

Assessing the overall performance of microfinance institutions

Chrysovalantis Gaganis*

Department of Economics, University of Crete, Greece

Abstract

In recent years, there has been a growing interest in microfinance institutions (MFIs). Some studies assess the financial condition of MFIs on the basis of individual criteria while a few others attempt to explain differences in profitability on the basis of firm-level attributes and country-level characteristics. However, there is no widely accepted measure for assessing the performance of MFIs. At the same time, these institutions face a challenge, as they have to provide financial services to the poor, and at the same time to cover their costs and grow. The present study employs a two stage analysis. In the first stage, I propose the use of the PROMETHEE II multicriteria method which is based on the outranking relations concept. This allows the evaluation of the overall performance of the MFIs using a set of, often conflicting, financial performance and social performance criteria. In the second stage of the analysis, I use regression analysis to explain differences in the overall performance of the MFIs on the basis of various country-specific characteristics such as macroeconomics, financial and institutional development. The results show that the size of the MFIs has a robust non-linear, inverted U-shaped impact on overall performance. Age and the status of non-governmental institution also appear to matter. As it concerns the country-level attributes, GDP growth has a robust positive impact on overall performance. Regional differences also appear to matter.

Keywords: Microfinance, Performance, PROMETHEE II

* Author for correspondence: c.gaganis@uoc.gr

1. Introduction

Microfinance institutions which specialize on the provision of financial services to low-income clients and micro-entrepreneurs have grown significantly in recent years. Lützenkirchen and Weistroffer (2012) highlight that MFIs had extended loans to more than 200 million clients by the end of 2010, whereas through various socio-economic ties of the borrowers and their families, microfinance has influenced the lives of around 1 billion people in emerging and developing countries. Another particular characteristic of the MFIs' borrowers is that they usually lack credit history and collateral which limits their access to financing from traditional commercial banks (Banerjee and Duflo, 2007). Therefore, it is not surprising that MFIs have attracted considerable attention by academics and policy makers, with recent studies focusing on a variety of topics like the impact of microfinance on poverty or child health outcomes (Imai et al., 2012; DeLoach and Lamanna, 2011), competition between microfinance non-governmental organizations (Ly and Mason, 2012), microfinance and female empowerment (Ngo and Wahhaj, 2012), the use of credit scoring models from MFIs (Blanco et al., 2013; Cubiles-De-La-Vega et al., 2013), the diversification benefits from adding microfinance funds to a portfolio of risky international assets (Galema et al., 2011), the drivers of buffer capital (Tchuigoua, 2016), and the determinants of governance quality (Tchuigoua, 2015).

The aim of the present study is twofold. The first aim is to provide an overall measure of the performance of MFIs. As discussed in Devinney et al. (2010), the performance of firms is of central interest to managers, researchers and policy makers; however, there is little convergence of opinion on how performance should be measured. To this end, Devinney et al. (2010) argue in favour of an overall measure of performance. This becomes even more crucial in the case of MFIs, due to the double challenge that they face. More detailed, MFIs not only have to provide financial services to the poor (*outreach*), but they also have to cover their costs to avoid bankruptcy (*sustainability*). Furthermore, as mentioned in von Stauffenberg et al. (2003) all performance indicators tend to be of limited value when examined in isolation and this is particularly the case for the profitability indicators of MFIs. They also highlight that to understand how an institution achieves its profits the analysis must also take into account other indicators that influence the operational performance of the institution, such as operational efficiency and portfolio quality. Finally, the profitability analysis is further complicated by the fact that a significant number of MFIs receive grants and subsidized loans.

Therefore, ideally various dimensions should be taken simultaneously into account in the assessment of their performance. Nonetheless, as discussed in Weber and Luzzi (2007) very few attempts have been made to aggregate the numerous indicators of MFI's performance into a single measure and most of the studies simply compare the financial condition of MFIs on the basis of univariate tests of individual ratios such as the return on assets (e.g. Bi and Pandey, 2011; Agarwal and Sinha, 2010). Zeller et al. (2003) propose the construction of an overall measure; however, their suggestions are limited to the assignment of arbitrary weights to the indicators or the derivation of weights through principal components analysis (e.g. Weber and Luzzi, 2007). A few recent papers also estimate the efficiency and/or productivity of MFIs using frontier techniques (e.g. Servin et al., 2012; Wijesiri et al., 2015; Wijesiri and Meoli, 2015), which provide an overall score. However, the majority of these studies tend to measure how efficient the MFIs are in transforming inputs (e.g. number of credit officers, total assets) to outputs (e.g. financial revenue), while ignoring other aspects like portfolio risk and capital strength.¹ In this paper, I follow a different approach, and I propose the use of the PROMETHEE II multicriteria method that summarizes both the financial and social performance of MFIs in a single score of relative performance on the basis of pairwise comparisons across a set of often conflicting criteria.²

The second aim of the present study is to explain differences in the overall performance indicator, obtained from the PROMETHEE II method, on the basis of firm-specific and country-specific attributes. The investigation of the determinants of performance has attracted the interest of researchers from the fields of international business, strategic management, and finance (e.g. McGahan and Porter, 2002; Joh, 2003; Short et al., 2007; McGahan and Victor, 2010). However, MFIs are considerably under-research compared to non-financial firms and traditional banking institutions. The few existing studies examine the impact of firm-level attributes such as corporate governance and legal status (Hartarska, 2005; Mersland and Strøm, 2009; Tchakoute-Tchuigoua, 2010) or country-level characteristics such as regulations, macroeconomics, and institutional development (Cull et al., 2011; Ahlin et al., 2011) on single indicators of the profitability and growth of MFIs.

The sample consists of 2,044 MFIs operating in 115 developing countries over the period 2000-2014, an unbalanced panel of 9,447 firm-year observations. The results can be summarized as follows: (i) size and age appear to have a non-linear impact on overall

¹ Some of these studies account for the social dimension of MFIs by taking as output the number of women borrowers or the average balance of the loan (e.g. Gutierrez-Nieto et al., 2009).

² This method has been used in the past to assess the performance of investment, cooperative, and commercial banks (Doumpos and Zopounidis, 2010). To my knowledge, this is the first application on MFIs.

performance, (ii) non-governmental organizations have higher performance than other types of MFIs, (iii) GDP growth has a positive influence on overall performance, (iv) regional differences have an impact on the overall performance of MFIs.

The rest of the paper is as follows. Section 2 discusses the data and the methodological framework. Section 3 presents the results. Section 4 concludes.

2. Methodology and Data

2.1. PROMETHEE

The PROMETHEE method (Preference Ranking Organization METHod for Enrichment Evaluations), developed by Brans (1982), is one of the most efficient and simplest Multi-Criteria Decision Aid (MCDA) methods. It belongs to the family of outranking relations (Roy, 1996), and it may be used to rank a finite set of alternatives from the best to the worst. In 1985 Brans and Vincke, proposed the PROMETHEE II method, which is the one used in the present study. In the first step a preference model (net flow) is being constructed, as shown below:

$$\Phi(\mathbf{x}_i) = \frac{1}{m-1} \sum_{j=1}^m \left[\sum_{k=1}^n w_k (\pi_k(x_{ik}, x_{jk}) - \pi_k(x_{jk}, x_{ik})) \right] \quad (1)$$

where $\mathbf{x}_i = (x_{i1}, \dots, x_{im})$ and $\mathbf{x}_j = (x_{j1}, \dots, x_{jn})$ are the data for the MFIs i and j over n evaluation criteria, $\pi_k(x_{ik}, x_{jk})$ is the partial preference index indicating the strength of the preference for MFI i over MFI j on criterion k , and m is the number of observations in the sample.

Brans and Vincke (1985) proposed six types of piecewise linear forms of preference functions to facilitate the selection of a model: the usual criterion; the quasi-criterion; the criterion with linear preference; the level criterion; the criterion with linear preference and indifference area; and the Gaussian criterion. In this study I rely on the Gaussian function to define all partial preference indices. Brans et al. (1986) mentioned that the Gaussian criterion has no discontinuities and it contributes to the stability of the results.

$$\pi_k(x_{ik}, x_{jk}) = \begin{cases} 1 - \exp \left[-\frac{1}{2\gamma_k^2} (x_{ik} - x_{jk})^2 \right] & \text{if } x_{ik} \geq x_{jk} \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

where $\gamma_k > 0$ is a user-defined constant

The PROMETHEE II method requires information on the weights of the criteria. Finding the appropriate weights, that are measures of the relative importance of one of six criteria for the MFIs, can be a very difficult and complex problem for the decision maker. Therefore, in this study the weights are determined using a simulation approach that is based on a set of 10,000 scenarios.³ To evaluate the MFIs under each weighting scenario I use a set of parameters such that $\gamma_k = 0.5\sigma_k$ ($k = 1, \dots, n$), where σ_k is the standard semi-deviation of the pairwise differences $x_{ik} - x_{jk}$ on criterion k . The net flow in (1) takes values between -1 and 1. If $\Phi_{xi} \approx -1$, then MFI i is almost strictly outperformed by all other MFIs. If $\Phi_{xi} \approx 1$, then MFI i is almost strictly preferred over all MFIs in the sample.

For the construction of the overall performance indicator with the use of PROMETHEE II, I use four financial ratios and two social performance criteria, taken from the MIX database. The first criterion is the return on asset, which reveals how well the MFIs use their assets. It is calculated as net operating income (less tax) over average assets. ROA has been one of the favoured indicators of profitability used not only in studies on non-financial firms and banking institutions, but also on the ones on MFIs (e.g. Cull et al., 2011). The second criterion is the total expense to assets ratio. This is calculated as the ratio of the summation of financial expenses and impairment losses and operating expenses over average assets. Therefore, higher figures indicate a less efficient cost management. The third ratio is the total equity to total assets ratio, used as a measure of capital strength (e.g. Hartarska and Nadolnyak, 2007). This is of particular interest to lenders, who prefer higher values as they reveal a greater long-term financial safety in terms of the safety cushion (in the form of equity) to absorb losses. The fourth criterion is the ratio of the portfolio at risk higher than 30 days. This indicator reveals the value of all loans outstanding that have one or more instalments of principal past due more than 30 days as a percentage of the gross loan portfolio.⁴

The next two criteria, relate to the social results of the MFIs, and more precisely their outreach to women and small-scale borrowers (see e.g. Gutierrez-Nieto et al., 2009; Cull et al., 2011; Hermes et al., 2011). The first is captured with the percentage of female borrowers. Higher values for this indicator indicate more depth of outreach, since lending to women is

³ Determining the weights with simulation methods is very popular in the MCDA field (Lahdelma et al., 1998; Lahdelma and Salminen, 2001; Tervonen and Figueira, 2008). Tervonen and Lahdelma (2007) suggest that such a large number of scenarios is sufficient to achieve robust results.

⁴ The portfolio at risk includes the entire unpaid principal balance, including both the past due and future instalments, but not accrued interest. It also includes loans that have been restructured or rescheduled.

associated with credit assistance channelled to a specific group. The second social indicator relates to clients' poverty level. It is measured by the average loan balance per borrower / GNI per capita. From a social perspective lower figures per borrower are desirable since microfinance projects are expected to reach poor clients.⁵ For example, a technical guide of CGAP, by Rosenberg (2009), mentions that an average outstanding loan balance below 20 percent of per capita GNI can be seen as a rough indication that clients are very poor.

2.2 Second Stage regressions

In the second part of the analysis, I examine the firm- and country-level attributes that shape the MFIs' overall performance, by estimating the following regression:

$$PROMSC_{ijt} = \alpha + \beta X_{ijt} + \gamma Z_{jt} + \epsilon_{ijt} \quad (3)$$

Where $PROMSC_{ijt}$ is the overall performance score obtained by PROMETHEE II for MFI i that operates in country j in year t ; X_{ijt} is a vector of MFI-level variables (e.g. size, age, type); Z_{jt} is a vector of country-level variables that capture the macroeconomic, institutional and other country conditions common to all banks in country j in year t ; ϵ_{ijt} is the error term. I estimate a random effects model with robust standard errors clustered at the bank level.⁶ The variables are defined in Appendix I, and they are also discussed below.

Hartarska and Nadolnyak (2007) find that age and size affect MFI's outreach, whereas Hermes et al. (2011) report that older MFIs are less efficient. Therefore, to examine the impact of MFI size I use the natural logarithm of total assets (LNAS). I also use the squared term of LNAS to account for potential non-linear effects. To control for the impact of MFIs' age I include dummy variables for new MFIs (1-4 years) and young MFIs (5-8 years), with mature ones (more than 8 years) being the omitted category. To capture the impact of MFI's focus on lending I use the ratio of gross loans to total assets (Hartarska and Nadolnyak, 2007).

⁵ As discussed in Rosenberg (2009) the key assumption is that the average loan balance is roughly related to client poverty, because better-off clients are not expected to be interested in very small loans. Yet, it should also be acknowledged that the correlation between loan balances and poverty is far from perfect because low loan sizes do not always guarantee a poor clientele (Rosenberg, 2009). Despite this shortcoming, this indicator is frequently used to measure the social performance of MFIs (Gutierrez-Nieto et al., 2009; Tchakoute-Tchuigoua, 2010; Hermes et al., 2011).

⁶ The estimation of a fixed-effects model is not possible given that some of the variables of interest (e.g. the type of MFI) are time invariant. The Breusch and Pagan Lagrangian multiplier test reveals that the random effects model is more appropriate than a pooled OLS model (Prob > chibar2 = 0.000).

Mersland (2009) provides a theoretical framework that explains the cost of different type of ownership (cooperative, non-profit organizations, shareholder firms) in microfinance organizations. Cull et al. (2011) also argue that MFIs with NGO/NBFI charters tend to have objectives and funding arrangements that differ from those of more commercially-oriented MFIs (such as banks or credit unions). Empirical studies reveal similarities and differences among different types of institutions. For example, Tchakoute-Tchuigoua (2010) concludes that (i) there are no significant differences in profitability between NGOs and private microfinance companies, (ii) private microfinance companies are more sustainable than NGOs, (iii) the risk in the credit portfolio for private companies is lower than with NGOs, (iv) cooperatives are more efficient than private companies and NGOs, (v) there is no difference in efficiency between the NGOs and private companies, (vi) for profit MFIs are more socially efficient than not-for-profit MFIs. To account for these differences, I include two set of dummy variables. Following the classification of MIX, I distinguish between the different types of legal status, those being Bank, Credit union/cooperative, Non-bank financial institution (NBFI), Non-Governmental organization (NGO), Rural bank, Other (omitted group).⁷ Additionally, I include a dummy variable that distinguishes between profit and non-profit institutions.

Hartarska and Nadolnyak (2007) and Cull et al. (2011) discuss various reasons as for why regulations could influence performance. The empirical findings of Hartarska and Nadolnyak (2007) show that regulatory involvement does not directly affect the performance of MFIs either in terms of operational self-sustainability or outreach. However, Cull et al. (2011) conclude that profit-oriented microfinance institutions respond to supervision by maintaining profit rates but curtailing outreach to women and customers that are costly to reach. To account for the impact of regulations, I introduce a dummy variable that takes the value of one for regulated MFIs and zero otherwise.

⁷ MIX defines a “bank” as “A licensed financial intermediary regulated by a state banking supervisory agency. It may provide any of a number of financial services, including: deposit taking, lending, payment services, and money transfers”. A “rural bank” is defined as “Banking institution that targets clients who live and work in non-urban areas and who are generally involved in agricultural-related activities”. The “NBFI” is defined as “An institution that provides similar services to those of a Bank, but is licensed under a separate category. The separate license may be due to lower capital requirements, to limitations on financial service offerings, or to supervision under a different state agency. In some countries this corresponds to a special category created for microfinance institutions”. In the case of “NGO”, MIX mentions that it is “An organization registered as a non profit for tax purposes or some other legal charter. Its financial services are usually more restricted, usually not including deposit taking. These institutions are typically not regulated by a banking supervisory agency.” A credit union/cooperative is defined as “A non profit, member-based financial intermediary. It may offer a range of financial services, including lending and deposit taking, for the benefit of its members. While not regulated by a state banking supervisory agency, it may come under the supervision of regional or national cooperative council”

Ahlin et al. (2011) conclude that the country context is an important driver of MFI performance. Therefore, to examine the impact of environment factors I consider various country characteristics that account for: (i) economic freedom, (ii) political risk, and (iii) macroeconomic conditions, and (iv) other market conditions.

To account for economic freedom, I use the corresponding index of Heritage Foundation. This index considers freedom in: Business, Trade, Fiscal, Government size, Monetary, Investment, Financial, Property rights, Corruption, Labor, protection of property rights, and government size (expenditures % GDP). It takes values between 0 and 100 with higher values indicating higher economic freedom.

I also control for political risk, using an indicator from the International Country Risk Guide (ICRG). This indicator provides an assessment of the countries along the following attributes: government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability, bureaucracy quality. This indicator takes values from 0 to 100 with higher values, indicating lower political risk.

Finally, I control for other country and market conditions as in Ahlin et al. (2011). Macroeconomic conditions are captured with GDP growth and inflation rate. International inflows are captured with the ratio of foreign direct investment inflows to GDP. Banking and Financial services development is captured with the domestic credit provide by financial services to GDP. To examine the impact of social development I include in the analysis the Gini index, which is a measure of income inequality. Finally, to capture unobserved characteristics that are common within regions, all the specifications include regional dummy variables.⁸

2.3. Dataset

The sample consists of 2,044 MFIs operating in 115 developing countries over the period 2000-2014. Not all MFIs are covered over the entire period resulting in an unbalanced panel of 9,447 yearly observations. Data for MFIs are collected from the MIX market database. Country-level data are obtained from the Heritage Foundation, the World Bank Development Indicators database, and the ICRG.

⁸ I follow the classification of MIX and I include dummies for: (i) Africa, (ii) East Asia and the Pacific, (iii) Eastern Europe and Central Asia (iv) Latin America and The Caribbean, and (v) Middle East and North Africa, with South Asia being the omitted region.

3. Results

3.1. Base results

Table 1 presents descriptive statistics of the variables, and Table 2 shows the correlation coefficients. In both cases, Panel B presents information for firm-level attributes, and Panel C shows information for country-level characteristics.⁹

[Insert Tables 1 and 2 Around Here]

Table 3 presents the average value for the six criteria used in the development of the overall performance indicator among various percentiles of the PROMSC. As expected, PROMSC increases with an increase in ROA, EQAS and FEMBOR, whereas the opposite happens in the case of TEAS, PORISK and LOAGNI. This is confirmed by the correlation coefficients presented in the last row. In general, we observe that there are important differences in the values of firms falling in the lowest and highest percentile.

[Insert Table 3 Around Here]

Table 4 provides a helicopter tour of the overall performance scores obtained by PROMETHEE II while distinguishing between different groups of banks and regions. A comparison of the mean scores by group reveals that: (i) profit-oriented MFIs (PROFST) outperform the non-for-profit ones (NOPROFST), (ii) non-regulated MFIs (NOREGUL) outperform the regulated ones (NOREGUL), (iii) NGOs, followed by “Other” MFIs outperform the rest of the groups, (iv) MFIs operating in Middle East and North Africa (MIDEASTNA), followed by the ones from South Asia (SOUTHAS), outperform MFIs from others regions. The Kruskal-Wallis test of mean differences, presented in the last column of Table 4, reveals that there are statistically significant differences among these groups.

[Insert Table 4 Around Here]

Table 5 presents the first regressions results. To make full use of the sample, and avoid any concerns due to potential correlations (e.g. REGUL and NGO = -0.477; PROFSTAT and NGO = 0.607), I start with a basic model that includes only size, lending activity, and the

⁹ Panel A in Table 1 presents descriptive statistics for the six criteria used in the estimation of the PROMETHEE score. All the criteria were capped at the 1st and 99th percentile.

regional dummies. These results are presented in column 1 of Table 5. Then, I include one by one the various variables discussed in section 2.2. The model with all the firm-specific variables is presented in column 6.

LNTA enters the regressions with a positive and statistically significant coefficient, whereas LNTASQ has the opposite effect. Thus, there appear to be non-linear effects. Size has initially a positive impact, up to a certain point, after which its influence becomes negative. This reveals an inverted U-shaped impact. There is some evidence that higher lending activity results in lower overall performance, which could be explained by the fact that these banks will take higher credit risk. However, the significance of LOANS disappears when all the variables are included in the specification. While there is no difference between new MFIs (age up to 4 years) and mature ones (over 8 years), the results in columns 2 and 6 indicate that young MFIs (age between 5 and 8 years) perform better than the mature ones. One potential explanation, discussed in Hermes et al. (2011) is that older institutions have had to learn how to cope with microfinance practices by trial and error, whereas more recently established institutions may profit from the knowledge with respect to microfinance practices that has been built-up during the past few decades. REGUL enters with a negative coefficient and PROFITST with a positive one, both being significant in columns 3 and 4, respectively. However, their impact is no longer significant when we control for other MFI-level attributes in column 6. Therefore, I cannot conclude that there is a robust significant relationship between regulations and performance, a finding that is consistent with Cull et al. (2011) and Hartarska and Nadolnyak (2007). Finally, while in general there appear to be no difference between the various types of MFIs and the omitted category, NGOs enter with a positive and statistically significant coefficient, indicating that they experience higher overall performance.

[Insert Table 5 Around Here]

Table 6 presents the results when I include the country-level variables in the regressions. Again, I include them in the regressions one by one, while retaining all the variables of column 6 in Table 5. Only GDP growth and POLRISK appear to have a significant impact on performance in columns 1 to 6, this being positive in both cases. Therefore, GDP growth and lower political risk exercise a positive influence on the overall performance of MFIs. However, the impact of political risk disappears when we include both POLRISK and GDPGR in the regression equation in column 8. The insignificance of the country-level

factors could be due to the inclusion of the regional dummies in the regressions. The results in both Tables 5 and 6 indicate that these variables capture various regional characteristics that have a robust impact on overall performance. The only regional dummy that does not have a significant impact is the one of Middle East and North Africa, indicating that there are no differences with South Asia that is the omitted category. The MFIs in all the other regions, experience a lower overall performance as it is evident by the negative and statistically significant coefficient.

[Insert Table 6 Around Here]

3.2. Further results

In this section, I attempt to investigate further the impact of economic freedom and political risk by disaggregating the overall scores into their components.¹⁰ Following the categorization of Heritage Foundation, I first consider four broad categories (i.e. pillars), those being: (i) rule of law (average of property rights and freedom from corruption), (ii) limited government (average of fiscal freedom and government spending), (iii) regulatory efficiency (average of business freedom, labor freedom, and monetary freedom), (iv) open markets (average of trade freedom, investment freedom, and financial freedom). The results in Table 7 show that the limited government sub-index has a positive impact on MFIs' performance, whereas the open markets sub-index has a negative impact on MFIs' performance. Then, I disaggregate these sub-indices further and I consider one by one all the individual indicators. The results in Table 8 reveal that property rights freedom and government spending enter with a positive and statistically significant coefficient, whereas the opposite happens in the case of trade freedom. Thus, these individual components appear to be the ones driving the earlier finding about the sub-indices.

[Insert Tables 7 and 8 Around Here]

Similarly, I disaggregate the index of political risk. The results are presented in Table 9. As above, the results are conflicting, justifying the insignificant impact of the overall indicator. More detailed the negative sign of socioeconomic conditions, investment profile, and religious tensions reveals that lower political risk (i.e. higher score) along these

dimensions results in lower overall performance of MFIs. In contrast, the positive sign of the coefficient of external conflicts, democratic accountability, and bureaucratic quality, indicates that lower political risk along these dimensions improves the MFIs' performance.

[Insert Table 9 Around Here]

4. Conclusions

Microfinance institutions provide financial services to low-income customers or customers belonging in certain groups (e.g. women) who are usually in need of relatively small amounts to finance their businesses, manage emergencies, etc. Within this context, a common argument is that MFIs may enhance economic growth, and decrease poverty alleviation. Consequently, their performance is of interest to various stakeholders, including policy makers and donors who fund the MFIs. However, there is no widely accepted measure for assessing the performance of MFIs. At the same time, MFIs are often judged not only across a wide set of financial criteria but also on the basis of their social performance. Using individual criteria to assess these types of performance can easily lead to conflicting conclusions.

The aim of the present study was twofold. First, to develop an overall performance indicator that takes simultaneously into account a set of financial and social indicators. This could be of use to managers, policy makers, and donors that would like to compare the MFIs over a set of criteria. Second, the present study attempts to investigate the driving factors of this overall performance. To accomplish these tasks I use a large heterogenous group of over 2,000 MFIs operating in more than 100 countries. This allows me to compare different types of institutions (e.g., banks, rural banks, non-bank financial institutions, etc.), regulated and un-regulated institutions, profits and non-profit MFIs, etc. Also, this cross-country setting allows me to consider various country-specific attributes, like macroeconomic conditions, business conditions, etc.

The results show that the size of the MFIs has a non-linear impact on overall performance. This is inverted U-shaped, meaning that size has initially a positive influence on performance; however, there is a turning point after which the impact of size becomes negative. Young MFIs appear to outperform the mature ones, although there is no difference between new MFIs and mature ones. Finally, non-governmental institutions also appear to perform better. Turning to the country-specific characteristics, only GDP growth has a robust positive impact on overall performance. Other characteristics, like inflation, political risk,

economic freedom, foreign direct investment flows, and financial development, do not appear to matter. However, when I disaggregate the indicators of political risk and economic freedom to their components, I observe that some of them have a statistically significant impact on performance. Additionally, the significant impact of regional dummies reveals that there are unobserved country-level characteristics that play a role in shaping overall performance. This could be an avenue for future research.

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Table 1 –Descriptive statistics

	Obs.	Mean	St. Dev.	Min.	Max.
Panel A: Criteria used in PROMETHEE II					
ROA	9,447	0.784	10.536	-55.384	22.323
TEAS	9,447	25.883	16.091	4.217	96.829
EQAS	9,447	34.412	26.502	-15.628	99.629
PORISK	9,447	6.173	8.930	0.000	53.648
FEMBOR	9,447	65.164	26.663	5.684	100.000
LOAGNI	9,447	59.702	89.906	1.920	588.902
Panel B: Firm level variables used in regressions					
PROMSC	9,447	0.000	0.161	-0,881	0,454
LNTA	9,447	15.587	1.986	2.944	23.992
LNTASQ	9,447	246.906	61.965	8.670	575.635
GRLOANT	9,447	0.808	2.144	0.004	126.816
NEWAGE	9,352	0.125	0.331	0.000	1.000
YOUNGAGE	9,352	0.211	0.408	0.000	1.000
CREDCOOP	9,399	0.146	0.353	0.000	1.000
RURAL	9,399	0.346	0.183	0.000	1.000
NGO	9,399	0.377	0.485	0.000	1.000
NBFI	9,399	0.342	0.474	0.000	1.000
MBANK	9,399	0.881	0.283	0.000	1.000
REGUL	9,300	0.645	0.478	0.000	1.000
PROFST	9,198	0.601	0.490	0.000	1.000
Panel C: Country level variables used in regressions					
EASTEUR	9,447	0.190	0.392	0.000	1.000
AFR	9,447	0.159	0.366	0.000	1.000
EASTAS	9,477	0.100	0.300	0.000	1.000
MIDEASTNA	9,477	0.047	0.212	0.000	1.000
LATAM	9,477	0.311	0.463	0.000	1.000
GDPGR	9,280	5.333	3.786	-46.082	34.500
INFL	8,612	6.842	5.261	-10.067	96.094
DOMCRFIN	5,887	43.610	23.215	-16.378	192.660
FORINV	9,260	3.777	4.437	-3.751	84.945
GINI	4,193	43.517	9.080	16.230	64.790
POLRISK	7,859	60.574	7.387	33.208	81.750
ECONFR	9,094	57.078	6.195	22.100	79.000

Notes: Variables are defined in Appendix I