

Determinants of Performance of Microfinance Institutions: Cross Country Analysis

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Abstract

This study investigates the effect of both financial sector development and the macroeconomic development on the performance of microfinance institutions (MFIs). The study uses random effect model as an analytical framework and the findings indicate that MFI's outreach are increased where formal financial system is less developed but to be profitable or to maintain a certain level of standard, minimum financial development is expected. Similar with financial sector development, MFIs also flourish where macro economy is less developed. But such situations are weakly associated with profitability. This study suggests that better macro economy and improved financial system could utilize resources more efficiently and thus leads to more returns on assets with a view to enhance MFIs performance.

Keyword: Microfinance, financial sector development, macroeconomic development, microfinance institutions' performance

1. Introduction

The phenomenal growth of micro finance institutions in the world has attracted attention of many stakeholders to evaluate the performance of such financial services to the poor people. In the start-up period during the early eighties, MFIs were providing financial services to the poor to help them come out from the poverty and were mainly funded with donor money under an NGO status. That time performance measures were generally limited within outreach and impact measures. But Since the 1990s, however, the sector is undergoing a process towards formalization and commercialization which is reducing dependency on donor funds and forcing them to aspire for financial sustainability. Due to this formalization process, modern MFIs are believed to serve a dual objective, this is: both to reach the unbanked poor as well as to become self-sustainable (Armendariz and Morduch, 2005; Hartarska, 2005). Factors affecting the sustainability of an MFI can be divided broadly between institutional and environmental variables. Institutional variables are those factors that are specific to the institution, while environmental variables relate to the policy and economic setting of the country the institution operates in (Crabb, 2008). The financial sector development is now also considered as an important factor in the success of microfinance institutions.

Existing literature on microfinance generally put emphasis on firm specific characteristics that affects microfinance performance. But the impacts of macroeconomic development with special emphasis on financial sector development are still remains relatively understudied. While the role of the macro-economic environment has been studied in depth in the formal financial literature, the relationship between MFI-performance and the macro environment has only recently been received attention by a small but increasing number of authors (Vanroose and D'Espallier, 2009). In order to investigate these issues empirically and to reduce the gap in the existing literature I relate MFI performance measures to a number of variables that capture the development of the banking sector as well as macroeconomic environment by using a large unique panel dataset of 759 institutions over 2 years.

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2. Literature Review and Hypothesis

There are only few studies available which provide some evidence on the impact of financial development factors and macroeconomic determinants on the performance of MFIs. Primarily microfinance institutions achieved success in financially and economically less developed countries but later in 2000s success of some MFIs in relatively better economy with stable financial development have drawn attention of academicians, researchers and others.

Many microfinance institutions are currently not self-sustaining, and both theoretical and empirical work suggests that the economic and financial environment in which they operate is an important factor in their ability to reach this goal, furthering the mission of outreach to the poor (Armendariz & Morduch, 2004). He also argued that MFIs cannot provide effective financial intermediation without a “well-functioning regulatory framework” in the country. Woller and Woodworth (2001) cited many impact studies and conclude that governments must “create a macroeconomic environment characterized by stable growth, low inflation, and fiscal discipline.” They further suggested that poor macroeconomic, regulatory and trade policies will undermine the viability of small business owners and the MFIs that support them. Supporting their views Crabb (2008) also strongly argued that the economic environment of the host country strongly influences the sustainability of a microfinance program. He argued that since MFIs support entrepreneurs, their success is dependent on the degree of economic freedom provided these entrepreneurs. Therefore, he suggested that countries with greater levels of economic freedom should have more successful entrepreneurs and more sustainable MFIs. He emphasized on ten factors that affects economic freedom such as, trade policy, fiscal burden of government, government intervention in the economy, monetary policy, capital flows and foreign investment, banking & finance, wages and prices, property rights, regulation and informal market activity.

Ahlin and Lin (2006) used a sample of 112 MFIs from 48 countries for the years 1996–2004. By using within and between panel regressions, they examined whether performance of MFIs is affected by the macro economy. They focused on four performance measures: self-sustainability, default rates, costs per borrower, and growth in clientele. Concerning the macroeconomic variables, they use real per capita income growth rates, inflation, labor force participation rates, manufacturing’s share in GDP and net foreign direct investment as a fraction of GDP. Their study indicated that the macroeconomic environment is a significant determinant of MFI performance. However, they also showed that MFI success is for a substantial part determined by MFI-specific factors. Vanroose (2008), in a later study took into account all developing countries, identified macro-economic factors that may explain why the microfinance sector is more developed in some countries while not in others. She studied the sector on an aggregated country-level and found a positive influence of population density, GNI and aid per capita on MFI-outreach.

It is also argued that in addition to many other important factors, the performance and long-run economic growth and welfare of a country are related to its degree of financial development. Financial development is measured by factors such as size, depth, access and the efficiency and stability of a financial system, which includes its markets, intermediaries, range of assets, institutions and regulations. The higher the degree of financial development the wider the availability of financial services that allows the diversification of risks. This increases the long run growth trajectory of a country and ultimately improves the welfare and prosperity of producers and consumers with access to financial services. Although financial sector development is thought to be important to foster economic growth (Levine, 2004), however, relating microfinance performance with formal financial sector development is getting slow but increasing attention. Jalilian and Kirkpatrick (2005) showed that financial sector development plays an important role in poverty reduction. Consequently, an important part of development policy is concerned with developing financial markets for the poor as a way to enhance economic growth (Demirgüç-Kunt et al. 2008). Following the need Hermes et al. (2009) focused on the relationship between MFI-efficiency and the development of the financial system using stochastic frontier analysis and find that MFI- efficiency is positively correlated with overall financial sector development. Later Vanroose and D’Espallier (2009) also found indications of interdependencies between MFI-performance and formal financial sector development.

Based on the above literatures this study develops following two hypothesis:

H₁ : Microfinance sector development has significant relationship with formal financial sector development.

H₂ : Macroeconomic development has significant relationship with microfinance sector growth

3. Materials and Methods

Data

The study employed a unique cross-country cross-section database of 758 MFIs in 29 countries for the years 2009-2010. The database was constructed from the Microfinance Information eXchange Inc. (MIX) and Micro Banking Bulletin (MBB). The years 2009-2010 have been selected for two reasons: One, no studies have yet been conducted on this and second, the reported data available in 2011 and 2012 are very few. The MIX classifies institutions under different legal status. All five of them were being used: cooperatives, non-bank financial institutions, banks, rural banks and non-profit organizations. The study had used all categories and included as much observations as possible in order to reduce any sample bias.

The dataset includes MFIs from the five main developing regions in the world. These are: the Latin American and Caribbean region (LAC: 158 MFIs), the South-African region (S-Africa: 108 MFIs), the Middle-Eastern and Northern African region (MENA: 33 MFIs), the South- Asian region (S-Asia: 212 MFIs), the East Asian and Pacific region (EAP: 137 MFIs) and finally the Eastern Europe and Central Asian region (ECA: 110 MFIs). The legal distribution is as follows: 491 NGOs, 152 cooperatives, 364 non-banks financial institutions, 288 rural banks, 80 banks and 12 MFIs that are classified under the 'other' category.

4. Model and Variables

In line with previous studies focusing on the determinants of MFI-performance (Hartarska, 2005; Mersland and Strøm, 2008; among others) the present study related MFI-performance to the variables of interest in addition to a wide set of control-variables. Specifically, the study related MFI performance to *a.* variables measuring formal banking sector development *b.* macro-economic development and *c.* micro-institutional controls. The model can be written as follows:

$$MFIperf_{i,t} = f(bank)_{i,t} + g(macro)_{i,t} + h(MFIspecific)_{i,t} + \mu_i + \phi_r + u_{i,t} \quad (1)$$

Where,

$MFIperf_{i,t}$ is a set of performance-measures;

$Bank_{i,t}$ is a set of variables that capture the state of the formal banking sector of the country in which the MFI is active;

$Macro_{i,t}$ is macro economic variables in each country where MFI operates;

$MFIspecific_{i,t}$ is a set of institution-specific variables taken from previous literature;

μ_i is the institution-specific effect that captures all unobserved institution-specific variation and ϕ_r is a set of regional dummies that captures regional differences in MFI performance.

And i -stand for MFI and t indicates time.

Estimation methods

The parameters of the panel data regression model presented in (1) were estimated using a random effects model (RE). A RE-model has a number of important benefits that has made it popular in performance-studies. First, the RE-model takes into account all unobserved institution-specific residual

variation in MFI-performance in the term μ_i , thereby reducing any bias resulting from potential omitted variables (Stock and Watson, 2007). Secondly, the RE model is better suited to tackle the time-invariant nature of some of the covariates than for instance the fixed effects model that eliminates time-invariant variables by first-differencing (Stock and Watson, 2007; Lensink and Mersland, 2009; Hartarska, 2005).

5. Empirical results

Descriptive statistics

In Table 1, I presented a number of summary statistics for the sample under study. The table included the MFI-specific variables (1516 MFI-year observations), macro-economic variables and the variables measuring development of the formal banking sector. The MFI-specific variables indicate that the mean *lnNAB* is 9.18, which corresponds to 9,729 borrowers served on average. Mean *OSS* is 1.16 indicating that on average MFIs are self-sustainable i.e. costs are covered by income.

Table 1: Summary Statistics

	N	Mean	Std. Dev.	Min	Max
MFI-specific variables					
LnAsset	1464	15.57	2.12	5.75	23.68
LnGLP	1489	15.23	2.17	4.08	22.82
LnNAB	1409	9.18	2.22	0.69	15.92
OSS	1207	1.16	0.46	-0.68	6.29
ROA	1150	0.01	0.09	-0.68	0.37
ROE	1142	-0.83	31.34	1058.78	14.32
DumNGO	1515	0.32	0.47	0	1
DumBank	1515	0.05	0.22	0	1
DumNBFI	1515	0.24	0.43	0	1
DunCoop	1513	0.10	0.30	0	1
DumRural	1516	0.19	0.39	0	1
Macro-economic environment					
FDI	1516	2.95	2.53	-0.3	12.38
GNI	1516	3164.84	2828.80	440	9930
INDVA	1420	31.74	9.26	15.63	64.72
INFLATION	1516	6.69	7.33	-18.85	26.78
POPDENS	1516	209.44	239.23	5.96	1142.29
RURPOP	1516	52.29	19.27	15.67	84.96
Formal banking sector					
ATM	686	33.92	32.17	1.15	120.62
DOMCRED	1516	43.82	27.74	6.26	129.92
DEPRATE	1238	5.96	3.84	1.05	18.67
LENDRATE	1230	12.37	7.15	5.29	44.65

The table presents a number of summary statistics for the key-variables used throughout the study. *LnAsset* is the natural logarithm of total assets. *lnNAB* is the natural logarithm of the number of active borrowers. *lnGLP* is the natural logarithm of the MFI's total loan portfolio.

OSS is operational self-sufficiency measured as net income divided by operating expenses. *ROA* is return on assets. *ROE* is return on equity. *DumNGO* is 1 if the MFI is an NGO and 0 otherwise. *DumBANK* is 1 if the MFI is a bank and 0 otherwise. *DumNBFI* is 1 if the MFI is a non-bank financial institution and 0 otherwise. *DumCOOP* is 1 if the MFI is a cooperative and 0 otherwise. *DumRURAL* is 1 if the MFI operates solely in rural areas and 0 otherwise. *FDI* is the share of foreign direct investment being invested in the host-country. *GNI* is the per capita gross national income of the host-country. *INDVA* is the added value of industry of the country in which the MFI is active. *INFLATION* is the yearly inflation rate of the host-country. *POPDENS* is the population density of the host-country. *RURPOP* is the percent of total population live in villages of the host country. *ATMs* is the number of ATMs available in the host-country per 1,000,000 inhabitants. *DOMCREDIT* is domestic credit for the industry provided by the formal banking sector measured as percentage of GNI. *DEPRATE* is the yearly average deposit-rate of the host-country measured in percentages. *LENDINGRATE* is the yearly average lending rate applicable in the host-country measured in percentages.

Multivariate analysis

Table 2 summarizes the regression outputs from the MFI-performance model estimated using random effects. Here I investigated the impact of development of the formal financial system in terms of, domestic credit (measuring depth of the formal financial system) and the impact of the interest rates on MFI-performance in terms of the deposit rate and the lending rate. The different columns correspond to the different performance measures (*lnNAB* and *lnTLP* for outreach; *OSS*, *ROA* and *ROE* for profitability). First I discuss the variables measuring development of the formal system. Next I will discuss the macro-economic and institutional-specific controls.

Financial development and MFI performance

As can be seen from the table, more access to the formal financial system in terms of domestic credit is negatively (although not significant) associated with *NAB*, MFI-outreach variable. This indicates that MFIs perform better where access to the formal financial system is lower, while positive and highly significant ($b=0.0074$; $p<.0001$) effect was found on *GLP*. Domestic credit has also been significantly and positively related with profitability in terms of *OSS* ($b= 0.0014$; $p<.05$). This finding was also confirmed by previous studies (Imai, 2012, Ahlin, 2011 and Hermes, 2009). This confirms the first hypothesis: MFI-performance is influenced by formal banking sector development and the results showed negative but non significant relation with *NAB* but positive and significant association with *GLP* and *OSS*. This indicates that MFI's outreach can be increased where formal financial system is less developed but to be profitable or to maintain a certain level of standard, minimum financial development is expected. These finding was related to positive spillover effects between the formal banking system and microfinance (Hermes et al., 2009). For example, in Bangladesh microfinance sector development and formal banking development is growing at a time and many MFIs are using whole sale fund from larger MFIs or commercial bank and such increased credit lines reinforce the development of microfinance.

McIntosh and Wydeck (2005) show that interest rates are usually lower in well-developed banking systems due to competition. As a result, MFIs could have access to cheaper loans which would enable them to reach financial sustainability more easily. This study also find lending rate has negative and strong significant impact on number of active borrowers ($b= -0.03$, $p<.0001$) which is expected in theory and relatively weak & mixed effect on profitability (since $b=.0056$; $p<.10$ for *OSS* and $b=-0.005$; $p<.10$ for *ROA*). This suggests that, while in general there is a negative relation between MFI performance and formal financial sector development, a certain level of banking development must be present before microfinance can reach positive returns on equity and assets (Vanroose, 2009). Deposit rate showed positive impact on outreach in terms of *NAB*. This is similar with the market failure hypothesis. Higher deposit rates also

associated with higher lending rate to cover cost of the funds. This is usually happens in less developed financial system. Consequently, it supports the assumption that MFI outreach increase where formal financial system is less developed. This demonstrates that the two bank variables measure financial sector development in a different manner and that there exist significant differences between them, as mentioned by Demirgüç-Kunt et al. (2008).

Table 2: Result of multivariate regression analysis

Variable	GLP	NAB	OSS	ROA	ROE
Intercept	-1.029 (<.0001)	-3.528 (<.0001)	0.1398 (0.5428)	0.7322 (1.00)	-60146 (0.9997)
FDI	-0.0006 (0.9218)	-0.012 (0.4961)	0.0109 (0.1981)	-8E-04 (0.8218)	0.5756 (0.6947)
GNI	0.00001 (0.1987)	9E-05 (<.0001)	-3.09E-07 (0.9748)	2E-05 (0.228)	0.0051 (0.5357)
INDVA	-0.0006 (0.6595)	-0.01 (0.0107)	0.0088 (<.0001)	-0.003 (0.4646)	-0.377 (0.8142)
INFLATION	0.001 (0.5766)	0.0034 (0.4607)	0.0036 (0.1568)	7E-05 (0.9124)	0.0751 (0.7615)
POPDENS	0.0003 (<.0001)	0.0012 (<.0001)	0.0001 (0.1038)	5E-05 (0.8806)	0.0776 (0.7814)
RURPOP	0.0076 (<.0001)	0.0167 (<.0001)	0.0028 (0.1276)	0.0001 (0.9783)	3.7912 (0.3056)
DOMCRED	0.0026 (<.0001)	-0.008 (<.0001)	0.0014 (0.0248)	-6E-05 (0.9569)	0.2071 (0.6925)
DEPRATE	0.0057 (0.3413)	0.0732 (<.0001)	-0.007 (0.3965)	0.0035 (0.4067)	0.245 (0.8919)
LENDRATE	0.0035 (0.1547)	-0.035 (<.0001)	0.0054 (0.0736)	-0.005 (0.1257)	0.7587 (0.61)
ASSET NEW (Dummy)	0.988 (<.0001)	0.7585 (<.0001)	0.0189 (0.0245)	0.0101 (<.0001)	0.7198 (0.2345)
YOUNG (Dummy)	-0.027 (0.6167)	0.4107 (0.0058)	0.1353 (0.0973)	0.0224 (0.1407)	-1.158 (0.8453)
MATURE (Dummy)	0.0267 (0.595)	0.6491 (<.0001)	0.0593 (0.4116)	0.0059 (0.6638)	-2.349 (0.6584)
NGO (Dummy)	0.0702 (0.1128)	0.7386 (<.0001)	0.0374 (0.5655)	0.0117 (0.3507)	-4.39 (0.3713)
BANK (Dummy)	-0.14 (0.0076)	0.2711 (0.0713)	-0.058 (0.4706)	0.0092 (0.5259)	5.958 (0.2985)
BANK (Dummy)	-0.228 (0.0014)	-0.151 (0.4538)	-0.162 (0.1064)	-0.019 (0.3031)	7.1194 (0.3254)

Macroeconomic and MFI performance

This study also explored that MFI's outreach increased significantly in the densely populated country where share of rural population are relatively larger but weak influence on profitability had been found. Therefore, the findings suggest that microcredit usually serves different segment of the population where formal financial services are not available or are not designed to include small borrowers. Moreover, it is evident from the result that MFI's borrowers and size grows generally in a less developed economy but it is not confirmed in case of profitability measures (operational sustainability, return on assets and return on equity) since no significant association have been found in case of GNI per capita and FDI. INDVA was a negative predictor of MF borrowers growth ($b = -0.01$; $p < .05$), since more share in industry might provide wage employment opportunities thereby reduces borrowers' intension to invest in micro enterprises. While strong positive association found with profitability in terms of OSS ($b = 0.0088$; $p < .0001$) indicating increased value addition in industry might enhance loan repayment, thereby increases operational self sufficiency. Foreign direct investment is a negative and significant predictor of MFI outreach in terms of both number of borrowers ($b = -0.075$; $p = .0002$) and loan size ($b = -0.068$; $p = .004$). Similar with this findings Ahlin ((2011) also found FDI as a negative predictor of MFI outreach. As with a stronger manufacturing sector, greater FDI inflows may raise wage employment, which could potentially limit MFI extensive growth. Findings also suggest that MFIs perform better in countries not heavily affected by high inflation rates.

Overall, the results seem to confirm hypothesis 2, that MFIs are reaching more clients in comparatively less developed economy and relatively stable & densely populated region in the host country. And are also reaching more clients where the formal banking sector is less developed. This is in line with the market failure argument put forward by theory: MFIs flourish where the formal banking sector and macro economy are less developed. But such situations were weakly associated with profitability. Therefore, it is expected that better macro economy and improved financial system could utilize resources more efficiently and thus leads to more returns on assets. Nawaz(2010) found that MFIs located in South Asia and Africa was tended to be inefficient. Many studies (Ashraf & Hassan, 2011)found Latin American MFIs tended to be more efficient in terms of profitability. It is may be due to the fact that economy in those country are more developed where microfinance are comparatively profitable but growth of outreach is generally found in less developed economy and densely populated region.

MFI's specific controls

Older MFIs perform better both in terms of outreach and profitability (Vanroose, 2009 added, the effect is decreasing with age and found significant negative second order effect). Larger MFIs also perform better both in terms of outreach and profitability.

Looking at legal status we see that the bank, non-bank financial intermediaries and rural bank perform better in terms of outreach. No significant impact was found on profitability. But previous studies found that NGOs have the highest outreach (Hartarska and Nadolnyak ,2007; Vanroose, 2009) while cooperatives and non-bank financial institutions have better profitability (Vanroose, 2009).

Finally, the study turned towards the regional dummies and found that MFI in MENA was performing better both in terms of outreach ($b = 1.1378$; $p < .001$ for GLP) and profitability ($b = 0.2547$; $p < 0.05$ for OSS). ECA and EAP also had shown better performance in terms of GLP instead of its' lower borrower growth. This result indicated the potentiality of MF services extensive growth in the ECA and EAP region and intensive growth in MENA.

6. Conclusion

This study analyzed the relationship between performance of microfinance institutions (MFIs) and the development of the macroeconomic environment as well as formal financial sector of the country in which the MFI is active. The study found that MFIs reached more clients and were more profitable where access to the formal financial system was low. This finding also comply with the market-failure hypothesis: MFIs

respond to a need that banks do not fulfill and flourish where the formal banking sector fails. However, indications of interdependencies between MFI-performance and formal financial sector development were also found. First, MFIs were less profitable where interest rates are higher reflecting the fact that MFIs depend upon the domestic banking system for additional funding. Secondly, MFIs were less profitable where inflation is high, suggesting that MFIs benefit from stability of the formal financial system. Overall, the results showed that the macro-economic environment is crucial to fully understand MFI-performance and that outreach and accordingly impact of MFIs are contingent on financial sector development.

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