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Article

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Board and management gender diversity and financial performance of microfinance institutions

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Abstract: We investigate board and management gender diversity issues in the microfinance setting with data (2010–2014) drawn from 494 microfinance institutions across 76 countries. We find that board gender diversity positively predicts management gender diversity. On the effects of board and management gender diversity on the financial performance of microfinance institutions (MFIs), we find that whereas board gender diversity is negatively and significantly related to MFI financial performance, management gender diversity is negatively but insignificantly related to MFI financial performance. We show that 50% or higher diversity in either board or management is the threshold at which gender diversity is productive to MFIs. However, danger exists that an MFI that combines 50% or higher female representation on its board with 50% or higher female representation on its management team is likely to experience a tumble in its financial performance. The overall effect of these outcomes is that the push for more female representation on boards and management teams of MFIs should be done with a lot of tact and circumspection.

Subjects: Gender Studies; Economics, Finance, Business & Industry; Business, Management and Accounting

Keywords: board of directors; diversity; microfinance institutions; financial performance

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PUBLIC INTEREST STATEMENT

This paper investigates board and management gender diversity issues in the microfinance setting with data drawn from 494 microfinance institutions (MFIs) across 76 countries. We find that board gender diversity positively predicts management gender diversity. We also find that whereas board gender diversity is negatively and significantly related to the financial performance of MFIs, management gender diversity is negatively but insignificantly related to the financial performance of MFIs. We show that 50% or higher diversity in either board or management is the threshold at which gender diversity is productive to MFIs. However, danger exists that an MFI that combines 50% or higher female representation on its board with 50% or higher female representation on its management team is likely to experience a tumble in its financial performance. The overall effect of these outcomes is that the push for more female representation on boards and management teams of MFIs, pursuant to matching theory, should be done with a lot of tact and circumspection.

1. Introduction/theoretical background

Boards of directors form an important corporate governance mechanism, especially in markets where external monitoring is weak (Dahya, Dimitrov, & McConnell, 2008). Generally, the board of directors of a corporate entity is the committee tasked with the responsibility of charting the strategic path of the entity. Its ultimate goal is to ensure that the entity is run properly so as to guarantee shareholder wealth maximization.

One dimension of boards that has engaged the attention of researchers is diversity. The extant literature draws a line of distinction between board demographic diversity and board structural diversity (Ben-Amar, Francoeur, Hafsi, & Labelle, 2013). The impact of the former generally relates to the service task of the board while the impact of the latter relates to the control task of the board (Ararat, Aksu, & Tansel Cetin, 2015). Board demographic diversity is defined as composition of board members in terms of different variables such as gender, age, nationality, ethnicity, educational background and experience (Erhardt, Werbel, & Shrader, 2003). Among the demographic variables, Krishnan and Park (2005) posit that gender is a richer, more complex than the others since its effects emanate from managers' socio-cognitive base. Gender diversity in the boardroom refers to the presence of women on the board of directors (Carter, Simkins, & Simpson, 2003; Dutta & Bose, 2006).

Board diversity has assumed some monumental significance in corporate governance discourse in recent years in the wake of unprecedented gargantuan governance failures. Public pressure has been mounted on various firms to improve gender diversity on their boards. Some European countries such as Belgium, France, Norway and Italy have introduced legislations demanding more female board representation for some firms. However, the question of economic consequences of female board representation remains inconclusively addressed. Rhode and Packel (2010) conclude from their comprehensive review of the research on diversity and corporate boards that the "empirical research on the effect of board diversity on firm performance is inconclusive, and the results are highly dependent on methodology" (p. 8).

The general postulation of the resource-based view of the firm is that there is a positive relationship between diversity and organizational performance (Barney, 1991). Solakoglu and Demir (2016) provide several reasons why diversity, particularly board gender diversity, should positively influence firm performance. First, when a board is heterogeneous it is assumed that it will gain a better understanding of the market place and, by extension, the market segmentation needs of the product or service which could translate into better performance of the firm. Second, board diversity may promote higher creativity and innovation which will positively impact firm performance. Third, a higher level of diversity on the board may result in a better corporate image which may ultimately lead to a higher performance. Fourth, a diverse board (including males and females) may improve the selection process of the firm which will lead to a better management team with a potentially higher performance. Fifth, on the face of it, a diverse board is expected to have a broader view of the business environment which will improve the decision-making process through the evaluation of many alternatives (Solakoglu & Demir, 2016). According to Carter et al. (2003) greater diversity may promote the independence of the board as women have more tendencies to ask questions that would not be asked by male directors. Because women are oriented toward supporting and maintaining relationships than men, when more women occupy managerial positions we should expect some improvement in organizational learning, climate, and performance (Shrader, Blackburn, & Iles, 1997).

The upper echelons theory of Hambrick and Mason (1984) strikes a chord with the resource-based view of the firm. Its crux is that the demographic characteristics of top managers and organizational decision-makers have a significant effect on firm performance. In particular, the theory posits that the experiences, values, and personalities of managers strongly impact their interpretations of the situations they encounter and hence their choices (Hambrick, 2007). Two ideas underpin this theory. First, the strategic behavior of the firm is a reflection of shared leadership of the top management team—its collective knowledge, capabilities, and interactions. Second, the demographic features of

managers can be used as proxies of their models of knowledge (Ruiz-Jiménez & Fuentes-Fuentes, 2016). In fact, at the heart of upper echelon theory is that demographic characteristics are tangibly intertwined to the "psychological and cognitive elements of executive orientation" (Knight et al., 1999, p. 447).

On the flip side of the coin, there are reasons why diversity might lead to lower firm performance: decision-making becomes more time-consuming; different objectives and more conflicts in the board that lower the effectiveness of decision-making process; and possibility of value destruction rather than value creation in firms operating in sectors that require a quick response to market shocks (Petrovic, 2008; Solakoglu & Demir, 2016).

Does board gender diversity positively or negatively affect the performance of microfinance institutions (MFIs)? Besides, exploring the effect of board gender diversity on the performance of MFIs, we also interrogate the effect of gender diversity in management on the performance of MFIs. We tailor this along the argument of Dwyer, Richard, and Chadwick (2003) who posit that the "benefits of diversity in general, and gender diversity in particular, are more fully realized when the breadth of perspectives imbued in a diverse management group benefit not only the top management team (TMT)-led strategic decision-making process but also the strategic implementation phase in which middle managers are primarily involved." Do women managers in MFIs positively or negatively influence their performance?

The homo-social reproduction theory postulates that women are underrepresented in organizations because the group in charge reproduces their descriptive characteristics in those they choose to join them. The import of the theory does not differ from the bottom-up ascription theory of Elliott and Smith (2001) which submits that diversity begets diversity and that diversity among top leadership ranks is associated with greater diversity at lower levels of an organization (Skaggs, Stainback, & Duncan, 2012). It predicts that leaders who represent a demographic minority will increase the representation of other demographic minorities by pushing for more diverse hires, serving as role models and mentors to those hires and/or moderating the impact of bias in recruitment, hiring and promotion (Duguid, Loyd, & Tolbert, 2012). By extrapolation, women leaders are supposed to have the ability as well as the desire to support other women into leadership ranks (Cook & Glass, 2015). Terjesen and Singh (2008) confirm this theory with a report from their study of 43 countries that countries with higher representation of women on boards are more likely to have women in senior management. Does increasing presence of women on a board positively predict increasing presence of women in management of MFIs?

There appears to be a paradigm shift towards the contingency approach to the analysis of the diversity–performance nexus in recent times. One of such studies is Solakoglu and Demir (2016) which considers the role of firm characteristics on the relationship between gender diversity and firm performance. It shows that there is a significant association between gender diversity and firm performance for firms that are targeting local markets, firms in the financial sector and firms that are family or block-owned. Ararat et al. (2015) investigate how board diversity affects firm performance in emerging markets and find a positive and non-linear relationship between demographic diversity and performance, mediated by the board's monitoring efforts. García-Meca, García-Sánchez, and Martínez-Ferrero (2015) analyze the effect of board diversity (gender and nationality) on performance of banks using a sample of 159 banks in nine countries during the period 2004–2010 provide evidence to the effect that the institutional characteristics (investor protection and bank regulatory regime) of the banks have a moderating effect on diversity–performance relationship. We follow the contingency approach to the analysis of the association between demographic diversity and firm performance by exploring whether management gender diversity moderate the relationship between board gender diversity and the financial performance of MFIs. We are particularly interested in knowing whether the presence of a critical mass of female directors combines with the presence of a critical mass of female managers to positively affect MFI financial performance. Our

principal interest stems from the position of the extant literature that the presence of a critical mass of female directors offers women leaders with greater organizational support. This support improves the ability of these women leaders to pursue positive performance goals. The support is in the form of peer and mentorship relations and access to professional networks which facilitates the flow of information, strengthens decision-makers to follow unique and innovative changes and increases leadership creativity (Ashford, Rothbard, Piderit, & Dutton, 1998; DiTomaso, Post, & Parks-Yancy, 2007; Herring, 2009).

We favor the microfinance industry to find answers to the above questions 'because of its mission orientation, its entrepreneurial nature, diverse institutional conditions, and high percentage of female leaders' (Strøm, D'Espallier, & Mersland, 2014, p. 1). Besides, microfinance is not only a business for women but also, to a large extent, a business by women (Strøm et al., 2014). In sum, answering the above questions in the microfinance setting is significant for the reason that studies have shown that microfinance plays three broad roles in development: it helps the very poor households to meet basic needs and protects them against risks; it improves household economic welfare; and it helps to empower women by supporting women's economic participation and so promotes gender equity (Asiama & Osei, 2007).

Our data (2010–2014) from 494 MFIs drawn from 76 countries show that board gender diversity is negatively and significantly related to the financial performance of MFIs, thus, challenging the resource-based theory as well as the upper echelon theory. Management gender diversity is also negatively and insignificantly related to MFI performance. Consistent with the homo-social reproduction theory and bottom-up ascription theory of Elliott and Smith (2001), we find a robust positive and statistically significant relationship between board gender diversity and management gender diversity, suggesting that female directors of an MFI are more likely to push for more females to occupy managerial positions. As regards, the interaction effects of board gender diversity and management gender diversity on MFI's financial performance, we find that the pure interaction term has a positive but statistically insignificant impact on MFI performance. However, threshold analysis reveals that when the percentage of females on boards and management teams of MFIs reaches 50% or higher this enhances financial performance. This finding partially underscores the critical mass theory of Konrad, Kramer, and Erkut (2008) but offers 50% or higher as the critical mass where the presence of female directors is significantly beneficial to MFIs as against the 3 or more directors proposed by the latter. Further interrogation of the threshold effects of board and management gender diversity shows that boards with 50% or more female directors interact with management teams made up of 50% or more female managers to negatively and significantly affect MFI performance. The implication is that an MFI that pushes the matching theory to the extent of packing its board and management teams with 50% or more females is likely to experience a deterioration in its financial performance.

The paper contributes to and advances the extant literature on gender diversity–performance relationship in the following ways. First, to the best our knowledge, no study has sought to explore the critical mass hypothesis in percentage terms. The existing critical mass hypothesis Konrad et al. (2008) is set in terms of the number of directors not in terms of percentage. Besides, it covers only female directors. The current study does not only identify a critical mass for female directors but also for female managers. In addition, it elevates the discourse to the next level by exploring the moderating effect of the latter on the relationship between the former and financial performance. We believe this represents a marked departure from the existing body of knowledge in the field and thus opens up the floodgates for more empirical investigations. Second, the finding that increasing female directors triggers increasing female managers confirms and deepens our understanding of homo-social reproduction theory as well as the bottom-up theory.

2. Gender diversity and performance-empirical studies

Mixed empirical results exist on the effect of board gender diversity on firm performance. Smith, Smith, and Verner (2006) study 2,500 Danish firms and show that the proportion of women in top

management jobs tends to have positive effects on firm performance, even after controlling for numerous characteristics of the firm and direction of causality. Lenard, Yu, York, and Wu (2014) study gender diversity on the board of directors and its relationship with risk management and corporate performance and show that more gender diversity on the board of directors impacts firm risk by contributing to lower variability of stock market return. They also show that the higher the percentage of female directors on the board, the lower the variability of corporate performance. However, Sila, Gonzalez, and Hagendorff (2016) provide evidence to the effect that boardroom female representation has no influence on equity risk. Mahadeo, Soobaroyen, and Hanuman (2012) find that proportion of female directors positively impacts corporate performance. Strøm et al. (2014) confirm this theory with the evidence that a female chief executive officer and a female chairperson of the board are positively related to MFI performance. Solakoglu and Demir (2016) find some weak evidence that gender diversity impacts firm performance. Khan and Vieito (2013) find that female CEOs[1] positively and significantly influence firm performance measured by return on assets (ROA). Cook and Glass (2015) analyze the data-set of all CEOs and board of directors in Fortune 500 companies over a 10-year period and find a slightly significant positive relationship between board diversity and the prospect of a woman being appointed CEO. They further find that board diversity significantly and positively influences the post-promotion success of women CEOs. They also find that board composition is critical for the appointment and success of women CEOs and that increasing board diversity should be fundamental to any organizational diversity efforts.

On the other hand, there are studies that do not observe any significant effect of board gender diversity on firm performance. Francoeur, Labelle, and Sinclair-Desgagné (2008) study the 500 largest Canadian firms and find, among other things, that the impact of female directors on firm performance is insignificant. A recent study by Babalos, Caporale, and Philippas (2015) also finds that gender does not influence fund performance.

In the microfinance setting, the issue of female leadership and firm performance has been studied by Strøm et al. (2014), who find that female leadership is positively related to the performance of 329 MFIs in 73 countries from 1998 to 2008. However, we believe that the current study is novel and thus should have a space in the empirical literature because it detours from the previous studies that focus on the impact of female directorship, female chair and female CEO on MFI performance (Strøm et al., 2014).

3. Data and variable definitions

We obtain data from three sources: www.mixmarket.org; World Bank and the United Nations' Development Program. The MFI-specific and market data have come from www.mixmarket.org; the GDP per capita data have been sourced from the World Development Indicators of the World Bank; and the Human Development Index (HDI) data have been gathered from the United Nations' Development Program website. A summary of the variables and how they are measured is presented in Table 1.

Table 2 reports the descriptive statistics of the data used. As can be observed, the mean ROA is 2% suggesting that microfinance is not a lucrative venture. The mean OSS 1.160 is quiet high. The average female representation on the boards and management teams of MFIs is 31 and 36%, respectively, with the maximum being 100%. These statistics suggest that indeed microfinance is dominated by females.

3.1. Board and management gender diversity variables

Flexibility exists in the literature as to how to measure board gender diversity. Studies such as Lenard et al. (2014), Ahern and Dittmar (2012), and Adams and Ferreira (2009) have used the percent of women directors on board to measure board gender diversity. Some studies have also used the number of women directors on board or a dummy variable motivated by the idea that a critical mass needs to be attained before the impact of women directors is felt (Simpson, Carter, & D'Souza, 2010). A recent study by Strøm et al. (2014) has used both percent of women and a dummy variable to

Table 1. Variables, definitions, notations, and expected signs

Variable	Definition	Notation	Expected sign
Dependent variable			
Financial performance	Return on assets	ROA	
	Operational Self-sufficiency defined as portfolio revenues divided by operational expenses	OSS	
MFI-specific variables			
Board gender diversity	% of female directors of all directors	FBM	?
Management gender diversity	% of women Managers of all managers	FM	?
Interaction term	% of female directors multiplied by % of women managers of all managers	FBMFM	+
Critical mass for board gender diversity	% of female directors of all directors ≥ 50%	FBM ≥ 50	+
Critical mass for management gender diversity	% of women Managers of all managers ≥ 50%	FM ≥ 50	+
Interaction term at threshold level	% of female directors of all directors ≥50% multiplied by % of women managers of all managers ≥ 50%	FBM ≥ 50FM ≥ 50	+
Size	Natural logarithm of total assets (US$)	SIZE	+
Portfolio at risk	Portfolio at risk 30 days overdue	PaR30	?
Financial intermediation	Deposits to loans ratio	DTL	+
Age of MFI	Binary: if MFI is mature	AGE	+
Market control variables			
Type of MFI	Binary: if type is NGO	TYPE	?
Regulation status	Binary: if type is NGO	REGU	?
Country control variables			
	Human development index	HDI	?
	GDP per capita adjusted for purchasing power parity	GDPPC	?

measure board gender diversity. We follow the example of Strøm et al. (2014) to measure board and management gender diversity using percent of women directors on board and percent of women managers as well as dummy variables. The dummy variables are used to gauge the presence or otherwise of threshold effects of board and management gender diversity on MFI performance. Our inability to obtain data on the number of female directors as well as the number women managers has compelled us to test the critical mass hypothesis in percentage terms. However, we do not see this as handicap because we feel that this affords us the opportunity of developing a new threshold level that could shape future gender interventions. What percent of women directors is needed before the impact of women on performance is observed? What percent of women managers is needed before the influence of women on MFI financial performance emerges? To obtain the thresholds for board and management gender diversity, a number of regressions are run using various percentages.

We test the moderating effect of management gender diversity on the board gender diversity–performance relationship by constructing an interaction term which is obtained by multiplying the percent of women directors by percent of women managers. To avoid multicollinearity problem between the interaction term and the board and management gender diversity variables, we obtain a

Table 2. Summary statistics of the variables used in the Study. The number of observations (*N*) is in terms of firm-years

Variable	*N*	Mean	Median	St. dev.	Min.	Max
ROA	1,702	0.02	0.02	0.10	−2.41	0.37
OSS	1,702	1.160	1.12	0.35	0.00	6.81
FBM	1,702	0.31	0.27	0.25	0.00	1.00
FM	1,702	0.36	0.32	0.29	0.00	1.00
SIZE	1,702	16.57	16.49	1.80	11.08	21.80
PaR30	1,702	0.06	0.03	0.12	0.00	3.73
TYPE	1,702	0.43	0.00	0.50	0.00	1.00
AGE	1,702	0.84	1.00	0.37	0.00	1.00
DTL	1,702	0.28	0.00	0.48	0.00	6.20
HDI	1,702	0.65	0.66	0.09	0.33	0.84
GDPPC	1,702	4,109.453	3,225.862	3,218.292	214.2310	15,764.76
FBMFM	1,702	0.12	0.06	0.17	0.00	1.00
FBM ≥ 50	1,702	0.23	0.00	0.42	0.00	1.00
FM ≥ 50	1,702	0.32	0.00	0.47	0.00	1.00
FBM ≥ 50 FM ≥ 50	1,702	0.11	0.00	0.31	0.00	1.00
REGU	1,702	0.6	1.00	0.49	0.00	1.00

pure interaction term by first regressing the interaction term on board and management gender diversity variables. The unstandardized coefficients are then saved and used as the pure interaction term and included in model (2).

3.2. Financial performance

We adopt ROA as the main performance indicator because it offers some insight into the managerial efficiency in terms of asset utilization to generate profit. As part of robustness checks, we adopt operational self-sufficiency (OSS) as auxiliary measure of MFI performance. The use of OSS as a performance measure is not novel to microfinance setting. OSS is a common metric in MFI assessment (Armendáriz & Morduch, 2010). According to Strøm et al. (2014), OSS is immune to bias from different "capital structure, access to subsidized funding and possible differences in default policies in the MFI" (p. 63). These performance measures are taken directly from the data-set gathered for the study.

3.3. MFI, market, and country control variables

Five institutional control variables are included in our analyses. These are portfolio at risk 30 days overdue (PAR30) used to measure credit risk; natural logarithm of total assets (ASSETS) used to measure the size of an MFI; deposit to loans ratio (DTL) used to measure the degree of financial intermediation; and age of MFI (AGE) which is a binary variable coded 1 if MFI is mature and 0 otherwise. The market control variables are type of MFI (TYPE) which is a binary variable coded 1 if MFI is an NGO and 0 otherwise and regulation (REGU) which is also a binary variable coded 1 if MFI is regulated by the banking authorities and 0 otherwise. Control for NGO type is instructive because it has been suggested that women easily gain access to managerial positions in "the often more mission-driven NGOs" (Strøm et al., 2014). These control variables have been carefully selected to remove as much as possible the MFI-specific heterogeneity (Strøm et al., 2014).

To mitigate the possible bias emanating from country heterogeneity, we introduce two country control variables: GDP per capita adjusted for purchasing power parity (GDPPC) and HDI. These measure the economic conditions of the study countries.

4. Methodology

In answering the question of whether board gender diversity predicts management gender diversity, we estimate the following model with percent of women managers as the dependent variable:

$$FM = f(\text{Board gender diversity, MFI controls, market controls, country controls, Error term}) \quad (1)$$

In answering the question of whether board gender diversity and management gender diversity influence MFI performance as well as whether the latter has any moderating effect on the relationship between board gender diversity and MFI financial performance, we estimate the following model:

$$ROA = f(\text{Gender diversity, MFI controls, market controls, country controls, Error term}) \quad (2)$$

One important issue in panel regression analysis is the selection of panel estimation technique.

According to Adams, Hermalin, and Weisbach (2010) to completely eliminate time-invariant heterogeneity in data, fixed effects (FE) estimation technique should be applied to panel data. To avoid arbitrariness involved in accepting such a recommendation, we perform Hausman Test to choose between the FE and random effects (RE) models. The Hausman Test examines the null hypothesis that the difference between FE and RE of the model is not systematic. It helps to determine whether the FE or RE model is suitable for analysis. Where the Hausman Test results support the use of FE panel model, the likelihood ratio test or the redundant FE Test which assesses the appropriateness or otherwise of the FE estimation technique is performed to confirm this. We also perform Wald Test to ascertain the appropriateness or otherwise of the panel model used in this study. The Wald Test examines the joint significance of the explanatory variables in explaining the variations in the dependent variable.

Correlation analysis is done to check multicollinearity in our models. Table 3 reports the Pairwise correlations between all continuous variables. Using Kennedy (2008)'s standard of 0.80, it is observable that none of the correlations between two variables exceed this 0.80 limit, suggesting that our models do not have a multicollinearity problem.

5. Board gender diversity and management gender diversity

The homo-social reproduction theory suggests that groups in charge of organizations reproduce their own characteristics. Thus, when men are at the top they reproduce their own characteristics below and vice versa. Can we argue that when more women are on the board of an MFI they will reproduce themselves below? We address this question by regressing management gender diversity variable (FM) on board gender diversity (FBM). The results are reported in Table 4. Columns 2 and 3 of the table show the results of FBM and lagged FBM. Column 4 shows the results of the full model when MFI and country control variables are introduced. This is done as a robustness check on the

Table 3. Correlation matrix. Pairwise correlations between all continuous variables

	1	2	3	4	5	6	7
1.FBM							
2. FM	0.18						
3. PAR30	0.02	−0.01					
4.SIZE	−0.11	−0.12	−0.02				
5. HDI	−0.05	0.19	−0.06	0.11			
6.GDPPC	−0.04	0.23	−0.02	0.05	0.80		
7. DTL	0.08	−0.06	0.02	0.34	−0.12	−0.07	
8. FBMFM	0.72	0.64	−6.78E-05	−0.15	0.04	0.08	0.02

Table 4. Board gender diversity and management gender diversity

Variable	Dependent variable-FM		
	FBM level	Lagged FBM[a]	Full model
C	0.297***	0.308***	0.425***
FBM	0.194***	0.144***	0.1807***
PAR30			−0.041
SIZE			−0.016**
HDI			0.014
GDPPC			2.27E-05***
TYPE			−0.002
DTL			−0.000
AGE			0.039**
REGU			0.006
N	1,702	1,361	1,702
R^2	0.03	0.02	0.09
Wald test X^2	1,271.930***	1,500.099***	1,500.099***
F-statistic	47.11***	20.70***	19.13324***
Hausman test X^2	0.445807 (0.5043)	2.529247 (0.1118)	9.73322 (0.3735)
Durbin–Watson	1.6	1.7	1.6
Method	Panel RE	Panel RE	Panel RE

[a]One-year lag selection is based on Schwarz Information Criterion.

**Represent 5% significance levels.

***Represent 1% significance levels.

results in columns 2 and 3. The Hausman Test result supports the use of RE model for estimation. The results of the RE model show that there is a robust positive statistically significant relationship between board gender diversity and management gender diversity. Thus, support is found for homo-social reproduction theory. The implication is that as the percentage of female board members increases, there is a corresponding increase in the percentage of female managers. Empirically, this result confirms the work of Terjesen and Singh (2008) that countries with higher representation of women on boards are more likely to have women in senior management.

6. The effects of board and management gender diversity on MFI financial performance

What are the effects of board and management gender diversity on MFI financial performance? We address this question by estimating Equation (2). Both FE and RE estimation techniques are employed depending on the Hausman Test results. As can be observed, when ROA is used as performance measure, the FE is the appropriate technique. The use of FE model is informed by the result of Hausman Test as well as the redundant FE Test. The R^2 is 45%, the Durbin–Watson statistic is around 2, the *F*-statistic 3.16 significant at 1% significance level and the Wald test χ^2 value of 121.52 is at 1% significance level. The results of these diagnostic tests suggest that the model is reliable and thus the results are also reliable.

The results show that both board and management gender diversity have negative effects on financial performance (Table 5). However, the effect of management gender diversity is statistically insignificant. The negative, statistically significant effect of board gender diversity on financial performance could possibly be explained by the ills documented in the literature as attending diversity: decision-making becomes more time-consuming; different objectives and more conflicts in the board that lower the effectiveness of decision-making process; and possibility of value destruction rather than value creation in firms operating in sectors that require a quick response to market shocks (Petrovic, 2008; Solakoglu & Demir, 2016).

Table 5. Effects of board and management gender diversity on MFI performance

Dependent variables				
			Robustness check	
Variable	ROA	OSS	ROA	OSS
			All continuous variables are lagged 1 year[a]	All continuous variables are lagged 1 year
C	−0.275***	0.276	−4.36	−0.800
FBM	−0.036**	−0.057	−0.479***	−0.018
FM	0.010	−0.063	0.082	0.014
PAR30	−0.041**	−0.205***	−0.105	−0.026**
SIZE	0.008***	0.023***	−0.125	0.005
HDI	0.298***	0.935***	−0.098	−0.245
GDPPC	−1.10E-05***	−1.79E-05***	0.232	0.061
TYPE	0.008	0.042*	0.185	0.067
FBM ≥ 50	0.036***	0.023	−0.328**	−0.015
FM ≥ 50	0.022**	0.082***	0.183	0.050
DTL	0.021***	0.009	0.030	0.005
AGE	−0.007***	−0.031	0.024	0.017
REGU	−0.008	−0.004	−0.006	0.131***
N	1,702	1,702	385	439
R^2	0.45	0.04	0.65	0.05
Wald Test X^2	178.1779***	10501.73***	8,072.292***	69.24***
Hausman test X^2	45.84***	18.53 (0.1006)	20.63**	14.2572 (0.2846)
Likelihood ratio	941.448***	–	377.250***	
Durbin–Watson	2.07	1.6	2.9	1.7
Method	Panel FE model	Panel RE	Panel FE	Panel RE

[a]Lag selection is based on Final prediction error, Akaike information criterion, Schwarz information criterion, and Hannan–Quinn information criterion.

*Represent 10% significance levels.

**Represent 5% significance levels.

***Represent 1% significance levels.

The positive and statistically significant coefficients of FBM ≥ 50 and FM ≥ 50 suggest that threshold effects exist in the relationships between board and management gender diversity and financial performance of MFIs. It means MFIs are more likely to benefit from gender diversity at board and management levels only when 50% or more females are on their boards as well as their management teams. By implication, our data set the critical mass for the influence of gender diversity to be felt at 50% or higher representation. The reasons for the positive impact of the 50% or more threshold of female directors are not farfetched. It is documented in the literature that a critical mass of female directors offers women leaders with greater organizational support which comes in the form of peer and mentorship relations and access to professional networks which facilitates the flow of information, strengthens decision-makers to follow unusual and innovative changes and increases leadership creativity. This support improves the ability of these women leaders to pursue positive performance goals (Ashford et al., 1998; DiTomaso et al., 2007; Herring, 2009).

Is the 50% or higher standard universally achievable? It appears daunting in non-MFIs, taking into consideration the cultural and other barriers that work against women across the world especially in developing countries. However, in the microfinance setting we can be cautiously optimistic that this is achievable because as Strøm et al. (2014) put it: "microfinance is not only a business for women it is to a large extent also a business by women" (p. 1).

The control variables are all significant except TYPE and AGE. The negative and positive coefficients of PAR30 and ASSETS, respectively, are in tandem with the work of Strøm et al. (2014). The coefficients of HDI and GDPPC are positive and negative, respectively, suggesting that whereas an improvement in the HDI promotes MFI financial performance, an improvement in the GDPPC hurts the financial performance of MFI.

7. The moderating effect of management gender diversity on board gender diversity–financial performance nexus

Does management gender diversity significantly moderate board gender diversity–financial performance relationship? Our pure interaction term representing the unstandardized coefficients obtained from regressing the FBMFM variable on FBM and FM is positive but statistically insignificant on the two financial performance measures.[2] Having failed to establish any significant relationship between our interaction term and any of the two financial performance measures, we proceed to explore whether the moderating effect of management gender diversity on board gender diversity could occur at threshold level. The results of this analysis are presented in Table 6. Under the two performance measures, the interaction term, FBM ≥ 50FM ≥ 50, exhibits a negative statistically significant impact on financial performance, suggesting that MFIs that combine 50% or more female board members with 50% or more female managers are likely to record a drop in their performance. We ascertain the robustness or otherwise of our finding by first running the model without control variables and then running it again with control variables. Both the partial and full models suggest that the interaction between board gender diversity and management gender diversity hurts the financial performance of MFIs.

Table 6. The moderating effect of management gender diversity on board gender diversity–financial performance nexus

Variable	ROA		OSS	
	1. Partial model	2. Full model	3. Partial model	4. Full model
C	−3.771***	−5.439***	1.169***	0.272**
FBM	−0.460**	−0.269	−0.081	−0.055
FM	0.144	0.088	−0.052	−0.068
PAR30		−0.514**		−0.204***
SIZE		0.109***		0.022**
HDI		0.325		0.941***
GDPPC		−7.26E-06		−1.81E-05***
TYPE		0.168*		0.042*
FBM ≥ 50	0.344***	0.329***	0.055	0.051
FM ≥ 50	0.273**	0.314***	0.091***	0.104***
DTL		−0.387***		0.009
AGE2		−0.264***		−0.032
FBM ≥ 50 FM ≥ 50	−0.479***	−0.462***	−0.070*	−0.068*
REGU		−0.147		−0.003
N	1,408	1,408	1,702	1,702
R^2	0.08	0.12	0.01	0.05
F-statistic	22.94***	14.54***	2.168216**	6.21***
Hausman test X^2	6.704224 (0.2436)	20.35 (0.0867)	6.914386 (0.2271)	18.581928 (0.1366)
Wald test X^2	7,267.068***	8,089.932***	10,020.72***	10,481.75***
Method	Panel RE	Panel RE	Panel RE	Panel RE

*Represent 10% significance levels.
**Represent 5% significance levels.
***Represent 1% significance levels.

What may account for this negative effect? The possible reason is that at 50% or higher female representation the MFI is gravitating towards gender homogeneity which strips it of the benefits of diversity, a phenomenon which we call overgenderization. Increasing female representation at board and management levels by 50% or more may be courting underused *resource effect* espoused by Strøm et al. (2014). It posits that total resource pool of equally competent men and women is underutilized when candidates for management and director positions are selected from the subset of men only (Strøm et al., 2014). The same argument can be made when the selection is made from the subset of women only.

8. Conclusion and policy implications

Three theoretically grounded questions have been addressed in this study: (1) Does increasing representation of female board members translate into increasing representation of females in management teams? (2) What effects do board and management gender diversity have on the financial performance of MFIs? (3) Does management gender diversity moderate the relationship between board gender diversity and the financial performance of MFIs?

These questions have been addressed using a data-set of 494 MFIs from 76 countries. Three main conclusions emerge from our analyses. First, our data support the conclusion that female board membership increases with female management membership. MFIs with more female board members are more likely to have more female managers, thus, upholding the prediction of the homosocial reproduction theory as well as bottom-up theory. Second, we find evidence to anchor a conclusion that female board members hurt the financial performance of MFIs. We also conclude that there is no significant relationship between female managers and MFI financial performance except when 50% or more female managers are appointed. Based on our threshold effects analysis results, we conclude that MFIs can significantly benefit from both board and management gender diversity when they achieve 50% or more threshold. However, an MFI that combines 50% or higher female representation on its board and 50% or higher female representation in its management team is not likely to experience the benefits of female representation in corporate affairs.

One policy implication of our study is that although microfinance is a business for and by women yet excessive female representation on boards and management teams could be detrimental to the financial performance of MFIs. We, thus, recommend that there should be equitable representation of both men and women on boards and management teams of MFIs in order to promote appreciable financial performance.

The policy implication of the finding that increasing percentage of female directors is characterized by increasing female managers is that policy-makers that seek to improve female participation in the management of firms could prosecute their agenda by first securing more female representation on corporate boards.

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Notes
1. Chief executive Officers.
2. Details of results not reported but are available upon request.

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