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Research Article

What Determines Premium of MFIs in the Mena Region? A Panel Data Analysis (2004-2014)

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Abstract

This is the first paper to address the premium-social performance relationship upon an unbalanced panel of 66 microfinance institutions (MFIs) in the MENA region over 2004-2014. According to a fixed effects model using instrumental variables, financial sustainability is the primary determinant of premium (i.e. the financial margin), whereupon social performance has a positive albeit insignificant impact. Mature MFIs maintain financial sustainability and serve rather non-poor clients, although they tame interest rates.

Keywords

Financial margin; Interest rates; MENA region; Microfinance institutions; Social performance; JEL; C13; C33; D23; G21; I3

Introduction

Microfinance institutions (hereafter MFIs) provide financing alternative to bank credit and usury informal loans, charging interest rates that stand between the bank base rate and the usury rate. Labie et al. [1] points out that MFIs rates help achieving a financial margin sufficient to cover all transaction costs, whereas Yunus and Weber [2] claim that these rates are unethical and unaffordable for poor clients.

It is worth focusing upon the MENA region, Being both the narrowest market as regards worldwide microfinance industry and an infant one experiencing the fastest growth [3]. The median lending interest rates of MFIs vary between 29% and 36% over 2004-2014; they decline until 2009 and eventually stabilize until 2014. Median borrowing interest rates rise from 2% to 4.69% over 2004-2014. The increase in borrowing rates does not explain the decline in lending rates until 2007. From 2010, both rates follow the same linear trend, although their trend varies from one country to another [4].

Our question is twofold: what are the determinants of the financial margin of MFIs in the MENA region? What is the impact of social performance thereupon?

The rest of the paper is as follows: Section two is devoted to materials (sample and description of the variables) and the econometric panel data model using instrumental (lagged) variables. Section three presents the results of the model, without and including

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social variables, estimates of the determinants of the financial margin. Section four checks the robustness of the results and points out some limitations.

Materials and Methodology

The sample

We selected from the Microfinance Information Exchange (MIX) database an unbalanced panel of 66 MFIs in nine MENA countries over an eleven-year period (2004-2014): Egypt (13), Jordan (8), Morocco (10), Tunisia (1), Yemen (7), Lebanon (5), Palestine (8), Syria (3) and Iraq (11). As of 2010, the average or median age of MFIs increases from 10 to 17 years, while the number of MFIs declines from 60 to 23: young MFIs are crowded out of the sample, whereas mature ones are prominent.

The determinants of *Premium*

Premium (the financial margin) is the difference between the loan revenue and the cost of funds, i.e. the lending interest rate minus the borrowing rate. The lending rate strongly determines the financial margin and both variables follow the same trend.

Internal determinants of the financial margin are operating expenses, loan loss provisions and net profit, which we measure by the productivity of personnel (*PP*) and cost per borrower (*CB*), the portfolio at risk 30 days (*PAR*) and adjusted return on assets (*AROA*). The financial margin is positively correlated with *PP* and *AROA* and negatively with *PAR* and *CB*; whereas the correlation between *AROA* and *Premium* is not significant.

Three external factors affect the financial margin. First, competition (*Competition*) among MFIs we measure with the market power of the first MFI in each country. MFIs in some MENA countries experience a monopoly (Tunisia) or a duopoly (Syria), while the share of the first two MFIs in other MENA countries proves substantial [4]. Second, regulation (*Regulation*): we consider as regulated those MFIs that are subject to regulations tailored for microfinance, including restrictions upon the maximum lending rates and deposit collection, which may affect their performance [5]. Last, inflation (*Inflation*): with high inflation, real lending interest rates may prove negative: MFIs must choose between negative real interest rates, which damage their loan portfolio, or raising nominal rates that will cover inflation but lessen the demand from the poor.

Social performance has an impact on the financial margin [4]. It is measured with two proxies: depth of outreach (*Depth*), and the percentage of women borrowers (*WB*). *Depth* is a dummy variable that identifies the target clientele by an MFI. It is equal to 1 if the average loan amount per borrower (*AL*) based on gross national income (*GNI*) *per capita* is below the poverty line ($ 2 a day *per capita*): hence, the MFI targets poor customers. If *ALGNI* stands above the poverty line, the MFI targets non-poor customers. *WB* is a proxy for the impact assessment of microcredit, in as much as the role of MFIs is to improve the economic and social situation of poor clients and especially women. Two other social variables contribute to a better social performance of MFIs: solidarity loan (*Group*) and the rural areas (*Rural*) wherein MFIs operate.

Depth of outreach: a "V" trend

According to Figure 1, the average lending rate and premium remain almost constant over 2004-2014, albeit experiencing a dip in 2007. The "V" trend in depth of outreach (*Depth*) suggests that MFIs in the MENA region are targeting non-poor clients throughout 2004-2011 and address some poor customers over 2012-2014; in 2014 depth of outreach is almost nil. MFIs remain profitable until 2012, when *AROA* declines throughout 2014 towards zero and MFIs experience a deficit in this last sub-period, suggesting they face a trade-off between financial performance and social performance.

The econometric model

We design an econometric panel data model wherein which the financial margin is the dependent variable, while social performance is an independent variable measured by a set of variables: depth of outreach (*Depth*), women borrowers (*WB*), loan methodology (*Group*) and operating areas (*Rural*). We capture the internal and external determinants of the financial margin. Other factors affecting the interest rate are used as control variables: the characteristics of MFIs include age (*Age* and *Age2*), deposit collection (*Deposits*) and subsidies received (*Subsidies*), as well as the macroeconomic environment (*GNI per capita*) of the countries.

The econometric model is designed as follows:

$$Premium_{it} = \zeta_{it}\ social\ performance\ variables_{it} + \eta_{it}\ internal\ factors_{it} + \theta_{it} external\ factors_{it} + \alpha_{it} control\ variables_{it} + \mu_{it}$$

Where *Premium*$_{it}$ is the financial margin of the ith MFI at date t and μ_{it} is the error term of the ith MFI at date t.

To overcome endogeneity issues, we instrumented explanatory variables *AROA* and *CB* with their lagged variables up to two periods: $AROA_{t-1}$, $AROA_{t-2}$, CB_{t-1} and CB_{t-2}. The Sargan test validated the instrumental variables (IV) but it resulted in a big loss from 422 to 260 observations. The Hausman test standing below five per cent allowed to select the most effective estimation method for IV: double least squares with fixed effects (FE2SLS) for Models 3-7, and double least squares with random effects (EC2SLS) for Model 8 [6]. Table 1 records our estimates.

Model 1 without social variables

The results from Model 1, wherein social variables are not included, show that internal factors have a significant impact on the financial margin.

AROA has a positive and very significant influence (p-value<0.01); the more MFIs look for financial sustainability, the more they increase interest rates. It is in line with Rosenberg et al. [7] and Basharat et al. [8], whereas it contradicts Cull et al. [9], Cotler and Almazan [10] and Dorfleitner et al. [11], who find the lending rate mainly depends on operating expenses. Although the effect of cost per borrower (*CB*) upon the financial margin is negative, it proves very low and insignificant.

PAR has a negative and very significant impact (p-value<0.01). The loan portfolio that is not backed by guarantees is a major source of risk; the more it is affected by payment delays over 30 days, the less loans are likely to be reimbursed. This runs opposite to Cuellar-Fernandez et al. [12], Dorfleitner et al. [11] and Bosire et al. [13] arguing that poor quality of the loan portfolio affects positively the interest rate.
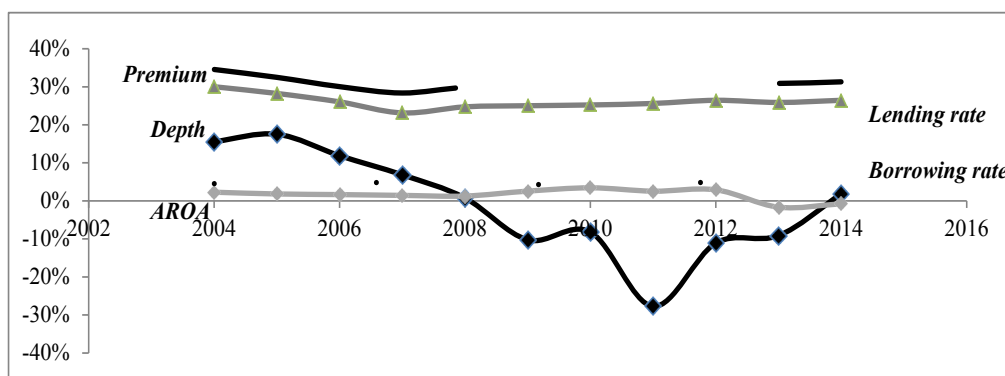
The productivity of personnel (*PP*) has a negative and significant effect (p-value < 0.5), which is consistent with Liang et al. [14] but contradicts Adair and Berguiga [4].

Competition has a positive and very significant impact (p-value<0.01). The larger is the market power of the prominent MFI, the weaker is competition and the more MFIs can increase interest rates.

Inflation has a positive and significant effect (p-value<0.5), in line with Adair and Berguiga [4]. MFIs increase their nominal interest rates to prevent the deterioration of their real loan portfolio.

Age and *Age2* generate a very significant impact (p-value<0.01) on the financial margin, upon which they stand as the second main determinant. The positive relationship may be due to the balance of social performance and short-term financial performance [15]. In line with Mersland and Strøm [16], Dorfleitner et al. [11], Roberts [17] and Cuellar-Fernandez et al. [12], the negative quadratic relationship (non-linear inverted "U") suggests that MFIs increase their interest rates on the short-run, which they may lessen on the long-run: the more MFIs mature, the better they upgrade efficiency and tame their lending rates [18].

Deposits have a positive and significant effect (p-value<0.5). The more MFIs collect deposits, the more they will pay financial charges to their customers. Hence, MFIs should increase their lending rates

Figure 1: The trend of lending and borrowing rates, Premium, AROA and Depth.

Table 1: Estimates of the financial margin (*Premium*) models.

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	Full	Full	NGOs	Unregulated	Urban	Poor	2010-2014	Individual loan
Variables	FE2SLS	FE2SLS	FE2SLS	FE2SLS	FE2SLS	FE2SLS	FE2SLS	EC2SLS
AROA	0.9642***	0.9759***	0.8861***	0.8426***	0.7977***	0.5750***	0.9205**	0.0475
	(4.6555)	(4.7193)	(3.8560)	(4.4844)	(5.3530)	(3.5904)	(2.0861)	(0.5082)
CB	-0.0001	-0.0001	-0.0001	0.0009	-0.0007	-0.0005	0.0013**	0.0001
	(-0.3363)	(-0.2220)	(-0.3111)	(1.2366)	(-0.8750)	(-0.6048)	(2.2048)	(1.5148)
PAR	-0.0134***	-0.0138***	-0.0135***	0.3477***	0.2748**	0.2842**	0.4966*	-0.0007
	(-2.6592)	(-2.7247)	(-3.3386)	(2.8514)	(2.0884)	(2.5162)	(1.7724)	(-1.0073)
PP	-0.0005**	-0.0005**	-0.0006**	-0.0001	-0.0005	-0.0003	0.0001	-0.0001
	(-2.0331)	(-2.0878)	(-2.4926)	(-0.4832)	(-1.4099)	(-1.2570)	(0.3950)	(-0.5310)
Depth		0.0437	0.0363	0.0801	0.0488		0.0100	0.0887***
		(1.5795)	(1.5469)	(1.0856)	(1.2461)		(0.2770)	(4.0648)
WB		0.0601	0.0062	-0.0616	0.0711	-0.0046	0.0590	0.0159
		(1.0077)	(0.1051)	(-0.6389)	(0.8602)	(-0.0604)	(0.4801)	(0.4312)
Group		-0.0048	-0.0096	-0.0460*	-0.0011	0.0006	0.0320	
		(-0.2717)	(-0.5907)	(-1.8382)	(-0.0417)	(0.0361)	(0.9232)	
Rural		0.0105	0.0080	-0.0364		0.0137	0.0538*	-0.0350**
		(0.6914)	(0.5718)	(-1.1860)		(0.9087)	(1.7573)	(-2.1262)
Regu	-0.0074	-0.0141	-0.0004		-0.0230	-0.0216	-0.2100	-0.0535***
	(-0.2748)	(-0.4939)	(-0.0172)		(-0.4179)	(-0.7734)	(-1.4229)	(-2.8615)
Comp	0.0023***	0.0023***	0.0012*	0.0025	0.0054**	0.0230	-0.0119	0.0018***
	(3.1884)	(3.1573)	(1.8140)	(1.2547)	(2.0239)	(0.2353)	(-0.2032)	(2.6467)
Inflation	0.3651**	0.3835**	0.1576	0.3493**	0.3691**	0.2579*	0.4340	-0.2007
	(2.3169)	(2.4227)	(1.3372)	(2.1196)	(2.4342)	(1.7722)	(0.7338)	(-1.5846)
Age	0.0337***	0.0332***	0.0240***	0.0344***	0.0320**	0.0274***	0.0458**	0.0041
	(5.0466)	(4.9899)	(4.1759)	(3.0910)	(2.4185)	(3.7800)	(2.5503)	(0.6385)
Age2	-0.0008***	-0.0008***	-0.0007***	-0.0010***	-0.0007**	-0.0008***	-0.0013**	-0.0003
	(-4.9965)	(-4.8364)	(-5.3717)	(-5.5152)	(-2.0074)	(-5.7910)	(-2.3650)	(-1.2959)
Subsidies	-0.0019	-0.0013	-0.0007	-0.0039	-0.0002	-0.0003	0.0094	-0.0016
	(-0.5739)	(-0.4014)	(-0.2620)	(-1.2097)	(-0.0647)	(-0.0962)	(0.2342)	(-0.1328)
Deposits	0.0606**	0.0533**	0.0462**	0.0361	0.0673	0.0439*	-0.0635	0.0028
	(2.5330)	(2.1695)	(2.0969)	(1.3331)	(1.2556)	(1.9289)	(-1.0904)	(0.1134)
GNI	-0.0000***	-0.0000***	-0.0000	-0.0000	-0.0001**	-0.0000	-0.0000*	0.0000
per capita	(-2.9258)	(-2.9716)	(-1.2930)	(-0.7886)	(-2.4221)	(-0.6926)	(-1.6460)	(0.9530)
Observations	241	240	195	130	149	145	126	124
MFIs (N =)	56	56	42	34	39	32	53	37
Sargan test	0.9901	0.9933	0.2569	0.5039	0.5180	0.8983	0.7704	0.7211
Hausman test	0.0000	0.0474	0.0000	0.0000	0.0389	0.0000	0.0000	0.2132

Source: Authors.   ***, **, *: p-value <0.01, <0.5, <0.1.   Robust T-statistics in parentheses

to close the gap and ensure a positive financial margin. This runs opposite to Cuellar-Fernández et al. [12]: Deposits collection requires the regulation of MFIs, which are forced to reduce their interest rates and subsequently their financial margin to target the poor.

Economic growth (*GNI per capita*) generates a very significant impact (p-value<0.01) but slightly negative, as noticed by Ahlin et al. [19], Mallick [20], Roberts [17] and Janda and Zetek [18]. Investment opportunities are rising with economic growth, customers become less poor and the loan amount increases, whereas operating expenses and interest rates fall.

Model 2 including social variables

Model 2 including social variables first confirm the results of Model 1 as for the determinants of the financial margin: *AROA, PAR, PP, Age* and *Age2, Competition, Inflation, Deposits* and *GNI per capita*

prove robust. Social variables have a positive but insignificant impact.

Depth of outreach (*Depth*) is positive but insignificant upon the financial margin. MFIs that grant small amounts to poor clients increase their interest rates: a higher financial margin covers operating expenses [12]. In addition, financially excluded customers accept higher interest rates upon small amounts [4].

The percentage of women borrowers (*WB*) is insignificant but has a positive effect that is underlined by Dorfleitner et al. [11], Roberts [17], Janda and Zetek [18] and Cuellar-Fernández et al. [12].

Operating in a rural area (*Rural*) generates a positive but insignificant impact: the more MFIs target rural customers who are predominantly poor, the higher is the financial margin.

Granting loans to groups (*Group*) has a negative but insignificant effect. The solidarity loan mechanism lessens default risk, thanks to

incentives for repayment but generates additional administrative costs by reducing the average loan amount per borrower. MFIs adopting this methodology must then increase their portfolio yield and minimise costs per borrower in order to be financially sustainable [15].

Discussion and Conclusion

Robustness checks

We use Models 3-8 as sub-samples (See Table 1) in order to check the robustness of the results.

According to the Hausman test, the FE2SLS method provides the consistent and asymptotically efficient estimators of the financial margin models as regards NGOs (Model 3), non-regulated MFIs (Model 4) operating in urban areas (Model 5), targeting the poor (Model 6) and mature (Model 7). MFIs granting individual loans (Model 8) are estimated with the EC2SLS method.

With the exception of Model 8 wherein *PAR* is the second determinant, the results of Models 3-7 confirm those previously provided by the full sample in Models 1 and 2: adjusted return on assets (*AROA*), Deposits collection (*Deposits*), the productivity of personnel (*PP*), *Age* and *Age2*, *Competition* and *Inflation* are the determinants. The profit motive remains the primary determinant of the financial margin of MFIs in the MENA region.

Conclusion

The limitations of our study are twofold. On the one hand, the lagged variables took care of the endogeneity issue at the expense of the number of observations. On the other hand, the MENA region is specific; hence, one should not extend our findings to the overall microfinance industry, especially as the MIX database collects only the thin layer of MFIs that publish their financial statements.

Premium seems to exert an insignificant impact upon the social performance of MFIs. In this connection, our policy recommendation is to remove capped interest rates and promote competition in the microfinance industry throughout the MENA region.

Acknowledgements

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