Microfinance institutional growth: How driven forces impact their financial integration?

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Abstract.

This article analyses the growth of microfinance by examining how some driven forces heighten more or less their financial integration. Three main driven forces identify: agency costs, financial development and trade-off in microfinance. The author samples 542 microfinance institutions. Quantile regression applies to analyze difference effects. The results first reveal that high financial development can easily improve financial integration of microfinance, by expanding rate of external investors. Nevertheless, as viewed, high financial integration can also reach where financial development is low. Then, there is inverse link between agency costs and financial integration of MFIs. At last outreach performs better than financial performance in improving their financial integration. There is no mission drift across quantiles and status. Microfinance institutions that plan to increase their average loans with an increase of their number of active borrowers perform better in a financial integration.

Keywords. Financial integration, microfinance, financial development, agency costs, financial performance and outreach.

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1. Introduction

The microfinance has developed during this last three decades. Its success is partly because of two mains observations. One is the ability of microfinance institutions to reach the poor's (Littlefield, Morduch, et Hashemi 2003; Hartarska et Nadolnyak 2008; Rai et Ravi 2011). This improves financial inclusion rate in less developed countries. Some pessimistic views argue there is neither real effect, nor the effect of microfinance on poverty is not clear (Kah, Olds, et Kah 2005; Morris et Barnes 2005; Bateman 2010; Duflo 2010). Nevertheless, despite this debate, the importance of microfinance actions in less developed countries is real.

The second is a raise of external funds in microfinance industry. It explains rapid growth of some microfinance institutions (Ghosh et al. 2003). The cost of external funds because of their origins (domestic and international) settles the efficiency of microfinance institutions. Cheap external funds impel low loan costs that expand microfinance. Efficient microfinance institutions can attract more poor clients. Reverse effects occur with entry of inefficient microfinance institutions that benefit from low costs of external funds. In this case, an increase of external funds cost could lessen the inefficient MFIs, but there could be a raise of loans interest rate linked to an increase of external funds cost.

So, an increase of microfinance is real through financial integration set up with external investors. External investors in microfinance industry are commercials banks, foreign banks, venture capitalists and private investors. External investors taking part in capital improve the microfinance institutions financing sources. The neoclassical theory argues that growth of microfinance explained by a financial integration occurred between microfinance institutions and external investors (Giannetti and Ongena, 2009 P. 182). Contributing this paper is to identify and analyze the impact of driven forces that can heighten more or less microfinance financial integration based on an increase of external funds.

As the financial theory stated, setting up financial integration by two main control reasons namely an increase of the degree of financial development and decrease of agency costs. Let argue that a high financial development encourages financial integration. If the financial development degree is low, only larger firms will be more financially integrated, because they will be able to bear high markets and contractual costs (Khanna and Palepu, 2000). Microfinance institutions with specific behavior could impel some mission drifts. They could increase moral hazard incentives that highlights trade-off between financial performance and outreach. Purpose of considering trade-off in microfinance, explains its impact on financial integration. So, in this study we consider three main driven forces that can impact microfinance financial integration. They are: financial development, agency costs and trade-off between financial performance and outreach. The study evaluates driven forces impact on financial integration of microfinance.

It samples 542 microfinance institutions between 1997 to 2013. Quantile regression applies to analyze difference effects. The results first reveal that high financial development can easily improve financial integration of microfinance, by expanding rate of external investors. Nevertheless, as viewed, high financial integration can also reach where financial development is low. One reason gave is that only larger microfinance institutions with highest market share can be easily financially integrated. There is inverse link between agency costs and financial integration of microfinance institutions. At last, outreach performs better than financial performance in improving their financial integration. There is no mission drift across quantiles and status. Microfinance institutions that plan to increase their average loans with an increase of their number of active borrowers perform better in a financial integration.

Rest of article is as follows. The second section examines the literature linking the financial integration with financial development, agency cost and trade-off between outreach and financial performance. The third section presents the data, model and estimation methods.

The fourth section discusses the empirical results, and presents some robustness checks of the results. The fifth section ends with important implications.

2. Literature review

2.1 Financial integration and financial development

Financial development has an important role in improving financial services in an economy.Financial development includes its ability to mobilize private savings, effective resource allocation, increasing liquidity risk diversification, reducing information asymmetries and transaction costs, and improving alternative funds through individuals' household savings and undistributed corporate profits (Ang and Mackibbing, 2005).

Low financial development could weaken financial links between microfinance institutions and external investors. Most developing countries have low financial development. There are also large market gaps existing between microfinance institutions and commercial banks (Vanroose et D'Espallier 2013). A solution is to improve financial sources of microfinance by encouraging new financial opportunities. So, financial integration improves by financial development rise financial inclusion rate through an increase of clients and products portfolio. The gains of financial integration in microfinance are transfer of banking practices, technology, skills and funds. An increase of external funds flows lessens the cost of capital and increases microfinance savings (Prasad et al. 2007). External investors having good arbitrage strategy between risk and returns, will easily manage microfinance risks. Similarly, microfinance easily share their experience to external investors by teaching them how to finance and include poor clients, small and precarious entrepreneurs in the financial sector.

External investors taking part in microfinance capital could gain extra returns coming from social advantages and improvement of regulation. Some external investors could more focus on increasing of funds granted to poor, small and medium firms. Based on this, let assume that financial development is positively linked to financial integration of microfinance. External investors will be more confident about microfinance institutions capability and skills. They will have high incentives to diversify their portfolio with some new financial and social investment. The first assumption is -H.1 a positive effect of financial development on financial integration of microfinance-.

2.2 Financial integration and agency cost

Financial institution deciding to open their capital to external investors faces agency costs. Agency costs highlight some conflicts between the manager and shareholders. Agency costs in microfinance growth is the conflict between managers' objectives and pressure of external investors. External investors can put pressure to guide loans granted with as result an increase of default risk of borrowers. As the agency cost theory mentioned, the internal organization depends on institutional characteristics value by the capital (Williamson 2000).

The value of capital measured by equity/assets (Berger et Di Patti 2006). Low equity/assets or high leverage ratio lessens agency costs and increases firm value. This is real if external investors can easily encourage or constrain manager's decisions to act more in their interests (Berger et Di Patti 2006). So, the existing link between financial integration and equity/assets is negative. As microfinance institutions financially integrate, they easily lessen the agency cost by well diversifying their capital. Microfinance institutions with high returns will also more attracting external investors because they appear as more confident in the market.

Low agency cost means high leverage ratio for financial institutions. Sometimes, high leverage ratio can mitigate conflicts between shareholders and managers about specifics points. Those points are investment strategies (Myers 1977), risk (Jensen et Meckling 1976; Williams 1987), liquidation conditions and dividend policy (Stulz 1990). Later, Kar in 2012 analyzes the impact of capital and financing structure on microfinance performance. He empirically confirms agency cost theory by specifying an increase in leverage that raises profit efficiency (Kar 2012). He argues that capital/assets negatively linked financial performance. There is a nonlinear relationship between capital/assets and financial performance of microfinance. An increase in debt/equity associates with a decrease in profitability (Kar, 2012 P.340).

Indeed, one important point that appears clearly in those studies is that a well-diversified capital of financial institutions characterizes by low agency cost. So we assume at this stage that -H2. there is a negative relationship between agency costs and financial integration degree-

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2.3 Financial integration and trade-off between financial performance and outreach

Financial integration is part of financial development mainly characterized by an increase of financial inclusion rate in less developed countries. To insure sustainable financial integration of microfinance, it is important to consider their financing ability and social strategies. Besides, an improvement of micro financial intermediation is real with good regulation and supervision. These good regulation and supervision can also impact the financial integration.

Good or weak macroeconomic environment impacts microfinance growth (Gonzalez 2007; Krauss et Walter 2009; Ahlin, Lin, et Maio 2011). This will in their turn impact financial integration of microfinance. In less developed financial sector, microfinance more targets poor

clients and raise the rate of financial inclusion (Vanroose and D'espallier 2013, P. 1966). In a well-developed financial sector, microfinance institutions will compete with banks that could easily adapt their loans contracts. This competition pressure can lead to mission drift in the microfinance clients' portfolio. Mission drift occurs when the size of average loans increases (Mersland and Strom, 2010 P. 29). Microfinance will increasingly choose to target better-off clients as a reply to aggressive actions of banks in the market. Existence of mission drift is also determined by microfinance experience (Mersland and Strom, 2010 P. 30), maturity of clients Cull et al. 2009, P. F126) and microfinance efficiency (Hermes, Lensink, et Meesters 2009).

By considering these facts, a high mission drift is positively linked to a high-level of financial development. One aim in this case for microfinance is to diversified their clients' portfolio by targeting better-off clients. A high mission drift also highlights an event of trade-off between financial performance and outreach. So, MFIs increase their financial performance by diversifying their clients' portfolio by targeting of better-off clients. So, let assume -H3. an indirect and positive link between mission drift and financial integration.

3. Method

3.1 Data

To carry out our tests, the study uses a panel dataset on 542 microfinance institutions from Mix-market database merge with country-level economic data of World Bank data from 1997 to 2013. Each microfinance institution has a minimum of 10 years to a maximum of 17 years' observations. The criteria defining our panel dataset needs that all microfinance have at least a minimum of 10 observations on the length period of 17 years considered. The dataset includes microfinance institutions of five sub-regions: Sub-Saharan Africa (98 MFIs), East Asia and Pacific (50 MFIs), Eastern Europe and Central Asia (103 MFIs), Latin America and

Caribbean (181 MFIs), South Asia (79 MFIs) and Middle East and North Africa (31 MFIs). The panel dataset analysis organizes on individual microfinance profile.

A classification of microfinance institutions does by the degree of financial integration (each quantile). To make our results robust, we divide our sample in five subsamples based on the status of microfinance. Microfinance status are banks, credit and saving cooperatives, nonbank financial institutions (NBFIs), nongovernmental organizations (NGOs) and rural banks. This sample as the one of Vanroose and D'Espallier (2013, P. 1969) cannot claim as a representative data of the whole microfinance sector. Our aim by building this database is to more diversify endogenous characteristics of microfinance.

3.2 Variables

(a) Dependent variable: *Financial integration*

The degree of financial openness measures financial integration. Prasad et al. 2007 identify two index. The first one is official controls on capital flows consider as a binary indicator that directly measures the capital controls but does not capture differences in the intensity of these controls. Capital account controls highlight some constrained measures took to control capital flow. The second one is to estimated gross stocks of foreign assets and liabilities as a share of gross domestic product (GDP). The both measures value the financial openness of an economy.

Giannetti and Ongena (2009) evaluate the impact of financial integration on firm performance by considering the rate foreign lending in the gross loan portfolio. As a financial integration measure they used the percentage of foreign lending which is a ratio of foreign banks loans to total banks loans. In Mixmarket database we cannot distinguished foreign loans to

domestic loans in the grow loans portfolio. But according to the literature review above, a proxy of financial integration is the level external funds compare with total financing sources.

For example, an analysis of Kenyan microfinance sector shows the importance of debt funds rate to the deposits and compulsory savings[2]. As already mentioned, financial integration in microfinance considers participation of external investors in the capital. For that, let identified five subgroups of capital sources: Domestic debt, international debt, compulsory savings, deposits collected and equity.

Annual reports of Kenyan microfinance in 2012, 2013 and 2014 consider three types of microfinance institutions. There are, microfinance that gives only credit financed by borrowings, microfinance banks and banks mainly financed by borrowings, deposits and equity. If we exclude banks, only two important sources remain which are deposits and borrowings. Between 2012 and 2014, liabilities increase for whole Kenyan microfinance actors. For debt funds, an increase is just for microfinance given only credit and banks. The debt funds of microfinance increases between 2011 and 2012 and decrease in 2013.

Different observations appear for financial integration analysis according to microfinance status. Microfinance that gives only credit with high rate of international debt register a slowdown of their financial performance. The slowdown expresses a decline of returns and operational self-sufficiency. Managing international debt without deposits and with equity and compulsory savings is not enough. Besides, some microfinance institutions that gives only credit have domestic debt, compulsory savings and equity greater than external debts. They register better results with a raise of their financial performance. As example, those microfinances are Jitegemea Credit Scheme, SISDO and JEHU microfinance. For microfinance

[2] The study case of financial integration analysis is the Kenya microfinance sector did through the reports of 22 MFIs among which 3 of them are largest and having 80% of the market share. Among those MFIs 13 are considered as only given credits, 6 are microfinance banks that collect deposits and give credit and 3 are banks.

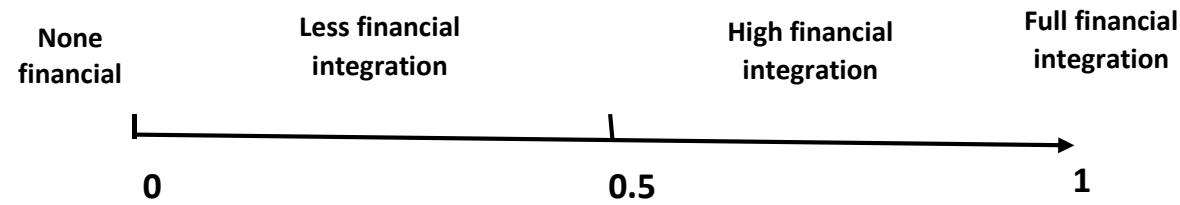
banks, their capital is more diverse with domestic debt and international debt that are less important than compulsory savings and deposits. A good financial integration is real for microfinance if total savings is greater than debt funding. The success of their financial integration insures an equilibrium between external funds, domestic savings and equity. Therefore, their financial performance indicators are positive. This specific result contributes to consider the percentage of borrowing as a proxy measure of financial integration calculate as the ratio of total borrowing over total funds (total deposits plus total borrowings). The microfinance financial integration index is defined as follows:

$$FI = \frac{borrowings}{total\ deposits + total\ borrowings}$$

Let consider the graph 1 below that shows the different stage of financial integration of a microfinance institution.

[Insert graph 1]

Graph 1 shows the financial integration level measures as the percentage of borrowings to total funds. The graph shows three part for the financial integration curve. The first one where financial integration curve is nearest 0. The second part where the financial integration curve is between 0 and 1. The last part where the financial integration curve is nearest 1. This can be resume by the line below.



The value of financial integration indicator of microfinance is between 0 and 1.

If FI = 0, there is no financial integration, this means the main and only financing sources for microfinance is total deposits collected.

If FI = 1, there is full integration, and external funds as borrowings mainly finance microfinance loans granted.

(b) Variables of interest

i. Financial development

The data source of financial development indicators is World Bank Indicators (WBI) database. Three probable measures analyze the financial development process. They are the domestic credit provided by the financial sector (*DC_FS*), Automated teller machines (ATM) and interest rate spread (spread). The one consider in our study is domestic credit provided by financial sector.

ii. Leverage effects

One measure of agency cost is equity/assets. Equity/assets is a measure of leverage for firms. There is an inverse relation between equity/assets and leverage. If leverage effects are high, then equity/assets will be low. This induces low agency cost linked to high leverage ratio.

iii. Financial performance

Financial performance and outreach are indicators that analyze microfinance performance. To measure financial performance, Mixmarket proposes four indicators. They are return on assets (ROA), return on equity (ROE), financial self-sufficiency (FSS) and operational self-sufficiency (OSS). FSS and OSS measure ability of microfinance to cover their cost (Kar, 2012 P.331). ROE and ROA measure ability of microfinance to make returns (Hartarska 2005). This study considers two indicators of financial performance ROA and OSS. Return on assets (ROA) equals to net operating income, less taxes on assets. Most microfinance clearly values their return on assets more than return on equity. Equity is ambiguous with mix value of real equity owned and subsidies received.

The second group of dependent variables is outreach where we distinguish breadth of outreach to depth of outreach (Cull et al. 2011; Kar 2012). Breadth of outreach measure the number of active clients (Cull, Morduch, et others 2007); Kar 2012 P.332). Depth of outreach evaluates the quality of outreach to poor. Its associated indicators are average loans, average loan amount adjusted by GNI per capita and percent of female loan clients.

(c) Control variables

i. Microfinance institutions' control variables

The microfinance control variables are size, financial intermediation degree and status. The assets per GNI measures the microfinance institutions size. Graph 2 below shows the relationship between assets growth and borrowings. There is a positive correlation between assets growth and percentage of borrowings. Large microfinance institutions more use external funds than small ones.

[Insert graph 2]

As graph 2 suggests, the more borrowings increase, the more assets raise. Just a few part of large microfinance borrows high amounts, a huge number of small size used less external funds.

The financial intermediation measures microfinance ability to collect deposits that finance loans granted. So, if a microfinance collects high deposits, then its level of financial intermediation is high. Thus, financial intermediation here is a dummy variable; with 1 if a microfinance has a high financial intermediation and 0 otherwise. The legal type of microfinance considered are four (BANK, COOP, NBFI and NGO).

ii. Macroeconomic environment

For the macroeconomic environment, we consider six factors which are: GDP per capita growth, remittances received (REMI) and aid received (AID). Their values are extracting from WDI data base. Economic growth measures by GDP per capita growth (GDPPC) indicates dynamic changes in real GDP divided by the population. As financial development-economic growth link theory reveals, a high financial development is positively link to a high economic growth level (King and Levine, 1993).

Its related observation is extracting from World Bank indicators (WDI) data base. Remittances could raise financial inclusion and financial performance of microfinance in developing countries. So, an expecting sign is a positive link between remittances and microfinance performance. But a negative link between remittances and financial integration. Net official aid (AID) refers to aid flows (net of repayments) from official donors to countries and territories.

3.3 Models and estimation methods

The regression model in outspoken form is:

$$FI_{it} = f(FD)_{it} + g(lev)_{it} + g(PERF)_{it} + h(MFIspecific)_{it} + k(macro)_{it} + c_i + u_{it} \quad (1)$$

i is for microfinance and t for time. FI is for financial integration. FD is for financial development. $PERF$ is a vector of microfinance performance (social and financial). lev is for leverage and is negatively linked to cost agency. $MFIspecific$ is a set of institution-specific variable $macro$ includes a set of macro-economic control variables for the country. The empirical model valued for financial integration as dependent variables y_{it} is as follows:

$$y_{it} = \beta X_{it} + c_i + u_{it} \qquad t = 1,2,\ldots..,T \quad (2)$$

X_{it} is a 1XK vectors of observable variables for microfinance "I" at time "t". c_i is unobservable effect considered sometimes as unobserved component, latent variable, or unobserved heterogeneity (Wooldridge, 2010, P.251). If i referred to individual, then c_i is individual's effects or individual heterogeneity. u_{it} represents idiosyncratic errors or idiosyncratic disturbances related to variations across t and i. Many financial behavior studies rely on performance indicators with unobserved effects interacting with explanatory variables (Wooldridge, 2010 P. 299).

What's more, microfinance empirical studies apply methods as ordinary least squares (OLS), general least square (GLS) or general method of moments (GMM). Those methods highlight mean effects and don't consider distributional effects. However, financial integration distributional graph (graph 3) below shows important changes along the pathway. Despite general increase of financial integration (see graph 3), there are differences across quantiles.

[Insert graph 3]

Thus, we use quantile regression that considers those limits that can influence our panel data specification. This allows us to highlight the effects of independent variables X along the entire distribution. A basic approach developed by Koenker and Bassett (1978) relies on quantile parameter heterogeneity. One of their main hypothesis is that control variable effects is exogenous. But as we can note in our study financial intermediation is endogenous to financial integration. Koenker and Bassett (1978) quantile regression shows some limits. Standard errors estimated are not consistent in the presence of heteroscedasticity. Therefore, quantile regression estimators in this case are biased. One solution is to estimate a conditional quantile regression. By this method, main control variable is modeled as endogenous variable. For that Abadie, Angrist and Imbens (2002) developed an approach based on instrumental variable (IV) identification strategy (Frölich and Melly, 2010, P.4).

So, the analysis of the driven forces impacts on financial integration will consider a conditional quantile for our panel data. Their results will be compare to those of general least square (GLS). The first step of our analysis will be a Hausman test where different coefficient parameters will be estimated. It will find out probable fixed effects across quantiles or not.

4. Results

4.1 Descriptive facts

[Insert table 1]

The cross-regions evidence summaries in table 1 as a comparable analysis of financial integration and financial development focuses on analysis of the role of private savings in the financial development. Subregions where financial development is low as Africa and East Asia and the pacific register also a low financial integration. Nevertheless, there are also subregions with low financial development linked to high financial integration. These are the cases of Latin America and the Caribbean and Eastern Europe and Central Asia. Those evidence for developing countries reveals two ending remarks about the financial development theory. On the one hand as the theory says, less increase of financial products and services can appear as a great constrain for a good financial integration. On the other hand, when the financial development is low, only larger firms in that economic context are more financially integrated as Khanna and Palepu (2000) argued.

[Insert table 2]

According to more cross evidence present in table 2, there is another cause that settle a high financial integration happening which is the status of financial actors. NGOs and Non-Banking Financial Institutions (NBFI) are more financially integrated. In Latin America and

the Caribbean and Eastern Europe and Central Asia where there is less financial development, high financial integration is mainly leaded by NGO and NBFI.

[Insert graph 4]

Quantile graph analysis did with graph 4 reveals links between financial integration and driven forces. Such driven forces are financial development (dc_fs), agency cost (equity/assets), microfinance performance (ROA, OSS, average loan per gross national income (avloan_gni) and active borrowers (lnacbor)). Mean curve of financial development shows a positive link with financial integration. But in some areas of the curve there is a decrease of financial development degree when financial integration converges to full integration. Agency cost curve shows some area of increase and other of decrease. In fact, an increase of financial integration is due to an alternative increase and decrease of agency costs. Financial performance (ROA) positively increase across quantiles of financial integration and is above the mean value.

An analysis of quantile graph shows two types of behavior for the curves of financial development and financial performance. There is an alternative increase and decrease of financial integration linked to an increase of financial development. According to the curves of outreach (breadth and depth), the first part is decreasing with a reshape point where there is an increasing process. If outreach approach is considering, through the different quantile of financial integration, there is a decline of the number of active borrowers instead the fact of a decreasing value of average deposits.

[Insert table 3]

Table 3 presents the descriptive statistics on both depend and independents variables. The mean value of financial integration is 68.757 with a high standard deviation equals to 36.243. This high value of standard deviation of financial integration suggests a possible widespread of financial integration level for the whole developing countries.

4.2 Results and discussion

Table 4 shows main results for financial integration testing predictions for the three driven forces considered. The first assumption is a positive relationship between financial development and financial integration. The second one is a positive relationship between leverage and financial integration. The third one is positive link between mission drift, and financial integration. Table 4 shows 3 main columns divided according to each quantile (Q= 0.1; Q=0.5 and Q=0.9).

[Insert table 4]

Let first examines the impact of financial development across the different quantiles. Financial development positively and significantly impacts financial integration of MFIs. An eased access of credit and deposits services encourages by regulation improvement insure good development of financial institutions. Each financial institution easily interacts with others, and a direct result is more commercial banks loans for microfinance. The level of liabilities increases with the level of borrowings.

If we consider the effect across the different quantiles, the effect of financial development is greater in quantile having higher financial integration. For quantile Q=0.9 the financial development effect is 0.388 and for quantiles 0.1 and 0.5 their respective values are 0.141 and 0.212. An increase of borrowings slowdowns the rate of deposits. This partial conclusion appears with financial intermediation signs. The more microfinance institutions collect deposits, the more they are financial intermediated.

Thus an increase of financial integration degree for microfinance is negatively linked to the percentage of deposits collected. But, as noted in the applied case of Kenyan microfinance, the capital of microfinance growth with an equilibrium percentage sets up between external

funds and total deposits. External funds (borrowings) has to increase but less than the total deposit, to insure them a good performance.

Let consider now the leverage effect measures by the percentage of equity to assets. Equity/assets is significantly and negatively linked to financial integration. Obviously, a decrease of equity to assets equal to a decline of agency cost and inversely to a raise of leverage. So, the result show a decrease of agency costs induces an increase of financial integration of microfinance. Across the quantiles, the agency costs effects are differently weighted. In model (2) reducing agency cost is higher in quantiles 0.1 and 0.5. For quantile Q=0.9, reducing agency cost is less important. Thus, microfinance institutions that are less financially integrated needs to raise their leverage ratio. This is true because they can reduce their agency costs.

Next, let analyze the trade-off in microfinance impacts on financial integration. Microfinance targeting an increase of returns measures by return on assets (ROA), less improves their financial integration. Besides, an analysis across status reveals none significant effect. Microfinance targeting a decrease of cost measures by operational self-sufficiency (OSS), also less improves their financial integration. As the results show, there is a significant and inverse relationship between OSS and financial integration for quantile Q=0.5. the associated parameter value is -10.666.

If microfinance choose to improve outreach, two distinguished effects are depth of outreach effect and breadth of outreach effect. As remarked, an increase of average loan induces an increase of financial integration level across the quantiles with differentiate associated values. Quantile with low financial integration values the impact of average loan is positive. In quantile Q = 0.1 its coefficient parameters is equal to 3.045. In quantiles Q=0.5 and Q=0.9 the respective parameter values are 2.501 and 2.90. The breadth of outreach measures by the number of active clients is nonsignificant for quantiles Q=0.5 and Q=0.9. Only for quantile

Q=0.1, there is a significant effect of the number of active clients. An increase of the number of active borrowers raises the financial integration of microfinance.

The increase of average loan is consecutive to an increase of the number of active borrowers. So, there is no appearance of mission drift with financial integration. This is real in quantile Q=0.1 where microfinance is less financial integrated. Therefore, by considering microfinance performance, outreach has great effect on financial integration more than financial performance. Microfinance that plans to increase their average loans with an increase of their number of active borrowers perform better in a financial integration.

Robustness check of trade-off impacts is done according to each microfinance status. According to results, increasing profit and decreasing costs both improve financial integration of credit and savings cooperatives. But, for NBFIs effects are reverse. NBFIs are more financially integrated if they don't focus on profit, but on increasing income that covers their cost. So in short, financial integration of NBFIs is improved by minimizing their cost with less profit.

[Insert table 5]

In addition, an analysis of outreach according to microfinance status as table 5 shows, reveals for credit and savings cooperatives a cumulative increase of average loans and number of active borrowers. There is no mission drift appearance for cooperatives when they choose to be more financially integrated. In the cases of banks and NBFIs, increasing the number of active clients raise their financial integration. So, microfinance that attracts new clients send a good signal to external investors on their ability to extend their clients' portfolio. It is good incentive for external investors to more invest in their capital. Nevertheless, for NGOs, an increasing of the number of active clients does not improve their financial integration.

What's more, let analyze additional significant effects of assets size, economic growth, aids and inflation. An increase of assets induces a decline of financial integration in microfinance. This fact is significantly true for banks, cooperatives and NBFI. According to the robustness check, the assets size of all microfinance are negatively and significantly linked to their financial integration level. Nevertheless, an increase of NGOs assets raises their financial integration.

Economic growth has a positive impact on financial integration of microfinance. Economic growth increases financial integration in top quantiles Q = 0.5 and 0.9. The highest value is in quantile Q = 0.5. Similarly, increasing aid positively impacts financial integration. For less financially integrated microfinance, increasing remittances help them to improve their financial integration. Inflation is positively linked to financial integration of microfinance. A high consumption price implies high external funds in microfinance.

5. Conclusion

To conclude, this study analyses the growth of microfinance by examining how some driven forces heighten more or less their financial integration. Three main driven forces identify: agency costs, financial development and trade-off in microfinance. There are two added values related to this study: an empirical value and a theoretical value. First, most currents microfinance analysis used panel data approach with a GLS method applied for fixed or random effects. Those methods highlight mean effects and don't consider distributional effects. Thus, the use of quantile regression considers those limits. This allows us to highlight different weighted effects of driven forces along the entire distribution of financial integration. In an empirical view related to microfinance studies, this is our first added value. So in our sample of quantiles we have two groups of observations. One group where microfinance

institutions are more financially integrated and another group where they are less financially integrated. We saw different weighted impacts of driven forces along the quantiles and microfinance status on financial integration degree.

The second is on theoretical approach where we also highlight the effect of those driven forces on the financial integration. As we argue, the first assumption is a positive relationship between financial development and financial integration. The second one is a positive relationship between leverage and financial integration. The third one is positive link between mission drift, and financial integration.

The results show first that high financial development can easily improve financial integration of microfinance, by expanding rate of external investors. Nevertheless, as viewed, high financial integration can also reach where financial development is low. One reason gave is that only larger microfinance with highest market share can be easily financially integrated. There is inverse link between agency costs and financial integration of microfinance. At last, outreach performs better than financial performance in improving their financial integration. There is no mission drift across quantiles and status. Microfinance institutions that plan to increase their average loans with an increase of their number of active borrowers perform better in a financial integration.

All in all, an improvement of financial integration in microfinance relies on financial development, agency cost and outreach. Increasing financial performance of microfinance slowdowns their financial integration. For developing countries an environmental context where microfinance can easily borrow will improve developing the whole financial sector. Less financially integrated microfinance needs the support of policy makers. External investors have to manage two problems associated to less financially integrated microfinance. Those problems are: adverse selection and moral hazard of microfinance institutions. Policy makers could help microfinance as lenders at last resort. This will increase the confident in microfinance and

decrease the moral hazard negative effect. One result will be more external investors that raise capital of microfinance. Policy makers could also ease formal environment to clear microfinance sector. This will appear for external investor as a good signal to choose efficient project where to invest. Thus, this action will lessen adverse selection problem managing by external investors.

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Table 1. Mean of financial integration and financial development by sub-regions in developing countries

	Sub-regions	Mean	Standard Errors	95% Conf. Interval	
FI	Africa	39.172	1.206	36.807	41.537
	Middle East and North Africa	98.219	0.876	96.503	99.936
	East Asia and the pacific	54.548	1.652	51.309	57.787
	Eastern Europe and Central Asia	82.133	1.124	79.929	84.337
	Latin America and the Caribbean	71.967	0.959	70.087	73.846
	South Asia	75.478	1.137	73.249	77.706
FD	Africa	22.591	0.640	21.336	23.845
	Middle East and North Africa	96.388	2.117	92.237	100.539
	East Asia and the pacific	47.064	1.450	44.221	49.908
	Eastern Europe and Central Asia	34.712	0.709	33.322	36.102
	Latin America and the Caribbean	39.472	0.536	38.421	40.523
	South Asia	56.291	0.578	55.157	57.425

Source. Author

Table 2. Mean of financial integration by Status of MFIs

	status	Mean	Standard Error	95% conf. Interval	
FI	bank	42.226	1.259	39.757	44.695
	Cooperatives	29.261	1.615	26.095	32.426
	nbfi	78.903	0.816	77.303	80.503
	ngo	82.001	0.707	80.615	83.387
	Rural Banks	34.781	2.671	29.546	40.017
	others	65.924	7.314	51.584	80.264

Source. Author

Table 3. Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FI=borrowings/total funds	4278	68.757	36.243	0	100
fin	8804	0.219	0.413	0	1
bank	8804	0.133	0.340	0	1
cooperatives	8804	0.098478	0.298	0.000	1
nbfi	8804	0.357	0.479	0	1
ngo	8804	0.376	0.485	0	1
dc_fs	8603	39.561	25.852	-16.378	195.938
roa	5478	1.652	10.434	-213.670	100.890
oss	5975	1.173	0.710	-0.004	36.627
aloan_gni	6006	0.720	2.073	0	94.712
acbor	6058	106837.400	498795.200	0	8166287
equi	6184	34.450	27.166	-156.952	117.266
lnassets	5494	9.024	1.982	-1.092	15.646
gdppc_growth	8722	3.352	4.037	-34.960	50.031
lnremirec	8342	20.739	1.981	9.348	24.971
lnaid	8498	20.273	0.971	15.384	23.968
infl_cp	8391	8.669	29.519	-10.067	1058.374

Source. Author

Table 4. Links between financial integration, financial development and microfinance performance along the quantiles

	Q = 0.1 N = 3230		Q = 0.5 N = 3230		Q = 0.9 N = 3230	
FI	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
fin	-54.966***	-35.070	-59.996***	-58.049***	-41.849***	-51.781***
	(6.790)	(36.330)	(2.166)	(5.262)	(2.166)	(3.906)
dc_fs	0.171***	0.141***	0.092**	0.212***	0.180**	0.388***
	(0.044)	(0.049)	(0.040)	(0.075)	(0.086)	(0.122)
roa	0.430***	0.291	0.205	0.303*	-0.003	0.095
	(0.153)	(0.252)	(0.165)	(0.173)	(0.165)	(0.189)
oss	-0.220	-4.356	-7.201***	-10.666***	-0.854	-7.350***
	(1.578)	(3.813)	(2.091)	(3.005)	(4.010)	(0.767)
aloan_gni	2.877	3.045***	2.470	2.501**	1.914**	2.900**
	(1.868)	(1.156)	(1.966)	(1.205)	(0.765)	(1.184)
lnacbor	2.956	4.147**	2.385	2.215	0.231	-0.354
	(1.927)	(1.967)	(1.928)	(2.455)	(0.849)	(1.596)
equi	-0.657***	-0.568	-0.260***	-0.410**	-0.102**	-0.125
	(0.168)	(0.478)	(0.091)	(0.166)	(0.040)	(0.109)
lnassets	-2.752	-3.323	-4.768**	3.129	-2.213**	-4.829*
	(1.966)	(2.639)	(2.024)	(3.241)	(0.958)	(-2.540)
lnassetsB		-7.489**		-15.115***		-6.368**
		(3.251)		(3.851)		(2.996)
lnassetsC		0.615		-6.548**		-1.095
		(2.077)		(2.912)		(3.450)
lnassetsN		-2.608		-8.336**		3.785
		(2.433)		(3.986)		(2.721)
lnassetsNGO		1.984		-5.056		3.977
		(2.680)		(3.248)		(2.497)
gdppc_growth	0.185	0.316	0.357*	0.540**	0.254**	0.394
	(0.31)	(0.220)	(0.194)	(0.215)	(0.117)	(0.251)
lnremirec	1.7903***	2.015***	1.426	1.041	-0.188	-0.664
	(0.552)	(0.474)	(0.932)	(0.865)	(0.724)	(0.936)
lnaid	-0.9504	0.524	1.468**	2.509***	2.052***	1.761
	(1.527)	(0.914)	(0.746)	(0.741)	(0.561)	(1.165)
infl_cp	0.4245	0.109	0.801***	0.434**	0.262**	0.315
	(0.33)	(0.308)	(0.215)	(0.221)	(0.130)	(0.282)
bank	2.809	98.061***	13.775***	176.202**	16.821***	105.597***
	(4.376)	(35.755)	(3.301)	*	(4.023)	(31.841)
				(42.469)		
cooperatives	6.177*	-0.384	3.090	59.350**	7.496	3.567
	(3.726)	(20.397)	(3.648)	(28.917)	(7.093)	(36.882)
nbfi	13.4136***	40.806	18.653***	94.990**	18.037***	-14.431
	(3.147)	(24.746)	(3.084)	(41.443)	(3.473)	(26.509)
ngo	21.2914***	-0.780	30.872***	76.892**	21.453***	-9.695
	(5.037)	(24.550)	(3.716)	(32.847)	(3.325)	(23.526)
_cons	27.2782	-25.705	36.553	-44.859	60.905***	107.760**
	(40.461)	(37.917)	(23.391)	(38.320)	(22.714)	(46.186)

( ): standard errors. ***statistically significant at the 1%, **5% and *10% levels

Source. Author

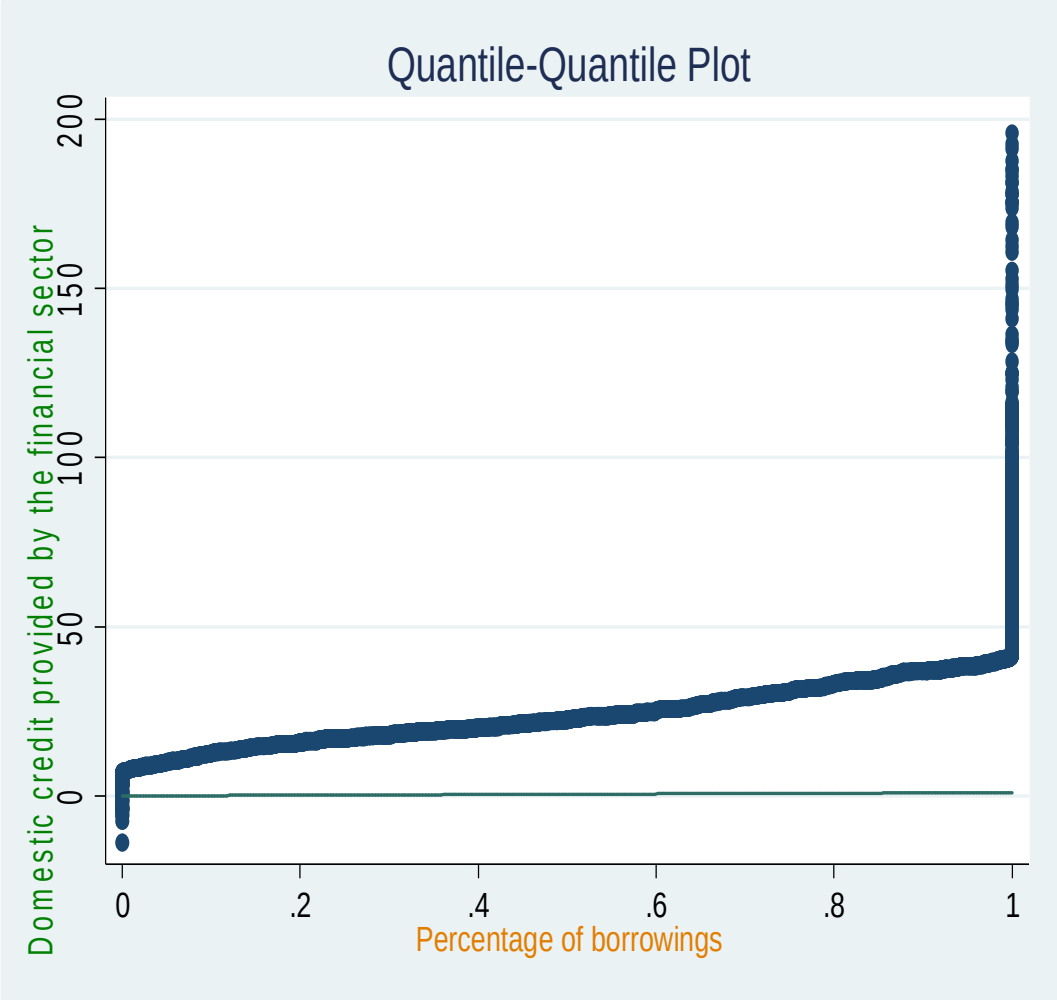
Table 5. Links between financial integration and microfinance performance along the types of MFIs

FI	Banks	Cooperatives	NBFI	NGO	Rural Banks
roa	0.003	0.022***	-0.003***	0.000	0.011
	(0.004)	(0.005)	(0.001)	(0.001)	(0.019)
oss	-0.336***	-0.499***	0.148***	-0.001	-0.046
	(0.064)	(0.112)	(0.028)	(0.003)	(0.237)
aloan_gni	-0.012	0.274***	-0.019	-0.012	0.290
	(0.009)	(0.052)	(0.013)	(0.018)	(0.346)
lnacbor	0.135***	0.171**	0.028**	-0.023**	-0.124
	(0.027)	(0.068)	(0.012)	(0.010)	(0.131)
equi	0.018***	0.006*	0.000	-0.001***	0.014
	(0.002)	(0.003)	(0.000)	(0.000)	(0.042)
equi²	0.000***	0.000	0.000***	0.000***	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
lnassets	0.123	0.304*	0.061*	-0.068**	1.515***
	(0.108)	(0.156)	(0.033)	(0.027)	(0.490)
Assets²	-0.017***	-0.020**	-0.005***	0.004**	-0.075***
	(0.005)	(0.008)	(0.002)	(0.002)	(0.024)
_cons	3.185***	0.826	3.843***	5.006***	-2.691
	(0.587)	(0.613)	(0.174)	(0.148)	(2.365)
	N=528 Number of groups = 66 Wald chi2(8)=428.04 Likelihood = -2765.508***	N=321 Number of groups = 47 Wald chi2(8)=81.34 Likelihood = -1429.233***	N=1251 Number of groups = 178 Wald chi2(8)=166.89 Likelihood = -6216.843***	N=1352 Number of groups = 183 Wald chi2(8)=72.65 Likelihood = -6244.543***	N=102 Number of groups = 13 Wald chi2(8)=17.15 Likelihood = -403.289

( ): standard errors. ***statistically significant at the 1%, **5% and *10% levels

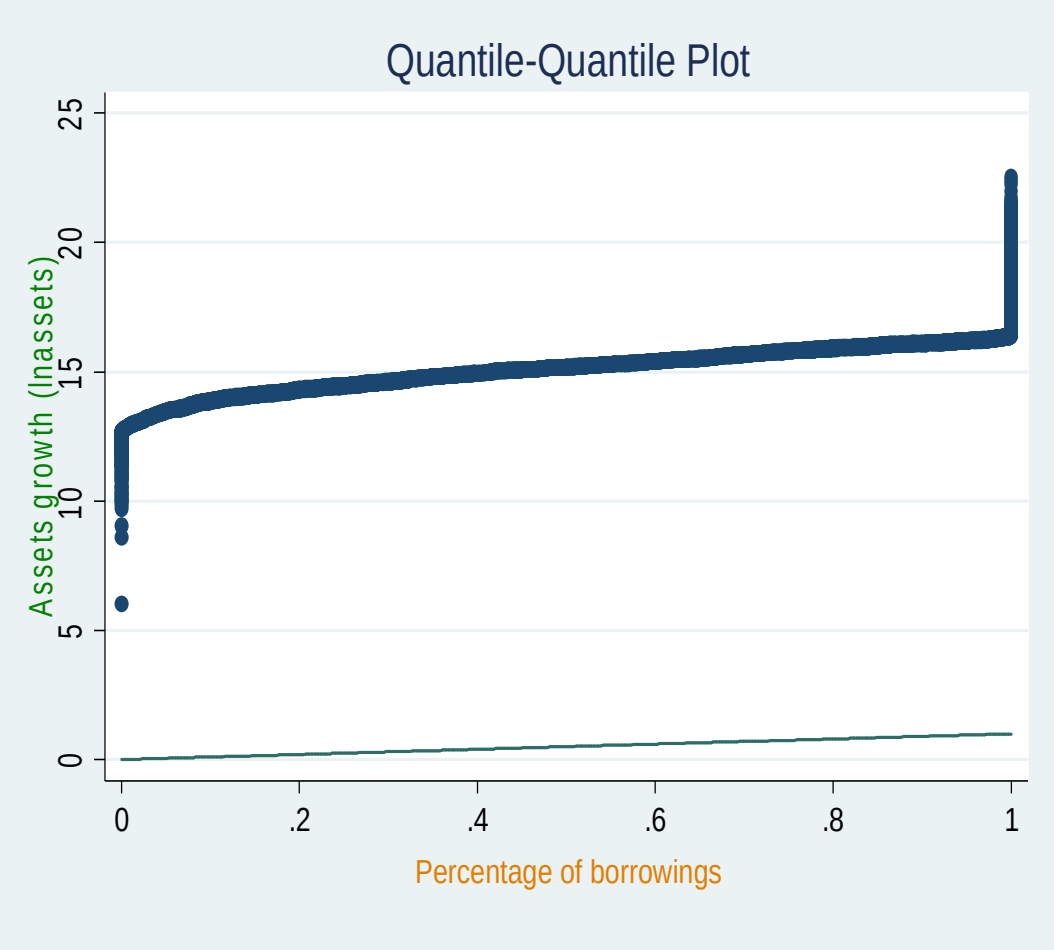
Source. Author

Graph 1. Percentage of borrowings according to the level of financial development



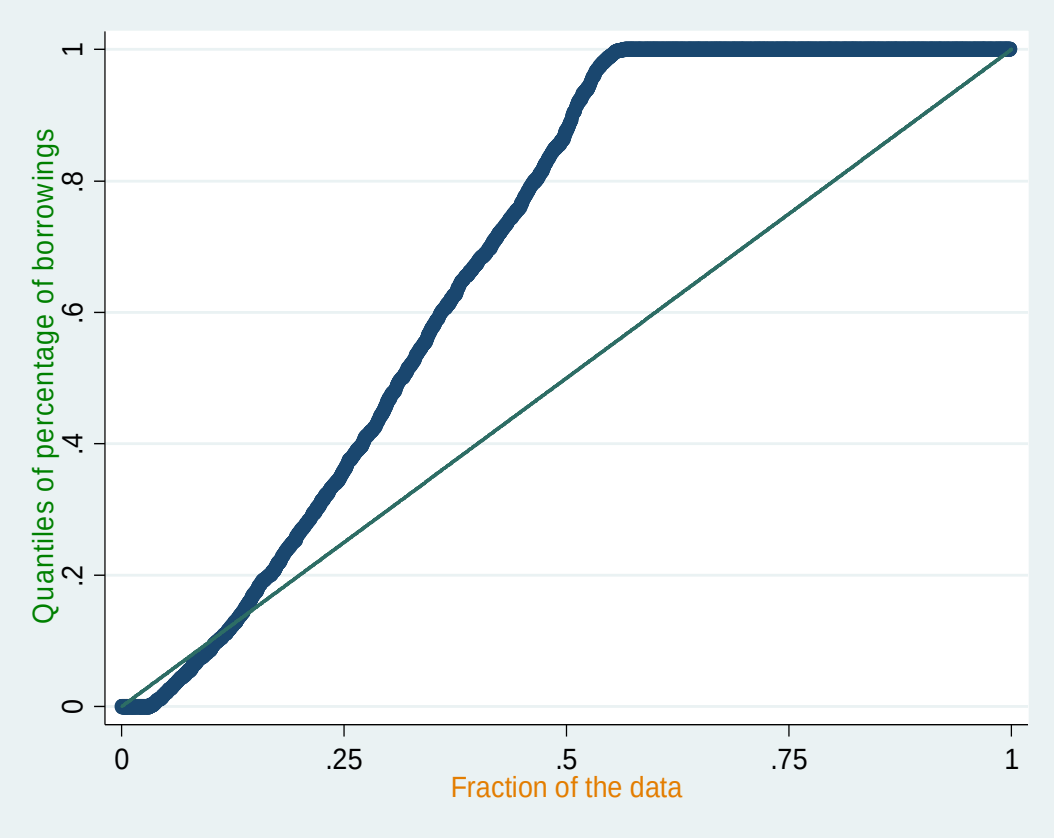
Source. Author

Graph 2. Relationship between borrowings and assets



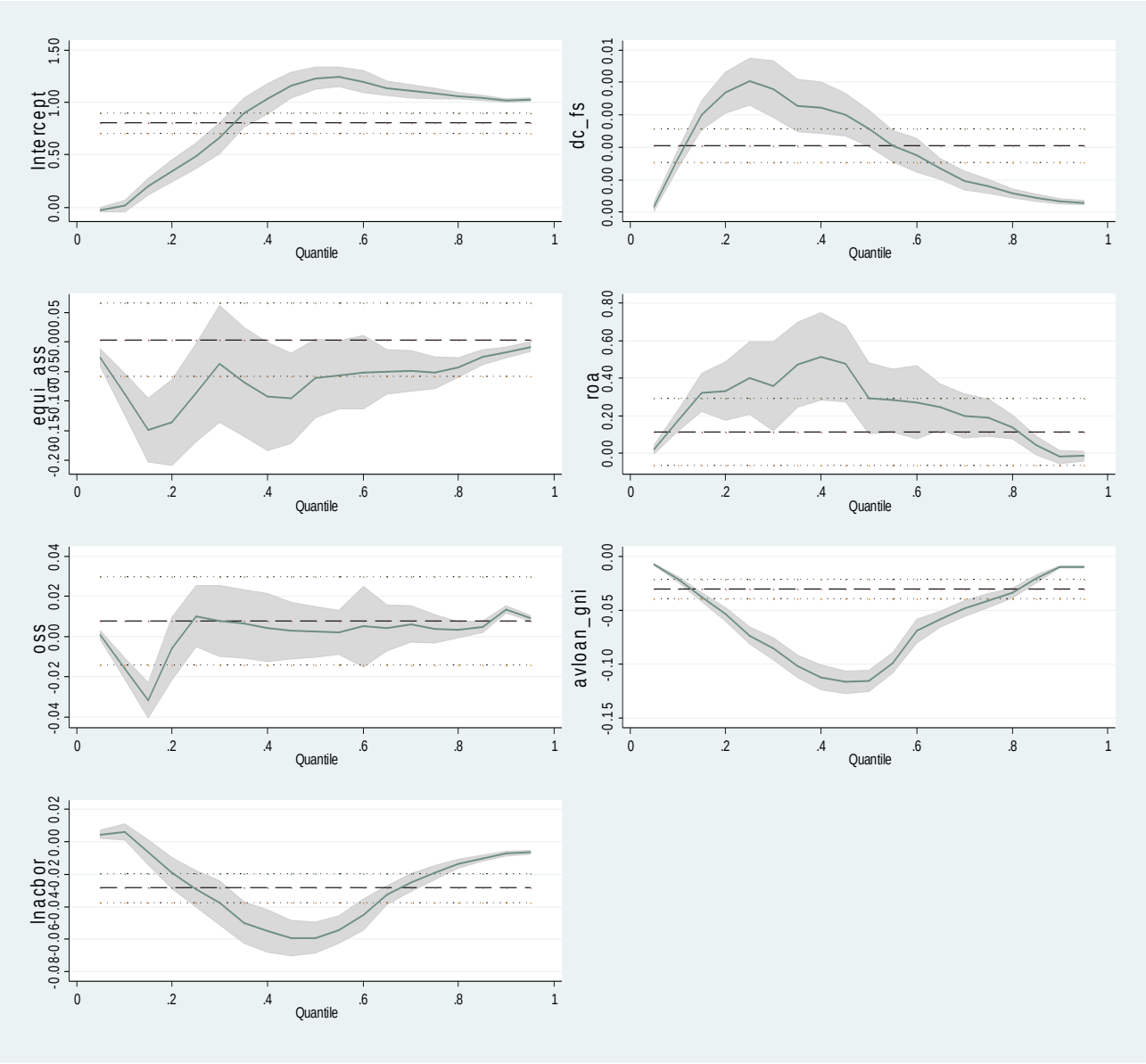
Source. Author

Graph 3. Financial integration pathway



Source. Author

Graph 4. Quantile graph relationship between financial integration, financial development, agency costs and microfinance performance



Source. Author