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Financial Linkages, Institutional Factors and Loan Repayment Performance: The Case of Microfinance Cooperatives in Tanzania

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Abstract

Loan repayment performance (LRP) in microfinance institutions (MFIs) has been associated with borrowers' and institutions' factors. Since microfinance cooperatives (MCs) are owned by borrowers, their institutional factors might affect LRP differently. Based on linkages literature, transaction cost and principal agency theories, financial linkages (FLs) between MCs and formal financial institutions (FFIs) seem to shape institutional factors, and therefore, LRP. However, empirical studies on these relationships are missing. Based on t-test analysis utilising three-year unbalanced data of 148 to 273 MCs' observations, this paper shows that FLs have strong relationship with institutional factors affecting LRP. Controlling for these factors, results on the linear regression analysis reveal that FLs do not affect LRP.

Keywords: *financial linkages, institutional factors, loan repayment performance, MFIS/microfinance cooperatives, Tanzania.*

1. Introduction[1]

The increasing demand of microcredit services has raised the need for a continuous establishment of microfinance institutions, especially microfinance cooperatives (MCs) (i.e., savings and credit cooperative societies), which are closer to the people. MCs empower the economic and social development of low income people by integrating them in a relatively more formalised financial sector. This enables low income people to have a safe and income generating savings and borrowing options at a relatively lower interest rate than those charged by informal financial institutions (IFIs), such as money lenders; and to access other financial services which are not offered by IFIs. The social impacts of MCs on social development are reflected in the ability of members to use their accumulated savings to send their children to schools, pay for their school fees, acquire modern housing facilities, and to spend on social emergencies such as sickness. Apart from business and agricultural loans, education, development and emergency loans are among the priorities of the majority of MCs in Tanzania.[1] MCs are also used by the government and development partners to implement some economic and social development programs aiming to achieve the millennium development goals (MDGs).[2]

The establishment of MCs in Tanzania has been increasing over time. During 2005– 2009, the number of MCs has increased from 1,875 to 5,344, while the number of members served has reached 911,873 people, and therefore, reaching the penetration rate of 4%.[3] The

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[1] In 2005-2007, 78 and 50% of MCs in Iringa and Dar es Salaam, respectively, offered education loans (Ishengoma, et al. 2010). Between 32 and 71% of MCs in Dar es Salaam and Iringa offered development loans for constructing or accruing houses for living and renting, hence accumulation of assets (Ishengoma, et al., 2010).

[2] In 2006-2007 MCs were used by the government to channel Tsh 21 billion to small entrepreneurs and marginalised households (URT, 2008) and to facilitate the implementation of the national strategy 'Kilimo Kwanza' (agriculture first) by channelling loans to small farmers (www.tzonline.org). Development partners are using them to offer consumer loans for investment in solar energy (UNDP, 2009).

[3] See Table 1 in the following section.

average savings and deposits, as well as loan per member, were growing at the rate of 16% and 35%, respectively.

Although the sector of MCs in Tanzania is expanding, some MCs are struggling to survive, while others have exited the market. In May 2009, 631 MCs were inactive. The major problem affecting some MCs' operations is high loan delinquency and default rates (LDD).[4] Loan repayment rates of MCs in the Southern Highlands Zone districts ranged from 44–52%, while those in the Northern Zone districts reached 79% (Agrisystems-Eastern Africa Ltd., 2003). The average loan repayment rates of MCs in Songea and Mbinga ranged from 64 to 70%, while those in Njombe and Mufindi were between 14% and 50% (Agrisystems-Eastern Africa Ltd., 2003). However, some MCs in other regions attained loan repayment rate of 90–100% (Agrisystems-Eastern Africa Ltd., 2003).

Factors affecting loan repayment performance (LRP) are addressed from the borrowers' or the institutions' point of views (Derban et al., 2005). Studies in the former perspective associate LRP with borrowers' or group's characteristics (Zeller, 1998; Godquin, 2004), while the latter focus on institutional attributes (Derban et al., 2005; Copisarow, 2000; Hulme and Mosley, 1996; Stiglitz & Weiss, 1981). Most of the studies focusing on institutional factors are based on non-MCs. The fact that MCs' borrowers are on the other side the owners of lending institutions (i.e., MCs), the way institutional factors affect their LRP might be different from reported experiences. The effects of institutional factors on LRP also seem location or clients' specific.[5]

The environment within which MFIs and borrowers operate also influences LRP.[6] In Tanzania, the financial sector is not highly developed and interest rates charged by commercial banks are relatively high. MCs borrowing funds from banks (for re-lending to their members) charge high interest rate to cover financing costs (Mlowe & Kashuliza, 2009). High interest rates may increase borrowers' utility of loan default (Hulme & Mosley, 1996), and result in adverse selection (Stiglitz & Weiss, 1981).

Since the late 1990s and early 2000s, the government undertook regulatory reforms to encourage the development of MCs.[7] However, the external governance of MCs' operations is still poor given the low capacity of the Cooperative Audit and Supervision Corporation (COASCO).[8] This may create a room for poor internal governance practices, and utilisation of low qualified staff and management (URT, 2000), which in turn decrease LRP (Isakwisa, 2006; Abafita, 2003). When the market is uncompetitive and the regulatory system is poor, business partners may establish horizontal and vertical linkages to substitute for external governance while

[4] Loan delinquency occurs when a borrower fails to repay the loan instalments on time; while loan default happens when a borrower completely fails to repay the loan at prescribed terms.

[5] See for example the failure of denial of future loans to improve LRP in areas where borrowers have access to multiple borrowings (Matin, 1997); the limited influence of group lending and peer pressure on LRP when the is low social capital (Bhatt and Tang, 2002); the limited usefulness of applying rule of law when the legal system does not give power to MFIs (Godquin, 2004); and the possibility of the intensity of loan collection procedures to have limited effects in areas with high labour costs (Hulme and Mosley, 1996).

[6] Environmental factors include the possibility of having more business opportunity for small businesses (Bhatt and Tang, 2002); income growth, weather condition, the level of monetisation of the economy, transport, access to market for inputs and outputs (Zeller, 1998); the level of financial sector development; external governance of MFIs (URT, 2000); and sources of financing (Deininger & Liu, 2009).

[7] In 2003, the Cooperative Act was enacted, and the Department of Cooperative Development was established to facilitate and oversee the development MCs. The COASCO was also reformed to audit and supervise MCs.

[8] As of May 2009, estimates on cooperative development in 2009 based on data from Department of Cooperative Development, Ministry of Agriculture Food Security and Cooperatives show that only around 40% of MCs in operations were audited.

overcoming challenges that might arise due to its absence, and facilitating transactions at relatively low transaction cost.

Thus, in line with the transaction cost theory, principal agency theory, and literature on linkages, the institutional factors, -- i.e., loan design/credit policy and terms (Copisarow, 2000; Hulme & Mosley, 1996; Yaron, 1994; Stiglitz & Weiss, 1981), internal governance practices (URT, 2000; Isakwisa, 2006; Abafita, 2003), capacity in credit and business management (TFC & DCD, 2006) -- are likely to be shaped by parties (especially private commercial investors) which MFIs are linked to. Empirical findings supporting this theoretical assumption and the effect of financial linkages on LRP are missing.

Based on t-test analysis utilising three-year unbalanced data of 148–273 MCs' observations, this paper intends to examine the relationship between institutional factors and financial linkages. Based on linear regression analysis, the paper assesses the effect of institutional factors on LRP. Controlling for the institutional factors, the paper examines the effect of financial linkages on LRP.

The rest of the paper is organised as follows. Section 2 offers a brief overview of MCs in Tanzania, Section 3 describes the theoretical relationship between institutional factors and LRP, and institutional factors and financial linkages. It also presents the assumptions, which the paper intends to test. Section 4 describes the data and the analytical approach which the paper utilises. Section 5 presents the results, while section 6 offers conclusion and implications of the findings.

2. Microfinance Cooperatives in Brief

It is important to know the organization of MCs because they are different from other microfinance institutions (MFIs). The description provided here is based on data from six focus group discussions (FGDs) (comprising 112 managers and board members from 102 MCs in Dar es Salaam and Iringa), and the literature review.

MCs (SACCOS) are associations of persons, who voluntarily join together to achieve common needs through the formation of democratically controlled organizations, make equitable contributions to the capital required for the formation of such organizations, and accept the risks and the benefits of the undertaking in which they actively participate (URT, 2004). Thus, members in a given MC have equal value of shares, and are required to make compulsory savings. In 2005–2009 the average loanable funds per member increased from Tsh 123,281 to Tsh 191.501 (Table 1). MCs' sources of financing are shares, retained earnings, savings, deposits and loans from formal financial institutions (FFIs). During 2005–2009, loan from FFIs accounted for 18% of total loans offered by MCs, which increased to 54.38%, while the contribution of savings decreased from 50–34%.

MCs aim to encourage savings and create a source of credit to their members at a fair and reasonable rate of interest. During 2005–2009, loanable funds per member were increasing at a rate of 16% (Table 1). The average loan per member has been increasing over time. MCs are required to offer loans to members only. The loans are mainly individual based, secured by a borrower's savings (which is equivalent to one-third of loan amount) and three to five guarantors who are also members of the same MCs. As indicated in Table 1, during 2005–2009, average savings ranged from 34–53% of loan outstanding. However, during the FGDs, MCs' managers reported that some MCs, particularly employees based, do not require borrowers to save one-third of loans applied because their borrowings from FFIs are secured by salaries of employees who receive, loans and guaranteed by their employers.

Table 1: MCs performance during 2005 - 2009

	June 2005	Nov-07	May, 2008	Dec 2009	Annual growth rate
Total loanable funds (deposit, savings, and share) (Tsh)	44,563,302,264	122,630,268,508	134,023,926,739	211,405,972,301	80.74
Loans disbursed (Tsh)	54,140,056,528	185,587,647,366	228,537,867,840	463,407,606,779	122.90
Borrowing as% of total funding (i.e., value of loan disbursed to members)	17.69	33.92	41.36	54.38	48.39
savings as% of loan outstanding	53	40	40	34	
Average loanable funds per Member (Tsh)	123,281	131,162	150,506	191,501.27	16.13
Average loan per member (Tsh)	212,605	242,696	320,216	508,193	34.93
Number of members	254,651	764,692	713,699	911,873	73.80
Number of MCs (SACCOS)	1,875	4,428	4,780	5,344	51.97

Source: Authors' estimates based on data (i.e., June 2005 to Dec, 2009 Reports) from the Department of Cooperative Development, Ministry of Agriculture Food Security and Cooperative.

Apart from savings and share value, the majority of MCs require the borrower to pledge assets (e.g., farm land, planted trees for timber, and houses), which require the consent of a husband or wife for married borrowers. Since some assets might be inherited, some MCs require a family member to guarantee the loan. A significant percentage of assets are unregistered as they are informally acquired, and thus difficult to identify the legal ownership. MCs face challenges to use unregistered assets as collateral and members to guarantee loans. Basically, the guarantors may borrow if their savings are higher enough to secure additional loans. However, MCs' managers reported that this is not firmly practiced because, in many cases, a member guarantees more than one borrower. The membership guarantee in MCs differs from group lending since the borrower can change guarantors and s/he can guarantee members who have not guaranteed his/her loan. As sketched in Fig. 1, MCs' managers reported that loan guarantee by members is used as a formality as described in their loan policy, but this does not make any sense. If they strictly follow it, some members may not access loan for a long period of time, while MCs will in some cases maintain excess liquidity. This may not only generate zero return but also discourage membership. These are the reasons why some MCs require borrowers to use their assets to pledge loans.

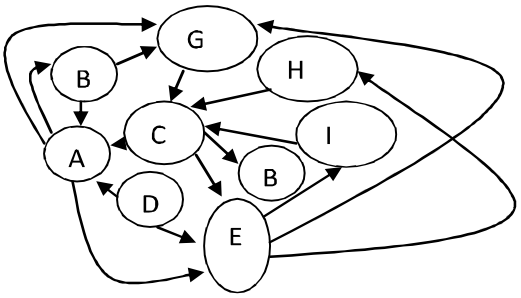


Figure 1: ***Loan guarantee by three members – Experience of MCs in Dar es Salaam and Iringa***

Apart from saving and loan services to members, MCs offer term deposits and insurance to members and non-members. Those linked to FFIs offer automatic teller machine (ATM) services, money transfer, payments of salaries and pensions to members and non-members. The risk of loan delinquency and default is mainly borne by members and external investors, particularly FFIs.

3. Institutional Factors, Financial Linkages and Loan Repayment Performance: Theoretical Views and Postulations

This section presents theoretical views on the relationship between institutional factors (namely loan design and institutional attributes) and LRP. Although the views are mainly based on non-MCs they are important for this paper since MCs are also MFIs, and play the intermediation role in the financial system. Based on the nature of MCs as presented above, the assumptions that the paper intends to test are presented parallel with the theoretical views. The section also presents the theoretical relationship between financial linkages and institutional factors, and thus LRP.

Based on the arguments by Hulme and Mosley (1996) that borrowers may fail to repay loans because they face high transaction costs during loan processing and repayment; arguments by Derban et al. (2005) that borrowers lack incentives to repay loans because of unfavourable credit terms; and the argument by Copisarow (2000) that the loan offered does not suit borrowers' needs; institutional lenders are responsible for low LRP. This could be caused by inappropriate design of loans, their management and the institution at large.

3.1 Loan Design and Management

When designing microfinance services, particularly loans, lenders need to know the attributes and needs of their clients (Christen, 1992; Hulme & Mosley, 1996; Copisarow, 2000). Loan design encompasses loan features: the size of loan, type of loan (e.g., agricultural or business), form of loan (e.g., in cash or in kind, i.e., material inputs), and terms of loan (interest rate, loan period, frequency of repayment). Others are loan requirements (group or individual based loan, loan security/collateral), and loan repayment incentives. A given design of loan may be appropriate in one area and inappropriate in another because of different needs and features of clients being served.

MFIs may fail to attain high LRP because they offer, for example, a big size of loans to clients, who are inexperienced or require small loans (see Copisarow, 2000; Derban et al., 2005). MFIs may also offer a longer loan, while micro clients require a short loan period (Derban, 2005). Provision of a small loan to first time borrowers, which progressively increases over time, enables lenders to know their clients better, while providing the opportunity to borrowers to gain experience in their businesses (Christen, 1992; Derban et al., 2005) without being exposed to high risk. A study by Godquin (2004) in Bangladesh MFIs reveals that LRP is negatively associated with loan size, and positively associated with loan duration. She argues that a large loan requires longer loan period. If borrowers are offered loan with a grace period of 12 months, their repayment rate increases from 50–94%.

The size of loan offered by MCs is determined by the security (savings) made by a borrower, which is equivalent to one-third of the loan. Contrary to the experience of other MFIs, MCs have no minimum loan amount that a borrower should start with. It is possible to increase loan offered to a borrower over time, but this will depend on his/her savings. Thus, we assume that loan size affect LRP.

In encouraging better repayment and collection, MFIs try to offer incentives. These incentives are either financial (rebate on timely repayment, progressive lending, denial of loan, penalty, provision and collection of loan closer to the house of borrowers) or non-financial (frequency of loan repayment, provision of non-financial services, involvement of community leaders in loan assessment, public embarrassment) (see Godquin, 2004; Hulme & Mosley, 1996; Yaron, 1994).[9] The economics

[9]For example, BKK and Bank Rakyat Indonesia's unit desas (BRI) offer monthly interest rebate of 0.5 and 1%, respectively, for timely repayments of original loan value; while the Bank for Agriculture and Agricultural Cooperatives in Thailand imposed a penalty of 3% a year

of these incentives in encouraging loan repayment are realised through the increase of the cost of default to borrowers by raising benefits accrued together with loans, or reducing the transaction costs incurred by borrowers during loan application to loan repayment (see Hulme & Mosley, 1996; Yaron, 1994). Despite of encouraging loan repayment, thus reducing bad debts, these incentives increase cost to lenders.

Positive outcomes of applied incentives seem location or clients' specific. For example, the progressive lending incentives or denial of future loans might be less important in an area where borrowers have access to multiple sources of loans (Matin, 1997), and providers have no mechanism of sharing information on the bankability of borrowers. The use of group lending and application of social cohesion for increasing loan repayment was found not influential in determining LRP in inner cities of USA due to low social capital (Bhatt & Tang, 2002). Where the legal system does not give more power to the MFIs to enforce contract, the use of rule of law might also be complicated (Godquin, 2004). In areas where the cost of labour is exorbitant, high intensity of loan collection procedures (number of frequencies plus bringing collection services closer to borrowers) might outweigh the benefit of loan collections (Hulme and Mosley, 1996).

A study by Godquin (2004) conducted in Bangladesh reveals that the provision of basic literacy and primary health services increases LRP because they strengthen the capacity of borrowers in repaying loans, and make their relationship with MFIs more valuable. On the contrary, a study by Derban et al. (2005) conducted in the UK reveals that the provision of training and advices, apart from loan, negatively affects LRP because they increase administrative cost that could raise interest rate charged to cover all costs. The kind of training or education being provided and its quality, as well as the level of understanding of potential borrowers being given training are not revealed by previous research. This could be the reason why in some cases training has positive effect on LRP, while it has no effect, in other cases.

As noted above, MCs mainly offer individual lending while membership guarantee is meaningless. Progressive lending is possibly being practiced by MCs but with respect to the amount of a borrower' savings, availability of funds and in some cases the value of assets pledged as securities. The FGDs reveal that none of the sample MCs offer rebates on early or timely repayment. Survey data does not offer information on the provision of non-financial services. During the FGDs, MCs managers reported that opening hours of MCs determine savings and loan repayment because when members visit MCs offices and find them closed, they get tempted to spend their money in other uses. Some MCs, using labour service from volunteer-members, have limited opening hours. This implies salaries and fringe benefits, which are related to employment of full time workers (casual or formal), and thus increased opening hours may increase LRP.[10] Provision of financial bonuses to loan officers also increases their motivation in loan repayment follow-up (Hulme & Mosley, 1996). Thus, we assume that labour cost has effect on LRP.

Processing small loans and provision of incentives to encourage loan repayment increase administrative costs (Hulme & Mosley, 1996). This is expected to raise the

on arreas (Yaron, 1994). BRI progressive lending system offers 100 increase of loan if all payments were made on time; 50% if final payment on time, reduction of 50% if final payment not in time (but paid within one month), and no new loan if final payment was made more than two months late (Mosley, 1996). MFIs with loan repayment greater than 80% applied intensive loan repayment procedures (i.e., weekly to monthly collection of instalments done during the meeting nearby borrowers' houses) (Hulme and Mosley, 1996).

[10] The type of labour utilised, thus labour input in terms of salaries and fringe benefits, is one of the institutional attributes.

interest rate charged by MFIs above the market or the banks rate (Copisarow, 2000). High interest rate may either attract risky borrowers or enforce them to engage in risky projects (Stiglitz & Weiss, 1981). It may also increase the utility function of defaulting if the instalments (principle and interest rates) are higher than collateral and lost benefits from defaults (Hulme & Mosley, 1996). Derban et al. (2005) corroborate these arguments by showing that high interest rate is associated with high loan loss rate.

While, as noted above, MFIs are expected to charge high interest rate, it is not clear how high should the interest rate be to cover all costs without attracting adverse selection or risky projects. The rates charged by sample MCs are diverse and range from 13–40%. MCs aim to offer credits to their members at a fair and reasonable rate of interest, and all members are subject to the same rate of interest irrespective of the amount they borrow. Difficulties in repaying loan may still be felt by borrowers since their wealth and economic activities are diverse. We postulate that interest rate affect LRP.

Traditionally, lending institutions, such as banks, require collateral to secure loans. This is among the reasons that exclude microclients from having access to loans from banks. MFIs show that it is possible to substitute collateral with other mechanisms, such as the use guarantees from community leaders and bill receipts as evidence of repayment performance (Derban et al., 2005), group lending, and peer pressure to enforce repayment. Other MFIs require insurance of loans from a third party (Hulme & Mosley, 1996). However, in most developing countries, third party insurance for microcredits does not exist. Alternatively, compulsory or voluntary savings are being used. These are said to enhance financial discipline, reduce institutions' financial risks (Yaron, 1994), and to improve LRP (Hulme & Mosley, 1996).

MCs require loan applicants to save one-third of loans they apply for. Those applying for bigger loan sizes are expected to save more. However, if large borrowers are inexperienced they may still face difficulties in repaying loan despite of having high savings. The relationship between savings and LRP might be different from the above experiences if MCs depend on savings as the source of financing because borrowers use their own funds. Thus, loan security for MCs might have a positive or a negative effect on LRP. This paper intends to find out which direction of effect it has.

Prevention of losses arising from loan delinquencies and defaults start during the scanning and selection stage of loan applicants based on information offered by the borrowers. To reduce the problem of information asymmetry and risk, MFIs apply group lending whereby borrowers in a group may help to reduce information asymmetry and to monitor each other to enhance loan repayment. In some areas MFIs involve community leaders to screen applicants of loans and to facilitate loan repayment (Yaron, 1994), hoping that they are likely to be more aware of the activities the applicants are involved in. Institutions suffering from inadequate loan evaluation, poor management and lack of continuous monitoring may face low LRP (Yaron, 1994).

The utilisation of group lending approach is important in enhancing LRP. There are very few cases of MCs that apply a group lending approach to incorporate members who could not join individually due to high value of shares which they are required to acquire. Groups are treated as individual members. Members in groups are expected to graduate into MCs common category of individual members after building their financial capacity to acquire the required number of shares. The majority of sample MCs do not apply group lending, thus it is not empirically analysed in this paper.

Alternatively, MFIs applying individual based lending are expected to invest more in workforce costs to reduce information asymmetry, and increase loan collections (Cull, et al., 2007). They need to use educated (Godquin, 2004) and motivated staff (through provision of staff incentives connected to loan collections) (Hulme & Mosley, 1996). The application of accounting and management system to keep track of delinquencies and defaults early enough so as to make appropriate measures and pressure repayment may increase efficiency in loan collection (Bhatt & Tang, 2002). The paper treats education and labour input as institutional attributes, whose relationship with LRP are also examined.

The timing of loan provision (see Copisarow, 2000, Derban et al., 2005), the way MCs deal with defaulters (see Godquin, 2004; Mosley, 1996; Bhatt & Tang, 2002), and the implementation of loan policy, are all important in explaining LRP, but were not captured by the quantitative data utilised by this paper. Apart from loan design and management, institutional attributes (age, size, and type based on activities which clients are involved in), may also determine LRP. These variables are included in the regression analysis to control for their effects. Their possible relationships with LRP are as presented in the following section.

When members finance their loans by their own funds and the risk of default is born by them, some might relax to meet their obligations. When part of the funds to finance loan are from external investors (non-members), especially FFIs, MCs' officials are likely to pressure borrowers to repay loans. The theoretical relationship between financial linkages (i.e., transactions between MFIs/MCs and FFIs), institutional factors, and therefore LRP, is presented in a separate section below.

3.2 Institutional attributes

A review of empirical studies shows that some institutional attributes may in one way or another affect loan LRP. These are, for example, the age, size, type and location of the institution. We focus on the former three apart from education and labour input because the majority of MCs that responded on the questions capturing LRP are located in Iringa.

The age of an institution is sometimes used to depict its experience, which indicates another way of accumulating knowledge apart from the workforce education. MFIs' knowledge about their clients, which help to design loans to meet their needs, increases with time (Copisarow, 2000, Christen, 1992). As MFIs grow older, the loan loss rate is reduced (Derban et al., 2005). However, older managements might also be conservative in adopting new technologies or applying new techniques to enforce loan repayment. Younger institutions may also learn from the mistakes of older institutions, which is possible if there is an organised way of disseminating information about the best practices in a given area (Derban et al., 2005).

The size of an institution is related to the economies of scale in operations, whereby its fixed costs are shared by a significant number of clients, and thus, decrease as the institution expands. This may reduce interest rate charged by an institution, and encourage loan repayment. Empirical evidence by Derban et al. (2005) reveals that large institutions have lower loan loss rates.

MCs in Tanzania are either totally employees-based (i.e., established by workers of a given organisation in a given location), or mixed (i.e., formed by entrepreneurs, household members, and workers). As noted above, employees-based MCs require borrowers to pledge their salaries to secure their loans. Loan instalments are directly deducted from the salaries of borrowers and deposited into MCs' accounts. The risk associated with loan default for these borrowers is low. Therefore, the type of MCs (i.e., employees-based or mixed) can

be used to indicate the level of security and a loan collection procedure applied by MCs, which are among the loan design features. Employees-based MCs are expected to have higher LRP than mixed ones. However, MCs managers (in the FGDs) reported that formal workers in large organisations are the major target market for consumer loans from commercial banks. Indebted MCs members sometimes accept loans from commercial banks and vice versa. Under this situation, employers treat loans from MCs as subordinate. This results in low LRP among employees-based MCs.

3.3 Financial linkages

Linkages refer to transactions between economic agents, through or outside the market, fully or partially priced (Stewart & Ghani, 1991). Pagura and Kirsten (2006) define financial linkages as any mutually beneficial partnerships which result in outreach expansion. Kirsten (www.ilo.org) identifies two types of financial linkages: direct, and facilitating financial linkages. The former denote linkages whose aim is to help less formal institutions to diversify their sources of funding, expand their loanable funds and/or balance liquidity shortages and excess; while the latter refers to linkages between institutions in which FFIs hire less formal institutions to act on their behalf (Kirsten, www.ilo.org). This paper views financial linkages according to Stewart and Ghani (1991) and Pagura and Kirsten (2006) because they involve transactions between FFIs and MCs, which are less formal, but the distribution of benefits is likely to be unequal. Based on MCs managers' views (in FGDs), facilitating linkages are informally embedded in direct linkages, thus we do not categorise them.

Taking advantages of MFIs' financing gaps and their strength in high repayment rates while reaching the poor, FFIs are increasingly establishing linkages with MFIs to diversify their investment portfolios by accessing low-risk high investment returns, to decrease their loan administrative costs through wholesale lending, and to expand their markets (see Seibel, 2005; Awal, www.bwtp.org; Development Alternatives, Inc. 2005; DBR, 2007).[11] MFIs' borrowing from FFIs has increased to meet their financing gaps arising from expanding demand of microcredit, while subsidies are declining (Krauss & Walter, 2008, Market Mix, 2010a; DBR, 2007; Development Alternatives, Inc., 2005).[12] Through financial linkages, MFIs are said to benefit by expanding their outreach (Pagura & Kirsten, 2006).

The relationship between financial linkages and institutional factors, and therefore LRP, can be explained by the transaction cost theory, agency theory, and linkages literature. Based on transaction cost theory, linkages between FFIs and MCs generate transaction costs arising from the low ability of either party to honour a contract. This is because one party (in our case a MC) might have low human capital and infrastructure to execute a contract and comply with terms of loans and requirements, while its management may try to meet their own interests (see Williamson, 1985). These bounded rationality and opportunism increase uncertainty.

From the perspective of the principal-agency theory, the problem of opportunism as described in the transaction cost theory is due to the separation of ownership (principal) from the management (agent), whereby the latter tries to maximise their own utility function at

[11]Foreign investment in MFIs has increased from US$1.7bn in 2004 to around US$4.4bn in 2006 (CGAP Brief April 2006). Loans from Developing World Markets to MFIs operating in Latin America, Asia, and Eastern Europe increased from $40 million in 2004 to $60m in 2006 (Krauss & Walter, 2008).

[12] In Asia, the share of borrowings to MFIs sources of financing increased from around 20 to 30% during 2003-2008 (Market Mix, 2010a). In Africa, borrowings accounted for around 16% of MFIs financing sources in 2006, which increased to around 19% in 2008 (Market Mix, 2010b).

the expense of the former.[13] The principal will use different mechanisms (such as close monitoring and supervision, which require the agent to produce reports periodically; ask the agent to utilise full-time workers; control prices and sources of debt financing; the target markets; and sometimes provide on-job training and advices) to ensure that the agent complies with terms in the contract. From the transaction cost theory perspective, these mechanisms aim to reduce transaction costs. The linkage literature views them as kinds of vertical actions aiming to enhance the performance of allied parties by acquiring new technology and management skills, and enhancing product value (see also Gallardo, et al., 2006).

The mechanisms used by principal to enforce compliance with the contract are likely to shape the agent's factors affecting LRP. Their effects on loan design can be reflected on the size of loans offered by MFIs, which is likely to be large due to their access to funds from FFIs. The availability of funds may reduce the time members spend to wait for loans and thus reduce transaction costs to borrowers. If loans from FFIs are expensive, which could be due to high transaction costs, MFIs may be forced to charge high interest rates to cover financing and operation costs. The expansion in scope of outreach may increase the relationship between MCs and members. The mechanisms may also alter MFIs' institutional attributes and management practices such as utilising better educated management, full-time workers to increase office opening hours and using computerised accounting system to track loan repayment. These may increase operating costs, and thus, interest rate charged by MFIs. As discussed in the previous section, they might however improve LRP.

The empirical evidence by Pagura and Kirsten (2006) shows that FINCA/Costa Rica was compelled to accept requirements on interest rates, staffing and equipment purchase decisions; People's Credit and Finance Corporation (PCFC) requires its MFIs partners to use the Grameen model of lending to their clients; Bank Pembangunan Daerah (BPD) in Bali requires its partner Lembaga Perkreditan Desa (LPDs) to save with their bank only; ICIC Bank requires partner MFIs to open fixed deposit account with the value of 8–15% of total value of MFIs loan portfolios purchased by ICIC Bank. In Tanzania, sample MCs reported that commercial banks require MCs to deposit 20–33% of the loan they apply for in fixed deposit receipt account which earn interest rate lower than what they pay them. They also reported that some banks require MCs board members to pledge their assets if the value of MCs' assets is inadequate. To access uninterrupted open handed funds for lending to its clients, CASHPOR was compelled to operate as an agent of ICICI Bank in entering new market, while assuming the risk of loan losses of up to 12% before ICICI Bank would share in the risk (Development Alternatives, Inc., 2005). Some of these requirements change the loan design directly, while others affect it indirectly through transaction costs. Based on the 5Cs of credit evaluation, the possibility for FFIs to link with MCs, which have high investment in human capital and infrastructure to undertake their operations, is high.

Conclusively, based on reviewed literature linking LRP to institutional factors and the nature of MCs, we assume loan design features (i.e., interest rate, loan size and loan security) affect LRP. Based on the above theoretical discussions on the relationship between financial linkages and institutional factors, we postulate that the institutional factors (viz., interest rate, loan size, loan security, labour input, MC's size and age) are associated with financial linkages, and therefore, the latter are likely to affect LRP. With respected to the possible relationship

[13] Since FFIs invest in MFIs by providing them with loan, they are viewed as principal and the management of MFIs as agent.

between LRP and institutional attributes as presented in the previous sub-section, we need to control for their effects when assessing the relationship between financial linkages and LRP.

4. Methodology

4.1 Data

This paper utilises three year (i.e., 2005–2007) unbalanced data from 102 MCs collected (in 2008–2009) by means of personally administered structured questionnaire to assess the effect of financial linkages on MCs' sustainability and performance.[14] Fifty five percent of MCs were located in Dar es Salaam and the rest in Iringa. The selection of the two regions was based on the fact that a significant number of MCs in these regions were involved in financial linkages (see Piprek, 2008). Stratified random sampling was used to select MCs that had operated for at least 3 years.

Our sampling framework was a directory of MCs operating in Tanzania mainland.[15] A list of MCs in Dar es Salaam and Iringa were then updated by the district cooperative officers in Njombe, Mafinga, Iringa, Kinondoni, Temeke and Ilala. The aim was to get at least 20 MCs from each district. The FGDs comprising 112 MCs' managers of 102 MCs interviewed were also organised to collect qualitative data, of which some are reported in the previous sections. Since some MCs did not respond on some questions, the analysis describing the relationship between financial linkages and institutional factors utilises 148–273 observations of 102 MCs, while the models regressing LRP on institutional factors and financial linkages use 58–74 observations of 36 MCs.

4.2 Modelling

To assess the relationship between financial linkages and institutional factors measured in ratio form, we use unequal-variance t-test because the variable, financial linkages, is captured as a dummy, and the Bartlett's test for equal variances rejects the equal variance hypothesis. During the FGDs, MCs' managers reported that when they access loan from CRDB Bank Plc., they are more closely supervised and monitored than when they borrow from other commercial banks and financial institutions. CRDB Bank Plc is the leading provider of loans to MCs. In the mid-2000s, it offered loans to around 157 rural MCs (Piprek, 2008). Other commercial banks, finance companies and pension funds, which MCs managers commented that they have no experience in wholesale lending to MFIs, started the late 2000s to offer loans to MFIs. Thus, in a reduced descriptive analysis we compare the institutional factors of MCs that accessed loans from CRDB Bank Plc. to those which borrowed from other FFIs.

Expressing LRP as a function of institutional factors or borrowers attributes has been applied by several studies (see Bhatt & Tang, 2002; Derban et al., 2005; Godquin, 2004; and Hulme & Mosley, 1996). In line with these studies we use a semi-log regression function (Equation 1) to assess the effect of institutional factors (loan design) and financial linkages on LRP, while controlling for institutional attributes.

In Equation 1, LRP, LD, IA represent LRP, loan design features, and institutional attributes for a sample observation, MC*i* (*i* = 1, 2, 3, … *n*) at time *t* (*t* = 2005, 2006, and 2007). The terms *e*, , and are an error term, constant term, coefficients of three loan design features and coefficients of five MCs' attributes, respectively, which we intend to estimate. Based on the above postulations,

[14]The author of this paper was the principle researcher in this project.

[15]The directory was downloaded from the Bank of Tanzania website (www.bot-tz.org).

and in line with the reviewed literature, coefficients of all institutional factors (except MCs' attribute, managers' education) are expected to have a positive or a negative sign. The coefficient of the variable, managers' education, is expected to be negative since LRP is measure in a reverse form.

LRP is captured by a variable, loan delinquency and default rate (LDD), measured as a sum of number of borrowers who faced difficulties and those who failed to repay loans divided by the number of borrowers in a specified year (2005, 2006 and 2007). Thus, low LDD implies high LRP. Loan design features are interest rate, loan size and loan security. Interest rate is expressed in annual basis; loan size is measure as the natural logarithm of the average loan amount (in Tsh) per borrower. A loan security is measured in two ways: equity per member (member's equity) denoted as the natural logarithm of the value of savings plus shares per member; and equity ratio measured as savings plus share divided by loan outstanding (at the beginning of the year) plus loan offered in a respective year. These two indicators and financial linkages also show sources of financing. Thus, they enter into Equation 1, one at a time, which results in three models.

Institutional attributes are type of a MC, age, labour input, manager's education and financial linkages. Type of a MC is measured as dummy one if a MC is employees-based, and zero if it is mixed. Age is denoted as the natural logarithm of the number of years since a MC started to offer loans. Labour input is captured as the natural logarithm of the total sum of salaries or wages and fringe benefits incurred per year per member. Managers' education is measured as dummy one if the average years of education of a MC's managers is above 11, and zero otherwise.[16] A financial linkage is measured as dummy one if a MC had access to loan from FFIs ,and zero otherwise. FFIs which offered loans to MCs are CRDB Bank Plc., Small Entrepreneurs Loan Facility (SELF), PRIDE-Tanzania, Savings and Credit Cooperative Union League of Tanzania (SCCULT), and Mufindi Cooperative Bank (MUCOBA). In a reduced comparative analysis, we capture financial linkages as dummy one if a MC accessed loan from CRDB Bank Plc, and zero otherwise.

5. Empirical Findings

5.1 Financial linkages and institutional factors

Table 2 reports on the t-test results describing the relationship between financial linkages and institutional factors. With respect to loan design aspects, the results reveal that MCs linked to FFIs charge higher average interest rate (24%) than their counterparts (23%), and the difference is significant. This might be because the former need to charge high interest rate to cover interest expenses and other operating costs related to loan processing and collection, which could be high since they are pressurised by lenders to attain high LRP. Their ability to become operational and financially sustainable is among the factors enabling MFIs to access private commercial funding (see DBR, 2007).

MCs linked to FFIs also had higher average member's equity (Tsh 171,511) but lower equity ratio (0.42) than their counterparts, which had Tsh 124,005 per member and equity ratio of 0.75. High member's equity might be a result of close control and monitoring done by FFIs over MCs (especially mixed ones) to make sure that members receiving loans have saved the maximum required amount to secure their loans. Low equity ratio is due to the involvement of loans from FFIs. The average loan size offered by

[16]The paper utilises a dummy variable because some MCs' managers had studied for at least 13 to 16 years, which is equivalent to ordinary or advanced diploma/degree while others had studied for 7 to 11 years (i.e., primary to secondary basic education).

MCs linked to FFIs was not significantly different from that of their counterparts.

Regarding institutional attributes, MCs linked to FFIs are relatively older (7 years), bigger (439 mean number of members), with higher average labour input (Tsh 5,811) than their counterparts which were aged 5.7 years, with 163 mean members, and with labour input of Tsh 4,200. Conclusively, the levels of intuitional factors of MCs differ from those of their counterparts. Further analysis on LRP reveals that MCs linked to FFIs have lower LDD, and the difference is significant. The fact that there is a strong relationship between institutional factors and financial linkages, we perform regression analysis, in the following section, to find out if after controlling for institutional factors, financial linkages could still have strong effect on LRP.

During the FGDs, MCs managers reported that CRDB Bank Plc. has more experience in wholesale lending to MCs than other FFIs, and its levels of pressure in enforcing loan repayment, close monitoring and supervision are higher than those of other FFIs. Their arguments are in line with the observations in linkages and global value chain literature that linkages are diverse due to different structures governing them. If this is the case, the levels of institutional factors among MCs linked to FFIs are also likely to differ.

Table 2, Panel 2 reports on comparative analysis of institutional factors between MCs linked to CRDB Bank Plc. and those linked to other FFIs. With respect to loan design features, the results reveal that MCs linked to CRDB Bank Plc. offered bigger loan size (Tsh 623,747) and had higher member's equity (Tsh 232,192) than their counterparts that offered Tsh 345,076 and had member's equity of Tsh 137,519. The differences are significant. Regarding institutional attributes, the former MCs were relatively bigger (with 623 average number of members) with higher average labour input (Tsh 7,322 per member) than the latter (335 members and labour input of Tsh 4,830). However, MCs linked to other FFIs were older than their counterparts by around 2, years and the difference is significant. We do not compare the LDD of these groups of MCs because the observations reporting on this are few.

5.2 Financial linkages, institutional factors and LRP

Table 3 presents the descriptive statistics of variables used in the regression model. The average LDD of sample MCs is 0.34. With respect to loan design features, the average interest rate charged by the sample MCs was 23%. The average loan size offered by the sample MCs was Tsh 408,910. This is higher than the average loan offered by MCs in Tanzania during 2007 (see Table 1). The average value of savings and shares per member for the sample MCs was Tsh 156,375, which is also higher than that of all MCs in Tanzania. The average equity ratio was 0.54.

Regarding institutional attributes, around 41% of sample MCs had access to loans from FFIs. Around 30% were employees-based MCs and the rest were mixed. The average age of sample MCs was 6 years. Around 54% of sample MCs had managers, whose average years of education was at least 11. The average labour input was Tsh 5,660. The average number of members per MC was around 285. It ranged from 63 to 1,790.

Table 3: Descriptive statistics

Variable	LDD	Loan size	Interest rate	Member's equity	Equity ratio	Type of MCs	Age	Managers education	Size of MC	Labour input	Financial linkages
Mean	0.343	12.921	23.081	11.960	0.541	0.297	1.843	0.541	5.652	8.641	0.405
Std. Dev.	0.558	1.092	5.232	1.242	0.665	0.460	0.709	0.502	0.878	1.155	0.494
Obs	74	64	74	71	60	74	74	74	71	70	74

Source: Authors' estimations

Table 4 reports the results on the effect of loan design and financial linkages on LRP while controlling for MCs' attributes. The results on Adjusted R squared reveal that loan design aspects, financial linkages and institutional attributes (all taken together) can significantly explain 33 to 59% of LDD. Interest rate has a negative and a very significant effect on LDD. A 1% increase in interest rate significantly reduces LDD by 0.04. This finding is contrary to the findings by Derban et al. (2005) and the hypothesis by Stiglitz and Weiss (1981) that high interest rate attract risky borrowers and the utility function of defaulting (Hulme and Mosley, 1996). It is, however, in line with the observation by Copisarow (2000) that MFIs are expected to charge higher interest rate than the market or the average banks' rate (Copisarow, 2000). Given the nature of loan security and guarantees, the difficulties faced by MCs to take defaulters to courts or to sale their pledged assets, and the application of individual based loan approach, MCs need more interest income to cover their investment in the infrastructure to keep track of loan repayment and to cover administrative costs (see Cull et al., 2007). These are possible by charging a restively high interest rate.

Loan security captured by a member's equity has a negative but insignificant effect on LDD. Lack of a significant effect may be explained by the way we measure the indicator (i.e., the value of savings plus shares per member irrespective of whether s/he has borrowed). Furthermore, as a member's equity is directly linked to the size of loan, higher savings implies larger loan size. Since loan size increases with LDD, it is possible that the positive effect of loan security is reduced by the negative effect from loan size.

Loan security captured by equity ratio, which also depicts the proportion of owners' funds used to finance a portfolio of loans, has a positive and very significant effect on LDD. Indeed, given poor external governance structure to enforce compliancy, MCs financing large part of their loan portfolio with members' (i.e., borrowers') funds make borrowers to relax in meeting their obligations, and thus, high LDD. MCs that utilised owners' funds charge lower interest rates, and pay relatively lower wages and fringe benefits. Low interest rate and labour input reduce LRP.

Table 4: Regression Results on Institutional Factors, Financial Linkages and LRP

	Model 1	**Model 2**	**Model 3**
Loan size	0.096 (0.082)	0.137** (0.059)	0.081 (0.073)
Interest rate	-0.0386*** (0.014)	-0.034*** (0.012)	-0.039*** (0.015)
Member's equity	-0.044 (0.111)		
Equity ratio		0.498*** (0.090)	
Type of MC	-0.436** (0.188)	-0.407*** (0.148)	-0.456** (0.181)
Age	-0.254** (0.115)	-0.181** (0.090)	-0.269** (0.111)
Managers' education	0.200 (0.141)	0.264** (0.116)	0.201 (0.152)
Size of a MC	-0.241*** (0.084)	-0.176*** (0.070)	-0.249*** (0.086)
Labour input	-0.143*(0.088)	-0.102* (0.065)	-0.159** (0.080)
Financial linkages			-0.001 (0.157)
Constant	3.632*** (0.928)	1.286* (0.862)	3.519*** (0.913)
Adj R-squared	0.3352	0.5924	0.3332
Prob > F	0.0002	0.0000	0.0002
Observations	61	58	61

Source: Authors' estimations

Note: the dependent variable is LRP. ***, **, and * imply significant at ≤1%, at ≤5% and at ≤10%, respectively. Figures in parentheses are standard error terms. As noted above, average member's savings and share, equity ratio and financial linkages enter in Equation 1, one at a time.

Loan size has a positive and significant effect on loan (LDD). This result conforms to the finding by Godquin (2004). As noted above, MCs in Tanzania have no standard sizes of loans, whereby the minimum amount for a first time borrower is specified, which progressively increases. Thus, in line with Copisarow (2000), Derban et al. (2005), and Christen (1992), the possibility for a first time borrower, who received a bigger loan because s/he has higher savings, to face difficulties or fails to repay the loan is high because of a lack of experience in loan management.

As reported in the previous section, the results in the t-test analysis show that financial linkages has a significant effect on LRP as MCs linked to FFIs had lower LDD than their counterparts. However, controlling for institutional factors, the results in the regression analysis show that financial linkages have no significant effect on LDD. The way we capture financial linkages might explain this result. This is because the magnitude of linkage benefits (sharing technology, training, close monitoring and supervision, members' access to FFIs' services) and terms of loan may depend on the frequency and size of transactions between MCs and FFIs. As noted above, the levels of institutional factors of MCs linked to CRDB Bank Plc. differ from those of MCs linked to other FFIs.

Institutional attributes reflecting some features of loan design are type of MCs and labour input. These attributes have significant and negative effects on LDD. Employees-based MCs have around 0.41 (or 41%) lower LDD than mixed MCs. As noted in the previous section, borrowers in employees-based MCs are less risky than those in mixed MCs because the former use workers' salaries, whose flow are stable, to secure loans, while the latter have no such advantage. Furthermore, loan collections in employees-based MCs are through direct deductions from the borrowers' salaries, which is easier and less costly. Mixed MCs loan collections depend on borrowers to come to the MCs' office to repay their loans. In case they do not come, following up one after another is costly and possibly unmanageable if MCs have low capacity to do that.

The labour input has a negative and significant effect on loan default and delinquency. As noted above, MCs utilising full-time workers are likely to offer more salaries and fringe benefits than those utilising volunteered members. The utilisation of full-time workers is related to lower loan default and delinquency because MCs have specified long working hours. Specified long working hours reduce transaction costs to borrowers, and thus encourage repayment (see Hulme & Mosley, 1996). Compared with member-volunteers, full-time workers are likely to be highly motivated to work hard and make close follow-up of loan collection since it is their responsibility.

Learning experience seems to be important in loan management as an increase in age of MCs reduces LDD. This finding complies with Derban et al. (2005), and arguments by Copisarow (2000) and Christen (1992). Managers' education has no significant effect on LDD in Model 1 and 3, but it has a positive and significant effect on LDD in Model 2. LDD declines as the size of MC increases, which could be due to increased economies of scale. The finding corroborates that of Derban et al. (2005).

6. Conclusion and Implications

The aim of the paper was to assess the effects of loan design features (i.e., interest rate, loan size and loan security), and institutional attributes (the type of MC, labour input, age of MC and MC's management education) on LRP. It also aimed to examine the relationship between institutional factors (viz., interest rate, loan size, loan security, labour input, MC's size and age) and financial linkages. Furthermore, controlling for institutional factors, the paper assessed the effect of financial linkages on LRP. To meet these objectives, the paper applied a t-test analysis utilising three-year unbalanced data of 148–273 observations of 102 MCs, a linear regression analysis.

The t-test analysis reveals that MCs linked to FFIs charged higher interest rate, had higher member's equity but lower equity ratio than their counterparts. They were also older, larger and had higher labour input than their counterparts. Therefore, financial linkages and institutional factors are strongly associated.

The regression results reveal that interest rate increases with LRP, which corroborates the observations by Copisarow (2000) on the need for MFIs to charge high interest rate given the nature of their operations. This is particularly important for MFIs applying individual lending approach as they need more income to facilitate investment in the infrastructure and workforce to enhance LRP (see Cull, et al., 2007). This finding is contrary to Stiglitz and Weiss (1981) and Hulme and Mosley (1996). Although interest rate increases with LRP, it is, however, possible that beyond a certain level (which might not yet be reached by the sample MCs), a raise in interest rate may reduce LRP, and thus, corroborates Stiglitz and Weiss (1981) and Hulme and Mosley (1996) assumptions.

The effect of loan security, captured by a member's equity on LDD, is insignificant. This could be related to the way we measure the member's equity, which is irrespective of whether the member has borrowed or not. On the other hand, equity ratio has a positive and very significant effect on LDD. The possibility for member-borrowers to relax in repaying loan, when the main source of financing is their own money, is high given poor external governance structure to enforce compliancy. MCs management, in cooperation with the Department of Cooperative Development in the Ministry of Agriculture, need to streamline loan repayment enforcement mechanisms while encouraging savings. Cooperation with external institutional investors may assist to streamline internal governance and enforce loan repayment.

Loan size has a positive effect on LDD. MCs have no specific minimum size of loan for a member borrowing for the first time, which can progressively increase. Thus, in line with Copisarow (2000), Derban et al. (2005) and Christen (1992), the possibility for inexperienced borrowers to access large loans and fail to repay is high. We recommend MCs to specify sizes of loans in the first rounds of borrowing to enable borrowers to build experience before offering them a large loan.

Although the t-test results indicate that MCs linked to FFIs have lower LDD than their counterparts, after controlling for institutional factors, the regression results reveal a lack of significant difference. The way we measure financial linkages might be the reason for a lack of significant effect. The t-test analysis comparing levels of institutional factors between MCs linked to CRDB Bank Plc. and those linked to other FFIs offers an insight that financial linkages are diverse. Thus, MCs may need to link with those which are likely to offer more linkage benefits at relatively low transaction costs. MCs not linked to FFIs are required to learn from their counterparts to improve their institutional factors and enhance their LRP.

With respect to institutional attributes, results reveal that employees-based MCs have higher LRP than mixed MCs. This might be explained by the use of salaries, which have stable flows, to secure loans and easier or/and less costly loan collection procedure in employees-based MCs. Mixed MCs may learn from the approach used by employees-based MCs. Since they have some members who are employees, loan to these members can be secured by their salaries apart from the application of other loan guarantee mechanisms. They can also use income of non-workers borrowers to secure their loans. Mixed MCs having borrowers with identified sources of income (e.g., agriculture) and specified sources (e.g., buyers: cooperatives or large companies) may arrange with the institutional buyers to collect loan instalments directly from them. Direct deductions of loan

instalments from borrowers' incomes remain a major challenge for mixed MCs in urban areas.

The labour input and age of MCs have a negative and significant effect on LDD. In line with the recommendation by Derban et al. (2005), and observations by MCs managers during the FGDs, the Department of Cooperative and Development may need to facilitate networking events to offer an avenue for sharing information on best practices between younger and older MCs so as to enable the former to learn from the mistakes of the latter.

Future studies showing how to arrive at a maximum interest rate, which beyond that could impair LRP, need to be conducted. Further studies estimating the effect of loan security on LRP of MCs operating in different levels of development of governance structures are required to offer more insights. Furthermore, studies considering the magnitude of linkage benefits, terms and requirements of loans, frequency of transactions when examining the effects of financial linkages on LRP are required given the growing trend of FFIs' wholesaling to MFIs.

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Appendix 1

Table A1: Correlation coefficients of continuous variables entered in the regression model

	LDD	Age	Size of MC	Size of loan	Interest rate	Labour input	Member equity	Equity ratio
LDD	1							
Age	-0.207	1						
Size of MC	-0.451	-0.136	1					
Size of loan	-0.111	0.035	0.12	1				
Interest rate	-0.233	-0.472	0.332	0.218	1			
Labour input	-0.236	0.181	-0.009	0.49	0.144	1		
Member equity	-0.328	0.33	0.18	0.623	0.045	0.576	1	
Equity ratio	0.629	-0.114	-0.247	-0.375	-0.165	-0.352	-0.168	1

Source: Authors computations.