the supplier. However, the average evaluation is rather on the agreement than on the disagreement side. For example, the first communication interaction “We always keep the main supplier informed about events or changes that may affect the supplier” received a rate of close to 5 out of 7. This means that a majority of firms does communicate regularly with the main supplier. However, there is scope of improvement of the communication with suppliers. On the positive side, communication with suppliers has increased between 2017 and 2022. Further, the likelihood of a high-quality and regular communication with the main supplier increases with firm size.

Firms seem to be slightly more likely to maintain a long-term relationship with the main supplier than to communicate. As with communication, having a long-term orientation with regards to the main supplier has become more usual among firms in the past five years. Further, the likelihood that firms have a long-term orientation increases with firm size.

We move towards the firms’ satisfaction with the supplier-relationship. Firms are both socially and economically satisfied with the supplier relationship, and their satisfaction has increased over time. For example, in 2017, “interactions between [the] firm and [the] main supplier are characterized by mutual respect”, was evaluated with an average of 5 (out of 7), and this has increased to an average of 6 in 2022. Medium firms are economically and socially more satisfied with the main supplier-relationship than micro and small firms.

Table 9.1: Relationship with supplier by year and firm size

	Total	2017	2022	Micro	Small	Medium
A: Communication	14.77	13.26	16.27	14.28	15.99	16.67
A1: We always keep the **main SUPPLIER** informed about events or changes that may affect the SUPPLIER.	4.96	4.49	5.45***	4.81	5.33	5.60
A2: We share much information with the **main SUPPLIER** if it can be of help.	4.95	4.45	5.46***	4.77	5.42	5.65
A3: We exchange information with the **main SUPPLIER** frequently and informally, not only according to a pre-specified agreement.	4.85	4.33	5.37***	4.70	5.24	5.42
B: Long-term orientation	16.59	15.28	17.89	16.13	17.72	18.42
B1: Maintaining a long-term relationship with the **main SUPPLIER** is important to us.	5.54	5.08	6.00***	5.38	5.95	6.14
B2: We focus on long-term goals in the relationship with our **main SUPPLIER**.	5.45	5.01	5.89***	5.30	5.80	6.09
B3: We expect the **main SUPPLIER** to be working with us for a long time.	5.60	5.19	6.01***	5.45	5.97	6.19
C: Social satisfaction	21.89	20.01	23.79	21.28	23.35	24.56
C1: We are satisfied with the social aspects of the relationship with our **main SUPPLIER**.	5.36	4.91	5.81***	5.20	5.73	6.09
C2: Interactions between our firm and our **main SUPPLIER** are characterized by mutual respect.	5.61	5.17	6.05***	5.46	5.95	6.21
C3: The working relationship of our firm with the **main SUPPLIER** is characterized by feelings of trust.	5.51	5.05	5.98***	5.35	5.90	6.16
C4: Our personal working relationship with the **main SUPPLIER** is satisfactory.	5.44	4.93	5.95***	5.30	5.76	6.09
D: Economic satisfaction	20.80	18.90	22.70	20.22	22.17	23.28
D1: Our financial performance from the relationship with the **main SUPPLIER** is satisfactory.	5.21	4.80	5.62***	5.09	5.53	5.70
D2: Our investments of resources in the relationship (e.g., time and money) with the **main SUPPLIER** have paid off well.	5.16	4.72	5.60***	4.99	5.55	5.86
D3: We are satisfied with the financial gains from our business relationship with the **main SUPPLIER**.	5.12	4.61	5.63***	4.98	5.44	5.74
D4: The contribution of the relationship with the **main SUPPLIER** to our total business performance is pleasing	5.30	4.75	5.85***	5.15	5.64	5.98
Observations	710	355	355	524	143	43

Note: Balanced panel
Source: Authors' calculations based on IIM 2017 and 2022 data.

9.3 Geographical linkages and investment & innovation

The quality of inter-firm linkages can positively affect firm performance. Forward linkages, i.e., the relationship firms have with the buyers of their products, may improve firms' knowledge and technical capabilities if the buyers are willing to invest and support their clients. There are different types of forward linkages in the sense that firms have different types of clients. We examine whether firms with stronger geographical linkages, i.e., firms that are not only selling to clients in the same district but also to neighbouring districts, neighbouring provinces, non-neighbouring provinces, and other countries, are more likely to invest and innovate. Investment and innovation are two activities that firms in growing economies undertake and that the Government of Mozambique seeks to support. Thus, it is important to understand which measures foster investment and innovation in the manufacturing firms. Stronger linkages between firms might be one measure to foster investment and innovation. Thus, we test this hypothesis.

For the purpose of this exercise, we create two indices. The first index measures the depth of a firm's geographical linkages and ranges from 0 to 5. It is 0 for firms that only sell to clients that are located in the same district. It is 5 for firms that sell to neighbouring districts, to other districts in its province, to neighbouring provinces, to non-neighbouring provinces, and export. Geographical linkages are weak, as the average of the balanced sample is 1.7 out of 5. On a positive note, the geographical linkages have become stronger over time, as the average has increased from 0.7 in 2012 to 2.24 in 2022. The second index is an investment & innovation index that ranges from 0 to 4. It is 0 if a firm neither invested nor innovated and 4 if it innovated in three different ways during the three years before the respective survey round. Innovation includes the introduction of new technology, introduction of a new product, and/or substantial improvement of an already existent product.

We start by running a basic regression that is similar to the regressions in multiple other chapters of this report. It is similar in the sense that it includes the same variables (see column 1 of Table 9.2), except for that we add firm performance (value added) as a control variable and do not use it as the dependent variable. In this chapter, the investment & innovation index serves as the dependent variable. We find that a firm's likelihood to invest and innovate is higher when it is performing better, employs more employees, is located in the South of Mozambique or operates in the paper sector (book binding).

The OLS regression in column 2 illustrates that firms that have stronger geographical linkages, i.e., they export to firms located outside of their own district, are more likely to innovate and invest. However, we need to be careful in interpreting these results as causal, i.e., we cannot argue that stronger geographical linkages cause investment and innovation. So far, we can only confirm that firms with

stronger linkages are more likely to invest and innovate. Thus, we run FE regressions (see column 5) to control for unobserved firm characteristics that might be the actual determinants of investment and innovation instead of geographical linkages. As suspected, the association between geographical linkages and investment and innovation becomes statistically insignificant. This means that firms with strong geographical linkages are generally different from firms with weaker geographical linkages, and because of these differences, firms with stronger geographical linkages are more likely to invest and innovate. However, the association between geographical linkages and investment & innovation is not very far from statistically significance. Thus, if we had a bigger sample, we might obtain a statistically significant association between geographical linkages and investment & innovation.

Table 9.2: Investment & innovation and geographical linkages

	(1) I & I OLS	(2) I & I OLS	(3) I & I OLS	(4) I & I OLS	(5) I & I FE
Geographical linkages		0.182*** (0.042)	0.178*** (0.038)	0.176*** (0.037)	0.093 (0.067)
Value added (logged)	0.041*** (0.009)	0.038*** (0.009)	0.041*** (0.009)	0.038*** (0.009)	0.023* (0.013)
Firm size	0.141*** (0.035)	0.096*** (0.037)	0.104*** (0.032)	0.108*** (0.032)	0.038 (0.075)
Female	-0.133 (0.128)	-0.147 (0.126)	-0.147 (0.104)	-0.135 (0.104)	-0.291 (0.212)
South	0.180*** (0.068)	0.167** (0.067)	0.157*** (0.058)	0.165*** (0.058)	
Food	0.218 (0.184)	0.295 (0.182)	0.332** (0.146)	0.363** (0.148)	
Textiles	0.331* (0.179)	0.305* (0.175)	0.417*** (0.138)	0.442*** (0.140)	
Wood	0.253 (0.168)	0.244 (0.164)	0.361*** (0.131)	0.401*** (0.133)	
Paper	0.557* (0.283)	0.470* (0.278)	0.965*** (0.225)	0.949*** (0.222)	
Chemicals	-0.040 (0.314)	-0.089 (0.295)	0.024 (0.234)	0.048 (0.236)	
Minerals	0.190 (0.201)	0.232 (0.200)	0.308* (0.165)	0.340** (0.167)	
Metal	0.259 (0.173)	0.241 (0.168)	0.355*** (0.134)	0.397*** (0.136)	
Balanced			0.043 (0.065)		
New firm 2022				0.160* (0.084)	
Firm and Year FEs	No	No	No	No	Yes
Obs	710	710	926	926	710
R^2	0.09	0.12	0.15	0.15	0.08

Note: Balanced panel. OLS and FE regressions.
Source: Authors' calculations based on IIM 2017 and 2022 data.

So far, we have only examined the same 355 firms, i.e., the balanced sample. The exit and newly added firms might be different from the balanced sample. Thus, it is important to understand if the obtained results are particular for the balanced sample or if they also hold for the other firm types. Column 3

includes a balanced dummy to examine whether the results are different for the balanced than for all other firms. The results are almost the same when controlling for the balanced sample, which means that the firms in the balanced sample are not fundamentally different from the exit and newly added firms in terms of investment and innovation. Moreover, in column 4, we restrict the sample to the 120 firms that were newly added in 2022. Once again, the results are almost the same as for the balanced and for the unbalanced sample, indicating that the newly added firms are not fundamentally different from the other firms.

9.4 Business associations and investment & innovation

There is evidence that the type of network a firm has can positively influence its performance (Panda, 2014). For example, participating in a business association can be an advantage if the association gives special support to its members such as advice on how to invest and innovate or by creating linkages with potential clients or business partners. Table 9.3 analyses the relationship between being a member of a business association and the likelihood to invest and innovate.

We find that being a member of a business association is positively and statistically significantly associated with investment and innovation. A firm that is member of a business association is 28 per cent more likely to invest and innovate (see column 2). When controlling for the different sample types in columns 3 and 4, the association becomes a bit smaller but remains statistically significant, implying that there are only small and unsubstantial differences between the sample types. Most notably, when controlling for time-invariant unobservable firm characteristics, the relationship between being a member of a business association and investment & innovation becomes even stronger and is statistically significant. Thus, we have strong evidence that participating in a business association brings advantages to firms.

Table 9.3: Investment & innovation and business associations

	(1) I & I OLS	(2) I & I OLS	(3) I & I OLS	(4) I & I OLS	(5) I & I FE
Business association		0.278**	0.212**	0.217**	0.366**
		(0.123)	(0.106)	(0.106)	(0.183)
Value added (logged)	0.041***	0.039***	0.044***	0.041***	0.023*
	(0.009)	(0.010)	(0.009)	(0.009)	(0.013)
Firm size	0.141***	0.111***	0.129***	0.133***	0.036
	(0.035)	(0.037)	(0.032)	(0.032)	(0.074)
Woman-led	-0.133	-0.119	-0.125	-0.112	-0.303
	(0.128)	(0.130)	(0.106)	(0.105)	(0.212)
South	0.180***	0.174**	0.163***	0.172***	
	(0.068)	(0.068)	(0.059)	(0.059)	
Food	0.218	0.135	0.171	0.205	
	(0.184)	(0.185)	(0.148)	(0.150)	
Textiles	0.331*	0.307*	0.408***	0.435***	
	(0.179)	(0.178)	(0.140)	(0.142)	
Wood	0.253	0.226	0.344**	0.386***	
	(0.168)	(0.166)	(0.132)	(0.134)	
Paper	0.557*	0.502*	0.972***	0.953***	
	(0.283)	(0.291)	(0.229)	(0.225)	
Chemicals	-0.040	-0.069	0.037	0.060	
	(0.314)	(0.308)	(0.242)	(0.243)	
Minerals	0.190	0.177	0.256	0.291*	
	(0.201)	(0.201)	(0.166)	(0.168)	
Metal	0.259	0.250	0.350**	0.395***	
	(0.173)	(0.171)	(0.136)	(0.138)	
Balanced			0.040		
			(0.066)		
New firm 2022				0.177**	
				(0.086)	
Firm and Year FEs	No	No	No	No	Yes
Obs	710	710	926	926	710
R^2	0.09	0.10	0.13	0.15	0.09

Note: Balanced panel. OLS and FE regressions.
Source: Authors' calculations based on IIM 2017 and 2022 data.

9.5 Conclusion

This chapter examined the different types of linkages that Mozambican manufacturing enterprises have with clients, suppliers, and geographical areas. It illustrates that over the past 10 years, important steps towards fulfilling the Government of Mozambique's objective of creating inter-firm linkages have been achieved. Across all provinces**,** inter-firm linkages have become stronger. Firms are not only selling to individual clients, but it has become more common to sell to SOEs and FDI firms. However, exporting remains the exception rather than the norm among the Mozambican manufacturing sector. Further, medium firms have deepened their linkages much more than micro firms. Lots of scope for the diversification of forward linkages remains, especially for the smallest firms.

Regarding the relationship with suppliers, i.e., backward linkages, they have remained the same or become worse over time. The ease of acquiring raw materials is evaluated as easy but has not improved over time. In most provinces, firms find it more difficult to find alternative suppliers. On the positive side, firms have become more satisfied regarding the social and economic aspects of their relationship with the main supplier. Further, firms are more likely to communicate with and have a long-term orientation towards the main supplier. However, there is scope of improvement in terms of communication and long-term orientation in the firm-supplier relationships.

Lastly, we provide statistical evidence that firms that are members of a business association are more likely to invest and innovate, even when controlling for unobserved time-invariant firm characteristics. Thus, a first policy-recommendation is to support existing and create new business associations. Only 15 per cent of the firms in our sample are members of business associations, and as shown in Chapter 3, in particular micro firms are unsatisfied with their business associations, probably because they tailor to larger firms. Thus, there is substantial room for improvement in the performance of business associations. If more firms become part of business associations that, at the same time, become more efficient, Mozambique will be better placed to achieve the goal of more investment and innovation, which will benefit the manufacturing sector and, ultimately, the economy as a whole.

Further, we recommend supporting firms to create stronger linkages with other firms, especially with FDI firms. For example, this could happen through the creation of supplier associations that can act as intermediaries to help connect firms that supply manufacturing products to FDI firms and multinational buyers. These supplier associations can also provide training to strengthen the capacity of firms and upgrade their technology. It is important for firms to be able to produce goods in high quantities and quality to satisfy the demand of FDI firms.

On the other hand, it is essential to attract FDI that is more beneficial for the development of local businesses and inter-firm linkages. Specific targeting of FDI firms and sectors would help achieve this goal. Sørensen et al. (2020) suggest focussing on supporting the machinery and electronics sectors as their products are economically complex, and Mozambique already exports some of these sectors' products such that it would be easier to expand on them than focusing on many new, sophisticated products. Similarly, the vehicles and transport equipment sectors have potential to help the country's economy diversify. Regarding export markets, we suggest focussing on the countries to which Mozambique is already exporting most, i.e., its neighbouring and other Southern African countries. "Exploiting and expanding the free trade agreement under the South African Development Community (SADC) seem important for Mozambique to realize this potential, which deviates somewhat from the country's current trade strategies" (ibid: 2). Further, Mozal should establish more and stronger connections with local firms, while the agro-industry also has high potential for export. The Government of Mozambique should continue facilitating the exports of goods. However, for this to work, most firms will have to substantially improve the quality and complexity of their products to be competitive in foreign markets.

10 Informality and levels of formalisation

Even though the literature on the informal sector has been developing for decades, there is no generally accepted definition of informality. Rather, different criteria have been used depending on the context of analysis and the problem at hand. According to Gerxhani (2004), the defining criteria can be *political* (e.g., based on government regulation), *economic* (for example, status of labour, including undeclared labour, or tax evasion), or *social* (some studies consider ease of entry and necessity of social networks as defining characteristics of the informal sector). Regardless of the specific criteria, most studies use a binary indicator when attempting to define which firms are formal (Berkel, 2018). However, such a simplistic division may fail to capture the complexity and heterogeneity of the informal sector, and merely demonize informality as a phenomenon that needs to be eradicated.

Indeed, in many countries of the Global South, the informal sector plays a substantial role in the economy. In Mozambique, about 80 per cent of the active labour force works in the informal sector (World Bank, 2019; Medina and Schneider, 2018) which makes up for almost 45 per cent of the national GDP (INE, 2021). According to a recent study by the World Bank (Aga et al, 2021), informal firms in Mozambique are two to three times less productive than formal ones, sell more than 10 times less and make profits almost 20 times lower than firms in the formal sector. In addition, the study finds that informal firms on average have fewer employees, are less likely to have access to finance, adopt fewer business practices, and have fewer skills available. This is not true for all informal firms: there is a group of firms in the informal sector that share similar characteristics with formal businesses. These firms might have more capacity to grow and benefit more from formalisation.

Reducing informality and transitioning to a formal economy have been key goals of the Government of Mozambique for many years. The Industrial Policy and Strategy developed in 1997 (GoM, 1997) already stressed the importance of striving for the inclusion of informal enterprises in the formal economy, simplifying the procedures for legalisation, and formalisation. Each of the five-year programmes proposed by the Government of Mozambique in 2005, 2010, and 2015 also include among their goals that of decreasing the level of informality and transitioning to a more formal economy (Programa Quinquenal do Governo, PQG, 2005-2009; 2010-2014; 2015-2019). To facilitate the formalisation process, initiatives such as the establishment of a one-stop shop (Balcão de Atendimento Único, BAÚ) and the adoption of a simplified licensing and tax regime (GoM 2012, 2009, 2007) were also introduced more recently.

An example of current efforts in this direction is the newly launched plan *Apoio à Transição de Empresas Informais rumo à Formalização e Desenvolvimento Sustentável em África, Caraíbas e Pacífico (ACP)* ("Supporting the transition of informal enterprises towards formalisation and sustainable growth in Africa, the Caribbean and the Pacific"), which will be implemented in Mozambique for the next four years by the Ministry of Industry and Commerce. This is done in compliance with donors' and governmental organizations' recommendations, which stress the importance of transitioning to a formal economy to boost tax revenues. The project is supported by the International Labour Organization (ILO), the European Union (EU) and the Organization of African, Caribbean and Pacific States (OACPS) and implemented with the United Nations Development Programme (UNDP).

Jones and Tarp (2015) analyse the evidence in support of two opposed perspectives on the informal sector in Mozambique, in particular seeking to assess whether policy makers in sub-Saharan Africa should focus on strengthening access to formal wage employment or raise productivity in the informal sector. The study concludes that formal sector workers are not consistently better off than informal sector workers are, and that jobs within the informal sector are heterogeneous in terms of returns. Implications of these findings include that, in a context such as Mozambique, policy should not aim to oust the informal sector in favour of formal job creation. Instead, the focus should be on increasing productivity within the informal sector, as well as on addressing infrastructural and regulatory constraints.

In this chapter, following Berkel (2018), rather than defining a binary formality indicator, we recognize that in the Mozambican context, (in)formality lies on a continuum ranging from a complete lack of integration with formal institutions and the regulatory system to full compliance. In between the two extremes, there are highly diverse firms that only comply with some regulations and are registered with some formal institutions. The existence of this "grey area" is partly because business registration is not a straightforward process in Mozambique, notwithstanding efforts in that direction (Berkel, 2018). We use five indicators to create a formality index that ranges from 0 to 5, based on the number of institutions a firm or its workers are registered with. In particular, we look at the following criteria:

1 The enterprise is registered with the Registry of Legal Entities (Conservatória de Registro de Entidades Legais, CREL)
2 It has obtained an Alvará (business licence)
3 The firm is registered with the local tax office/finance authority (Repartição de Finanças/Seccão de Finanças Local)
4 The workers are registered with the National Institute of Social Security (Instituto Nacional de Segurança Social, INSS)

5 The workers are registered with the Ministry of Labour and Social Security (Ministério de Trabalho e Segurança Social)

In what follows, we first look at how compliance with each of these criteria has changed over the years. Then we proceed to look at whether the firms in the balanced and unbalanced panel have increased their level of formalisation on average. We then examine firms' formality level by firm size, province, sector, and gender of the owner/manager. The main focus of this chapter is the balanced panel of 355 firms. However, we do present comparisons with the unbalanced panel, as a way to include trends of younger firms and of those firms that closed or left the sample before 2022. Finally, we look into the relationship between (in)formality and financial performance, to investigate whether more formal firms have higher revenues, value added, and labour productivity. The chapter concludes with some key messages and policy recommendations.

10.1 Registration with the authorities

Table 10.1 presents the level of compliance with each of the criteria considered in the formality index. Panel a presents results for the balanced panel, while panel B looks at the unbalanced panel of firms. For both the balanced and unbalanced panel we find a peak in compliance in 2017 and a subsequent descent in the average formality level in 2022. While in the balanced panel the share of firms having obtained an Alvará is slightly higher in 2022 compared to 2012, compliance with each of the other criteria is the same or lower in the latest survey wave compared to ten years before.

Table 10.1: Percentage of firms registered with authorities

Panel a: Balanced panel

	2012	2017	2022
	%	%	%
CREL	48.2	56.9	47.9
Alvará	47.3	53.2	50.4
INSS	36.9	45.1	37.5
Ministry of Labour	34.6	39.4	33.7
Finance Authority	50.7	88.0	45.6

Panel b: Unbalanced panel

	2012	2017	2022
	%	%	%
CREL	55.2	58.5	48.2
Alvará	52.8	54.6	51.2
INSS	42.7	47.0	38.6
Ministry of Labour	41.6	42.6	35.1
Finance Authority	56.9	89.4	45.9

Note: Balanced panel: 1,065 obs, 355 firms
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

Multiple reasons could explain the reversal of average compliance. A study by Berkel (2018) investigates the relationship between formalisation and firm outcomes using the 2012 and 2017 rounds of the IIM survey, as well as qualitative data. It concludes that enterprises with low formality levels do not benefit from formalisation, while enterprises that are not fully formal but rank higher on a formality continuum do reap some of the rewards of formalisation. Overall, the study concludes that in the Mozambican context, the benefits of formalisation are few, and the costs are high – and much higher than they are legally set to be. An additional reason that should be considered is that economic growth plays a crucial role in the process of formalisation in sub-Saharan Africa (Kiaga and Leung, 2020) and that, in general, the share of informal economic activity shrinks with the growth of per capita income (La Porta and Shleifer, 2014). While the Mozambican economy was growing steadily up until 2015/16, a series of economic, political, and social shocks took a toll on economic growth in most recent years. Especially in times of economic difficulties, firms might decide not to increase their level of formalisation when advantages are uncertain. In addition, the COVID-19 pandemic and the related restrictions of movement might have decreased the frequency of "spot-checks" done by government officials, thus reducing the incentives of formalisation for those firms that would have undergone the process out of fear of legal repercussions. Lastly, even though the questions related to each of the formalisation criteria were formulated in the same way in each of the questionnaires, there might be a level of error affecting the different survey rounds. In addition, firms may tend to declare that they fulfil the criteria, which they know are legally mandatory, when in fact they do not because they are afraid to tell the truth about not being registered.

10.2 Formality index

The formality index used in the following analysis includes the number of authorities a firm is registered or complies with. As discussed above, we look at registration with CREL, having obtained an Alvará, registration with the local finance authority, workers' registration with the INSS and workers' registration with the Ministry of Labour. Therefore, the formality index corresponds to the number of formality criteria the firms fulfil, and it ranges from 0 to 5.

Figure 10.1, panel a, shows that in 2012, the firms were much more concentrated in the extreme levels of the index, that is almost half (47 per cent) of the firms in the balanced sample did not fulfil any of the formality criteria, while almost a third (31 per cent) complied with all the criteria. In the following years, the variance increased, with fewer firms registering a value of 0 (28 per cent in 2017 and 38 per cent in 2022), and an increase in the firms with a formality index of 1 and 2, meaning that they only fulfil one or two of the criteria that make up the formality index. In particular, the percentage of firms with an index of 1 has increased significantly from almost 3 per cent in 2012 to 14 per cent in 2022,

while the proportion of those with a formality index of 2 has increased from 5 per cent in 2012 to 8 per cent in 2022. Looking at the highest level of compliance with the criteria, the percentage of firms with an index of 5 has increased by 3 percentage points in 2017, reaching a level of 34 per cent, and then it has dropped to 26 per cent in 2022. The firms of the unbalanced panel (panel b) present similar trends and levels of the formality index, with the level of informality being slightly higher than the balanced panel.

Figure 10.1: Informality level by years

Panel a: Balanced panel

Panel b: Unbalanced panel

Note: The formality index used in the following analysis includes the number of authorities a firm is registered or complies with. We look at registration with CREL, having obtained an Alvará, registration with the local finance authority, workers' registration with the INSS and workers' registration with the Ministry of Labour. The formality index corresponds to the

number of formality criteria the firms fulfil, and it ranges from 0 to 5. Balanced panel: 1,065 obs, 355 firms.

Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

Overall, there seem to be two opposing trends occurring. On one hand, there is a tendency towards an increase in the level of formalisation at the lowest levels, i.e., a shift from an index of 0 to fulfilling one or two of the criteria. On the other, there is a decrease in the share of firms in full compliance with the criteria considered here, thus a decline in the percentage of firms with a formality index of 5. This points to the fact that while there might be some benefit in complying with a few of the criteria, firms might not see many advantages in fulfilling all of the regulations at the same time.

Table 10.2 presents an overview of the average value of the formality index for both balanced and unbalanced sample for each relevant year in the different size categories, geographic areas, and aggregated sectors. In the balanced panel, the formality level peaked in 2017 at 3 per cent, while in 2022 it reverted to the levels seen in 2012 (2 per cent). However, if the firms are divided into the size categories micro, small, and medium, a slight increase in the average level of formality can be seen in each of the categories from 2012 to 2022. This is possible because, as shown in chapter 2, on average firms have shrunk in size, while if we look at the development of the level of formality of firms that were micro, small, or medium in 2012 there has been an average decrease in each of the categories. Small and medium firms have a consistently higher average level of formality, that is 1 for micro firms vis-à-vis 4 and 5 for small and medium firms in 2022, respectively.

On average, firms located in the North and South are slightly less formal in 2022 than they were in 2012, while there has been an increase in the average formality level in central Mozambique.

Enterprises in southern Mozambique remain more formal than the ones in the rest of the country, throughout the three survey waves.

Looking at the different sectors, there is variation in the trend of the formality index over time, with the majority of sectors registering a lower formality level in 2022 compared to 2012. In contrast, the average index has increased in the food processing sector. The sectors with the highest informality level throughout the years are those characterised by higher complexity, such as chemicals and paper (bookbinders).

The average level of formality of firms owned or managed by women has decreased in 2022 compared to 2012. The same is true for those owned or managed by men, which started from an even lower level than for women in 2012 and has dropped to below 2 in the average formality index in 2022. It is noteworthy that, to keep the panel dimension of the data, when looking at the gender of the owner/manager we only analyse the firms in which the owner/manager was interviewed throughout the three survey rounds (254 firms), and not a female worker of the firm.

Table 10.2: Average formality index, by firm size, firm location, firm sector, and gender of the owner

Balanced panel			
	2012	**2017**	**2022**
All	2.2	2.5	2.1
Micro	1.3	1.9	1.4
Small	3.6	4.0	4.2
Medium	4.8	4.8	4.6
South	2.6	2.9	2.3
Centre	1.6	2.0	1.8
North	2.1	2.6	2.0
Food	3.2	3.7	3.6
Textiles	2.1	2.0	1.8
Wood	1.7	2.0	1.6
Paper	4.8	4.4	4.3
Chemicals	4.7	5.0	4.0
Minerals	2.0	2.8	1.5
Metal	1.7	2.3	1.7
Other	3.5	3.8	2.2
Female owner/manager	2.4	2.1	2.2
Male owner/manager	2.1	2.0	1.9

Unbalanced panel			
	2012	**2017**	**2022**
All	2.5	2.61	2.12
Micro	1.4	1.9	1.4
Small	3.9	4.1	4.1
Medium	4.8	4.8	4.7
South	2.9	2.9	2.5
Centre	1.8	2.0	1.6
North	2.4	2.8	2.2

Food	3.4	3.8	3.5
Textiles	2.4	2.3	1.8
Wood	2.0	2.0	1.5
Paper	4.5	4.5	3.8
Chemicals	4.8	5.0	3.8
Minerals	2.5	2.8	1.7
Metal	2.0	2.5	1.7
Other	3.9	3.5	2.9

Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

In the unbalanced panel, too, there is an overall increase in the level of formality in 2017 followed by a drop in 2022, and trends in the different categories of disaggregation are comparable. In particular, there is an even bigger decrease in the average formality level compared to the balanced panel, going from 2.5 in 2012 to 2.1 in 2022, after having increased to 2.6 in 2017. The average level of formality has decreased slightly in the micro and medium firms in 2022 compared to 2012, while it has increased in small firms.

The level of formality also decreases on average for firms located in every area of the country, more sharply in the South and Centre. The level of formality in the South consistently remains the highest in the country. When looking at the disaggregation by sector, the trends are similar to those found in the balanced panel.

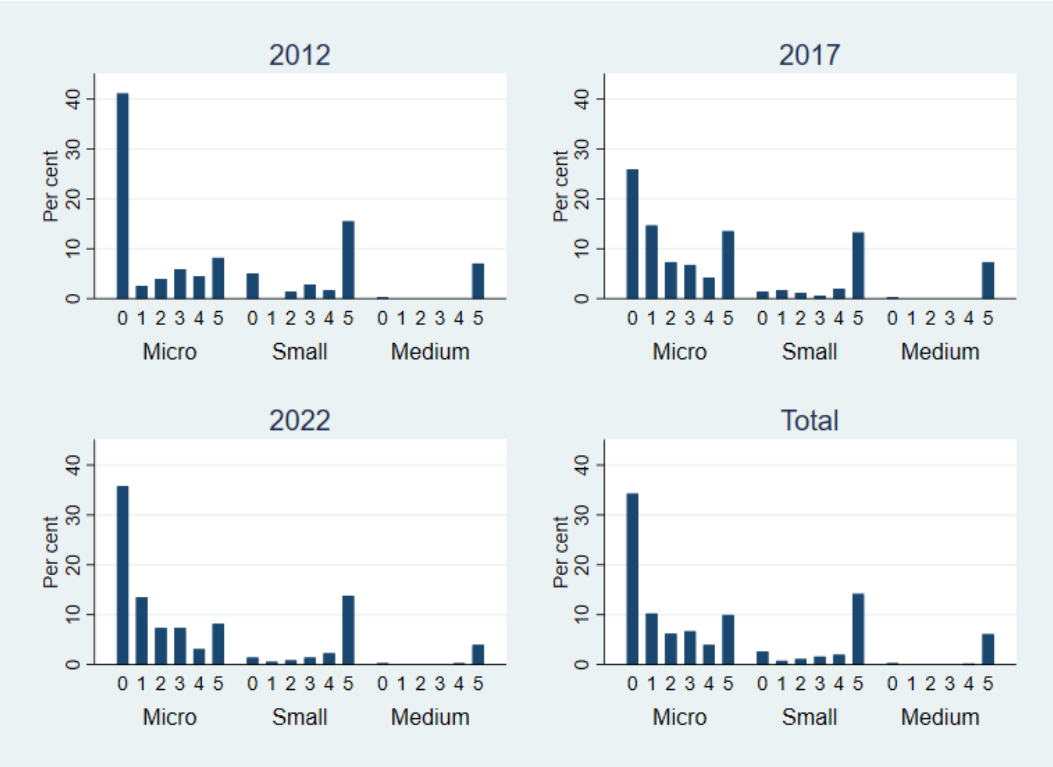
10.3 Formality by firm size

Figure 10.2 presents the formality level by year and firm size for the balanced (panel a) and unbalanced panel (panel b). As discussed in relation to Table 10.2, there has been a decrease in the formality level from 2012 to 2022. In particular, in 2012, the majority of micro firms (the vast majority in our sample) in the balanced panel did not fulfil any of the formality criteria, thus ranking 0 on the formality index. The percentage of micro firms with a formality level of 0 has decreased in 2017 and 2022, while the number of those with an index of 1 and 2 has increased in the two latest survey rounds.

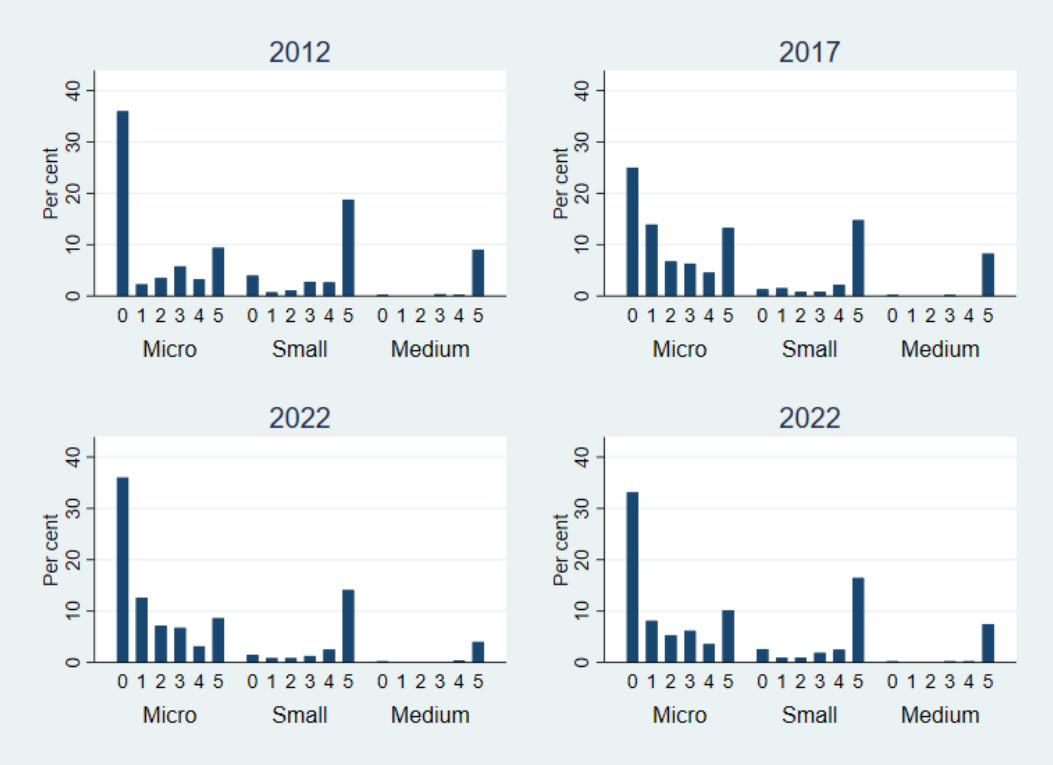
On the contrary, the majority of small firms had a formality level of 5 in every survey round, and the share of those with an index of 0 decreased sharply after 2012. Medium enterprises almost exclusively had a formality level of 5 across the three survey waves, with only a very small share of medium firms with a formality index of 4 in 2022. Trends are similar in the unbalanced panel. The higher level of formality found among bigger firms partly reflects the fact that it is arguably more difficult for larger firms to operate "under the radar". In addition, a higher level of formality allows bigger firms to establish business relations with large clients that require legal documentation of their transactions (Berkel, forthcoming; IIM, 2017).

Figure 10.2: Formality index, by year and firm size

Panel a: Balanced panel



Panel b: Unbalanced panel



Note: Balanced panel: 1,065 obs, 355 firms
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

10.4 Formality by firm location

Table 10.3 presents the average formality level by province for each survey round. In general, the results show that for each province there was an increase in 2017 (excluding firms located in Maputo City and the unbalanced panel's firms in Manica), followed by a setback in 2022. The level of formality is consistently higher in Maputo City, Maputo Province, and Nampula relative to the other provinces. In 2012 and 2017, the level of formality was higher in most of the surveyed provinces, meaning that, on average, de-formalisation occurred. Partial exceptions are Sofala, where in the balanced sample the level of the formality index is the same in 2012 and 2022 while there is a decrease in the unbalanced sample, Manica, where there is a slight increase in the formality levels, and Tete, where we see stagnation in the level of formality level in the balanced sample and an increase in the unbalanced sample.

Table 10.3: Formality index, by province

Panel a: Balanced panel

Province	Year			Total
	2012	2017	2022	
Maputo City	3.0	3.0	2.7	2.9
Maputo Province	2.9	3.1	2.6	2.9
Gaza	1.5	2.2	1.4	1.7
Sofala	1.5	1.7	1.5	1.6
Manica	2.0	2.6	2.4	2.3
Nampula	2.8	3.0	2.5	2.8
Tete	1.5	2.2	1.5	1.7

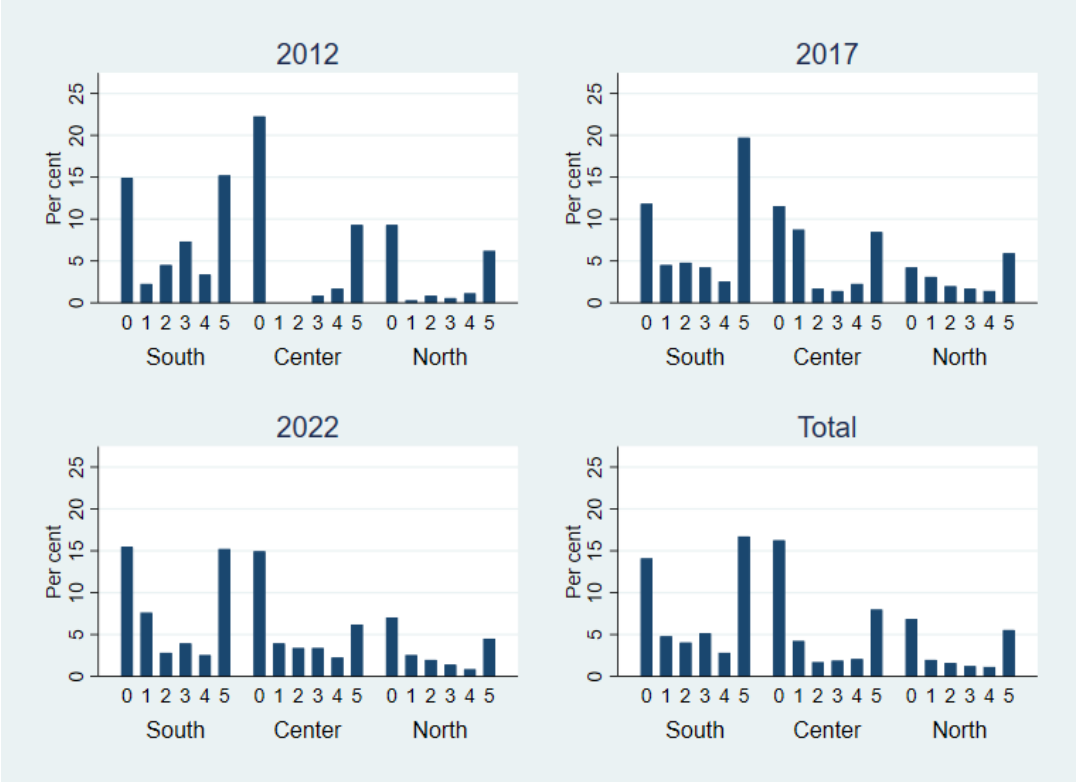
Panel b: Unbalanced panel

Province	Year			Total
	2012	2017	2022	
Maputo City	3.0	3.1	2.9	3.0
Maputo Province	3.4	3.1	2.7	3.1
Gaza	2.1	2.1	1.4	1.9
Sofala	1.9	1.7	1.5	1.7
Manica	1.7	2.7	1.8	1.9
Nampula	3.1	3.3	2.7	3.0
Tete	1.4	2.3	1.7	1.7

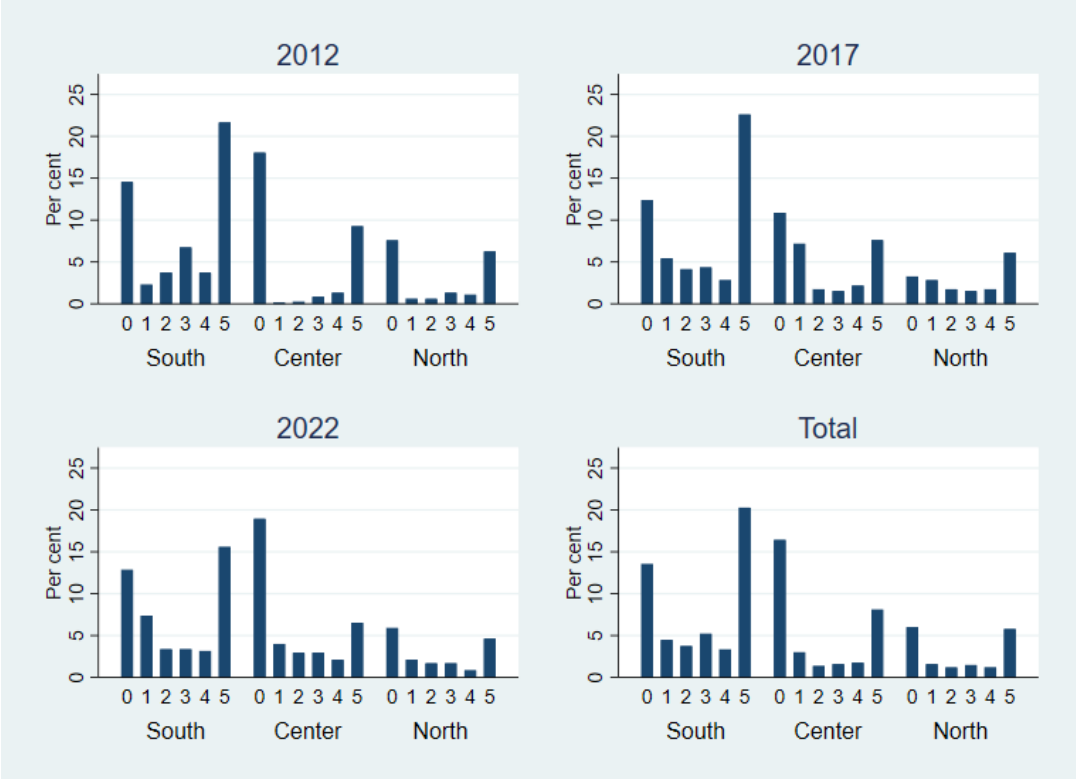
Note: Balanced panel: 1,065 obs, 355 firms
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data

Figure 10.3: Formality index by year and firm location

Panel a: Balanced panel



Panel b: Unbalanced Panel



Note: Each column represents the share of firms that have a formality index of the level indicated and belong to the firm size category indicated, so that the percentages sum up to 100 in each year.
Source: Authors' calculations based on IIM 2012, 2017 and 2022 data.

When looking at a division in macro spatial areas, Figure 10.3 shows that in the South, after an increase of firms with a formality index of 5 in 2017, the formality index reverts to levels seen in 2012 (balanced sample) or lower (unbalanced sample). More than 30 per cent of the firms are located in the South in 2022 and have a formality level of 0 or 5, suggesting bimodal distribution for this region. Looking at the balanced sample, enterprises in central Mozambique formalized in the years following 2012. The share of balanced sample's firms located in the central region with a formality index of 0 was 22 per cent in 2012 and has decreased to about 15 per cent in 2022. Moreover, in this region there was an increase in the share of firms with a formality index of 1, 2, 3, and 4, and a modest decrease in those fulfilling all the formality criteria. The trend is different for the firms of the unbalanced sample operating in the centre of the country, where de-formalisation occurred. In the balanced sample, firms operating in the North, too, have seen a progressive reduction of the share of firms ranking 0 on the informality index, with increases in the share of firms with lower levels of formality (index of 1 and 2) and a modest decrease in the share of those with the highest levels of formality (4 and 5). Conversely, in the unbalanced panel, we see an increase in formality in 2017, but in 2022, formality levels are similar to those seen in 2012.

10.5 Formality and financial performance

Formality can have a positive impact on firm performance if the formality status allows firms to access the formal credit market and support services provided by the government or other institutions. In addition, compliance with the regulatory system may allow firms to establish relations (such as subcontracting) with formal firms and contracts with large, formal clients. More formal firms may also have a reduced risk of being fined by government inspectors and can benefit from accessing legal protection (Fajnzylber et al., 2011; Kasseeah, 2016). A number of studies have examined empirically the relationship between firm formality and performance (see, for example: Mckenzie and Sakho, 2010; Fajnzylber et al., 2011; Bohme and Thiele, 2012; Aparicio, 2014; Kasseeah, 2016). In what follows, we investigate if firms in our sample that have a higher formality level are performing better than ones that are less formal.

The OLS regressions in column 2 of Table 10.4, 10.5 and 10.6 illustrate that firms that are more formal have higher revenue, value added, and labour productivity. However, the results from this regression can only be interpreted as correlation and not as causation. That is, we cannot argue that higher levels of formality cause higher performance. So far, we can only confirm that firms that rank higher on the formality index are more productive.

We run FE regressions (column 4) to control for time-invariant, unobserved firm characteristics that might be the actual determinants of performance instead of a formality status. Indeed, the relationship

between formality and firm performance becomes statistically insignificant in case of all three performance indicators. This means that the association between formality and firm performance is driven by underlying firm characteristics, i.e., that more formal firms are generally different from informal ones, and because of these differences, formal firms perform better. This also speaks to the fact that in the Mozambican context the benefits of formalisation are few (Berkel et al (2018), and in the absence of concrete benefits such as improved access to credit or linkages with formal firms and clients, obtaining a formal status does not lead to improved performance.

Table 10.4: Revenue and formality index

	(1) Revenue OLS	(2) Revenue OLS	(3) Revenue OLS	(4) Revenue FE
Formality Index		0.189***	0.219***	0.113
		(0.057)	(0.050)	(0.084)
Size	1.198***	1.021***	1.027***	0.645**
	(0.130)	(0.144)	(0.133)	(0.298)
Woman-led	1.262***	1.213***	0.940***	0.799*
	(0.319)	(0.311)	(0.244)	(0.420)
South	0.059	-0.036	-0.168	
	(0.188)	(0.189)	(0.161)	
Food	-0.466	-0.399	-0.803*	
	(0.531)	(0.507)	(0.445)	
Textiles	-1.428***	-1.217**	-1.515***	
	(0.511)	(0.494)	(0.430)	
Wood	-1.452***	-1.174**	-1.428***	
	(0.496)	(0.486)	(0.411)	
Paper	-0.928	-0.965	-1.157**	
	(0.856)	(0.845)	(0.572)	
Chemicals	0.142	0.253	0.326	
	(0.734)	(0.710)	(0.768)	
Minerals	-0.642	-0.370	-0.619	
	(0.573)	(0.559)	(0.482)	
Metal	-1.205**	-0.967**	-1.248***	
	(0.516)	(0.488)	(0.418)	
Balanced Panel			-0.168	
			(0.179)	
year = 2022				0.886***
				(0.199)
Firm and Year FEs	No	No	No	Yes
Observations	710	710	935	710
R^2	0.318	0.329	0.354	0.080

*Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1*
Source: Authors' calculations based on IIM 2017 and 2022 data

Table 10.5: Value added and formality index

	(1) Value added OLS	(2) Value added OLS	(3) Value added OLS	(4) Value added FE
Formality Index		0.122*	0.141**	0.089
		(0.071)	(0.059)	(0.117)
Size	1.159***	1.045***	1.105***	0.852**
	(0.170)	(0.184)	(0.149)	(0.384)
Woman-led	1.556***	1.524***	1.004***	1.131
	(0.409)	(0.405)	(0.306)	(0.729)
South	0.172	0.111	-0.039	
	(0.266)	(0.271)	(0.211)	
Food	-1.079*	-1.036*	-1.079**	
	(0.634)	(0.613)	(0.500)	
Textiles	-2.049***	-1.913***	-1.878***	
	(0.606)	(0.602)	(0.486)	
Wood	-2.188***	-2.009***	-1.955***	
	(0.562)	(0.561)	(0.459)	
Paper	-2.148*	-2.172*	-1.798**	
	(1.129)	(1.126)	(0.733)	
Chemicals	-1.053	-0.981	-0.542	
	(1.511)	(1.493)	(1.274)	
Minerals	-1.020	-0.845	-0.804	
	(0.620)	(0.611)	(0.516)	
Metal	-1.773***	-1.619***	-1.646***	
	(0.578)	(0.557)	(0.464)	
Balanced Panel			-0.738***	
			(0.185)	
year = 2022				1.738***
				(0.249)
Firm and Year FEs	No	No	No	Yes
Observations	710	710	926	710
R^2	0.206	0.209	0.268	0.139

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*
Source: Authors' calculations based on IIM 2017 and 2022 data.

Table 10.6: Labour productivity and formality index

	(1) Labour productivity OLS	(2) Labour productivity OLS	(3) Labour productivity OLS	(4) Labour productivity FE
Formality Index		0.154**	0.172***	0.103
		(0.060)	(0.051)	(0.104)
Size	0.228*	0.083	0.129	-0.112
	(0.138)	(0.146)	(0.119)	(0.321)
Woman-led	1.262***	1.222***	0.835***	0.752
	(0.356)	(0.349)	(0.269)	(0.561)
South	-0.195	-0.272	-0.404**	
	(0.226)	(0.230)	(0.181)	
Food	-0.939	-0.884	-0.981**	
	(0.585)	(0.559)	(0.466)	
Textiles	-1.803***	-1.631***	-1.669***	
	(0.561)	(0.548)	(0.454)	
Wood	-1.976***	-1.750***	-1.750***	
	(0.530)	(0.518)	(0.433)	
Paper	-1.533*	-1.563*	-1.445**	
	(0.874)	(0.866)	(0.601)	
Chemicals	-0.687	-0.596	-0.502	
	(1.135)	(1.112)	(0.930)	
Minerals	-0.991	-0.770	-0.776	
	(0.603)	(0.588)	(0.499)	
Metal	-1.706***	-1.512***	-1.591***	
	(0.547)	(0.521)	(0.442)	
Balanced Panel			-0.544***	
			(0.163)	
year = 2022				1.342***
				(0.221)
Firm and Year FEs	No	No	No	Yes
Observations	710	710	926	710
R^2	0.066	0.073	0.099	0.113

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1*
Source: Authors' calculations based on IIM 2017 and 2022 data

10.6 Conclusion

Even though increasing the level of formality in the economy is a long-standing goal for the Government of Mozambique, we have seen in this chapter that both in the balanced and unbalanced sample, de-formalisation occurred in the past 10 years. Indeed, the average level of formality is lower in 2022 than in 2012, and the share of firms complying with each of the five formality criteria selected is lower in the latest survey wave compared to the first. Two opposite trends are at play: on the one hand, there is a reduction of firms that do not comply with any of the regulations of interest; on the other, there is a decrease in the share of firms that fulfill all of the formality criteria. This suggests that firms may not see benefits in fully complying with regulations, but that firms are interested in not being completely informal. These results also suggest that higher formality does not lead to better financial performance as measured in revenue, value added, or labour productivity.

The various reforms and regulations that aimed at simplifying and speeding up the process of formalisation have not proven effective. The occurrence of de-formalisation might also have to do with the trends at play in the Mozambican economy at large: in most recent years, a series of shocks have had strong negative repercussions for economic growth and, as seen above, lower growth and decreasing per capita income are associated with lower level of formality. In addition, the benefits of formalisation in Mozambique are few and the process is costly, which is why especially in times of economic hardship, firms might decide not to increase their level of formalisation.

In absence of clear benefits of formalisation, it is recommendable for Mozambique not to focus on eradicating informality. The informal sector plays a key role in providing employment to the vast majority of the labour force in the country, in a context where formal job creation cannot keep up with rapid population growth. Indeed, informal jobs provide a livelihood to categories that are already marginalized and economically vulnerable, thus contributing to poverty alleviation. To harness the poverty-reducing potential of the informal economy and boost economic growth, it is necessary to make social protection programs available to informal workers, as well as to boost productivity in the sector with productivity-enhancing measures and by addressing infrastructural and regulatory constraints.

11 Access to credit

11.1 Are politically connected firms less constrained?

The impact of political connections of firms has been researched extensively, but limited focus has been given to the impact of such connections on access to formal finance. A few studies find that lenders in developing countries do favour politically connected firms (e.g., Mian and Khwaja, 2005; Claessens et al. 2008; Boubakri et al., 2012; Rand, 2020). Others emphasise the significant costs of being politically connected as not being reflected in a partial analysis of credit access and constraints (Jackowicz, 2014; Siegel, 2007). This chapter, therefore, addresses the question of to what extent political connections at the firm-level influence access to formal finance of small and medium enterprises (SMEs) in Mozambique, considering that there may be heterogeneity in firm-level credit demand.

The literature on the benefits of political connections often takes its point of departure in resource dependency theory. Political connections facilitate easier access to resources such as finance. Assuming political capital is a valuable and scarce resource, firms will compete to acquire political capital, given their various and differing benefits across heterogeneous locations. For example, political connections could be more valuable to firms in "bad" governance locations and firms with limited legal enforcement possibilities (informal firms).

Using this resource dependency perspective, Leuz and Oberholzer-Gee (2006) find that political connections help to attain preferential credit in Indonesia. In Pakistan, Mian and Khwaja (2005) find that politically connected firms can borrow more, although they, on average, have higher default rates. Finally, Rand (2020) finds that being politically connected in Vietnam decreases the likelihood of being credit constrained in formal financial markets and that these firms face up to 5 per cent lower cost-of-capital than non-connected firms. As such, the political affiliation of the firm owner is found to be a central explanation for preferential treatment in financial markets.

Political ties may also help overcome market/state imperfections such as red-tape and low enforcement of property rights (Chen et al., 2011). Li et al. (2008) examine how political connections affect the performance of Chinese private firms and find a positive impact related to preferential treatment of politically connected firms in credit markets, with effects being larger in locations with weaker institutions and legal protection/enforcement. Boubakri et al. (2012) find support for this result by showing (in a cross-country setting) that political connections lower the interest rate on loans for politically connected firms operating in weaker institutional environments. Du and Girma (2010) use

data on more than 100,000 Chinese start-ups and conclude that political connections lead to a suboptimal allocation of credit by favouring credit access to less efficient politically connected firms.

The disadvantages of being politically connected also relate to theories of rent seeking (Shleifer and Vishny, 1998). Political connections are seen as unfavourable, because of the increased exposure to government civil servants. Jackowicz et al. (2014) find that firm performance of, especially informal firms, is negatively affected by political connections and that this negative impact is intensified as the number of connections increases. As such, the potential benefits of political connections are overshadowed by the costs of these connections. Supportive evidence is found in Siegel (2007) analysing South Korean firms and Bertrand et al. (2004) in the case of France that political connections impose significant economic costs on firms because firms have to grant favours to local government officials that lead to in-optimal employment decisions. The effectiveness of corporate governance is also negatively correlated with being politically connected, negatively influencing enterprises' performance (Fan et al., 2007).

To summarize, the existing literature relies on the resource dependency of firms and rent-seeking theories to motivate arguments for positive or negative firm outcomes of political connections. Ambiguous outcomes are observed, highlighting that political connections' impact is highly context specific. To our knowledge, there is no firm-level evidence regarding the impact of political connections on access to financial resources in Mozambique. Therefore, this chapter utilizes our panel of small and medium enterprises (SMEs) observed in 2012, 2017 and 2022. Utilizing this 3-wave balanced panel of 355 Mozambican SMEs over a 10-year period, we analyse specifically whether formal credit access has improved, and financial constraints have been alleviated. We also look closely at the importance of being politically connected on both access to credit and being constrained by formal financial institutions. Controlling for self-selection into credit markets ad unobserved time-invariant firm-level heterogeneity, we find that being politically connected increases the likelihood of applying for credit but that it is not statistically related to being constrained in financial markets. Moreover, political connections are most valuable for the formal credit access of informal firms.

11.2 Defining credit constraints and political connectedness

We focus solely on the balanced panel, i.e., the 355 firms covering 1,065 firm observations in 2012, 2017 and 2022, to analyse the relationship between politically connected firms and access to finance. Additional details on the sampling can be found in Chapter 2.

The majority of firms considered are smaller businesses. Some of these are administratively listed firms (formal businesses with a tax ID, NUIT), and others are non-listed businesses (obtained through on-site

"block" identification) operating alongside the formal entities (businesses without a NUIT). While the group of listed firms represents the "formal" manufacturing sector in the selected provinces, our sample of informal businesses is not representative of "non-listed" manufacturing firms in Mozambique, as they may represent the more established and productive informal entities, and some of them are registered with local government entities.

The distinction between formal and informal enterprises may be important when analysing credit access. On the one hand, informal businesses will not be eligible for formal loans in the company name but have to rely on formal financing obtained based on personal wealth records without reliance on firm assets as collateral. On the other hand, since the data cover smaller businesses, informality will not necessarily matter that much for the relative probability of obtaining formal financing.

Distinguishing between credit applying and credit constrained firms

Many scholars have also discussed the definition of firm-level credit access and credit constraints in Mozambique (see, for example, Bentzen *et al.*, 2010). Cross-country evidence done by Beck and Demirgüç-Kunt (2006) using the World Business Environment Survey (WBES) data utilize a perception-based approach where firms are asked whether they perceive themselves as financially constrained and whether this is creating an obstacle to their growth. Cross-country evidence in Hansen and Rand (2014a) using Investment Climate Assessment (ICA) surveys shows that almost 50 per cent of the firms perceive lack of access to credit to be a serious or severe constraint to firm growth.

But as emphasized in Hansen and Rand (2014b), perceptions about being financially constrained do not imply that the firms are, in fact, credit constrained or, in fact, need credit. In the following, we, therefore, base our credit access and constraint definition on questions that would rank highly in the reliability classification by Boulier and Goldfarb (1998). In addition, our credit access and credit constraint measures need to ensure that constrained firms are only classified as firms with credit demand. Here we address this form of selection bias following Bigsten *et al.* (2003), Rand (2007), Bentzen *et al.* (2010), Hansen and Rand (2014a, 2014b) and Rand (2020) in (i) first identifying firms with demand for credit, and (ii) conditional on credit demand, identifying credit-constrained firms. In this chapter, we apply the following question to distinguish between firms with and without credit demand: "no need for a loan". If not applying and not needing a loan, the firm is assumed not to have credit demand. As in previous literature, we classify a firm as credit constrained if it (i) applied for and was denied credit or (ii) did not apply for credit due to reasons such as "application procedures to complex" and "collateral requirements unattainable".

Table 11.1 shows how many firms applied for a loan and whether the reason for not applying was "no need for a loan". Only 37 per cent of firms in the balanced panel (or 389 firms) applied for formal finance in 2012, 2017 and/or 2022. Of these, 73 per cent experienced problems getting the loan. Moreover, the Table documents details about the number of firms not applying for credit. Of the 676 observations not applying, 53 per cent did not apply because of an expectation of being denied, whereas 47 per cent of those not applying did not need a loan.

Table 11.1: Credit Access and Constraints

Applied for a loan	Yes			No	
	596			1,170	
	(34)			(66)	
	389			**676**	
	(37)			**(63)**	
Problems getting the loan	Yes	No	**Did not apply, why?**	Firms	Percent
	406	190	No need for a loan	561	(48)
	(68)	(32)		**318**	**(47)**
	284	**105**	Self-selection due to expected	609	(52)
	(73)	**(27)**	application rejection	**358**	**(53)**

Note: Percentages in parenthesis. Bold numbers relate to the balanced panel (a total of 1,065 observations). The remaining numbers relates to the full data (a total of 1,766 observations)
Source: Authors' calculation based on IIM 2012, 2017 and 2022 dataset.

Based on this, Tables 11.2 and 11.3 report that 60.3 per cent of the balanced sample can be classified as financially constrained. This number reflects a steady increase from 2012 to 2022 (from 53.8 to 81.1 per cent), accompanied by a significant drop (8 percentage points) between 2012 to 2017. This increase should be seen in the light of many more enterprises applying for formal finance in 2022 compared to 2012 and 2017. In 2012, only 19.7 per cent of the firms applied for formal finance, which increased to 68.7 per cent in 2022.

Note also from Table 11.2 the differences in both credit access and credit-constrained firms between politically connected and not connected firms. This relationship between being politically connected and being financially constrained is what we put under deeper scrutiny in the next sections.

Defining political connectedness

As alluded to in the introduction, being politically connected may bring both benefits and costs. In this chapter, we use an indicator variable taking the value 1 if the firm owner is a member of a political party and zero otherwise, as a proxy for political connectedness. In Tables 11.2 and 11.3, we document summary statistics by political connectedness and year for all variables subsequently used in the analysis of the impact of political connections on the probability of accessing formal finance and being financially constrained. Related to our definition, we see that almost 40 per cent of the balanced

sample is politically connected, ranging from 41 per cent in 2012 to 50 per cent in 2022. Note that variation exists as much in the balanced panel as in the unbalanced data (full sample); a variation that we are utilizing below for identification. Moreover, Table 2 shows that differences exist between politically connected firms and non-connected firms along observable characteristics. Politically connected firms are smaller, less likely to be formally registered, and more likely to be located in perceived “better” governance provinces in the country's centre.

Table 11.2: Summary statistics by connectedness

	Unbalanced	Pol Connect	Not connected	Balanced	Pol Connect	Not connected
Applied for credit (Yes=1)***	**0.337**	**0.379**	**0.311**	**0.365**	**0.424**	**0.327**
Credit constrained (Yes=1)***	**0.575**	**0.619**	**0.546**	**0.603**	**0.621**	**0.591**
PolConnect (Member of political party = 1)	0.390	1.000	0.000	0.396	1.000	0.000
Local Governance Index***	-0.038	0.030	-0.083	-0.038	0.030	-0.083
NUIT (Have business license = 1)***	0.647	0.602	0.676	0.590	0.559	0.610
Invest (Yes = 1)	0.390	0.381	0.395	0.372	0.384	0.364
Micro (Yes=1)***	0.665	0.722	0.628	0.713	0.756	0.684
Small (Yes=1)	0.254	0.233	0.267	0.223	0.213	0.229
Medium (Yes=1)***	0.082	0.045	0.105	0.065	0.031	0.087
Firm size (log full-time employees)***	2.080	1.928	2.177	1.939	1.837	2.005
Maputo (Yes=1)**	0.299	0.272	0.316	0.237	0.216	0.250
South (Yes=1)**	0.506	0.468	0.530	0.476	0.462	0.485
Centre (Yes=1)***	0.322	0.363	0.296	0.341	0.365	0.325
North (Yes=1)	0.172	0.169	0.174	0.183	0.173	0.190
Observations	1,766	688	1,078	1,065	422	643
Per cent		39	61		40	60

Source: Authors’ calculation based on IIM 2012, 2017 and 2022 dataset

Table 11.3: Summary statistics, by year

	Unbalanced			Balanced		
	2012	**2017**	**2022**	**2012**	**2017**	**2022**
Applied for credit (Yes=1)	**0.203**	**0.211**	**0.695**	**0.197**	**0.211**	**0.687**
Credit constrained (Yes=1)	**0.505**	**0.443**	**0.823**	**0.538**	**0.459**	**0.811**
PolConnect (Member of political party = 1)	0.400	0.267	0.491	0.414	0.279	0.496
Local Governance Index	-0.038	-0.038	-0.038	-0.038	-0.038	-0.038
NUIT (Have business license = 1)	0.794	0.657	0.383	0.755	0.634	0.380
Invest (Yes = 1)	0.794	0.285	0.339	0.493	0.296	0.327
Micro (Yes=1)	0.602	0.698	0.743	0.662	0.724	0.752
Small (Yes=1)	0.300	0.215	0.211	0.265	0.200	0.203
Medium (Yes=1)	0.099	0.087	0.046	0.073	0.076	0.045
Firm size (log full-time employees)	2.346	1.950	1.740	2.227	1.875	1.715
Maputo (Yes=1)	0.329	0.296	0.251	0.237	0.237	0.237
South (Yes=1)	0.527	0.517	0.457	0.476	0.476	0.476
Centre (Yes=1)	0.298	0.311	0.375	0.341	0.341	0.341
North (Yes=1)	0.174	0.172	0.168	0.183	0.183	0.183
Firms	831	460	475	355	355	355

Source: Authors' calculation based on IIM 2012, 2017 and 2022 dataset

11.3 Empirical approach and results

We operate with several specifications to analyse the relationship between the probability of being credit-constrained and political connectedness. First, we rely on the following simple pooled non-linear (probit) model:

$$d_{it} = 1[\beta_0 + \beta_1 T_{it} + x'_{it}\sigma + \varepsilon_{it} > 0] \quad (1)$$

where *d* is an indicator variable taking the value of one if the firm applied for formal finance (a) or is defined as credit constrained (c) and zero otherwise, *T* = 1 if the firm owner is a member of a political party and zero otherwise, *x* contains proxies for credit access, and ε is a firm-specific error term.

However, the above specification does not utilize the dynamics observed in political connectedness over time. We therefore also estimate the following pooled non-linear (logit) model:

$$P(d_{it} = 1) = \frac{\exp\left[\gamma_0 + \gamma_1 entry_{it} + \gamma_2 exit_{it} + \gamma_3 always_{it} + x'_{it}\sigma + \varepsilon_{it}\right]}{1 + \exp\left[\gamma_0 + \gamma_1 entry_{it} + \gamma_2 exit_{it} + \gamma_3 always_{it} + x'_{it}\sigma + \varepsilon_{it}\right]} \quad (2)$$

where *entry* = 1 if the firm owner goes from not being politically connected in period t-1 to becoming connected in period t (and zero otherwise), *exit* = 1 if the firm owner goes from being politically connected in period t-1 to becoming disconnected in period t (and zero otherwise) and *always* = 1 if

the firm owner is politically connected throughout the 2012-2022 period. The coefficient on γ_1 and γ_2 measure the difference in credit constraints for political "switchers" compared to firms staying politically unconnected throughout the period under study. The coefficient γ_3 measures a similar difference in the probability of being credit constrained between politically unconnected firms to firms that are connected throughout the period under study. As the above specification does not fully control for the individual fixed effects affecting the probability of being credit constrained, we, as a robustness check, also run standard linear fixed effects models to account for differences in firm-level heterogeneity affecting the credit-political connectedness relationship.

Finally, we have to acknowledge that the credit constraint perceptions are not independent of whether firms decide to apply for credit. To take into account the interaction of applying and perceived constraints, we model the determination of credit access and credit constraints jointly using a non-linear biprobit model, which utilizes the fact that the propensity to apply for a loan in formal and perceived credit constraints may not be independent:

$$a_{it} = 1[\beta_{10} + \beta_{11} T_{it} + x'_{1it}\sigma + \varepsilon_{1it} > 0] \quad (3)$$
$$c_{it} = 1[\beta_{20} + \beta_{21} T_{it} + x'_{2it}\sigma + \varepsilon_{2it} > 0]$$

where $\varepsilon_{1it}$and ε_{2it} have mean zero and unit variance, such that $(\varepsilon_{1it}, \varepsilon_{2it}) \sim binorm(0,0,1,1,\rho)$ and ρ is the coefficient of correlation.

Table 11.4 reports the results from specification (1). Column 1 only includes time fixed effects in addition to the reported variables, whereas column 2 also includes both location and sector fixed effects plus additional variables (described in Tables 11.2 and 11.3) likely to influence credit market access. Finally, in columns 3 and 4 we do the analysis separately for formal firms (with NUIT) and informal firms (without NUIT).

Table 11.4: Credit constraint determinants

	Apply			Constrained		
	All	Formal	Informal	All	Formal	Informal
PolConnect (Member of political party = 1)	0.050	**0.080***	0.040	-0.027	-0.038	0.022
	(1.44)	**(1.79)**	(0.73)	(0.76)	(0.80)	(0.44)
Firm size (log full-time employees)	**0.038****	**0.037***	0.046	**-0.048*****	**-0.051****	**-0.057***
	(2.14)	**(1.82)**	(1.24)	**(2.66)**	**(2.19)**	**(1.85)**
Local Governance Index	-0.013	-0.005	-0.028	-0.054	**-0.062***	-0.049
	(0.51)	(0.15)	(0.65)	(2.05)	**(1.75)**	(1.39)
Invest (Yes = 1)	0.016	-0.013	0.055	-0.018	**-0.080***	0.076
	(0.50)	(0.33)	(0.92)	(0.54)	**(1.79)**	(1.57)
NUIT (Have business license = 1)	**0.065***			**-0.083****		
	(1.68)			**(2.23)**		
Location fixed effects	YES	YES	YES	YES	YES	YES
Sector fixed effects	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES
Observations	1,065	628	432	1,065	628	432
Firms	355	298	235	355	298	235

*Note: t-stats (in parentheses clustered at the firm level). *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.*
Source: Authors' calculation based on IIM 2012, 2017 and 2022 dataset.

As expected, we find that firm size matters both for the probability of applying for formal finance (positive) and for the risk of being constrained in credit markets (negative). Having a formal license (NUIT) has the equivalent impact. Being located in areas perceived as having better governance structures does not influence the chance of applying for credit. Still, there is a negative well-determined relationship between perceived good governance and being credit constrained, but only for formal firms. A similar negative relationship is found for investing for formal firms, as expected. Finally, we find that politically connected firm owners are more likely to apply for formal credit, but conditional on reasons for applying for credit. We do not find that politically connected firms are less constrained in formal credit markets, as expected. Interestingly, controlling for location and sector fixed effects, formal firms that are politically connected have an increased probability of applying for formal credit by 8 percentage points, whereas no well-determined effect is found for informal firms.

Table 11.5, Panel A report results from specification (2) for the full sample (column 1), formal firms only (column 2) and informal firms (column 3), respectively. We find that firms switching into connectedness or out of being politically connected are significantly more likely to apply for formal credit, confirming the overall results in Tables 2 and 3. However, we do not find a relationship between being credit constrained and political connectedness. Coefficient estimates for the full sample in panel A, column 1 are equivalent to marginal effect estimates of 0.119 (entry) and 0.112 (exit), respectively. This means that firm owners who lose their membership (mostly due to change of owner) or who did not precisely state the nature of their political connection (party membership or local cadre member)

and firm owners that switch into becoming more politically involved have an 11-12 per cent higher likelihood of applying for formal finance as compared to firm owner never being politically involved during the 2012-2022 period. Interestingly, this effect is largely driven by informal enterprises, suggesting that political connections may be of significant importance for informal firms' participation in formal credit markets. Allowing for individual firm fixed effects in Panel B highlight that it is especially the entry into being politically connected that increases the probability of applying for formal credit. However, again we do not find any strong relationship between political connections and being credit constrained. As such conditional on applying, we do not find that politically connected firms are more or less likely to be denied the formal credit that they applied for.

Table 11.5: Always connected versus getting connected

Panel A: Pooled Logit						
	Apply			**Constrained**		
	All	**Formal**	**Informal**	**All**	**Formal**	**Informal**
Always connected	0.106	0.094	0.126	0.013	-0.057	0.099
	(1.59)	(1.25)	(1.10)	(0.23)	(0.73)	(1.21)
Entry (getting connected)	**0.119****	0.084	**0.196*****	0.012	0.051	0.027
	(2.41)	(1.13)	**(2.77)**	(0.21)	(0.59)	(0.41)
Exit (getting disconnected)	**0.112****	0.037	**0.164***	0.050	0.063	0.029
	(2.11)	(0.50)	**(1.93)**	(0.89)	(0.74)	(0.43)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Sector fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,065	628	428	1,065	628	432
Pseudo R-sq	0.195	0.200	0.206	0.121	0.115	0.102
Panel B: Conditional Fixed Effects Logit						
	Apply			**Constrained**		
	All	**Formal**	**Informal**	**All**	**Formal**	**Informal**
Entry (getting connected)	**0.092****	**0.123***	**0.154****	0.001	-0.017	-0.072
	(2.10)	**(1.76)**	**(2.25)**	(0.03)	(0.19)	(0.86)
Exit (getting disconnected)	0.061	-0.027	0.078	0.047	0.043	0.042
	(1.49)	(0.44)	(0.89)	(0.86)	(0.57)	(0.41)
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Additional time varying controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,065	628	437	1,065	628	437
Firms	355	298	240	355	298	240

*Note: t-stats (in parentheses) clustered at the firm level in the pooled logit and bootstrapped based on 50 replications for the conditional fixed effects logit. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.*
Source: Authors' calculation based on IIM 2012, 2017 and 2022 dataset

Finally, in Table 11.6 we report results from the bivariate probit model (specification 3). The reported test for independence between the equations shows that the null hypothesis of independence is rejected. However, Table 11.6 also shows that adjusting for interdependence between the probability of applying for credit and the likelihood of being constrained in credit markets (thereby controlling for the correlation between perceived credit constraints and likelihood of applying) does not change the overall conclusions.

Overall, we therefore conclude that we find a well-determined relationship between becoming politically connected and applying for formal credit, and that this relationship is particularly important for informal firms in Mozambique. Moreover, conditional on applying we do not find evidence of preferential treatment in the financial system of SMEs being politically connected.

Table 11.6: Applying and Constrained Independency

	Apply	Constrained	Apply	Constrained
Politically connected	0.134	-0.069		
	(1.46)	(0.75)		
Always connected			**0.290***	0.042
			(1.73)	(0.29)
Entry (getting connected)			**0.316****	0.032
			(2.40)	(0.23)
Exit (loosing connection)			**0.305****	0.130
			(2.18)	(0.91)
Time fixed effects	Yes		Yes	
Location fixed effects	Yes		Yes	
Sector fixed effects	Yes		Yes	
Additional controls	Yes		Yes	
Observations	1,065		1,065	
Rho	**0.146****	**(2.53)**	**0.141****	**(2.43)**
Wald test (p-value)	0.01		0.02	

*Biprobit estimates. t-stats (in parentheses) clustered at the firm level. *** indicates significance at the 1% level, ** at the 5% level, and * at the 10% level.*
Source: Author's calculations based on IIM data.

11.4 Conclusion

In the context of SMEs in Mozambique this chapter asked the simple questions: Are politically connected firms (i) more likely to apply for formal credit and if so (ii) are they less likely to be credit constrained if they have formal credit demand. Results reveal, controlling for self-selection into credit markets and unobserved time-invariant firm-level heterogeneity, that having a firm owner that is politically connected is linked with a higher likelihood of applying for formal credit. More specifically, it is shown that the political connections of informal firms are especially important for the decision to apply for formal finance, but that conditional on having credit demand that political connectedness is not related to whether the firm is credit constrained. Whether preferential treatment in the access to formal credit of politically connected informal firms is a causally dominating mechanism with respect to the overall impact on firm performance is a question left for further research.

However, the chapter does clearly reveal that there is increasing demand for external finance among Mozambican SMEs, but that this increase in demand is yet to be served. We obtain signals from the data that firms no longer can rely on retained earnings (internal finance) for scaling their business activities. Risk-willing external finance is needed. Policy makers therefore need to look deeper into reasons as to why the supply of finance for private sector activities is so slow in reacting to the private

business opportunities and the resulting increase in credit demand. Currently 68% of the firms applying for finance have trouble in obtaining credit, a number among the highest in the African continent (based on Investment Climate Assessment information), although the average bank customers in Mozambique (based on MIX Market information) is comparable to the average customer in Africa. This indicates that there may be room for relaxing lending criteria of local financial institutions in Mozambique in order to better facilitate the increasing credit demand by the private sector. One reason for the relative conservative lending policies in Mozambique could be due to lack of sufficient credit information. The absence of credit rating systems makes it difficult for financial institutions to assess the creditworthiness of potential borrowers. An inadequate legal framework adds to the complications as insufficient enforcement of contracts can create excessive risks for lenders and discourage lending. All these areas are well known avenues for improvement, but now it seems more important than ever to act to facilitate future private sector business opportunities.

12 Extreme weather risk perception and reaction

Idai, Kenneth and Gombe, and more recently, Freddy, are four major tropical cyclones that hit Mozambique in recent years. Cyclones and other weather-related disasters are so frequent that Mozambique is now classified as one of the countries most affected by extreme weather events (Eckstein et al., 2021). In the Government of Mozambique's National Climate Change Adaptation and Mitigation Strategy (GoM, 2012), the private sector is assumed to play an active role in supporting the country to react to extreme weather (GoM, 2012, p.5). The private sector's active role in reacting to extreme weather is a worldwide discourse. However, this discourse ignores that firms themselves need to react to extreme weather first before they can help others to react. Thus, this chapter examines firm owners' and managers' attitudes towards extreme weather and their reaction strategies.

Extreme weather does not bypass manufacturing enterprises. Berkel et al. (2021a) illustrate sharp decreases in revenue and profits of the manufacturing sector in Beira because of Cyclone Idai. To avoid similar scenarios in the future, firm owners and managers need to consider how to protect themselves from the harmful impact of extreme weather events. Due to the significance of the topic, we added weather-related questions to the survey in 2022. Note that this means that the survey rounds of 2012 and 2017 are not analysed in this chapter.

Before taking action against the possible impact of weather, extreme weather must be perceived as a risk to doing business. If it is not perceived as a risk, enterprise owners will not feel the need to protect their businesses. Thus, this chapter starts by examining firm owners' extreme weather risk perceptions. Second, it analyses whether and how firm owners prepare their business for potential future impacts of extreme weather. Third, we give suggestions on how to tackle the future risks of extreme weather.

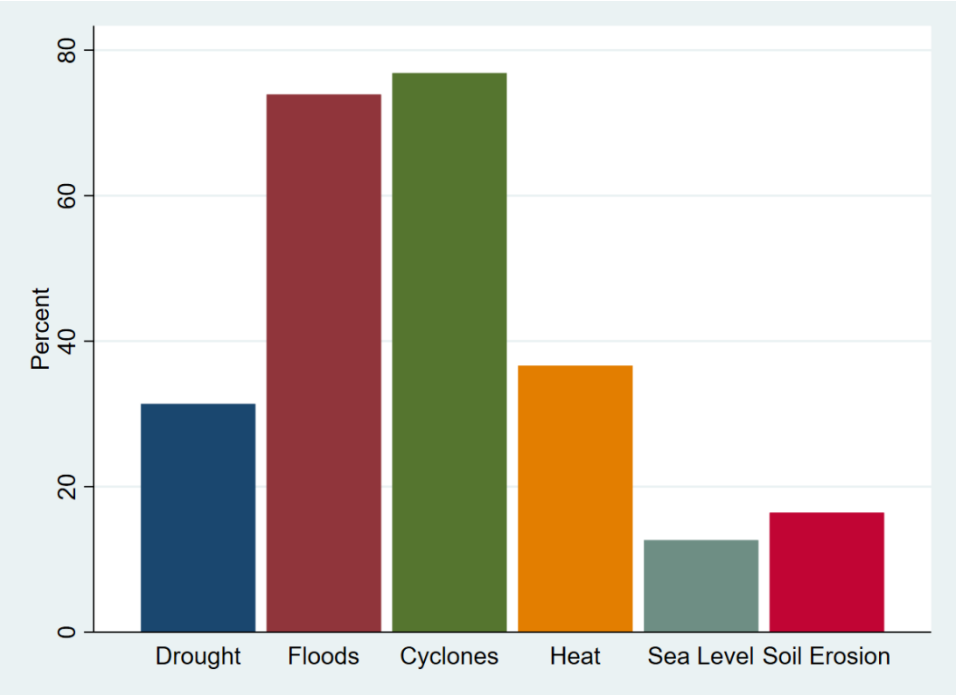
12.1 Predicting extreme weather risk perception

The interviewed firm owners and managers are aware of a high risk of extreme weather. Figure 12.1 illustrates which weather risks to doing business they regard as strongest. About 75 per cent of the firm owners chose floods and cyclones as the biggest risks to doing business. Only 37 per cent indicate that heat poses a threat, and 30 per cent mention droughts. As few as 14 per cent think that sea level rise represents a risk, even though the sea is rising and is already creating significant problems for Mozambican coastal cities (Mucova et al., 2021). Despite the awareness that climate change is happening and perceiving high weather-related risks, only 35 per cent of the firm owners know that climate change is mainly caused by human activities. Understanding climate change and its potential

impact is important to fully be able to react to extreme weather phenomena and make long-term plans. It is noteworthy that the 35 per cent share of our sample is 10 percentage points higher than the country's average. Only 25 per cent of Mozambique's population knows that climate change is mainly caused by human activities. On the other hand, 35 per cent is much lower than other African countries' averages of more than 60 per cent (Mauritius and Uganda) (Simpson et al., 2021).

If firm owners are not worried about extreme weather, they might not want to prepare for and react to it. Thus, we examine the extent to which firm owners are concerned about extreme weather. Following the approach by van der Linden (2015), we use eight different questions to create an index of weather risk perception. The first four questions asked firm owners to evaluate how serious of a threat they think a specific weather event is to the firm itself, to manufacturing firms in Mozambique, to Mozambique as a whole, and to manufacturing firms worldwide. The following two questions asked about the probability for the specific weather event to have negative consequences in the future for their businesses personally and Mozambican manufacturing enterprises as a whole. Further, we asked how concerned they are about the potential negative consequences of the specific extreme weather event for their businesses and how often they worry about these possible negative consequences. The same questions were asked two times, and first, referred to cyclones and, second, to floods (3).

Figure 12.1: Which weather event/s represent a risk to your enterprise?



Source: Authors' calculations based on IIM 2022 data.

All eight questions about weather risks had seven different reply options, ranging from 1 (=not worried/very unlikely depending on the specific question) to 7 (=extremely worried/very likely). Hence, the index ranges from 8 (lowest possible risk perception) to 56 (highest possible risk perception). Table 12.1 illustrates that firm owners perceive a high risk of cyclones (45.5) and floods (45.03).

The firm owners located in central Mozambique have a higher risk perception of cyclones (49.2) and floods (48.6) than firm owners in the North (43.6 and 43.1) and South (43.2 and 42.8). The higher perceived risk in the Centre might be related to that part of the country being more affected by extreme weather than the rest. Regarding differences in risk perceptions by firm size, we observe only small differences. Micro-sized and small enterprises perceive a slightly higher cyclone and flood risk than medium-sized enterprises.

Table 12.1: Extreme weather risk perceptions by geography and firm size

	2022 Survey Round						
	All	**South**	**Centre**	**North**	**Micro**	**Small**	**Medium**
	%	**%**	**%**	**%**	**%**	**%**	**%**
Heard of climate change	92.0	92.2	91.0	91.3	90.3	94.0	100.0
Cyclone risk	45.5	43.2	49.2	43.6	45.7	45.3	43.5
Flood risk	45.0	42.8	48.6	43.1	45.2	44.8	42.7
Total	475	217	178	80	353	100	22

Note: Restricted to 2022 survey wave.
Source: Authors' calculations based on IIM 2022 data.

To understand firm owners' risk perception in more detail, we examine the predictors of weather risk perception, i.e., what explains firm owners' weather risk perceptions? The academic literature highlights four main predictors of weather risk perception: *1. Socio-demographic, 2. Cognitive, 3. Experiential, and 4. Socio-cultural*. In studies on the UK and Australia, these four predictors explain 68 per cent of the variance in risk perceptions (van der Linden, 2015; Xie et al., 2019). This might be different in Mozambique, as it is a non-Western and non-industrialized country.

The socio-demographic predictors are income, age, level of education, firm size, and entrepreneurial orientation. We are the first to include firm size and entrepreneurial orientation because previous studies focused on individuals but not specifically on firms. It is essential to add firm-specific characteristics to the analysis, as firm owners and managers are different from an average individual.

The cognitive predictors include knowledge of the causes and consequences of climate change, and physical knowledge related to weather shocks and climate change. These three types of knowledge were shown to be valid in various cultural contexts (Shi et al., 2016). For example, one of the statements about the causes of climate change to which firm owners had to reply is "Climate change

is mainly caused by human activity". The interviewee has to select between "Correct", "Incorrect", and "Don't know". To measure physical knowledge, we asked, among others, "At the same quantity, CO2 is more harmful to the environment than methane." Lastly, to measure knowledge of the consequences of climate change, statements such as "For the upcoming decades, scientists expect the climate to change uniformly around the entire world" appeared.

Experiential predictors involve affect and personal experiences with extreme weather. Affect is "the extent to which [firm owners] view extreme weather as unpleasant, unfavourable, and negative" (Xie et al., 2019). Personal experience indicates if a firm owner has experienced any extreme weather events in their city within the last five years (van der Linden, 2015; Xie et al., 2019).

Socio-cultural predictors include firm owners' norms related to extreme weather mitigation, and more general values that matter for a person's worldview in a Western context. First, descriptive norms refer to the degree to which others, i.e., in our case other business owners, are acting to reduce the risk of extreme weather. Second, prescriptive norms measure the degree to which a firm owner feels socially pressured to view extreme weather as a risk that requires action (van der Linden, 2015: 116). Third, value orientations capture the effects of broader cultural values on personal risk perceptions. We assess three value orientations: biospheric (respecting the environment), socio-altruistic (advocating for social justice) and egoistic (pursuing self-serving activities) that were shown to be significantly associated with risk perceptions in previous studies (van der Linden, 2015; Xie et al., 2019).

Table 12.2 depicts the results of a hierarchical multiple regression analysis. Specifically, it shows the extent to which socio-demographic, cognitive, experiential, and socio-cultural factors predict cyclone risk perceptions among manufacturing enterprises in Mozambique. First, column 1 illustrates the association between five socio-demographic variables and cyclone risk perception. The only association that is statistically significant is the one between entrepreneurial orientation and risk perception. Firm owners with higher entrepreneurial orientation probably have a more long-term business vision than owners of subsistence firms and, therefore, perceive cyclones as a higher risk to doing business, too. These socio-demographic variables jointly explain 6 per cent of the variance in risk perception. Thus, socio-demographics seem to be of similar importance in Mozambique as in Western democracies (UK, Australia) (van der Linden, 2015; Xie et al., 2019).

Second and contrary to Western countries, knowledge of climate change plays a minor role in relation to risk perception in Mozambique. Only physical knowledge about climate change is significantly associated with cyclone risk perception, and it only adds 2 per cent of the variance in risk perception. The reason why knowledge is less important for risk perception in Mozambique than in other countries

might be that the knowledge level is generally low and does not vary strongly among different firm types. Hence, if everybody has more or less the same knowledge level, there will not be any varied impact of knowledge on risk perceptions.

Third, both more negative affect of and having personally experienced an extreme weather event matter strongly and significantly for risk perception. Affect and personal experience explain an additional 21 per cent of the variance, which is lower than in Western countries (33 per cent) (Xie et al., 2019).

Fourth, socio-cultural factors seem to play a smaller role in Mozambique than in Western countries. Specifically, it is only descriptive norms, i.e., the extent to which important others are personally acting to address extreme weather, that are significantly associated with risk perception. Socio-cultural factors only explain an additional 3 per cent of the variance.

Table 12.2: Determinants of cyclone risk perceptions

	Socio-demographics	Cognitive factors	Experiential processes	Socio-cultural influences
Income (logged)	0.144	0.095	0.034	0.061
	(0.105)	(0.105)	(0.092)	(0.093)
Age	-0.031	-0.025	-0.003	-0.002
	(0.021)	(0.021)	(0.019)	(0.019)
Lower education	0.190	0.443	-0.286	-0.225
	(0.611)	(0.617)	(0.545)	(0.542)
Firm size	-0.008	-0.007	-0.006	-0.006
	(0.006)	(0.006)	(0.005)	(0.005)
Entrepreneurial orientation	0.655***	0.593***	0.417***	0.394***
	(0.136)	(0.137)	(0.122)	(0.123)
Cause knowledge		-0.041	0.173	0.108
		(0.266)	(0.236)	(0.233)
Physical knowledge		0.571***	0.476**	0.453***
		(0.215)	(0.189)	(0.187)
Consequences knowledge		-0.022	0.064	0.035
		(0.242)	(0.213)	(0.212)
Affect			0.379***	0.349***
			(0.096)	(0.098)
Experience			0.967***	0.879***
			(0.096)	(0.102)
Descriptive				0.414***
				(0.102)
Prescriptive				-0.175
				(0.123)
Biospheric values				0.027
				(0.074)
Altruistic values				-0.080
				(0.065)
Egoistic values				-0.019
				(0.030)
Observations	475	475	475	475
Adj. R2	0.06	0.08	0.29	0.32

Note: Restricted to 2022 survey wave.
Source: Authors' calculations based on IIM 2022 data.

The entire model explains 32 per cent of the total variance in extreme weather risk perceptions – a smaller amount than found in previous studies (68 per cent) (van der Linden, 2015; Xie et al., 2019). However, given that it is highly challenging to collect data of high quality in Mozambique, we consider these results as good and reliable. In sum, entrepreneurial orientation, physical knowledge, affect, personal experience and descriptive norms have the strongest associations with cyclone risk perceptions. To make firm owners more aware of extreme weather and climate change, these are the five aspects policy makes could work on. However, firm owners' risk perceptions are already high. Thus, it is more important to assist them with the reaction to extreme weather. How to do this is the topic of the next sub-section.

12.2 Reaction to extreme weather

In a previous survey of manufacturing enterprises that were affected by cyclone Idai in Beira (Berkel et al., 2021a, 2021b), we found that very few enterprises apply measures to react to extreme weather. This is puzzling given the evidence that firm owners do perceive extreme weather as a high risk to doing business. Thus, in 2022, we decided to explore the topic of reaction of extreme weather in more depth and asked about specific reaction measures.

First, we asked how willing the enterprises are to apply a specific measure (on a scale from 1=Unwilling to apply to 5=Highly willing). Second, how effective they assess the specific measure to be (on a scale from 1=Ineffective to 7=highly effective). Third, if they have ever applied that measure in the past (on a scale from 0=never to 3=many times). Table 12.3 shows that there are two measures that enterprises believe to be most effective. They believe that "*Taking out the trash of the drainage pits in a joint effort with the neighbours*" is the most effective reaction to protect themselves from the impact of floods. The level of effectiveness is, on average, 5 out of 7. Drainage systems in local neighbourhoods are regularly cloaked with trash, which results in inundations. Enterprises do not only think that this is the most effective measure to react but are also willing to apply it (3.8 out of 5 levels of willingness) and 60 per cent of the sample have already implemented this measure at least once in the past.

The second most effective measure is "*Strengthening the fixation of the roof (usually a metal sheet) by adding more nails*". On average, it is being given 5.04 out of 7 levels of effectiveness. Consequently, enterprises are also highly willing to apply the measure (4 out of 5), and about half of the sample have used it at least once in the past.

In contrast, the measure that firms find least attractive is changing the location of their operations. The willingness to move lies at 2.7 (out of 5) and firms give it an effectiveness level of 3.6 out of 7. In the past, only 20 per cent of the sample have changed their location due to weather-related impacts.

The low willingness to move is likely related to firms having a network of local clients at their particular location, which they risk losing if they move somewhere else.

Overall, the willingness to react and evaluated effectiveness of reaction measures are both high. Hence, we need to dig deeper into the reasons of non-reaction. To do so, we analyse how multiple firm and owner characteristics are related to a firm's use of reaction measures. As firm and owner characteristics we use the same sets of variables that we classified as determinants of extreme weather risk perceptions in the previous section: *1. Socio-demographic, 2. Cognitive, 3. Experiential, and 4. Socio-cultural* characteristics. The dependent variable indicates how often firm owners have taken out the trash of the drainage pits in a joint effort with the neighbours (0=never to 3=several times).

Table 12.3: Extreme weather reaction measures – willingness to apply, self-assessed effectiveness and de-facto application

	Willingness to apply 1=Unwilling to apply to 5=Highly willing to apply	**Effectiveness** 1=Inefficient to 7=Highly efficient	**Share of firms that have applied the measure at least once**	**Obs**
Strengthen windows with metal sheets or with plywood secured by wooden or metallic beams	3.7	4.8	58.1	398
Strengthen doors with covers of wood or metal fixed on the wall	3.7	4.8	58.5	407
Strengthen the links between roof beams, using wires or sheet straps with nails	3.8	4.7	60.4	427
Strengthen the fixation of the roof (metal sheet) by adding more nails	4.0	5.0	71.4	423
Put business assets onto higher grounds	3.6	4.9	54.3	475
Plant trees around the business	3.2	4.6	38.5	475
Build a protective wall	3.4	4.9	39.4	475
Sand sacks	3.3	4.4	44.8	475
Take out the trash of the drainage pits in joint effort with the neighbours	3.8	5.3	60.2	475
Change location of the business	2.7	3.6	19.4	475

Note: Restricted to 2022 survey wave. Several of the questions have fewer observations because they were not applicable to all firms. For example, some of the firms do not have a room, so the questions about making changes on the roof are non-applicable to them.
Source: Authors' calculations based on IIM 2022 data.

Table 12.4 shows that firms are more likely to react to extreme weather when their owners have higher entrepreneurial orientation, when they have experienced an extreme-weather event in the past, and when they believe that other firm owners are acting to reduce the risk of extreme weather. These three variables are also strongly associated with firm owners' extreme weather risk perceptions. Thus, one policy measure that might increase both firm owners' extreme weather risk perceptions and their use of reaction practices might be the provision of information that other firm owners are reacting to extreme weather. Firm owners with educational levels below a secondary degree are less likely to react to extreme weather. Thus, on a long-term basis more and better education will also play a role in people's decisions whether to react.

Table 12.4: Determinants of applying extreme weather reaction measures

	Socio-demographics	Cognitive Factors	Experiential Processes	Socio-cultural influences
Income (logged)	0.033	0.035	0.022	0.018
	(0.027)	(0.027)	(0.027)	(0.028)
Age	0.005	0.005	0.005	0.005
	(0.004)	(0.004)	(0.004)	(0.004)
Lower education	-0.257**	-0.285**	-0.301**	-0.258*
	(0.128)	(0.130)	(0.129)	(0.130)
Firm size	-0.079	-0.076	-0.040	-0.028
	(0.063)	(0.063)	(0.064)	(0.063)
Entrepreneurial orientation	0.104***	0.111***	0.108***	0.098***
	(0.028)	(0.028)	(0.028)	(0.029)
Cause knowledge		-0.030	-0.006	-0.019
		(0.055)	(0.055)	(0.055)
Physical knowledge		-0.033	-0.044	-0.051
		(0.044)	(0.044)	(0.044)
Consequences knowledge		0.005	-0.009	-0.016
		(0.049)	(0.049)	(0.049)
Affect			-0.023	-0.024
			(0.022)	(0.023)
Experience			0.076***	0.054**
			(0.023)	(0.024)
Descriptive				0.058**
				(0.024)
Prescriptive				0.015
				(0.029)
Biospheric values				0.022
				(0.017)
Altruistic values				-0.016
				(0.015)
Egoistic values				0.000
				(0.007)
Observations	475	475	475	475
Adj. R^2	0.04	0.05	0.07	0.09

Note: Restricted to 2022 survey wave.
Source: Authors' calculations based on IIM 2022 data.

12.3 Conclusion

This chapter analyses firm owners' extreme weather risk perceptions and reaction measures. Almost all firm owners and managers perceive extreme weather as a high risk to doing business. Floods and cyclones are perceived as the biggest weather risks. Firms in the two central provinces Sofala and Manica report a slightly higher risk perception than firms in the South and North, probably because these are more strongly affected by extreme weather.

Statistically, we find positive associations between entrepreneurial orientation, personal experience with extreme weather, physical knowledge and descriptive norms, i.e., what others think or do, on the one hand, and both risk perception and the likelihood to react to extreme weather, on the other hand. Firms find the measure of jointly cleaning the neighbourhood's drainage system as most effective, are willing to apply it and two-thirds have already applied this measure before. The measure that is evaluated as second most effective is the strengthening of the firm's roof.

Many firms are already reacting to extreme weather. However, due to a changing climate the impacts of extreme weather phenomena will become stronger in the future such that it is necessary for more firms to start reacting, and to additionally improve the quality and quantity of reaction measures. We find that personal experience with extreme weather is an important predictor for reaction. Thus, an effective way of encouraging firm owners to take action against the effects of extreme weather phenomena could be having influential people such as policymakers and well-known businesspeople talk about their personal experience with weather shocks, and doing this in an approachable manner, i.e., with simple words instead of complex technical vocabulary (Xie et al., 2019). Letting firm owners know that other firms are already reacting might equally increase the number of firms that react to extreme weather in Mozambique.

The provision of information about specific reaction measures, and the provision of basic material such as metal sheets and nails to improve the roof and the firm's building could be useful. On a more long-term basis, weather and climate change knowledge is vital.

Encouraging joint reaction efforts on the neighbourhood-level seems to work well. Newman et al. (2019) show that encouraging existing community-based organizations through social recognition and in-kind incentives reduces flooding and keeps the neighbourhood clean.

Another essential point is to make sure that people obtain reliable news about the weather. When Cyclone Idai happened in Beira, people were informed about the cyclone but not that it would be

damaging. If people had known about the extent of the cyclone, they might have prepared themselves better.

13 Conclusion

The aim of this report was to provide a decade long statistical description and analysis of enterprise dynamics in the informal and formal Mozambican manufacturing sectors covering the period from 2012 to 2022. Based on detailed information from three survey rounds (2012, 2017, 2022) with a total of 1,056 manufacturing enterprises, the report has outlined and discussed multiple important dimensions related to the performance and challenges faced by enterprises. The report has, for example, addressed topics such as financial performance and productivity, informality, sales structure, management, employment, and firms' responses to extreme weather phenomena.

The report's primary focus is on 355 firms, interviewed in all the three survey rounds, i.e., they were in operation during the whole study period and make up the so-called balanced sample (2012-22). By describing enterprises operating during the entire study period, the report gives a focused picture of the changing environment for existing firms, not blurred by changes in sample composition. This also means that the dataset is strictly speaking not statistically representative of the Mozambican manufacturing sector. This is so since it includes older enterprises that are likely to be more productive and formal than the average Mozambican manufacturing firm. Nevertheless, the report describes trends and issues that are relevant for the manufacturing sector as a whole, as it finds that firms which closed during the study period and firms added to the sample in 2022 are generally similar to the firms in the balanced sample.

Since the 1990s, the Government of Mozambique has promoted an industrial strategy and formulated policies aiming to improve the conditions for manufacturing firms. The manufacturing sector is – in line with standard development theory – regarded as a main vehicle to achieve prosperity. Manufacturing enterprises have the potential to transform a subsistence and agricultural-based economy into a more productive, modern, and industrialized economy. Structural transformation has occurred in many Asian countries, and hopes are high for the same to happen in Africa. However, so far, industrialization in African economies has been disappointingly slow, and in Mozambique, industrialization is according to the findings of this report at best, stagnating.

Each of the report's chapters refers to a specific topic and illustrates that the policy objectives of the Government of Mozambique related to that specific topic are in general far from reality in present day Mozambique. Most of the goals set in the 1990s were not achieved by 2022. Alongside a few large industrial projects, most firms are concentrated in the same industries and carry out basic manual work without adding much value. Most micro-sized enterprises seem stuck in a low-level equilibrium, which

it is challenging to escape. Accordingly, the overall picture is rather bleak, but we also outline several positive developments.

There has been a strong focus on improving the business environment in the past 20 years. One-stop shops to facilitate business registration were established in every province and the process of business registration as well as the payment of taxes were simplified. Despite these efforts, we find that the business environment in which manufacturing firms operate has worsened or remained the same over time. Firms spend a lot of time dealing with bureaucratic processes, informality is higher in 2022 than in 2012, and the incidence of bribe payments has increased. Moreover, informal institutions such as business associations only provide fragile support, meaning they do not substitute for weak formal institutions.

About 6.7 per cent of the IIM firms left the sample during the 10 years. This share is lower than in many other developing countries. On the one hand, this is positive because it means that we were successful in tracking firms. On the other hand, a low exit share is a signal of an inefficient economy, in which new, more productive, enterprises do not replace older firms that become less productive over time. Thus, regarding firm dynamics and a healthy economy, Mozambique still has a long way to go. On a positive note, there seems to be a somewhat positive dynamics in the Mozambican manufacturing sector in the sense that younger, more productive firms replace firms that close. However, the productivity differences between dying and new firms are rather small, i.e., there is a lot of scope for improvement. Firms that left the sample and newly added firms are not fundamentally different from the firms we followed over the 10 years.

In several chapters, we examine the association between financial performance and specific firm and firm owner characteristics. Larger and female-led firms perform better with regard to revenue and value added than smaller and male-led firms. However, our statistical analyses suggest that improvements in formality, management, and inter-firm linkages do not causally explain better financial performance. This means that firms with higher revenue and value-added are generally different from firms with lower financial performance, and improving one of these variables only will not necessarily cause firms to perform better. Instead, multi-dimensional and targeted support programmes are essential for firm development.

We find a notable increase in productivity for small firms between 2017 and 2022, while micro and medium firms were struggling. At the same time, labour productivity remained low for all firm size categories. Since 2012, average employee wages, particularly the minimum wage, have been higher than labour productivity. This suggests that for most micro firms, productivity is so low that the value

of what they produce is less than the minimum wage. This is a finding that is critically important to consider when discussing firm dynamics in Mozambique, but we also show analytically that providing training to employees carries the potential to increase labour productivity.

During the COVID-19 pandemic, medium firms appear to have suffered the most, especially considering the high percentage of business closures and the relatively high percentages they present in most categories of the effects of the pandemic relative to micro and small firms. Among those firms that died between 2017 and 2022, larger firms gave financial issues as the main reason for closure, whereas smaller firms closed due to the owner's death or sickness. On a positive note, better results may be expected in the years to come as a part of the recovery process after the global pandemic.

The Government of Mozambique already acknowledged in its 1997 industrial strategy that better internal management of firms is required. Today, the Mozambican manufacturing sector is in the middle-field relative to other sub-Saharan African countries. On average, 55 per cent of the management practices we inquired about in both 2017 and 2022 were used in Mozambique. Thus, there is room for improving the management of enterprises.

With a growing population of young job seekers, it is Mozambique's objective to create many more decent formal sector jobs. Yet, job creation is not happening among the manufacturing firms that have been in operation for more than a decade. On the contrary, there were fewer jobs in this sector in 2022 than in 2012. The number of available jobs among firms in the balanced panel decreased strongly. Specifically, the 355 firms lost almost 2,500 jobs in 10 years, and new firms do not fully replace the lost jobs. Moreover, only 6 per cent of the workers are women, and just as the total number of workers has declined over time, the share of female workers has declined.

Between 2012 and 2022, the average job quality among manufacturing enterprises remained the same. For example, the various reforms and regulations that incentivize enterprises to contribute to the national social security system (Instituto Nacional de Segurança Social, INSS) have yet to reach their target. The number of INSS contributors has remained stagnant. Average wage levels have remained stagnant because some of the provinces experienced an increase and other provinces a decrease in wages. On average, fewer firms paid the minimum wage in 2022 than in 2017, probably driven by the rise in the legal minimum wage. Unsurprisingly, the wage level in the informal sector is much lower than in the formal sector but the gap has decreased in the last five years.

Important steps towards fulfilling the Government of Mozambique's objective of creating inter-firm linkages are being achieved. Across all provinces, inter-firm linkages have become stronger. Firms are not only selling to individual clients. It has become more common to sell to SOEs and FDI-firms.

However, exporting remains the exception rather than the norm in the Mozambican manufacturing sector. Further, medium firms have deepened their linkages much more than micro firms. Much scope for the diversification of forward linkages remains, especially for the smallest firms.

There is increasing demand for external finance among Mozambican SMEs, but this increase in demand is yet to be fulfilled. Firms can no longer rely on retained earnings (internal finance) to scale up their business activities. Currently, 68 per cent of the firms applying for finance have trouble obtaining credit, a number among the highest in the African continent (based on Investment Climate Assessment information), although the average bank customers in Mozambique (based on MIX Market information) is comparable to the average customer in Africa. This indicates that there may be room for relaxing the lending criteria of local financial institutions in Mozambique to better facilitate the increasing credit demand by the private sector.

Mozambique is classified as one of the countries most affected by extreme weather events, and we asked firm owners and managers about their extreme weather risk perceptions and reaction measures for the first time in 2022. Almost all firm owners and managers perceive extreme weather as a high risk to doing business. Floods and cyclones are perceived as the biggest weather risks. Nevertheless, not enough firms are reacting to the perceived risks, and the quality of the reaction measures they employ is low.

Overall, this report supports the observation that the manufacturing sector remains potentially instrumental in Mozambique's economic growth. However, the non-achievement of policy objectives that were set more than 20 years ago and the stagnation or worsening of many conditions under which manufacturing enterprises operate leads to a need for considering renewed policies and programmes to support firms and, ultimately, enhance economic growth.

Here are some of the key policy messages that emerge from this report.

- Reduce firms' administrative burden by implementing in practice the already existing regulations of simplifying the regulatory environment (e.g., decrease the number and costs of licenses and inspections required for businesses).
- Support regular meetings between the government and the private sector for government to obtain feedback on business regulations and the challenges firms are confronting (see more background information on this in Berkel et al., 2022).
- Pay attention to successful innovations by Mozambican manufacturing firms and support these firms to scale up.

- Facilitate the further deepening of value chains, enabling firms to specialise and co-operate for increased productivity.
- Reinforce the efforts to improve connections to international value chains.
- Pay more attention to how manufacturing firms in the country are managed. Better management is one of the firm characteristics that can be improved and positively contribute to the economy.
- Ensure that small, medium, and large firms are able to access formal finance for investments that could lead to improvements in productivity.
- To harness the job-creating, poverty-reducing potential of the informal economy and boost economic growth, it is necessary to make social protection programmes available for informal workers, and to boost sector productivity with productivity-enhancing measures and by addressing infrastructural and regulatory constraints.
- Efforts must be made to understand better why the supply of finance for private sector activities is so slow in reacting to the increasing credit demand. Relaxing the lending criteria of local financial institutions to better react to the increasing credit demand by firms seems merited.
- Incentivise training and upskilling opportunities for micro and small firms, particularly when productivity increases amongst these size categories can be achieved.
- Policymakers should be mindful not to let the minimum wage increase too much in the face of stagnant productivity. This will constrain firm dynamics, at least unless other supporting measures are put in place.
- Investigate the low prevalence of female-owned enterprises and create a conducive environment for the development of more women-owned businesses given their high potential for contributing to economic growth and poverty reduction.
- Ensure that a fair and inclusive labour market also embraces the gender dimensions in terms of employment opportunities and fair wages.
- Improve infrastructure and the integration of the economy.
- Extreme weather events are increasing in frequency and intensity. To increase effective reaction to extreme weather, policymakers and well-known businesspeople should talk about their personal experience with weather shocks, in an approachable manner, i.e., with simple words instead of complex technical vocabulary. Letting firm owners know that other firms are already reacting to extreme weather might equally increase the number of firms that react to extreme weather in Mozambique.

References

1 Introduction

Abbott, P., Tarp, F. and Wu, C. (2017). Structural transformation, biased technological change and employment in Vietnam. *The European Journal of Development Research*, 29, 54-72.

Cruz, A. and Mafambissa, F. J. (2018). Industries without Smokestacks: Mozambique Country Case Study, in: Newfarmer, R., Page, J. and Tarp, F. (eds). Industries without Smokestacks. Industrialization in Africa reconsidered. Oxford University Press, 232-253.

Dekle, R. and Vandenbroucke, G. (2012). A quantitative analysis of China's structural transformation. *Journal of Economic Dynamics and Control*, 36(1), 119-135.

Government of Mozambique – GoM (1997). Industrial Strategy Policy. Approved by Council of Ministers Resolution No. 23/1997 of 19 August. Buletim da República No 33, 2nd Supplement. Retrieved from: https://www.iese.ac.mz/lib/saber/fd_1412.pdf.

Government of Mozambique – GoM (2014). Estratégia Nacional de Desenvolvimento. Retrieved from: mef.gov.mz.

Government of Mozambique – GoM (2016). Política e Estratégia Industrial 2016-2025. Ministério da Indústria e Comércio. Retrieved from: https://www.mic.gov.mz/por/Industria/Politica-e-Estrategia-Industrial-2016-20252.

Government of Mozambique – GoM (2020). Programa Quinquenal do Governo: 2020-2024. Retrieved from: https://www.mctes.gov.mz/plano-quinquenal-do-governo-2020-2024/.

International Labor Organization – ILO (2019). Small matters. Global evidence on the contribution to employment by the self-employed micro enterprises and SMEs. Technical report, ILO.

Kim, H.S. and Ncube, M. (2014). Agricultural Sector Development and Structural Transformation: Sub-Saharan Africa Versus East Asia. *Seoul Journal of Economics*, 3, 349-386.

Lewis, A. (1954). Economic Development with unlimited supplies of labour. Bobbs-Merrill Company, College Division.

Matusse, M. (2022). Industrial Policy in Southern Africa: Mozambique's experience. UNCTAD. Retrieved from: https://unctad.org/system/files/information-document/BRI-Project_policy-brief-03_en.pdf.

Newfarmer, R., Page, J. and Tarp, F. (2019). Industries without smokestacks and structural transformation in Africa: overview, in: Newfarmer, R., Page, J. and Tarp, F. (eds). Industries without Smokestacks. Industrialization in Africa reconsidered. Oxford University Press, 1-26.

2 The data

Cruz, A. and Mafambissa, F. (2020). Economic Development and institutions in Mozambique. Factors affecting public financial management. WIDER Working paper 2020/133. Helsinki: UNU-WIDER.

IIM (2012). Survey of Mozambican Manufacturing Firms 2012. Maputo: National Directorate of Studies and Policy Analysis, Ministry of Finance and Economics. survey_of_mozambican_manufacturing_firms_iim2012.pdf (ku.dk).

IIM (2017). Survey of Mozambican Manufacturing Firms 2017. UNU-WIDER, University of Copenhagen, University of Eduardo Mondlane, retrieved from: https://www.wider.unu.edu/publication/survey-mozambican-manufacturing-firms-2017.

Knoema (2017). Mozambique GDP at current price. Retrieved from: https://knoema.com/atlas/Mozambique/ranks/GDP-at-Current-Prices.

UNSD (2008). International Standard Industrial Classification of All Economic Activities (ISIC). (Technical Report No. 4, Rev. 4). United Nations.

3 Business environment

Asongu, S. A. and Odhiambo, N. M. (2019). Challenges of Doing Business in Africa: A Systematic Review, *Journal of African Business*, 20(2), 259–68.

Bah, E. and Fang, L. (2015). Impact of the business environment on output and productivity in Africa, *Journal of Development Economics*, 114, 159–71.

Barasa, L., Knoben, J., Vermeulen, P., Kimuyu, P., and Kinyanjui, B. (2017). Institutions, resources and innovation in East Africa: A firm level approach, *Research Policy*, 46(1), 280–91.

Berkel, H., Cardona, M., Fisker, P. K., Rand, J., Santos, R., and Tarp, F. (2018). Survey of Mozambican Manufacturing Firms 2017. UNU-WIDER, University of Copenhagen, University of Eduardo Mondlane.

Bloom, N., Lemos, R., Sadun, R., Scur, D., and Van Reenen, J. (2014). JEEA-FBBVA Lecture 2013: The New Empirical Economics of Management, *Journal of the European Economic Association*, 12(4), 835–76.

Cruz, A. S., Ferreira, I. A., Flentø, J., and Tarp, F. (2020a). Chapter 3: Institutional performance: International datasets, quantitative survey and key informants: UNU-WIDER, Oxford Policy Management, University of Namur, Paris School of Economics, and Aide à la décision économique Economic development and institutions – Mozambique at a fork in the road: an institutional diagnostic EDI Working Paper WP20/MID03.

Cruz, A. S., Ferreira, I. A., Flentø, J., and Tarp, F. (2020b). Chapter 13: Synthesis and policy recommendations: UNU-WIDER, Oxford Policy Management, University of Namur, Paris School of Economics, and Aide à la décision économique Economic development and institutions – Mozambique at a fork in the road: an institutional diagnostic EDI Working Paper WP20/MID13.

Cruz, A. S. and Mafambissa, F. J. (2018). Industries without Smokestacks: Mozambique Country Case Study, in Newfarmer, R., Page, J., and Tarp, F. (eds.), *Industries without Smokestacks: Industrialization in Africa Reconsidered*, Oxford, Oxford University Press.

Dethier, J.-J., Hirn, M., and Straub, S. (2011). Explaining Enterprise Performance in Developing Countries with Business Climate Survey Data, *The World Bank Research Observer*, 26(“), 258–309.

Eifert, B., Gelb, A., and Ramachandran, V. (2008). The Cost of Doing Business in Africa: Evidence from Enterprise Survey Data, *World Development*, 36(9), 1531–46.

Forquilha, S. (2020). Decentralization reforms in Mozambique: The role of institutions in the definition of results: UNU-WIDER, Oxford Policy Management, University of Namur, Paris School of Economics, and Aide à la décision économique Economic development and institutions – Mozambique at a fork in the road: an institutional diagnostic EDI Working Paper WP20/MID12.

Hallward-Driemeier, M. (2013). Enterprising Women : Expanding Economic Opportunities in Africa, Washington, DC: World Bank.

Jones, S., Schilling, F., and Tarp, F. (2021). Doing Business While Holding Public Office: Evidence from Mozambique’s Firm Registry. University of Copenhagen.

Macuane, J. J. and Muianga, C. (2020). Natural resources, institutions, and economic transformation in Mozambique: UNU-WIDER, Oxford Policy Management, University of Namur, Paris School of Economics, and Aide à la décision économique Economic development and institutions – Mozambique at a fork in the road: an institutional diagnostic EDI Working Paper WP20/MID12.

Terjesen, S. A. (2016). Conditions for high-potential female entrepreneurship, IZA World of Labor 2016: 255.

Whitfield, L. and Buur, L. (2014). The politics of industrial policy: ruling elites and their alliances, *Third World Quarterly*, 35(1), 126–44.

4 Economic account and COVID-19

AUC/OECD (2022), Africa's Development Dynamics 2022: Regional Value Chains for a Sustainable Recovery, Paris: OECD Publishing.

Bloom, N., McKenzie, D., Mahajan, A. and Roberts, J. (2010). Why Do Firms in Developing Countries Have Low Productivity? *American Economic Review*. 100, 619-23.

Mead D. C. and Liedholm C.,(1998). The dynamics of micro and small enterprises in developing countries, *World Development*, 26(1), 61-74.

Lone S. A. and Ahmad A. (2020). COVID-19 pandemic – an African perspective, *Emerging Microbes & Infections*, 9(1), 1300-1308.

Padachi, K., (2012). Factors Affecting the Adoption of Formal Accounting Systems by SMEs. *Business and Economics Journal*, 1-20.

Tschirley, D. L., Snyder, J., Dolislager, M., Reardon, T., Haggblade, S., Goeb, J. and Meyer, F. (2015). Africa’s unfolding diet transformation: Implications for agrifood system employment. *Journal of Agribusiness in Developing and Emerging Economies*, 5(2), 102-136.

5 Sample exits, firm deaths and new firms

Aga, G., Campos, F., Conconi, A., Davies, E. and Geginat, C. (2021). Are Firm Capabilities Holding Back Firms in Mozambique? Policy Research Working Paper 9724. World Bank, Washington DC.

Altenburg, T., and Eckhardt, U. (2006). Productivity enhancement and equitable development: challenges for SME development. UNIDO research programme, Vienna.

Biggs, T. and Shah, M. (2006). African small and medium enterprises, networks, and manufacturing performance. Policy Research Working Paper 3855. World Bank, Washington DC.

Bigsten, A., Kimuyu, P. and Lundvall, K. (2004). What to do with the informal sector? *Development Policy Review*, 22(6), 701-715.

Bloom, N., Benn, E., Mahajan, A., McKenzie, D., and Roberts, J. (2013). Does Management Matter? Evidence From India. *The Quarterly Journal of Economics*, 128, 1-51.

Davies, E. and Kerr, A. (2018). Firm survival and change in Ghana, 2003–2013. *Journal of African Economies*, 27(2), 149-171.

Fairlie, R.W. and Robb, A.M. (2009). Gender differences in business performance: Evidence from the Characteristics of Business Owners survey. *Small Business Economics*, 33, 375–395.

Frazer, G. (2005). Which Firms Die? A Look at Manufacturing Firm Exit in Ghana. *Economic Development and Cultural Change*, 53(3), 585–617.

Goedhuys, M. and Sleuwaegen, L. (2009). High-growth Entrepreneurial Firms in Africa. WIDER Working Paper 2009/11. Helsinki: UNU-WIDER.

Goldstein, M., Gonzalez, P., Sreelakshmi, P. and Wimpey, J. (2022). Childcare, COVID-19 and Female Firm Exit. Impact of COVID-19 School Closure Policies on Global Gender Gaps in Business Outcomes. Policy Research Working Paper 10012. World Bank, Washington DC.

Liedholm, C., McPherson, M. and Chuta, E. (1994). Small Enterprise Employment Growth in Rural Africa. *American Journal of Agricultural Economics*, 76, 1177–1182.

Liu, J. T., Tsou, M. W. and Hammitt, J. K. (1999). Do small plants grow faster? Evidence from the Taiwan electronics industry. *Economics Letters*, 65(1), 121-129.

McKenzie, D. and Paffhausen, A. (2019). Small Firm Death in Developing Countries. *The Review of Economics and Statistics*, 101(4), 645-657.

Page, John, and Måns Söderbom (2015). Is small beautiful? Small enterprise, aid and employment in Africa. *African Development Review,* 27(1), 44-55.

Robb, A.M. (2002). Entrepreneurial performance by women and minorities: The case of new firms. *Journal of Developmental Entrepreneurship*, 7, 383–397.

Robb, A.M. and Watson, J. (2012). Gender differences in firm performance: Evidence from new ventures in the United States. *Journal of Business Venturing*, 27, 544–558.

Söderbom, M., Teal, F. and Harding, A. (2006). The Determinants of Survival among African Manufacturing Firms. *Economic Development and Cultural Change*, 54(3), 533–555.

Tan, H. H., and See, H. H. (2004). Strategic reorientation and responses to the Asian financial crisis: The case of the manufacturing industry in Singapore. *Asia Pacific Journal of Management*, 21(1), 189-211.

6 Owner characteristics

Barbieri, C., and Mshenga, P. M. (2008). The role of the firm and owner characteristics on the performance of agritourism farms. *Sociologia ruralis*, 48(2), 166-183.

Bhutta, M. Khurrum S., Arif I. Rana, and Usman A. (2008) Owner characteristics and health of SMEs in Pakistan. *Journal of Small Business and Enterprise Development*, 15, 130-183.

Buchdadi, A. D., Sholeha, A., and Ahmad, G. N. (2020). The influence of financial literacy on SMEs performance through access to finance and financial risk attitude as mediation variables. *Academy of Accounting and Financial Studies Journal*, 24(5), 1-15.

Danso, A. Et al (2016) Danso, A., Adomako, S., Damoah, J. O., and Uddin, M. (2016). Risk-taking propensity, managerial network ties and firm performance in an emerging economy. *The Journal of Entrepreneurship*, 25(2), 155-183.

Engelen, A., Gupta, V., Strenger, L., and Brettel, M. (2015). Entrepreneurial orientation, firm performance, and the moderating role of transformational leadership behaviors. *Journal of management*, 41(4), 1069-1097.

Fairlie, R. W. and Robb, A. M. (2009). Gender differences in business performance: evidence from the Characteristics of Business Owners survey. *Small Business Economics*, 33(4), 375-395.

Garwe, D. K., and Fatoki, O. (2012). The impact of gender on SME characteristics and access to debt finance in South Africa. *Development Southern Africa*, 29(3), 448-461.

Government of Mozambique - GoM (2014). Estratégia Nacional De Desenvolvimento (2015-2035). Maputo, Mozambique. Retrieved from: mef.gov.mz

Government of Mozambique – GoM (2020). Programa Quinquenal do Governo: 2020-2024. Retrieved from: https://www.mctes.gov.mz/plano-quinquenal-do-governo-2020-2024/

Isaga, N. (2015). Owner-managers' demographic characteristics and the growth of Tanzanian Small and medium enterprises. *International Journal of Business and Management*, 10(5), 168.

Islam, M. A., Khan, M., Obaidullah, A. and Alam, S. (2011). Effect of entrepreneur and firm characteristics on the business success of small and medium enterprises (SMEs) in Bangladesh. *International Journal of Business and Management*, 6(3).

Janssen, F. (2006). Do managers' characteristics influence the employment growth of SMEs?.*Journal of Small Business & Entrepreneurship*, 19(3), 293-315.

Jarmin, R. S., and Krizan, C. J. (2010). Past experience and future success: new evidence on owner characteristics and firm performance. US Census Bureau Center for Economic Studies Paper No. CES-WP-10-24.

Khalife, D. and Chalouhi, A. (2013). Gender and business performance, *International Strategic Management Review*, 1 (1), 1-10.

Klapper, L. and Parker, S. (2010). Gender and the business environment for new firm creation, *World Bank Research Observer*, 26 (2), pp. 237-257.

Kor, Y. Y. (2003). Experience-based top management team competence and sustained growth. *Organization science*, 14(6), 707-719.

Lee, T., and Chu, W. (2017). The relationship between entrepreneurial orientation and firm performance: Influence of family governance. *Journal of Family Business Strategy*, 8(4), 213-223.

Mabula, J. B., Dongping, H., and Mwakapala, L. Y. (2020). SME's use of ICT and financial services on innovation performance: The mediating role of managers' experience. *Human Systems Management*, 39(3), 427-439.

Milanov, H., Justo, R. and Bradley, S.W. (2015). Making the most of group relationships: the role of gender and boundary effects in microcredit groups", *Journal of Business Venturing*, 30(6), 822-838.

Rahaman, M. A., Luna, K. F., Ping, Z. L., Islam, M. S., and Karim, M. M. (2021). Do Risk-Taking, Innovativeness, and Proactivity Affect Business Performance of SMEs? A Case Study in Bangladesh. *The Journal of Asian Finance, Economics and Business*, 8(5), 689-695.

Robb, A. and Wolken, J. (2002). Firm, owner, and financing characteristics: differences between female- and male-owned small businesses, FEDS Working Paper No. 2002-18, Washington, DC.

Robb, A.M. and Watson, J. (2012). Gender differences in firm performance: evidence from new ventures in the United States. *Journal of Business Venturing*, 27 (5), 544-558.

Sharma, S., and Tarp, F. (2018). Does managerial personality matter? Evidence from firms in Vietnam. *Journal of Economic Behavior & Organization*, 150, 432-445.

Tandrayen-Ragoobur, V., and Kasseeah, H. (2017). Is gender an impediment to firm performance? Evidence from small firms in Mauritius. *International Journal of Entrepreneurial Behavior & Research*, 23.

Ussif, R., and Salifu, K. (2020). Contributions of small & medium enterprises to economic developments in sub-Saharan Africa. *International Journal of Academic Accounting, Finance & Management Research,* 4(3), 63-78.

Woldie, A., Leighton, P., and Adesua, A. (2008). Factors influencing small and medium enterprises (SMEs): an exploratory study of owner/manager and firm characteristics. *Banks & bank systems*, 3(3), 5-13.

Zolin, R., Stuetzer, M. and Watson, J. (2013). Challenging the female underperformance hypothesis.

International Journal of Gender and Entrepreneurship, 5(2), 116-129.

7 Management Practices

Anosike, P. (2019). Entrepreneurship education as human capital: Implications for youth self-employment and conflict mitigation in Sub-Saharan Africa. *Industry and Higher Education*, 33(1), 42-54.

Bloom, N., and J. Van Reenen (2007). Measuring and explaining management practices across firms and countries. *The Quarterly Journal of Economics*, 127(4), 1351-1408.

Bloom, N., B. Eifert, A. Mahajan, D. McKenzie, and J. Roberts (2013). Does Management Matter? Evidence from India. *The Quarterly Journal of Economics*, 128(1), 1-51.

Bloom, N., R. Sadun, and J. Van Reenen (2016). Management as a Technology?. Working Paper 22327. Cambridge, MA: National Bureau of Economic Research.

Bloom, N., K. Manova, J. Van Reenen, S. T. Sun and Z. Yu (2021). Trade and Management. *The Review of Economics and Statistics*, 103(3), 443-460.

Calderón, C. (2021). Boosting Productivity in Sub-Saharan Africa: Policies and Institutions to Promote Efficiency. Washington, DC: World Bank.

Caselli, F. (2016). Accounting for Cross-Country Income Differences: Ten Years Later. Washington, DC: World Bank.

Cruz, A. and Mafambissa, F. J. (2018). Industries without Smokestacks: Mozambique Country Case Study, in: Newfarmer, R., Page, J. and Tarp, F. (eds). Industries without Smokestacks. Industrialization in Africa reconsidered. Oxford University Press, 232-253.

Gielnik, M. M., M. Frese, K. M. Bischoff, G. Muhangi, and F. Omoo (2016). Positive Impact of Entrepreneurship Training on Entrepreneurial Behavior in a Vocational Training Setting. *Africa Journal of Management*, 2(3), 330-348.

Government of Mozambique – GoM (1997). Industrial Strategy Policy. Approved by Council of Ministers Resolution No. 23/1997 of 19 August. Buletim da República No 33, 2nd Supplement.

Government of Mozambique – GoM (2014). Estratégia Nacional de Desenvolvimento. Retrieved from: mef.gov.mz

Government of Mozambique – GoM (2016). Política e Estratégia Industrial 2016-2025. Ministério da Indústria e Comércio. Retrieved from: https://www.mic.gov.mz/por/Industria/Politica-e-Estrategia-Industrial-2016-20252

Hsieh, C. and P. J. Klenow (2010). Development Accounting. *American Economic Journal: Macroeconomics*, 2(1), 207-23.

McKenzie, D., and C. Woodruff (2017). Business Practices in Small Firms in Developing Countries. *Management Science*, 63(9), 2967–81.

McKenzie, D. (2021). Small business training to improve management practices in developing countries. *Oxford Review of Economic Policy*, 37(2), 276-301.

Newfarmer, R., Page, J. and Tarp, F. (2019). Industries without smokestacks and structural transformation in Africa: overview, in: Newfarmer, R., Page, J. and Tarp, F. (eds). Industries without Smokestacks. Industrialization in Africa reconsidered. Oxford University Press, 1-26.

Pedrini, M., V. Langella, and M. Molteni (2017). Do entrepreneurial education programs impact the antecedents of entrepreneurial intention? An analysis of an entrepreneurship MBA in Ghana. *Journal of Enterprising Communities: People and Places in the Global Economy*, 11(3), 373-392.

8 Employment

Government of Mozambique – GoM (2016). Política e Estratégia Industrial 2016-2025. Ministério da Indústria e Comércio. Retrieved from: https://www.mic.gov.mz/por/Industria/Politica-e-Estrategia-Industrial-2016-20252

Government of Mozambique – GoM (2020). Programa Quinquenal do Governo: 2020-2024. Retrieved from: https://www.mctes.gov.mz/plano-quinquenal-do-governo-2020-2024/

Government of Mozambique – GoM (2016). National Basic Social Security Strategy: 2016-2024. Retrieved from https://socialprotection.org/discover/legal_policy_frameworks/mozambique-national-basic-social-security-strategy-enssb-2016-2024

Gradín, C. and Tarp, F. (2019), Gender Inequality in Employment in Mozambique. *South African Journal of Economics*, 87: 180-199.

ILO and OECD (2022), 'MSME Productivity, Inclusive Growth and Decent Work Creation'. International Organization Labor, Genève OECD Publishing, Paris. Available at https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_845702.pdf

Jones, S., and Tarp, F. (2015). Priorities for boosting employment in Sub-Saharan Africa: evidence for Mozambique. *African Development Review*, *27*(S1), 56-70.

Kis, V. (2016). Work, train, win: work-based learning design and management for productivity gains, OECD Education Working Papers No. 135. Paris: OECD.

Lachler, U., Ricaldi, F., 2021. Mozambique Jobs Diagnostic: Volume 2 - Jobs Strategy Policy Note (Policy Note). World Bank, Washington, DC.

Malta, V., Kolovich, L., Martinez, A. and Tavares, M. (2019). Informality and Gender Gaps Going Hand in Hand. IMF Working Papers 19.1. Washington, DC: IMF.

OECD (2014). How Good Is Your Job? Measuring and Assessing Job Quality. In OECD Employment Outlook 2014 (pp. 79–140). Paris: OECD Publishing.

Quak, E. and Barenboim, I. (2022). Female Entrepreneurship and Informality in Low- and Middle-Income Countries: What Have We Learned So Far? MUVA Paper Series. Brighton: Institute of Development Studies.

Wage Indicator, (2022). Minimum Wage - Mozambique. Retrieved from Minimum wage - Mozambique - WageIndicator.org

9 Inter-firm linkages

Görg, H. and Seric, A. (2016). Linkages with multinationals and domestic firm performance: The role of assistance for local firms. *The European Journal of Development Research*, 28, 605-624.

Li, X., Wu, X. and Tan, Y. (2021). Impact of special economic zones on firm performance. *Research in International Business and Finance*, 58, 101463.

Panda, D. (2014). Managerial network impacts firm performance. *Performance Improvement Quarterly*, 27(1), 5-32.

Sørensen, B., Estmann, C., Sarmento, E. and Rand, J. (2020). Economic complexity and structural transformation: the case of Mozambique. WIDER Working Paper 2020/141. Helsinki: UNU-WIDER.

UNCTAD (2010): Creating Business Linkages: A Policy Perspective. Technical report.

10 Informality and levels of formalisation

Aga, G., Campos, F., Conconi, A., Davies, E., and Geginat, C. (2021). Informal Firms in Mozambique. Policy Research Working Paper Series (No. 9712), World Bank.

Aparicio, G. (2014). Does Formality Improve Firm Performance? Evidence from a Quasi-Experiment in Mexico. Boston University Working Paper. Boston, MA: Boston University.

Berkel, H. (2018). The costs and benefits of formalization for firms: A mixed-methods study on Mozambique WIDER Working Paper 2018/159. Helsinki: UNU-WIDER.

Bohme, M., and Thiele R., (2012). Is the Informal Sector Constrained From the Demand Side? Evidence for Six West African capitals. *World Development* 40(7), 1369-1381.

Fajnzylber, P., Maloney, W. F., and Montes-Rojas, G. V. (2011). Does formality improve micro-firm performance? Evidence from the Brazilian SIMPLES program. *Journal of Development Economics*, 94(2), 262-276.

Gerxhani, K. (2004). The informal sector in developed and less developed countries: A literature survey. *Public choice*, 120(3), 267-300.

Government of Mozambique – GoM (1997). Industrial Strategy Policy. Approved by Council of Ministers Resolution No. 23/1997 of 19 August. Buletim da República No 33, 2nd Supplement. Retrieved from: https://www.iese.ac.mz/lib/saber/fd_1412.pdf

Government of Mozambique – GoM (2007). Decreto No. 14/2007 de 30 de Maio: Estatuto Orgânico dos Balcões de Atendimento Único. Available at: http://www.bportal.co.mz/index.php?option=com_docman&task=doc_download&gid=134&Itemid=50

Government of Mozambique - GoM (2009). Lei No 5/2009: Imposto Simplificado para Pequenos Contribuintes (ISPC). Available at: http://www.at.gov.mz/por/Processos-Fiscais/Imposto-Simplificado-para-Pequenos-Contribuintes-ISPC

Government of Mozambique - GoM (2012). Decreto No 5/2012 de 7 de Marco: Regulamento do Licenciamento Simplificado para Exercício de Actividades Económicas. Available at:

http://www.salcaldeira.com/index.php/pt/component/docman/cat_view/32-legislacao/76-comercio-e-industria

IIM (2017). Survey of Mozambican Manufacturing Firms 2017. UNU-WIDER, University of Copenhagen, University of Eduardo Mondlane, retrieved from: https://www.wider.unu.edu/publication/survey-mozambican-manufacturing-firms-2017

Instituto Nacional de Estatística (INE). (2021). Inquérito ao Sector Informal - INFOR 2021, Moçambique -Relatório Final.

Jones, S., and Tarp, F. (2015). Priorities for boosting employment in Sub-Saharan Africa: evidence for Mozambique. *African Development Review*, 27(1), 56-70.

Kasseeah, H. (2016). The performance of small firms: Does formality matter? *Journal of Small Business & Entrepreneurship*, 28(6), 431-448.

Matlary, F.H., (2012). What Determines Microenterprise Growth? [Doctoral dissertation, Norwegian School of Economics]. Bergen.

McKenzie, D., and C. Woodruff. (2008). Experimental Evidence on Returns to Capital and Access to Finance in Mexico. *The World Bank Economic Review* 22(3) 457-482.

McKenzie, D., and Y.S. Sakho. (2010). Does it Pay Firms to Register for Taxes? The Impact of Formality on Firm Profitability. *Journal of Development Economics*, 91(1), 15-24.

Medina, L., and Schneider, F. (2018). Shadow Economies Around the World: What Did We Learn Over the Last 20 Years? IMF Working Paper /18/17.

World Bank (2019). Doing Business in Mozambique 2019. Washington, D.C.

11 Access to credit

Beck, T. and Demirgüç-Kunt, A. (2006). Small and medium size enterprises: access to finance as a growth constraint. *Journal of Banking and Finance*, 30(11), 2931–2943.

Bertrand, M., Kramarz, F., Schoar, A.and Thesmar, A., (2007). Politically connected CEOs and corporate outcomes: evidence from France. Crest Working Paper, revision asked, *The American Economic Journal.*

Bigsten, A., Collier, P, Dercon, S., Fafchamps, M., Gauthier, B., Gunning, J.W., Oduro, A., Oostendrop, R., Patillo, C., Soderbom, M., Teal, F. and Zeufack, A. (2003). Credit Constraints in Manufacturing Enterprises in Africa, *Journal of African Economies*, 12, 104-125.

Boubakri, N., Guedhami, O., Mishra, D. and Saffar, W. (2012). Political connections and the cost of equity capital. *Journal of Corporate Finance* 18(3), 541-559.

Boulier, B.L. and Goldfarb, R.S. (1998). The use and non-use of surveys in economics, Journal of Economic Methodology, 5(1), 1-21.

Bentzen, J., Byiers, B., Rand, J. and Tarp, F. (2010). Credit Demand in Mozambican Manufacturing, *Journal of International Development*, 22, 37-55.

Chen, C. J. P., Li, Z., Su, X. and Sun, Z. (2011). Rent-seeking incentives, corporate political connections, and the control structure of private firms: Chinese evidence. *Journal of Corporate Finance* 17(2), 229-243.

Claessens, S., Feijen, E. and Laeven, L. (2008). Political connections and preferential access to finance: The role of campaign contributions. *Journal of Financial Economics* 88(3), 554-580.

Du, J. and Girma, S. (2010). Red capitalists: Political connections and firm performance in China. *KYKLOS* 63(4), 530-545.

Fan, J. P. H., Wong, T. J. and Zhang, T. (2007). Politically connected CEOs, corporate governance, and post-IPO performance of China's newly partially privatized firms. *Journal of Financial Economics,* 84(2), 330-357.

Hansen, H. and Rand, J. (2014a). The myth of female credit discrimination in African manufacturing. *Journal of Development Studies*, 50(1), 81-96.

Hansen, H. and Rand, J. (2014b). Estimates of gender differences in firm's access to credit in Sub-Saharan Africa. *Economics Letters*, 123, 374-377.

Jackowicz, K., Kozowski, L. and Mielcarz, P. (2014). Political connections and operational performance of non-financial firms: new evidence from Poland. *Emerging Markets Review* 20, 109-135.

Leuz, C. and Oberholzer-Gee F. (2006). Political relationships, global financing and corporate transparency: Evidence from Indonesia. *Journal of Financial Economics* 81(2), 411-439.

Li, H., Meng, L., Wang, Q. and Zhou, L.A. (2008). Political connections, financing and firm performance: Evidence from Chinese private firms. *Journal of Development Economics*, 87(2), 283-299.

Mian, A. R. and Khwaja, A.J. (2005). Do lenders favor politically connected firms? Rent provision in an emerging financial market. *Quarterly Journal of Economics*, 120(4), 1371-1411.

Rand, J. (2007). Credit constraints and determinants of the cost of capital in Vietnamese manufacturing. *Small Business Economics*, 29, 1-13.

Rand, J. (2020). Are Politically Connected Firms Less Constrained in Credit Markets? In *Micro, Small, and Medium Enterprises in Vietnam*. Edited by: John Rand and Finn Tarp, Oxford University Press.

Schleifer, A. and Vishny, R. W. (1998). The grabbing hand: government pathologies and their cures. Cambridge: Harvard University Press.

Siegel, J.(2007). Contingent political capital and international alliances: evidence from South Korea. *Administrative Science Quarterly* 52(4), 621-666.

12 Extreme weather risk perception and reaction

Berkel, H., Fisker, P. and Tarp, F. (2021a). Cyclone impacts on manufacturing firms in Mozambique. WIDER Working Paper 85/2021. Helsinki: UNU-WIDER.

Berkel, H., Fisker, P. and Tarp, F. (2021b). Cash grants to manufacturers after Cyclone Idai. RCT evidence from Mozambique. WIDER Working Paper 87/2021. Helsinki: UNU-WIDER.

Fernandez, C., Holmlund, M., Mitchell, T., & Newman, C. (2019). Operation Clean Neighborhood: Working with Communities for Flood Risk Mitigation in Senegal. Washington, DC: World Bank

GoM - Government of Mozambique (2012). National Climate Change Adaptation and Mitigation Strategy. 39th Session of the Council of Ministers, Maputo. Retrieved from: mozambique_national_climate_change_strategy.pdf (ctc-n.org)

Mucova, S., Azeiteiro, U., Filho, W., Lopes, C., Dias, J. and Pereira, M. (2021). Approaching Sea-Level Rise (SLR) change: strengthening local responses to sea-level rise and coping with climate change in Northern Mozambique. *Journal of Marine Science and Engineering*, 9, 205.

Shi, J., Visschers, V., Siegrist, M. and Arvai, J. (2016). Knowledge as a driver of public perceptions about climate change reassessed. *Nature Climate Change*, 6(8), 759-762.

Simpson, N., Talbot, A., Krönke, M., Lennard, C., Odulami, R., Ouweneel, B., Steynor, A. and Trisos, C. (2021). Climate change literacy in Africa. *Nature Climate Change*, 11(11), 937-944.

Van der Linden, S. (2015). The social-psychological determinants of climate change risk perceptions: Towards a comprehensive model. *Journal of Environmental Psychology*, 41, 112-124.

Xie, B., Brewer, M. B., Hayes, B., McDonald, R. and Newell, B. (2019). Predicting climate change risk perception and willingness to act. *Journal of Environmental Psychology*, 65, 101331.

Supported by:

SUOMI
FINLAND

Embaixada da Noruega

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Embassy of Switzerland in Mozambique