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Impact of Microfinance on Agriculture and Livestock Production: Insights from Southern Punjab, Pakistan

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ABSTRACT

This research examined how microfinance affected livestock and agriculture in Pakistan's Rajanpur and Muzaffargarh areas. Data from 120 participants was collected with 60 participants from each district. This research observed that a much larger percentage of the microfinance participants was associated with producing their food. Microcredit can reduce vulnerability by enhancing the diversification of sources of income for households, increasing savings, enhancing credit availability, and consequently improving household savings management skills and farm productivity. To investigate the impact of forecasting factors on farmers' involvement in microfinance, probit regression analysis was employed. Despite the higher till and wheat output, revenue, gross margins, and livestock gross margins, microfinance farmers' expenditures associated with till and wheat were also significantly higher. Participation in microfinance was shown to lead to increases in rice and wheat production and margins. It shows that the more units of livestock, at 5% levels, farm participation in microfinance is falling whereas the number of microfinance institutions is falling. The findings show that microfinance loan recipients benefited from increased household spending, income, savings, and saving motivation. In a similar vein, microfinance initiatives contribute to the expansion of economic activity and job prospects in the local communities. The members' social standing is also raised, their health is improved, their level of education is raised, and women's participation in domestic duties is strengthened. The study's conclusions will help Pakistan improve its policies on microfinance. The findings are concurred with by, who, in their study, revealed that when women's education levels are low, then the possibilities of entry into microfinance are high. The favorable effect of participation in microfinance for farmers was that, with a 1% level of significance, taking credit for agriculture was significant. There was a 47% rise in the likelihood of microfinance participation for every household that took out loans. This study establishes the new significance of research as a practical form in the area of local microfinance operations' effectiveness in reforming the agriculture sector.

Introduction

Approximately 24% of Pakistan's GDP comes from agriculture, which is regarded as the foundation of the nation's economy. The industry supplies raw materials for industries like textiles as well as food for the populace. Furthermore, agriculture contributes significantly to foreign exchange earnings through exports, particularly those of fruits, rice, and cotton. Irrigation and land reform projects are among the policies and programs the government has put in place to aid in the expansion and advancement of the agricultural industry. The agricultural industry is regarded as the foundation of the nation's economy. The sector's growth and development can lead to significant benefits for the country and its people, including food security, economic growth, environmental sustainability, and cultural heritage conservation. Here are some points on the importance of agriculture in Pakistan.

Agriculture in Pakistan is closely linked to rural development, with most of the agricultural activities taking place in rural areas. Pakistan has a rich biodiversity, and agriculture plays a vital role in conserving it. Traditional crop varieties and livestock breeds are preserved and maintained by farmers, contributing to the country's agrobiodiversity. Agriculture in Pakistan has linkages to other sectors such as manufacturing, transport, and tourism. The sector provides raw materials for manufacturing industries, while transport and tourism benefit from the movement of agricultural goods and services. Pakistan's agriculture sector has attracted foreign investment in recent years, especially in the areas of seed production, livestock, and horticulture. This investment has contributed to the sector's growth, development, and global competitiveness. There is a lot of room for food manufacturing and value addition in Pakistan's agricultural industry. By adding value to raw agricultural products, the sector can create more job opportunities, increase income, and improve food quality and safety. Agriculture is a source of renewable energy in Pakistan. The country is the fourth-largest producer of sugarcane in the world, and the by-products of sugarcane, such as bagasse, are used to generate electricity.

Agriculture in Pakistan is essential for ensuring food security for the population. By producing sufficient quantities of food and ensuring its distribution to all segments of the population, the sector can contribute to reducing hunger and malnutrition. Agriculture in Pakistan is a significant source of employment, providing jobs for millions of people in rural areas. The sector employs both skilled and unskilled workers, contributing to reducing unemployment and poverty. Agriculture in Pakistan is a significant earner of foreign exchange through exports of agricultural products such as rice, cotton, fruits, and vegetables. The country's geographical location and diverse agro-climatic zones allow for the production of a wide variety of agricultural products that have a high demand in global markets.

Pakistan's economy is stable because agriculture is a dependable source of income for many farmers. Furthermore, the sector has benefited from government support in the form of subsidies, incentives, and credit facilities, which have helped to lower poverty and spur economic expansion (Ullah et al., 2023; Shah et al., 2021). The livestock sector is an essential component of agriculture in Pakistan, contributing to food security, income generation, and employment. The country is the third-largest milk producer in the world, and the livestock sector has significant potential for value addition and export earnings. Agriculture in Pakistan plays a crucial role in addressing malnutrition and ensuring a balanced diet for the population. By producing a variety of crops and livestock products, the sector can contribute to reducing the prevalence of malnutrition and its associated health problems.

Agriculture is the largest consumer of water in Pakistan, and efficient water management is crucial for the sector's sustainability. The government's focus on improving water management through initiatives such as drip irrigation, water conservation, and rainwater harvesting can lead to increased productivity and water-use efficiency. Agriculture in Pakistan has the potential to promote regional cooperation and integration. The country shares borders with several neighboring countries, and cross-border trade in agricultural products can lead to increased economic growth and stability in the region. Agriculture in Pakistan is the backbone of several agro-based industries, such as textiles, sugar, and vegetable oil. The country's abundant raw material supply and low labor costs have made it an attractive destination for investors in agro-based industries.

Balanced economic growth, social development, and environmental protection are necessary for sustainable development. Such practices include sustainable land management, organic farming, and conservation agriculture. Agriculture in Pakistan is exposed to the impacts of climate change, such as droughts, floods, and heat waves. However, the sector can also contribute to climate adaptation by adopting climate-smart practices such as crop diversification, agroforestry, and water conservation. Agriculture in Pakistan has a strong research and development infrastructure, with several agricultural research institutes and universities. Investment in agricultural research can lead to the development of improved crop varieties, sustainable farming practices, and efficient technologies.

Agriculture has a significant cultural significance in Pakistan. It is deeply ingrained in the country's traditions, festivals, and way of life. Agriculture is a source of pride for many farmers and represents the country's rich cultural heritage. The sector's growth and development can bring significant benefits to the country and its people, and the government's focus on supporting the sector can play a crucial role in achieving sustainable development.

The above researchers have focused on the microfinance functions, which are directly linked to the provision of microcredit facilities to the poor and marginalized people who have their residence in rural areas, whether in the national or international context. The main occupation of poor people living in rural areas is agriculture, hence; microfinance programs concentrate on developing the agricultural sector. All microfinance programs facilitate poor and backward peoples in transforming the agricultural system with new technologies through increased access to the marketplace for their agricultural products, increasing understanding among the farmers.

Microfinance is essential in market transition as it contributes positively finance. The microfinance industry should expand beyond credit, incorporating deposit facilities, payment services, money transfers, and foreign exchange transactions for customers. Microfinance revolutionizes business and service leasing by reducing risks and improving financial systems. However, it struggles with loan management quality and repayment issues.

Agriculture is one of the most significant sectors in developing countries like Ghana, given that it feeds the populace and supplies raw inputs to other sectors. An increase in agricultural output reduces poverty by enhancing both food security and access for households while increasing market access. Higher output, however, leads to lower food prices. Amongst the poor, though, traditional small-scale farmers are also the most concentrated group in producing food crops (MOFA 2008). Farmers in smallholdings depend on crude methods and technology; they lack expertise in certain vital aspects, such as the use of better seeds that could increase yields (MoFA, 2007). Farming in Ghana has been characterized by peasant

and subsistence farming using rudimentary methods; these have generally led to low outputs in the sector. As much as this contributes a fair share towards the country's GDP, per capita contribution is quite small, hence overall production has not risen to where the sector shall make the needed impacts (MoFA, 2008).

Smallholder farms generate 80% of Ghana's agricultural output by rain-fed. Most farming is traditional, with a ratio of farmers to tractors of 1:180,000. Farmers have very low access to the market, restraining both fertilizer use and irrigated practices. 2,740,000 households, of which 6,000 availed irrigation services; arable land under irrigation stands at 0.04%. Fertilizers are used generally by only 20% of families, as opposed to 60kg/ha in developed countries.

In both domestic and foreign settings, the aforementioned researchers concentrated on the roles of microfinance that are closely associated with offering microcredit assistance to the underprivileged and disenfranchised in rural regions. Since agriculture is the primary occupation of the impoverished in rural areas, microfinance programs are focused on enhancing the agricultural system.

"Microfinance has a major influence on the output and is positively correlated with agricultural production. Small loan amounts, the lack of collateral securities, and delays in the issuance of agricultural loans are some of the main obstacles to credit access. One of the biggest problems with credit administration is that farmers don't understand how to get loans. The recommendations included encouraging microfinance institutions (MFIs) and other development partners to effectively finance agriculture, educating farmers about the loan application procedure, encouraging farmers to save, and establishing active farmer-based organisations.

Literature Review

Ahmad (2020) concentrated on the contribution of microcredit to the advancement of agriculture. By helping to change the agricultural sector through the use of new technology, improving supply to the market for agricultural goods, and raising farmer knowledge, microcredit initiatives assist the poor and disenfranchised.

Commercial banks were instructed to offer institutional loans to priority microfinance by Nepal Rastra Bank (2020, p. 5) as part of the "Priority Sector Loan Program." As stated in banking policy, "A and B class banks should invest in microcredit" (Nepal Rastra Bank, 2022, p. 3).

Jain (2020, p. 34) observes that microcredit provides have a good effect on the empowerment of Nepali women residing in the country's eastern region. Women are empowered when they utilize microfinance services, such as savings and credit. The importance of microfinance is highlighted by Kumar (2020, p. 5), Someone who says "the active participation of women in SHGs has a positive impact on their members' empowerment." Gender engagement and women's empowerment are two of microfinance's main objectives.

Savings and credit are two examples of microfinance services that help empower women. According to Kumar (2020, p. 5), "the active participation of women in SHGs has a beneficial effect on their members' empowerment," emphasising the function of microfinance. Gender engagement and women's empowerment are two of microfinance's main objectives.

Ahmad (2020) concentrated on the contribution of microfinance to the advancement of agriculture. By helping to change the agricultural system through the use of new technology, improving supply to the market for agricultural goods, and raising farmer knowledge, microcredit programs assist the poor and marginalized. Microfinance is essential for helping the underprivileged and disenfranchised, but in certain situations, trouble recovering loans can arise.

According to Dhakal (2001), "the sector of microfinance has over the years dramatically altered and is likely to continue to change over the next few years as millions of poor people require the means of financial services to survive in life".

Microfinance is very essential for helping the poor and marginalized, but sometimes loan recoveries may be a problem because of inadequate monitoring and evaluation, which results in bad debts and problems related to loan repayment and investment (Gyanawali, 2007).

Regmi (2015) said that microfinance plays a significant role in the socio-economic upliftment of women. According to her, it has focused its orientation toward the empowerment of women through saving plans, employment plans, and skill-oriented training. Here, once again, microfinance focuses on the day-to-day problems of the poor in bringing about improved economic upliftment for the marginalized (Murphy, 2006). Such models cover all types of health, life, and livestock risks; sometimes they even work as a kind of village bank (Yunnus, 1993).

Microfinance's impact on savings and profits

The study area benefited from the microcredit program. In order to raise household incomes, it is essential. The analysis showed that while the number of high-income households increased, the percentage of low-income households declined. Furthermore, according to MFI representatives, the majority of households that received credit from MFIs were able to expand their farming or business operations with the help of the loan, which increased household savings and profits.

Microfinance's Impact on Employment and Farming Activities

After receiving a loan from microcredit, which improved their employment status, the respondents started growing vegetables. The local level rose in the study area as farmers began growing vegetables in the off-season and opening small businesses like tea shops and sewing shops. The conventional farming approach has evolved, and a new cultivation technique has emerged that contributes to job growth. Instead of focusing on a single season, farmers grow vegetables for entire years.

Impact of Micro lending on Food Purchases

The absence of irrigation facilities prevented some farmers from farming during dry spells. Farmers are unable to provide the daily food needs due to insufficient crop production. Here, they bought food from the market using loans they obtained from microfinance institutions. To address the issue of food scarcity, 4% of the participants in this study took out loans from MFIs.

Microfinance's Impact on Assets

The acquisition of household assets like televisions, cell phones, washing machines, and motorcycles is facilitated by microfinance programs. The impact of microfinance on growing

household assets was one of the questions posed to the interviewees. The respondents occasionally made loan investments in domestic assets. 15% of households borrowed money from MFIs to purchase farming equipment like walking tractors and pumping machines, while 6% of households used the loan to purchase land, according to the data. Microcredit initiatives contribute to household asset growth in the study area.

Microfinance Jobs' Effect

The analysis of the relationship between households' primary occupation and their yearly income before and after taking out loans is displayed in Table 7. The findings demonstrated a statistically insignificant correlation between households' primary occupation and their annual income before and after taking out loans. We can conclude that households receiving microcredit do not have to change their primary employment to improve their living conditions.

Objectives

This study's overarching goal was:

1. To look into how the microfinance program affects the growth of agriculture.

2. To investigate how microfinance contributes to the region's increased agricultural output.

3. To investigate the proper application of microfinance.

Hypothesis No.1

Ho: The development of agriculture and microfinance are unrelated.
H1: There is association between Microfinance and Agricultural development.

Hypothesis No.2

Ho: There is no correlation between microfinance and borrowers being more self-sufficient.

H1: Improvements in borrowers' self-sufficiency have been linked to microfinance investments.

Hypothesis No. 3

Ho: There is no correlation between microfinance and borrowers' improved quality of life.

H1: There is a correlation between microfinance and the borrowers' improved quality of life.

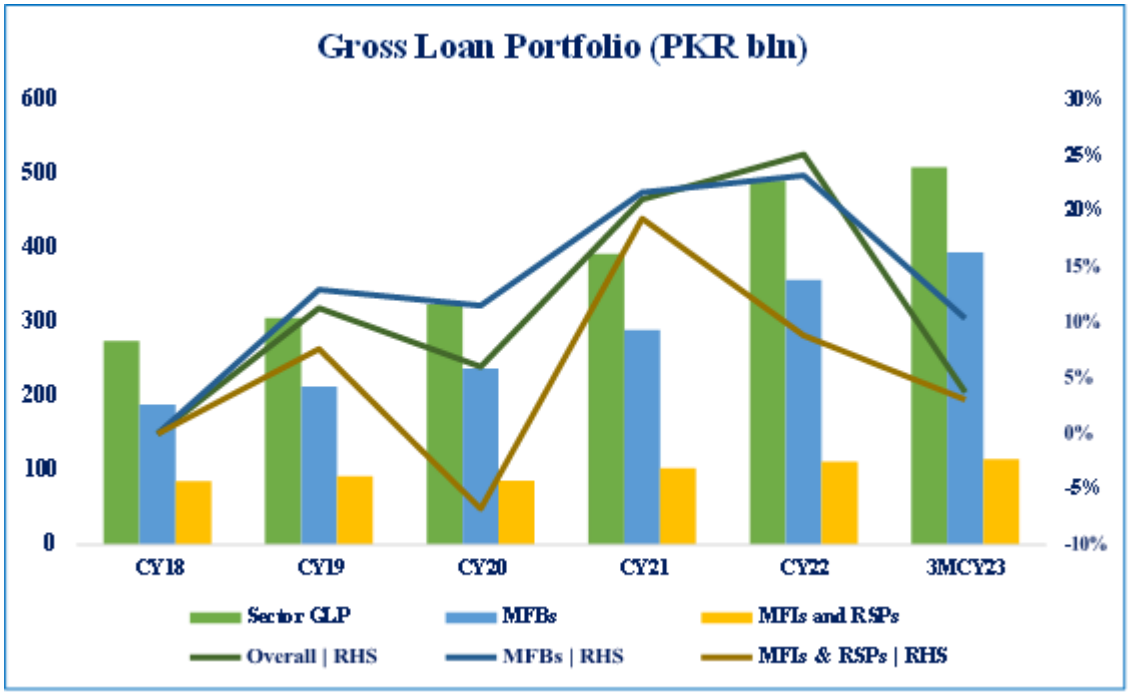
Microfinance Facilities in Pakistan

One definition of microfinance is the provision of financial services availed to the low-income section, unable to attain classic finance services. The different services that involve microfinance include savings accounts, current accounts, financial transfers, micro insurance, and microcredit.

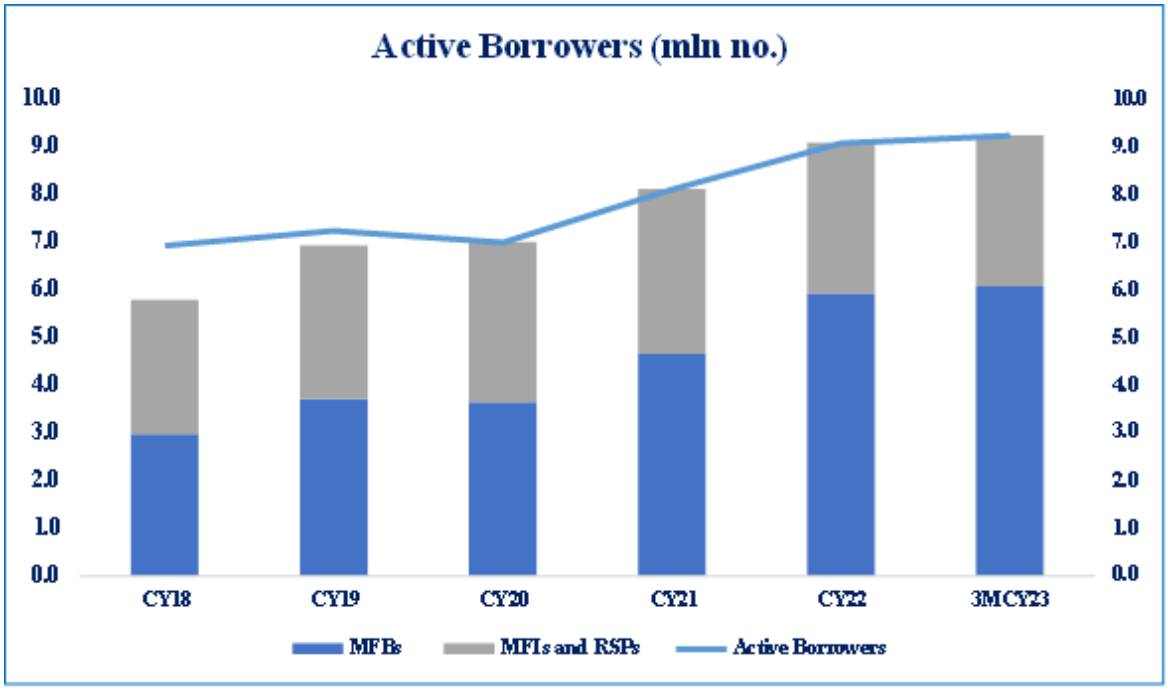
Finca Microfinance Bank Ltd. 2 U Microfinance Bank Ltd. 3 Khushhali Bank Ltd. 4 Advance Pakistan Microfinance Bank Limited.

Table 1: Trend Analysis

GLP | (MFBs + MFIs + RSPs & Others)	CY18	CY19	CY20	CY21	CY22	3MCY23
Outreach						
Number of Branches	4,239	4,036	3,828	3,823	4,058	4,037
Growth (YoY)	15%	-5%	-5%	0%	6%	-1%
Assets						
Gross Loan Portfolio (PKR bln)	275	306	324	393	491	510
Growth (YoY)	36%	11%	6%	21%	25%	4%
Active Borrowers (mln)	6.94	7.25	7.01	8.12	9.09	9.25
Growth (YoY)	20%	5%	-3%	16%	12%	2%
Average Loan Size	39,603	42,173	46,269	48,335	54,031	55,081
Portfolio-At-Risk (PAR>30 days)	2.2%	4.8%	3.7%	4.9%	5.8%	5.2%
Funding						
Value of Deposits (PKR bln)	240	268	374	423	514	488
Growth (YoY)	28%	12%	40%	13%	22%	-5%
Number of Deposit Accounts (mln)	35	48	64	79	94	98
Growth (YoY)	14%	35%	35%	23%	19%	4%
Average Deposit Size (PKR)	6,799	5,617	5,839	5,367	5,474	4,969
Growth (YoY)	13%	-17%	4%	-8%	2%	-9%

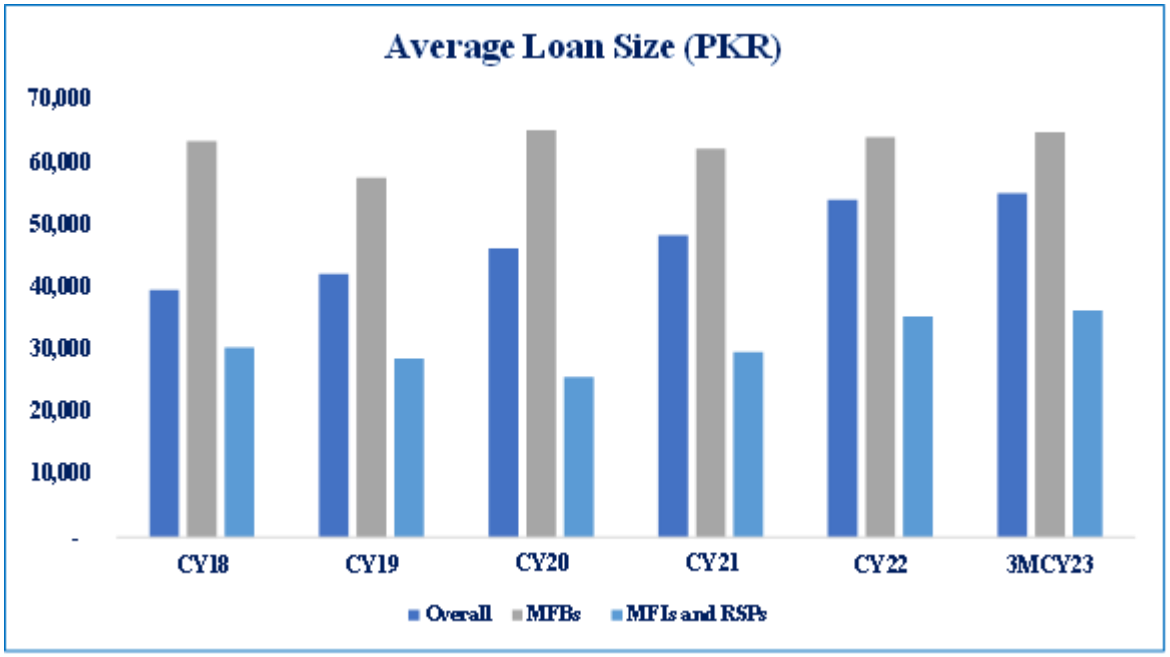


Source: Microfinance – PACRA Research – Sep'23



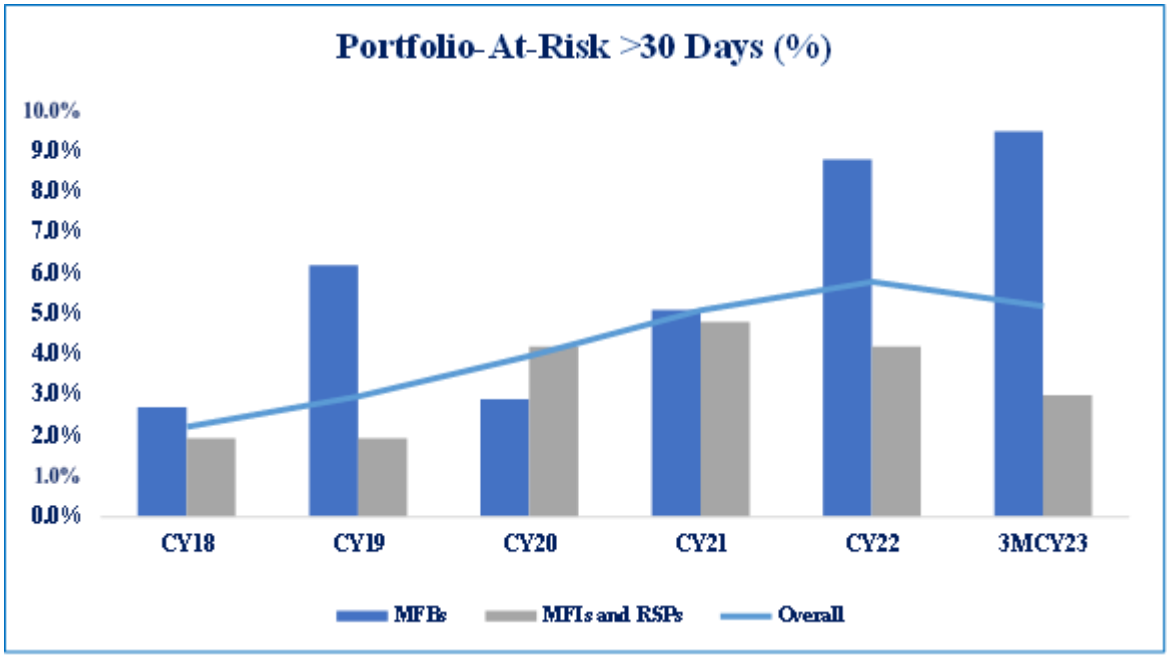
Source: Microfinance – PACRA Research – Sep'23

The sector GLP has reached PKR 510bn during 3MCY23. Microfinance Banks accounted for around 77% of overall sectorial GLP at PKR~395 billion, while MFIs and RSPs collectively added PKR~115 billion. Conventionally, MFBs grow faster than the industry average, whereas the growth of MFIs and RSPs is slow. The GLP for MFBs has grown at a CAGR of ~15% over the last five years, CY18-22, while it has increased at a very low pace of ~2% for MFIs. MFBs contributed approximately 66% of active borrowers in the Microfinance Sector in 3MCY23. Active borrowers were approximately 9.3 million in 3MCY23, with the contribution by MFBs standing at around 6.1 million.



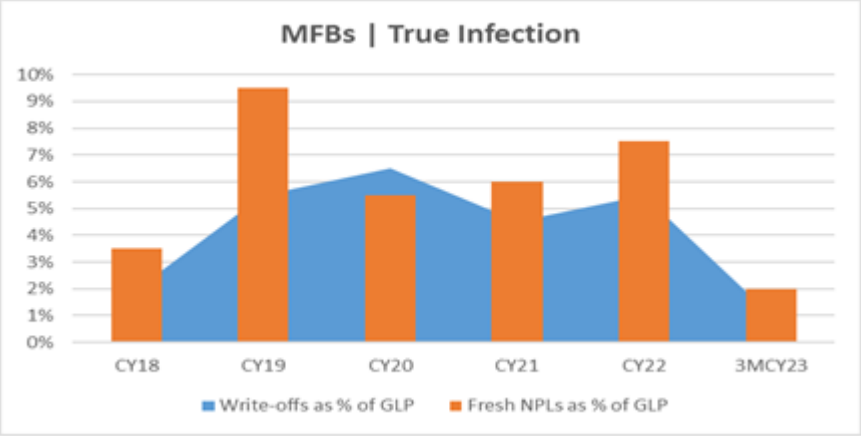
Source: Microfinance – PACRA Research – Sep'23

The average loan size for all segments, including the Microfinance Sector (MFS) in 3MCY23 rose about ~2%. The average loan size of 17 MFS went up to ~2% and PKR~55,081 at End-Dec'22, while that of MFBs is PKR~64,853 as of End-Dec '22. However, the average loan size of the sector increased by about 3% in MFIs as well as in RSPs. This primarily increased due to living costs and currency erosion. Credit quality in MFBs deteriorated sharply, with average PAR>30 days increasing to around 9.5% from 8.8% in CY22. It has been declining for MFIs and RSPs since CY21.



Source: Microfinance – PACRA Research – Sep'23

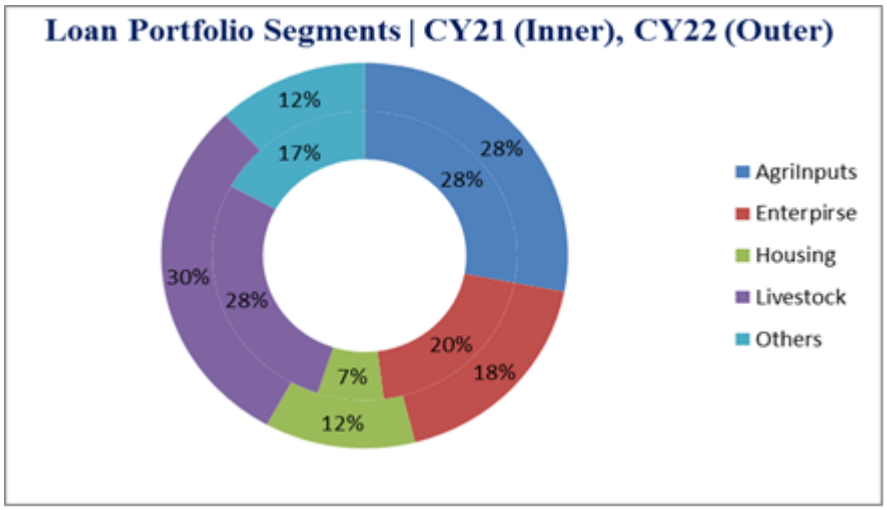
Microfinance Assets



Source: Microfinance – PACRA Research – Sep'23

In CY23, the infection rate on MFB came down to ~2%, whereas in CY22 it was ~8%. The ratio of write-offs to GLP decreases from over 6% in CY22 to under 1% in CY23.

The distribution of GLP for the Microfinance Sector in 2022 is given in the following graphic: Livestock made up to 30% of the entire portfolio, followed by agriculture (28%).

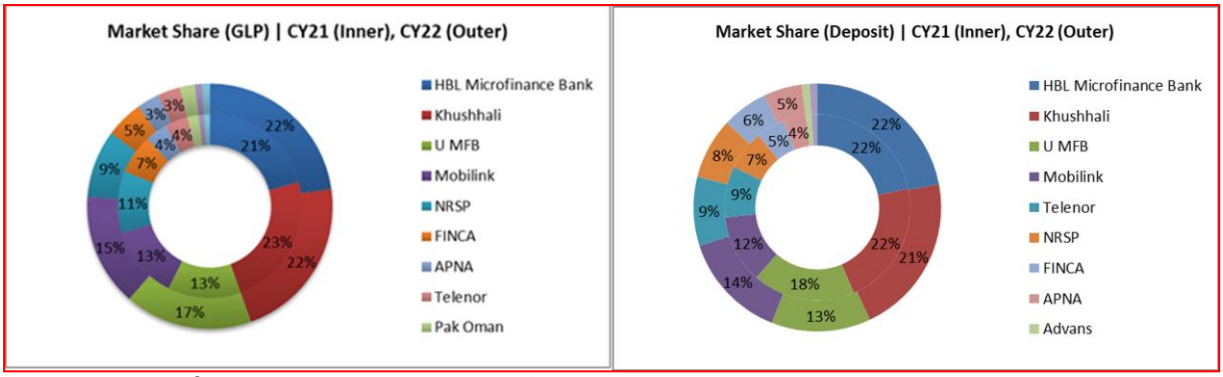


Source: Microfinance – PACRA Research – Sep'23

Microfinance Banks Market Share

As far as MFB's assets are concerned, overall GLP added up to ~PKR 357 billion as of End-Dec'22 compared with ~PKR 290 billion as of the same period last year. HBL Microfinance Bank remained at the top of both periods in terms of GLP of ~PKR 86bln for CY22 and ~PKR 59bln for CY21. The top five players together dominated the total GLP in the Segment and managed almost 86% for CY22.

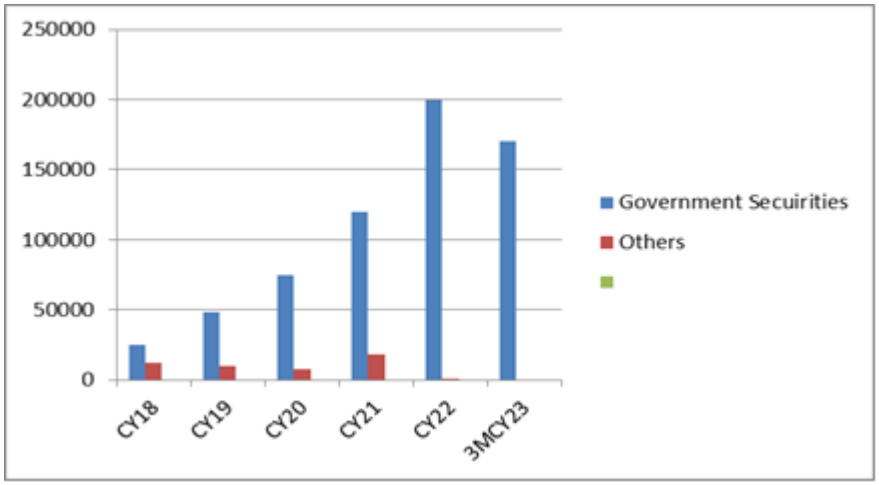
During CY22, the MFBs deposit base picked up to PKR ~514 bln, up from PKR ~423 bln CY21, showing a 22% YoY growth. The leading five players by deposit base include Fist MFB, Khushali, U-MFB, Mobilink, and Telenor, which cumulatively represent around 79% of all deposits in the segment.



Source: Microfinance – PACRA Research – Sep'23

Microfinance Banks Assets

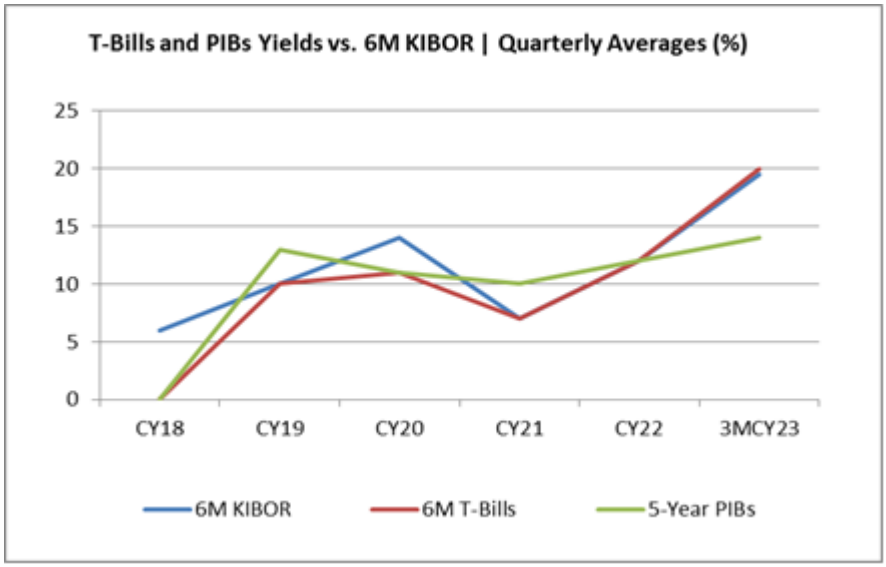
MFB investments totalled PKR~203 billion as of the end of CY22, a about 66% increase over the PKR~133 billion recorded the year before.



Source: Microfinance – PACRA Research – Sep'23

The cut-off yields for long-term and short-term securities in 3MCY23 were approximately 13.5% and 19.5%, respectively. Because of the mounting inflationary pressures and monetary tightening that accelerated throughout 1HCY23, the SBP's hawkish posture is reflected in the notable increase in 3MCY23. These had previously been approximately 11.5% and 11.0% in CY22, respectively.

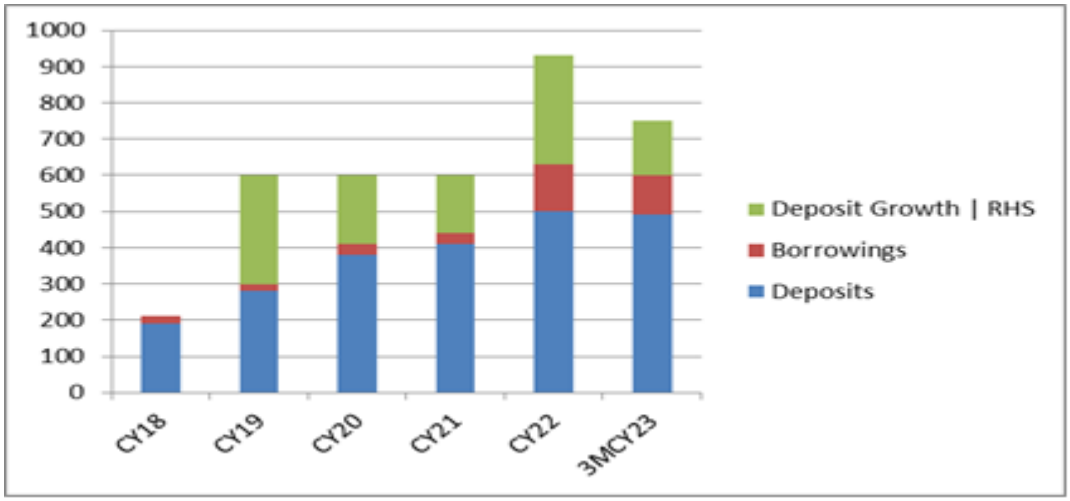
Overall, MFBs' total assets have expanded at approximately a CAGR of 25% during CY18-CY22. At 3MCY23, total assets stand at PKR~714 billion, in contrast to PKR~754 billion as at end-CY22. Advances and Investments soak up about 88% of MFB's assets, and hence, the sector is carrying at least 88% of its earning assets. The asset base of the sector has grown multifold over the last decade with its enormous growth potential.



Source: Microfinance – PACRA Research – Sep'23

Liabilities of Microfinance Institutions

The MFBs are the sole depositors to the Sector with ~94 million active depositors as of CY22 against ~79 million in CY21. Total deposits aggregated PKR ~514 billion by the end of December 2022 with a YoY growth of around 22%. The massive increase in depositors came from branchless banking with an average deposit amount of PKR 5,703 per account holder in the last year.



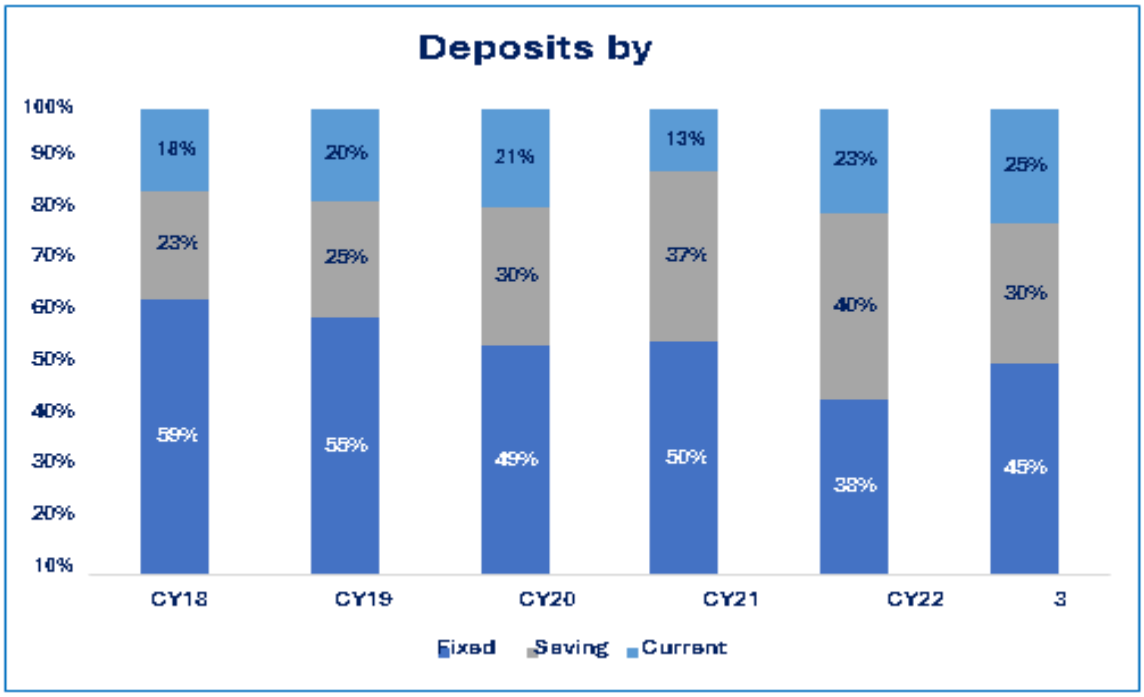
Source: Microfinance – PACRA Research – Sep'23

These deposits of MFBs stood at PKR ~488bln in 3MCY23, against borrowings of PKR ~125bln compared with PKR ~142bln in CY22. The borrowing comprised around 20% and deposits accounted for about 80% of the total funding of MFBs. Thus, there remained good stability in funding composition from CY22 to 3MCY23.

Microfinance Banks Deposits

MFBs had around 98 million deposit accounts with an average deposit size of PKR~5,663 in CY22 which had ramped up by PKR~274 from PKR~5,389 in CY21. While accesses had risen 4.3% during the year, the value term declined 5.1%. About 75% of the segment's

deposit base lies with the major composition of the Deposit Mix of MFBs mainly comprising Fixed Deposits and savings accounts. CASA's share of the overall deposit base stands at around 55%. The CA share is, however, low and has a tremendous mixture of branchless/m-wallet deposit accounts constituting only 16% of the total deposit amount.



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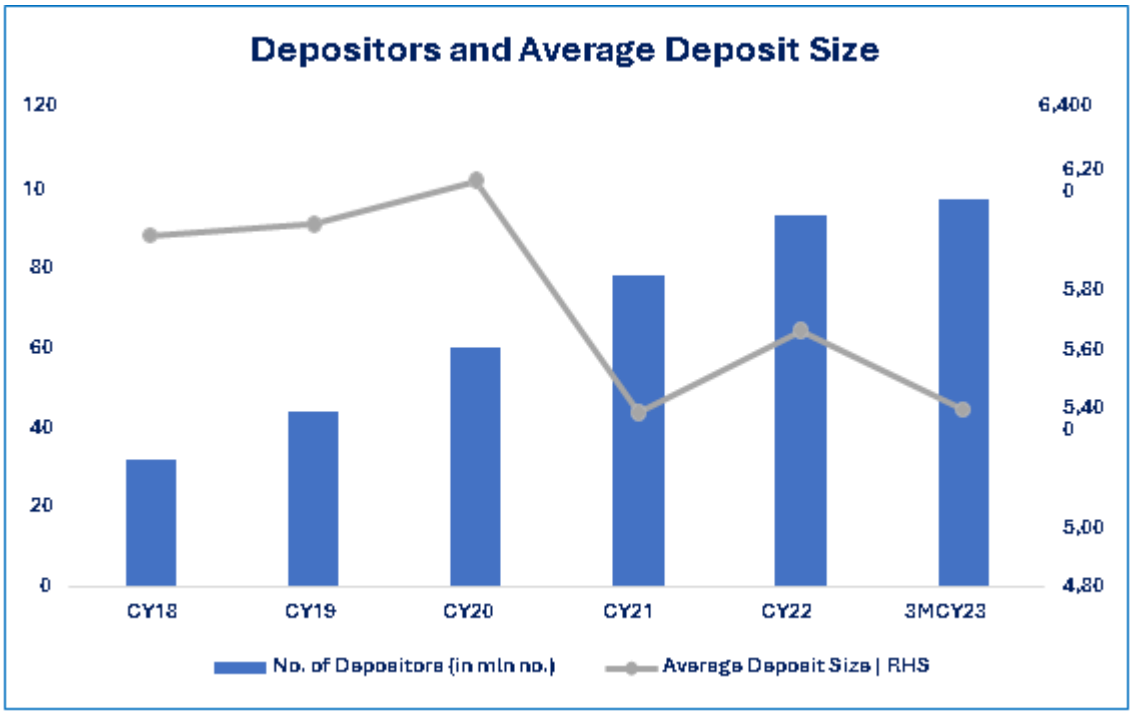
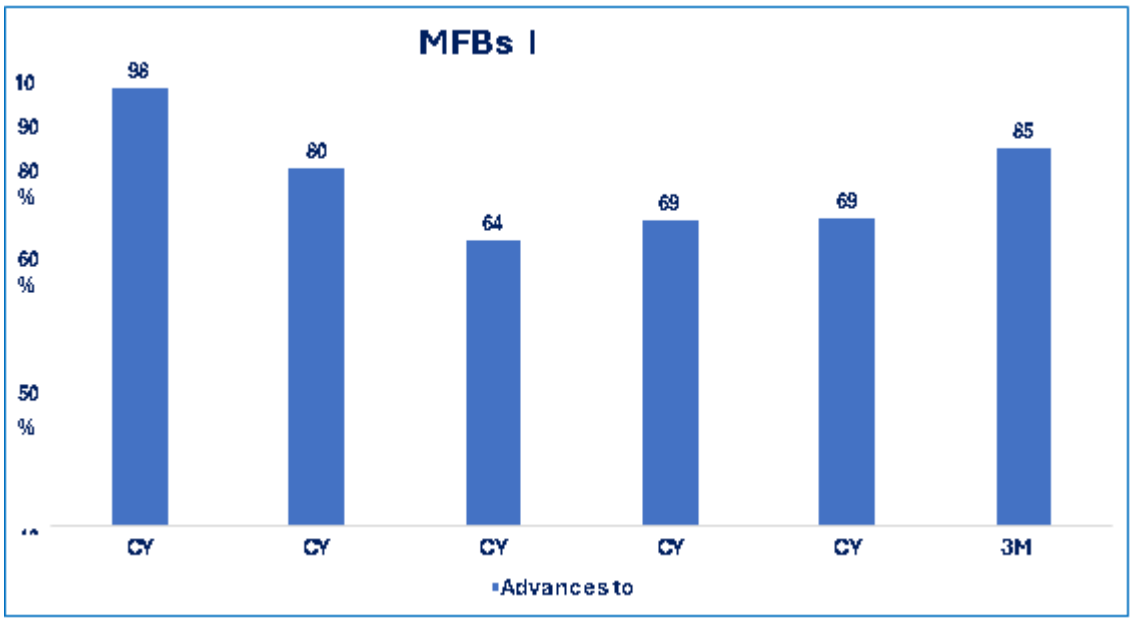


Source: Microfinance – PACRA Research – Sep'23

Ratio of Microfinance Banks' Assets to Deposits

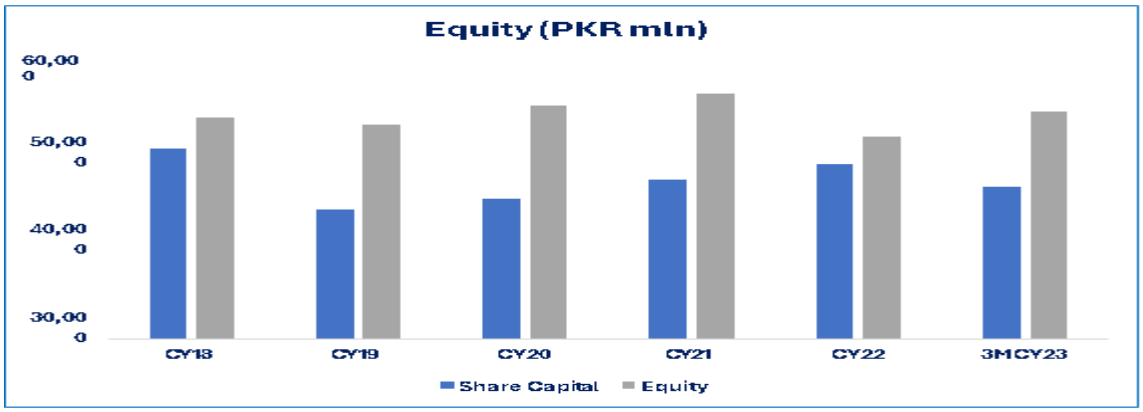
Microfinance Banks Capital Structure

MFB deposits increased 22% year over year to PKR 514bn as of the end of Dec. '22, while advances picked up by 11% to PKR 357bn. Advances-to-Deposits Ratio for MFB stood around 73% in CY19-3MCY23. ADR has fluctuated over the past five years, rising from 98% in CY18 to a low of 64% in CY20. Since March CY23, however, ADR has moved up to about 85%, back to the earlier levels.



Source: Microfinance – PACRA Research – Sep'23

By the end of March 2023, the MFBs' total equity had increased by almost 11% to PKR~49 billion (compared to PKR~44 billion at the end of December 2022). Interestingly, roughly 7% of the Segment's entire assets are made up of stock. MFB-provided gross loans were around eight times the segment's total equity during 3MCY23, while deposits mobilised were approximately 10.5 times that amount.



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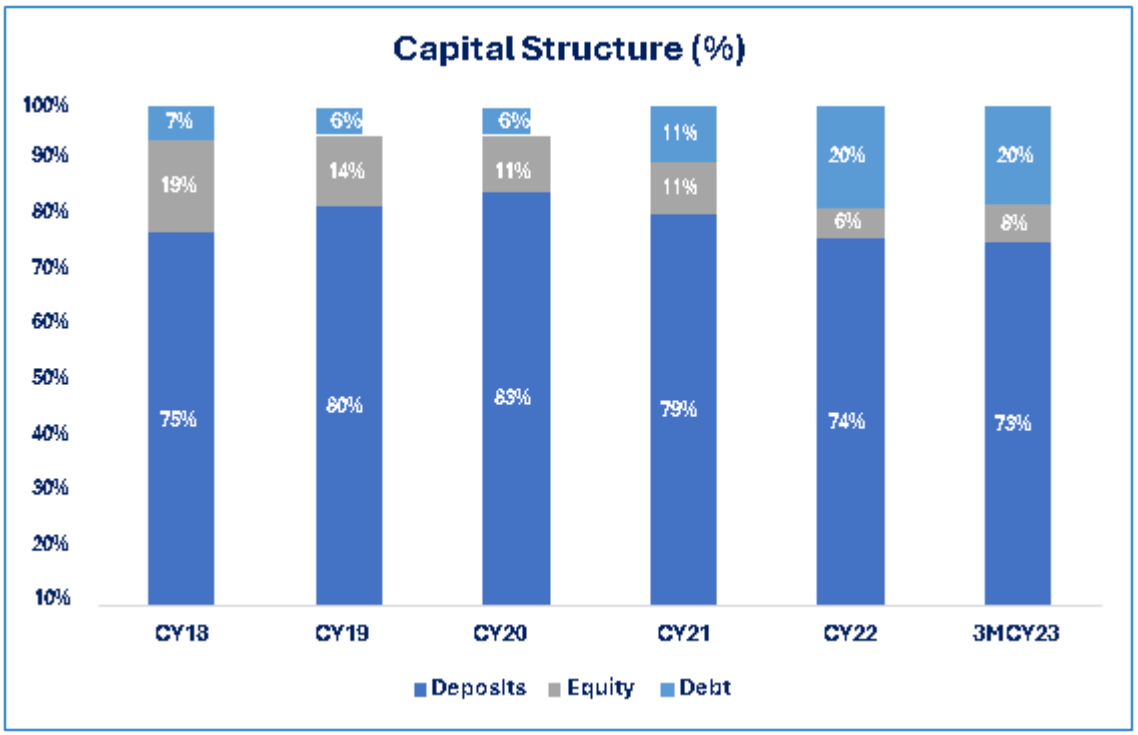

Source: Microfinance – PACRA Research – Sep'23

Objective of the study

The study aims to unfold the relationships between Microfinance and Agricultural Production. This research examines the impact of Microfinance on the Agricultural Production of Southern Punjab. Identify the impact of Microfinance on Livestock production in Southern Punjab makes proposals to improve the way microcredit is administered and made available.

Methodology

Data Collection

The research was conducted in the two districts of Southern Punjab (Muzaffargarh and Rajanpur). 120 farming households in all were selected as subjects from both districts, 60 each. Simple random sampling was adopted, and a comparison with and without microfinance has been done. A schedule of interviews was prepared to collect firsthand information.

Data Analysis

Collected data was coded, entered, and updated on Microsoft Excel; however, the results were analyzed on STATA (Version 14.2) for a mean, t-test, and probit test.

Probit regression model

This model suggests variables and probability values with a value ranging between 0 and 1. Since it is based on Yi as the binary answer for the farmers with two possible values, with or without microfinance, we can write Y = 1 to denote a farmer having microfinance and Y = 0 to denote a farmer without microfinance. This model uses X, the vector of regressors of explanatory variables, and β, the vector of slope parameters to investigate the deviation of

change in X relative to the probability of farmer's participation. The probability of binary response was defined as follows:

If Yi = 1; Pr (Yi = 1) = Pi Yi = 0; Pr (Yi = 0) = 1-Pi

Where,

Pi = E (Y = 1/x) represents the conditional mean of Y given certain values of X.

This model estimates the variables (X, dependent variables) that affect the probability of participation by farmers in microfinance and given the fact that the probability of participation is considered a nonlinear function of these variables, focusing more on the role played in decisions at higher levels by social, institutional, and financial factors.

Pr(Y=1) = (X beta)

Model Specification

The following is the expression of the probit model used in this study to examine farmers' involvement in microfinance:

Pr (Y=1) = f (b0+ b1 X1 + b2X2 + b3X3 + b4X4 + b5X5 + b6X6 + b7X7 + b8X8 + b9X9 + b10X10 +b11X11 + b12X12)

Where,

Pr (Y=1) = Probability score of participating in microfinance

X_1= Districts

X_2= Age of household head (years)

X_3= Gender of household head

X_5= Education of household head

X_6= Occupation of household head

X_7= House type

X_8= Landholding

X_9= Credit

X_{10}= LSU

X_{11}= Annual income of household b_1, b_2....b_{11}= Probit coefficient

Results and Discussions

Results

The most important part of scientific study is to analyze and interpret the data. This process alone makes scientific research incapable of serving its objective of generalization and prediction. Table 1 showed that males with 67.75% were in the majority of the respondents and females were with 32.5% in the concerned districts. According to this study, 45.83% of

respondents in the Southern Punjab district were under 25, 16.6% were over 50, and 37.5% of respondents were between the ages of 25 and 50. About 20.83% of farmers had a primary education, 20.83% had a middle school education, 25.00% had matriculated, and 12.5% had a bachelor's or master's degree, compared to 29.16% who were illiterate. In the districts of Southern Punjab, 66.66% of respondents were married, 16.66% were single, and 16.66% were widowed or widowed.

Table 1: Demographic status of Respondents

	Frequency	**%age**
Gender		
Male	81	67.75
Female	39	32.5
Marital Status		
Single	20	16.66
Married	80	66.66
Widow / widower	20	16.66
Age		
< 25 years	55	45.83
25-50 years	45	37.5
>50 years	20	16.6
Education		
Illiterate	35	29.16
Primary	25	20.83
Middle	25	20.83
Matriculation	30	25.00
Collage/University	15	12.5

Respondents' housing circumstances

Table 2: Respondents were distributed according on their housing circumstances

Housing conditions	**Frequency**	**Percentage**
Til	50	40.66
Wheat	55	45.83
Mixed	15	12.5
Total	120	100.00

Table 2 represents the housing conditions of farmers and observed that 40.66% of the respondents had Til houses, 12.5% had mixed devilling, and 45.83% of the respondents had Wheat houses.

The respondents' occupations

Table 3: The respondents' distribution based on occupation

Occupation	**Frequency**	**Percentage**
Agriculture	66	55.00
Labour	24	20.00
Business	15	12.5
Private job	10	8.33

Govt. Job	5	4.16
Total	120	100.00

Table 3 shows the different sources of income of the respondents, with agriculture (55%) labor (20%), local business (12.5%), private jobs (8.33%), and government jobs (4.16%).

Land Tenure Status of Respondents in Agriculture

Table 4: Respondent distributions based on tenure on agricultural land

Agriculture Land Tenure	Frequency	Percentage
Owner	35	29.16
Tenant	65	54.16
Owner cum Tenant	20	16.65
Total	120	100.00

Most of the respondents were 54.16%, 46.66% were Tenants, 29.16% were owner-ship farmers and 16.65% were owner cum tenant respondents (Table 4).

Farmers Participation in Microfinance

It has been observed that in our research Microfinance has been used by 78 households (Figure 1).

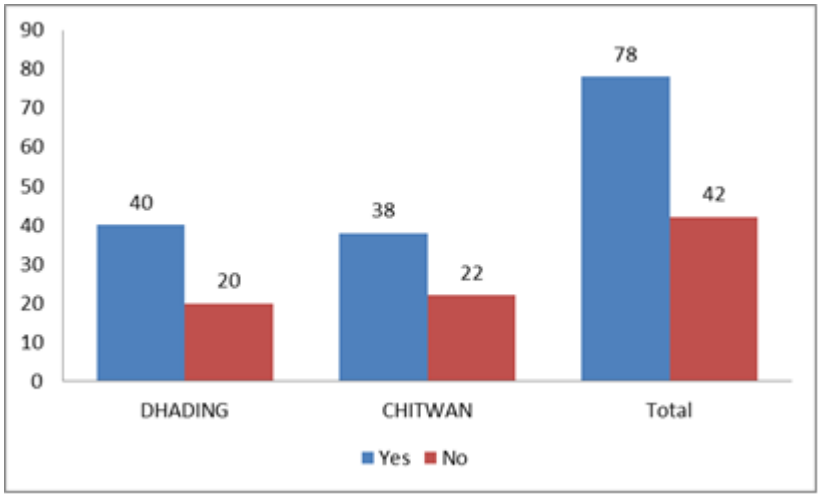

Figure 1: Farmers' participation in microfinance

Self-Sufficiency in Food and Microfinance

Figures 2 and 3 on people's participation in Food and microfinance independence. It was noted that the percentage of food sufficiency among participants in microfinance was higher at 65 percent compared to nonparticipants whose percentage was only 62 percent. In this research, it was discovered that only 5 percent of farmers with no uptake of microfinance had three months of sufficiency of food.

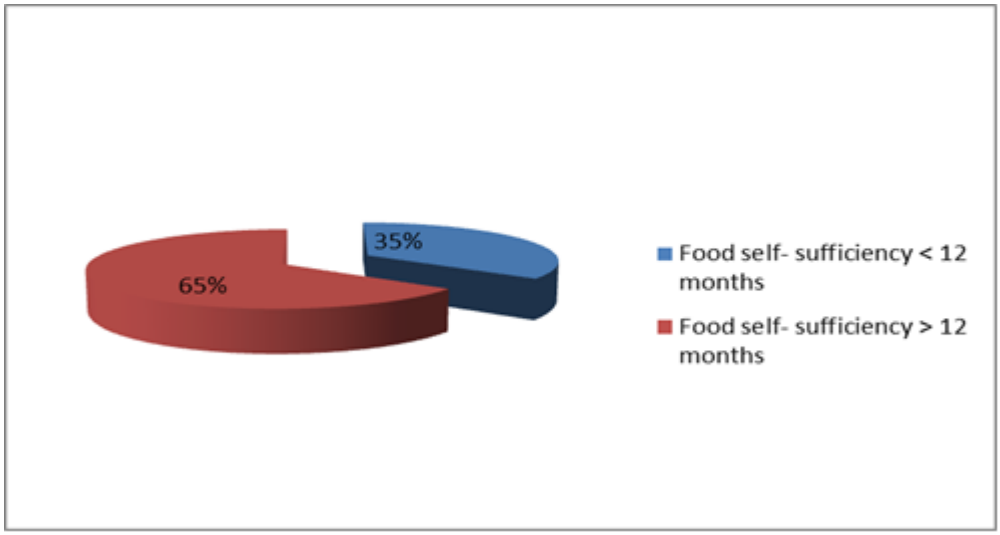

Figure 2: Food self-sufficiency with microfinance

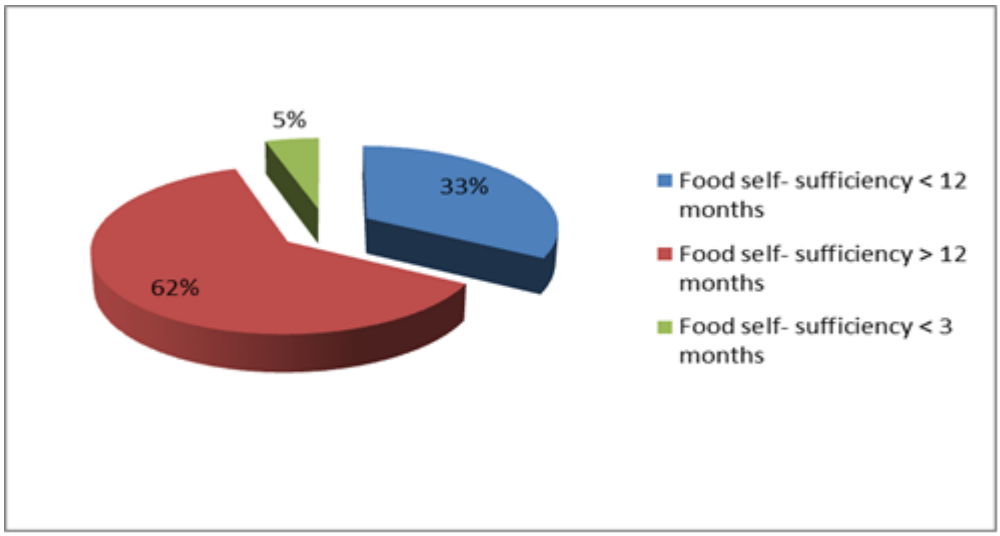

Figure 3: Food self-sufficiency without microfinance

Factors Influencing Farmers' Involvement in Microfinance in the Research Region

In this research, it was observed that farmers were involved in microfinance for different purposes with binary variables where engagement = 1 and 0 otherwise.

Six of the eleven variables—household age, caste, education, credit, livestock standard unit, and family income—were shown to be significant in the analysis of the 120 farmers who participated in microfinance. None of the other five variables were significant. According to the study, the likelihood of participating in microfinance is lowered by 1.5% for every unit rise in the age of the household head.

The authors also found that, at the 10% level, household head education is adversely correlated with farmers' participation in microfinance. With the household head's obtaining literacy, the possibility of participation in microfinance reduces by 6.3%. The findings are concurred with by, who, in their study, revealed that when women's education levels are low, then the possibilities of entry into microfinance are high. The favourable effect of participation in microfinance for farmers was that, with a 1% level of significance, taking

credit for agriculture was significant. For each household taking credit, the probability of participation in microfinance increased by 47%.

The study finds that farm involvement in microfinance decreases with higher livestock units at 5% levels, implying a reduction in the number of institutions covered by microfinance. This follows since increased household income through livestock owners would imply fewer institutions needed. However, the entry of farmers into microfinance seems to be positively correlated with household income at 5% levels, and their odds ratio to participate in microfinance with a given 1% increase in household income stands at 2%. This translates to saving for higher-income farmers leading to a contradictory finding (Nxumalo and Olaele, 2013).

Table 5: Summary of probit regression model

Variables	Description	Obs	Mean	Standard deviation	Min.	Max.
Dependent variable MICROFINANCE	Participating in microfinance programs. (1= with microfinance, 0= without microfinance)	120	0.65	0.47	0	1
Independent variables						
DISTRICT#	District of the respondent (1=Muzaffargarh, 0= Rajanpur	120	0.5	0.50	0	1
AGE_HH	Age of the household head (in years)	120	51.75	12.37	27	85
GENDER_HH#	Gender of the HH (1= Male, 0= female)	120	0.92	0.26	0	1
EDUCATION_HH#	Education of the HH (1= literate, 0= illiterate)	120	0.75	0.43	0	1
OCCUPATION_HH	Occupation of HH (1= Agriculture, 0= otherwise)	120	0.78	0.41	0	1
HOUSE_TYPE#	Type of house (1=Pakki, 0=Kachhi)	120	0.20	0.40	0	1
LAND_HOLDING	Total size of cultivated land (in hectares)	120	0.37	0.32	0	2.1
CREDIT#	Credit from microfinance for agriculture/livestock	120	0.46	0.50	0	1
LSU	Livestock standard unit	120	54.13	386.06	0	3006
LOG_INCOME	Total Farm income (Rupees/ha)	120	12.02	0.75	10	14.3

Table 6: Factors influencing microfinance participation in southern Punjab

Variables	Coefficient	Standard error	Z	P>|Z|	dy/dx
District	-0.541	0.472	-0.96	0.339	-0.015
Age hh	-0.059***	0.018	-3.12	0.002	-0.001
Gender hh	0.694	0.773	0.90	0.369	0.012
Education hh	-1.020*	0.532	-1.92	0.055	-0.063
Occupation hh	-0.308	0.570	-0.54	0.589	-0.012
House type	-0.781	0.512	-1.53	0.127	-0.165
Landholding	-0.467	0.576	-0.81	0.417	-0.150
Credit	4.068***	1.204	3.38	0.001	0.470
Lsu	-0.752**	0.031	-2.41	0.016	-0.002
Log income	0.632**	0.265	2.38	0.017	0.020

dy/dx is for discrete change of dummy variable from 0 to 1.

Summary statistics

Number of Obs.	120
LR $chi^2(11)$	98.26
Prob> chi^2	0.000
Pseudo R^2	0.6324

Conclusions

Microcredit can reduce vulnerability by enhancing the diversification of sources of income for households, increasing savings, enhancing credit availability, and consequently improving household savings management skills and farm productivity. The proportion of participants who produce their food is larger than that of the respondents. Participation in microfinance was shown to lead to increases in rice and wheat production and margins. It shows that the more units of livestock, at 5% levels, farm participation in microfinance is falling whereas the number of microfinance institutions is falling. This is because the income from the owners of the livestock is high, hence they require fewer institutions. The entry of farmers into microfinance institution participation is positively related to household income at 5% levels, the odds ratio for an opportunity for a farmer to enter a microfinance institution given that household income increases by 1%. Therefore, there should be intense monitoring and appraisal of these microfinance projects with consistent follow-up to ensure the credits are properly utilized.

Securities as Collateral and Other Credit Qualification Requirements

Farmers in Ghana face challenges when accessing loan facilities as described by 89.7% who emphasized it as being heavy, tiring, and time-consuming. The biggest challenge to SMEs is the lack of collateral securities as they know how to access and apply for loans earlier. Loans can be up to three to 24 weeks of waiting time, and only 9.7% are at the JHS/Middle School level, making the process somehow hard to understand and create application letters.

All this was subject to the strings of the facility that required farmers to have savings as collaterals for securities and make groups that would guarantee loans for each member as a guarantee for the loans issued and be liable for repayments in case any member failed to return. However, farmers claim that this wastes time, and "credit is delayed, making maximum benefits not to be derived.". The majority of the farming community (89.7%) had to suffer from the delayed sanctioning of loan

facilities but laborers are recruited on credit and repaid later from the harvested collection. Failure to fulfill such agreements may bring farm activities to a standstill until the loan is sanctioned, causing a serious blow to production.

High Interest Rate

High interest rates and unstable commodity prices make it challenging for the control farmers, where 88.5% of them did not borrow. In the treatment group, microcredit users consider taking loans from MFIs to be to their advantage as the high interest rate cannot be beaten by produce prices. This interest offered at 32 % is expensive, and thus cannot possibly make repayment in case of natural disasters or product value downfalls.

Advocates of credit users argue that with very high interest rates it becomes impossible to raise bigger loans, an argument also supported by the conclusion that the Bank of Ghana reached that high interest rates discourage farmers' ability to raise finances and therefore make low investments and low yields. The MFI defends the given rate for agricultural loans out of the reason that agriculture carries a highly risky associated factor. Though the interest rates are so high, farmers agree that repayments are flexible since at 34 weeks, they would have already cultivated and sold their products. However, the MFI faces problems with credit management, first in that it does not fully disclose clients' activities, and secondly by a lack of understanding among farmers mainly through a lack of education.

Policy and Recommendations

Based on the findings, microfinance greatly contributed to improving agricultural production. The sector's operators, on the other hand, face problems like ignorance of the loan accessing process as well as a shortage of assets to be used as collateral before granting agricultural loans despite the high demand for agricultural loans. A few of the important key findings came together to formulate the following recommendations.

In order to encourage the poor to take out loans from microfinance, the Pakistani government should help microfinance reduce loan interest rates. Customers must be trained on loan management and utilisation prior to loan issuance.

In order to guarantee that loans are used appropriately, microfinance should also conduct effective monitoring in their service regions and host awareness campaigns about the value and benefits of microfinance. Future studies can compare how technical and financial organizations contribute to the fight against poverty.

MFIs and Southern Punjab should assist farmers in forming active Farmer Organizations

One of the significant barriers to credit access is the lack of collateral security, which is often necessary for loan acquisition. The researcher has observed that farmers who do not have any physical property or have any individual as a guarantor are essential to be formed into groups to avail of the loan facility. Grouping an active FBO will increase the availability of credits. This is achievable through registration of the farmer organizations at the District Agricultural Development Unit linking them up with microfinance institutions and holding a monthly meeting for the members to discuss issues of importance to their activity.

Motivate Farmers to Use the MFI to Save

A significant number of service users of microfinance rely on saving as one of the strategies to get access to larger amounts of loans in the future. Opening an account was also one of the requirements for farmers before access to loans was granted to them. Encouraging the farmers to save helps them to obtain loan opportunities without much hassle and bigger loans that they can utilize to increase the farm size and harvest its increased output. To encourage saving, the following tangible programs are proposed: To encourage people to save, give prizes, and incentives, and feature the best and most consistent savers from time to time.

Conflict of Interests

The writers affirm that their interest is not in conflict.

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