

# Female participation and financial performance of microfinance institutions: Evidence from transition economies

Md Aslam Mia<sup>1</sup>  | Lucia Dalla Pellegrina<sup>2</sup>  | Wai-Yan Wong<sup>3</sup> 

<sup>1</sup>School of Management, Universiti Sains Malaysia, Malaysia

<sup>2</sup>Department of Economics, Management and Statistics (DEMS) and CISEPS, University of Milano-Bicocca, Italy

<sup>3</sup>Faculty of Economics and Management, Universiti Kebangsaan Malaysia, Malaysia

## Correspondence

Lucia Dalla Pellegrina Department of Economics, Management and Statistics (DEMS) and CISEPS, University of Milano-Bicocca, Italy.

Email: [lucia.dallapellegrina@unimib.it](mailto:lucia.dallapellegrina@unimib.it)

## Funding information

Md Aslam Mia gratefully acknowledges funding under the title 'short-term research grant' (Grant No: 304/PMGT/6315547) from Universiti Sains Malaysia, Penang, Malaysia. Lucia Dalla Pellegrina kindly acknowledges support from Baffi Center, Bocconi University - Milano.

## Summary

**Motivation:** Although female clients are the main target of most Microfinance Institutions (MFIs), male–female workforce ratio in microfinance operations is not proportionate. There is a consensus that a greater female presence in the workforce at all hierarchical levels could enhance the financial performance of MFIs thanks to women's tougher commitments and better managing capacity.

**Purpose:** There is scarce research investigating which hierarchical levels of female workforce contribute to MFIs' financial performance. This study aims at filling this gap by jointly analysing the effect of female participation at all hierarchical levels of MFIs, which is relatively rare in the existing literature, especially in microfinance.

**Methods and approach:** We use data from 172 MFIs in Eastern Europe and Central Asian countries (EECA) for the period 1996–2014. The data were then analysed by ordinary least squares, fixed, and random effects models, along with several diagnostic tests.

**Findings:** We find that female board members and female clients contribute positively to the financial performance of MFIs. The literature presents these outcomes as being due to women's' better organizational and monitoring techniques, and more responsible use of loans, respectively. However, our analysis shows that female managers and loan officers may impair financial performance to some extent, possibly because they face cultural limitations and safety obstacles, resulting in their being less persuasive and effective than men, especially in the process of collecting arrears payments.

**Policy implications:** Our study suggests that MFIs in the EECA context may improve their financial sustainability by reconsidering their organizational choices, such as operational recruitment, placing women at the top of the decision-making process. At the lower levels of the hierarchy, particularly loan officers, it would be advisable to support them in the interaction with male customers, so that they can adopt more effective techniques in the loan collection phases. MFIs can also scale up their loan activities to more women since their representation in the client base is relatively low in the EECA region.

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2022 The Authors. *Development Policy Review* published by John Wiley & Sons Ltd on behalf of Overseas Development Institute

## KEYWORDS

gender equality, governance, microfinance, microfinance institutions, workforce

## 1 | INTRODUCTION

For the last four decades, the literature has suggested that Microfinance Institutions (MFIs) may significantly contribute to alleviating poverty, increase women's empowerment, and promote entrepreneurship among marginalized people (outreach goals). It is widely known that MFIs' main target is women, accounting for almost two-thirds of their clients globally (Abdullah & Quayes, 2016). One reason for MFIs' attention towards women is that they are more easily excluded from the traditional financial sector. At the same time, many studies document how they fulfil their financial obligations better than males (Armendáriz & Morduch, 2005; D'Espallier et al., 2011; Beck et al., 2013). Nonetheless, despite MFIs' outreach goals towards them, women are under-represented on MFIs' staff, particularly at higher levels of the managerial hierarchy.

This study sheds light on whether more women as MFI stakeholders could correspond to better management in terms of MFIs' financial sustainability objectives. Indeed, despite considerable effort by MFIs, attaining financial sustainability remains a big challenge for the microfinance industry. This has been a vivid topic of discussion for at least the last two decades among both practitioners and policy-makers. In particular, the two key characteristics of microfinance (outreach and financial sustainability) have become a key concern for microfinance scholars, who have started investigating possible connections between the presence of women, both as MFI staff and as clients, and MFIs' financial performance.

The literature on the determinants of banks' performance is quite voluminous, but empirical investigation, especially among MFIs in transition countries, remains scarce. The minimal attention devoted to the role of female<sup>1</sup> participation on the performance of MFIs is perplexing, if only because the main clientele of MFIs are females. One does not necessarily need to be in a position of power to affect firm performance. Women serving in other roles within the microfinance industry could also influence important organizational outcomes, without even realizing their contribution. Studies like Hartarska et al. (2014) provided empirical evidence that loans authorized by female loan officers have lower default rates. Moreover, as Adusei et al. (2017) state, "homo-social reproduction theory postulates that women are under-represented in organizations because the group in charge reproduces their descriptive characteristics in those they choose to join them" and they also found that "as the percentage of female board members increases, there is a corresponding increase in the percentage of female managers." Figure 1 shows the representation of the female workforce and the clients' perspective towards the financial performance of MFIs. From the institutions' perspective, the three hierarchies are board member, manager, and loan officer. From the clients' perspective, there is only one hierarchy, the client. While each hierarchical level can play an important role in the success of MFIs, not all are given equal attention in the existing literature, unfortunately. Most importantly, the different hierarchies are not jointly analysed in terms of effects on MFIs' financial outcomes. Therefore, we have given enough attention to both the institutional and client perspectives in analysing the effect of gender diversity on the financial performance of MFIs.

Despite slow growth, recent studies like Gohar and Batool (2015), Gupta and Mirchandani (2020), and Hasan et al. (2019) have begun to investigate issues like how corporate governance and chief executive officer (CEO) duality (when the same person holds both the CEO and board chairperson positions in a corporation) can impact MFIs' performance and sustainability. Other studies have put gender as the focal point and investigate the dynamics of women's participation and financial performance of MFIs. However, the findings are mixed and inconclusive (Abdullah & Quayes, 2016; Adusei et al., 2017; Ghosh & Guha, 2019; Vishwakarma, 2017). It is widely argued that

<sup>1</sup>The terms female and women are used interchangeably in this study.

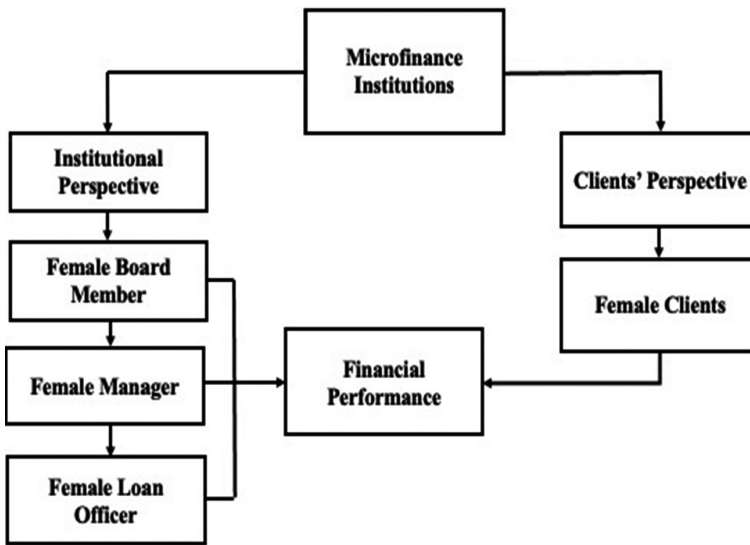


FIGURE 1 Representation of female workforce/clients in MFIs  
Source: Authors.

the participation of women as borrowers can enhance financial performance as they are more disciplined when it comes to repaying instalments, less likely to move, and face more social pressure than their male counterparts. Moreover, studies find that women (working in various organizational ladders in MFIs) are better skilled and have stronger managing capacity from the institutional perspective, thus helping to provide better firm performance.

Considering the paucity of research and inconclusive findings on the gender dynamics and microfinance performance in the context of transition countries, the main objective of this study is to investigate empirically whether female participation, in several respects, can enhance MFIs' financial performance in this context. We posit that women's participation at all hierarchical levels within MFIs should be viewed as a necessary condition for the sustainability of MFIs. Without active female participation as suppliers of microfinance, the goals of an inclusive and sustainable financial system could be undermined.

We focus on Eastern Europe and Central Asian (EECA) countries because this area, besides being under-represented in the existing literature, offers interesting scope for research. There is a reduced incidence of loans to women in EECA countries, compared with other countries, such as those of the Middle East and South Asia. The empirical analysis conducted on a sample of 172 MFIs from 1996 to 2014 suggests that both the presence of women on boards of directors and female borrowers are beneficial from the perspective of MFI sustainability purposes. On the other hand, there seems to be a weakly significant inverse relationship between the presence of women at intermediate levels of staff, such as managers or loan officers, and MFIs' financial performance.

The organization of the study is as follows. In Section 2, the current literature on women and microfinance performance is assessed. In Section 3 we contextualize our analysis and illustrate the methodology in geographical terms. Section 4 presents data and summary statistics from the database, while Section 5 discusses the findings of the study. Section 6 concludes with some policy implications and directions for future research.

## 2 | LITERATURE REVIEW: FEMALE PARTICIPATION AND FINANCIAL PERFORMANCE

The behavioural economics literature shows that economic behaviour differs according to gender (Hartarska et al., 2014). In MFIs, the female staff includes women working as loan officers, being responsible for relationship

management with clients, women managers, and women CEOs. According to the literature, we expect the proportion of females on MFI staff to influence performance. For instance, Mersland and Strøm (2009) found that female CEOs achieve better financial performance in the MFIs. Similarly, other studies like Gohar and Batool (2015) found that female CEOs tend to decrease costs and improve financial performance and help reduce the number of MFI branches. Carter et al. (2003) also found that boards with higher proportions of women and ethnic minorities in their boards outperform those that are more homogeneous.

Overall, female workers are crucial for MFI sustainability (Augustine et al., 2016) and beneficial for the overall economy. The former Secretary-General of United Nations, Ban Ki-Moon, highlighted this in a speech at the Dialogues at the Economic and Social Council in 2010. He mentioned that the participation of women in the workforce is an economic and social imperative. Unless women and girls are liberated from poverty, it is impossible to achieve peace, security, and sustainable development (Ban, 2010). Therefore, the sustainability of MFIs risks being undermined if women are not included in the board, especially as women are the main users of microfinance products and services.

## 2.1 | Female board member

Galbreath (2011) asserts that it is possible to identify two main effects of the presence of women on boards. First, there is a positive relationship between the number of women on a firm's board and its economic performance by return on equity (ROE), return on assets (ROA), and book-to-market value of equity. The results show that female board members make less costly strategic decisions in terms of sustainability, and engage in building better relationships with stakeholders, thereby increasing accountability and ethical conduct. Moreover, women may have a better understanding of consumer behaviour, which is a major component within the stakeholder theory<sup>2</sup> (Natividad, 2005). They can also improve the monitoring aspect of the boards they are on, improving MFIs' organizational dynamics (Adams & Ferreira, 2009; Erhardt et al., 2003; Mori et al., 2015), and consequently their financial performance.

Another effect is related to the positive relationship between women on boards and the social responsiveness dimension of sustainability, as women are more likely to establish relationships with a broad stakeholder base and incorporate different interests into firms' strategy. Mahadeo et al. (2012) found that a higher proportion of female directors improves corporate performance. In the microfinance setting, the issue of female leadership and firm performance has been studied by Strøm et al. (2014). This study of 329 MFIs in 73 countries from 1998 to 2008 found that "female managed MFI have better performance." In contrast, Adusei et al. (2017) observed that MFIs with more women on their boards of directors or in the management team tend to have lower performance. Gohar and Batool (2015), meanwhile, found that the presence of female directors in MFIs had a positive effect on outreach but not economic/financial performance.

## 2.2 | Female manager

Studies of how female management can affect firm performance in MFIs, provide overwhelming evidence of the benefits of female leadership, in comparison to the performance of traditional firms. In traditional firms, studies comparing the performance of men and women-owned firms show that those headed by women are generally smaller, in terms of gross revenue, number of employees, sales, assets, and profit levels (Ellis et al., 2010; Fischer

---

<sup>2</sup>Stakeholder theory states that when firm delivers value (financial and non-financial value) to all its stakeholders, it will gain. According to this theory, if the employees, who are also stakeholders, feel that they are being valued, tend to work harder and are more productive. This results in higher productivity across the organization (Freeman, 1984).

et al., 1993; Kalleberg & Leicht, 1991; Rosa et al., 1996; Watson & Robinson, 2003). Other studies report that women have a narrower and more homogenous social network (Kelley et al., 2010; Loscocco et al., 2009) than men, which causes lower performance. Accordingly, Kessy (2009) finds that men-headed enterprises perform better in business than those headed by women. In the area of MFIs, so far there is a lack of evidence indicating that male managers contribute to higher financial performance.

On the opposite side of the arguments, studies like Mersland and Strøm (2009) and Périlleux and Szafarz (2015) indicate that female managers, specifically CEOs, lead to higher performance on the part of MFIs. This is due to their greater ability to understand female information networks and hence can come up with products and services that better suit female users. Female managers also had a better understanding than male managers of the problems that female customers face. This result is supported by Hartarska et al. (2014), who found that female participation in leadership roles can be seen as a significant driver of firms' performance as a result of running more efficient MFIs. However, this difference is only evident when the MFIs serve a single market, either rural or urban. Strøm et al. (2014) subsequently confirmed the positive impact of female managers on the financial performance of MFIs.

### 2.3 | Female loan officer

In explaining the influence of female loan officers on female clients in MFIs, studies like Augustine et al. (2016) suggested the similarity-attraction hypothesis, which states that most people are attracted to or are more comfortable with people who are similar to themselves (Byrne, 1971). This conjecture has been proven by empirical evidence, particularly in the customer service context. For example, Crosby et al. (1990) found that perceived similarity between salespeople and customers tends to influence short-term sales, customer's trust in the salesperson, and positive emotions experienced by customers (Lee & Dubinsky, 2003). In the medical context, van den Brink-Muinen et al. (2002) showed that gender plays an important role in determining the effectiveness of communications between doctor and patient.

In the context of MFIs, female loan officers and female clients may find themselves in the same social networks. This can foster strong social ties, which will enhance understanding the consumption needs and expenditure patterns of female clients. When this is achieved, it could potentially reduce operating costs by better anticipating customer needs and making recommendations on where MFIs should convey their resources, eventually leading to higher performance. This has been shown by Beck et al. (2013) who found that loans under female loan officers are less likely to be problematic. It indicates that female loan officers are better at establishing trust with borrowers and provide better monitoring. The justification is supported by Eckel and Grossman (2001), who found that "a given offer is more likely to be accepted if it comes from a woman" and that "women paired with women almost never fail to reach an agreement."

One exception in the literature is the study by van den Berg et al. (2015), who found that loans to legal entities have higher default rates if screened by female loan officers. According to van den Berg et al. (2015), men may wield more authority over women borrowers in enforcing repayment due to their ability to travel through unsafe places to collect repayments and work much longer hours. However, overall the literature still indicates overwhelmingly that female loan officers have an advantage over their male counterparts in MFIs (Agier, 2012; Beck et al., 2013; Dixon et al., 2007).

### 2.4 | Female borrower

Past studies have often reiterated that female borrowers repay their loans more regularly than male borrowers (D'Espallier et al., 2011; Khandker et al., 1995; Kevane & Wydick, 2001). In fact, this saw Grameen Bank switching

its focus to female clients after experiencing repayment problems on the part of male borrowers in its early years (Armendáriz & Morduch, 2005).

This is quite evident, particularly in emerging countries. For example, Khandker et al. (1995) find that women in Bangladesh are favoured as borrowers due to their 97% recovery rate, compared to 89% for men. This is supported by Sharma and Zeller (1997), who report that in Bangladesh credit groups with higher percentages of women had significantly better repayment rates. In Malawi, Hulme (1991) states that 92% of female borrowers had no repayment problems compared to 83% of male borrowers. In Malaysia, Gibbons and Kasim (1991) found that 95% of women repaid their loans, compared to only 72% of men. In Guatemala, Kevane and Wydick (2001) found that female credit groups had better loan repayment records than male groups. Finally, in a global context, D'Espallier et al. (2011) show that a higher percentage of female clients in MFIs correlates with repayment rates.

Some of these results can be explained by observing things from the women borrowers' perspective. Women, especially those in poor countries, have very limited mobility as compared to men (Armendáriz & Morduch, 2005; Morvant-Roux, 2011). This is because women usually experience greater social pressure to take care of their children and are therefore more inclined to stay where they are. Social norms in some countries also mean that women are not considered for inheritance in the family (or have a very limited right), while men are eligible (Deininger et al., 2010; Kutsoati & Morck, 2016). By having less mobility and lacking the financial capacity to relocate, women are often trapped in a place where the pressure and humiliation are higher if they do not repay their loans. That is why it is expected that higher women's participation will result in higher repayment rates and hence better MFI financial performance.

### 3 | EMPIRICAL ANALYSIS

#### 3.1 | The context: Microfinance in Eastern Europe and Central Asia (EECA)

Although the practice of microfinance can be traced back several centuries, its popularization can be credited to Professor Muhammad Yunus, who pioneered the microcredit movement in Bangladesh in the mid-1970s through the establishment of the Grameen Bank. The initial purpose of microfinance has been generally consistent in many countries, namely provide financing to the poor, who are often excluded by the conventional banking system. However, as the poor generally do not have a credit history and own little in the way of assets to be used as collateral, MFIs leveraged the cultural aspect of the ties within the society. In the early stages of microfinance, their lending practices used the mechanisms of the group-lending scheme, with joint-liability loans. In this scheme, MFIs delegated the screening, monitoring, and contract enforcement costs to a group, while loan repayment was secured by the promise of access to future larger loans, conditional on current loan repayment (Conning, 1999; Navajas et al., 2000).

In the EECA region, the transition period from a centrally planned economy to a market economy during the 1990s forced banks to focus on big businesses and state-owned enterprises. As a result of this, smaller players in the market started scouring elsewhere for their funding. This was coupled with restrictive banking regulations that prevented new banks from entering the market (Armendáriz & Morduch, 2000). To occupy this space in the financial services industry, the first microfinance programme was established in 1992 in Poland (Forster et al., 2003). The principal objective of the programme was to raise incomes and broaden financial markets by providing financial services (principally credit) to small-scale entrepreneurs who otherwise lacked access to capital markets or formal financial institutions. Some of the following programmes had primarily social missions, focusing on outreach to women, displaced or widowed by war (Forster et al., 2003). They usually required small loans of less than USD 1,000. For example, Opportunity International's "Trust Banks" for poorer households in Macedonia, Bulgaria, Croatia, Romania, Poland, and Russia remain committed to group-lending practices, with clients in this niche typically starting with loans below USD 1,000 (Armendáriz de Aghion & Morduch, 2000).

Being the youngest microfinance industry in the world, the EECA region has yielded good financial performance. According to Hartarska et al. (2006), the average MFIs in the EECA region had a gross portfolio yield of 35% (in real terms), and operational self-sustainability of 131%, while the average for the global MFI industry was a gross portfolio yield of 29% and an operational self-sustainability of 123%.

Since the 2000s, MFIs have grown to control significant resources and develop a large client base. For example, in Central and Eastern Europe and the Newly Independent States (CEE and NIS), the asset base of these organizations is estimated to be USD 1.2 billion (Forster et al., 2003). The average loan amount per borrower is kept considerably smaller than those of conventional banks. The average loan size for MFIs has been estimated as approximately USD 611, while the average loan size for conventional banks is USD 7,740 (Forster et al., 2003).

Generally, microfinance services in the EECA region are offered by four types of organizations: non-governmental organizations (NGOs), microfinance banks (chartered commercial banks devoted to microfinance services), commercial banks (usually providing microloans through a separate unit within the bank dedicated to MFI activities, also called downscaling), and Credit Unions. Microfinance banks are predominant in Eastern Europe, while small non-bank financial intermediaries operate mainly in Central Asia. Depending on the subregion and the type of MFI, the loan size ranges from several hundred USD to USD 10,000 (Khachatryan et al., 2017). Another characteristic of the MFIs in the region is that they have high loan repayment rates, usually above 95%, and higher portfolio quality than MFIs in other regions (Bossoutrot, 2005).

An insight into the situation of MFIs in the EECA area, using the information from the database used in our study, is reported in the Appendix.

### 3.2 | Methodology

In this study, regression analysis combines financial performance measures with different layers of female employees in 172 MFIs in EECA countries to investigate the relationships between the two sets of variables. As the panel data from 1996 to 2014 is unbalanced, we use three different estimators, namely pooled OLS, fixed effects, and random effects.<sup>3</sup>

In line with other existing studies, the baseline estimated equation is as follows:

$$FP_{it} = \alpha_0 + \beta_1 FEMBOARD_{it} + \beta_2 FEMMAN_{it} + \beta_3 FEMLOANOFF_{it} + \beta_4 FEMBORR_{it} + \beta_5 DTE_{it} + \beta_6 LNASST_{it} + \beta_7 REGULATED_{it} + \beta_8 MATURED_{it} + \beta_9 NGO_{it} + \beta_{10} TEX_{ij} + \beta_{11} STAFFTURN_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

where subscript  $i$  identifies the MFI, while  $t$  is the respective time period (year).  $\mu_i$  are MFIs' fixed-effects, while  $\varepsilon_{it}$  is a zero-mean error term. Specifically,  $FP$  is financial performance, measured by a set of variables including yield on gross loans (YGL), ROA, ROE, profit margin (PM), and portfolio at risk for 30 days (PAR30). YGL is the ratio of interest and fee income from loan to the average gross loan. ROA is calculated by dividing net income by total assets. ROE is calculated by dividing net income by shareholder equity. PM is calculated by taking the value of net operating income divided by financial revenue. Finally, PAR 30 is loans in arrears for over 30 days, which is often used to gauge how the portfolio of MFIs is performing. These variables are commonly used proxies for measuring the financial/repayment performance of financial institutions like MFIs (D'Espallier et al., 2011; Strøm et al., 2014).

<sup>3</sup>Most of the existing studies have relied on fixed-effects estimates as their main reference. However, as some of the covariates are time invariant, we exploit the hypothesis that MFI's idiosyncratic errors are random to allow the inclusion of time invariant specificities.

We consider female participation in two ways. First, the institutional representativeness of females is captured by their presence as board members, managers, and loan officers (respectively *FEMBOARD*, *FEMMAN*, *FEMLOANOFF*). Second, from the clients' perspective, the share of female borrowers (*FEMBORR*) is typically used as a measure of outreach of the MFIs. All these gendered variables are measured as ratios (e.g., number of female board members over the total number of board members, number of female managers over the total number of managers, number of female loan officers over the total number of loan officers, and number of female clients over total clients). Based on the literature review above, we expect that female participation in any hierarchical level will have a significant relationship with the financial performance of MFIs. However, while the literature provides clear-cut evidence of a positive influence of both female CEOs and female clients on MFIs' financial performance, it is somewhat ambiguous as far as women managers and loan officers are concerned. This motivates the separate inclusion of females at different layers in the MFI's hierarchy (i.e., different regressors, one for each category).

Several control variables that can affect the overall financial performance of MFIs have also been included. For example, debt-to-equity ratio (DTE) is added to understand whether financial leverage can enhance MFIs' financial sustainability. For instance, Quayes (2015) argued that equity financing is expected to have a positive effect on the financial performance of MFIs except when the equity portion comes with a different agenda, such as outreach. Conversely, Abrar and Javaid (2016) found that MFIs with better financial performance finance their assets through more debt. The existing literature also suggests that size can have a bigger say in explaining the financial performance of financial intermediaries because of scale economies. The natural logarithm of the total asset (*LNASST*) is added to understand this effect.

Regulation may also have a mixed effect on financial performance. For example, a more regulated microfinance sector will enable MFIs to gain customer trust, but this comes with a price, such as security requirements and investment in necessary information and communication technology (Mersland & Strøm, 2009). Despite an increase in cost, regulation trust could also help MFIs' management to get access to subsidized funds from donors, government bodies, international funders, and generate deposits. Nonetheless, regulated MFIs may change their client base from poor people to relatively better-off clients, with a reduction in overall cost per loan and a positive effect on financial performance (Amin et al., 2018). We include a dummy variable (*REGULATED*) taking value 1 if the MFI is regulated to capture this effect.

Learning experience by operating a business for a long time has also been studied in the literature, and in most cases age is found to be a proxy to capture experience. In the specific case of MFIs, older MFIs are found to achieve financial goals better than their newly established counterparts (Wijesiri et al., 2017). Hence, we have included a dummy taking value 1 if the MFI is categorized as "mature" by the data source (*MATURED*) to capture the effect of MFI experience on financial performance.

Additionally, NGOs tend to be more socially oriented and connected to the grassroots poor than other types of MFI. Furthermore, NGOs often have considerable knowledge of the needs of the poor (Wilburn, 2009), as their main target is to work with those at the bottom of the economic pyramid (Pralhad, 2004). Moreover, NGOs are also innovative and most successful in their early stage (Chesbrough et al., 2006), as their know-how and proximity to the impoverished adds impetus to their success (Jamali, 2003). Gutiérrez-Nieto et al. (2007) argue that NGOs try their best to provide loans to the poor and operate with minimal cost. Hence, given the possible trade-off between financial sustainability and the outreach objectives of MFIs (Awaworyi Churchill, 2020), a negative effect of NGO status (*NGO*) on financial performance is highly likely in our case. The dummy variable takes the value 1 if its legal status is an NGO and 0 otherwise.

Finally, among the covariates, we include the share of total operating expenses over total assets (*TEX*) to account for the costs incurred by the MFI in managing loans and the percentage of employees that leave the MFI as a measure of staff turnover (*STAFFTURN*). *STAFFTURN* is the ratio of staff (permanent and contract) that have left the MFIs during the last reporting year to the average number of permanent and contract staff for the period. The implications of employees' turnover on MFIs can be huge as it distorts the borrower–employee relationship. Since the microfinance



TABLE 1 Summary Statistics.

Variable	Obs.	Mean	Std. Dev.	Min	Max
YGL	1756	0.21	0.14	-0.08	0.73
ROA	2155	0.04	0.09	-0.30	0.38
ROE	2150	0.11	0.41	-2.12	1.80
PM	2592	0.08	0.52	-3.42	0.72
PAR30	2329	0.046	0.072	0.000	0.410
FEMBOARD	609	0.31	0.27	0.00	1.00
FEMMAN	655	0.44	0.32	0.00	1.00
FEMLOANOFF	749	0.38	0.33	0.00	1.00
FEMBORR	2221	0.49	0.23	0.05	1.00
DTE	2676	5.03	10.98	0.00	81.16
LNASST	2763	15.12	2.38	9.29	20.61
REGULATED	2918	0.87	0.33	0.00	1.00
MATURED	2911	0.42	0.49	0.00	1.00
NGO	2909	0.08	0.27	0.00	1.00
TEX	2162	0.23	0.12	0.03	0.71
STAFFTURN	569	0.23	0.25	0.00	1.09

Source: Authors' computation based on MIX Market data. Note: All variables are winsorized at 1% and 99% except the dummy variables (REGULATED, MATURED, and NGO).

operating mechanism is based upon relationship banking principles, higher turnover is expected to take a toll on loan disbursement and repayment collection, thereby affecting the financial performance of MFIs (Mia et al., 2021).

## 4 | DATA

The data for this study were collected from the MIX Market database in 2016. The platform has now integrated with the World Bank, but, unfortunately, it does not report several interesting variables, such as age and regulation of MFIs, among others. Hence, we stick with the data that was originally collected from the MIX Market own platform as these variables remain crucial for this study.

Table 1 provides the descriptive statistics for the variables in this study. To ensure that our findings are not affected by the presence of outliers, which is often the case for secondary sources of data, we have winsorized continuous variables at 1% and 99% percentile levels.<sup>4</sup> Generally, the mean scores of the control variables are consistent with the overall mean score of MFIs worldwide (Microfinance barometer, 2016). Specifically, the average ROA of MFIs in the EECA region is 4%, the ROE is 11%, the YGL is 21%, and the average PM is 8%, which is considered somewhat high compared to conventional rates.

From the aspect of female participation, women represent about 31% of the board members (FEMBOARD). About 44% of the managers (FEMMAN) are female, while 38% of loan officers (FEMLOANOFF) are female. Meanwhile, female borrowers (FEMBORR) account for 49% of the market, which is still lower than South Asian countries with 92% of their customer base being women (Microfinance barometer, 2016).

Regarding the covariates, about 87% of MFIs are regulated (REGULATED), 42% of them are classified as mature (MATURED), and 8% of MFIs are NGOs (NGO).

<sup>4</sup>In particular, ROA, ROE, and PM exhibited large negative values for some MFIs, due to big losses incurred during the 2008–2010 financial crisis.

TABLE 2 Variance inflation factors and pairwise correlation.

	VIF	TEX	STAFFTURN	FEMBOARD	FEMMAN	FEMLOANOFF	FEMBORR	DTE	LNASST	REGULATED	MATURED	NGO
TEX	1.41	1.00										
STAFFTURN	1.15	0.16	1.00									
FEMBOARD	1.36	0.16	0.03	1.00								
FEMMAN	1.48	-0.02	0.07	0.42	1.00							
FEMLOANOFF	1.54	-0.06	0.06	0.36	0.43	1.00						
FEMBORR	1.45	0.31	-0.04	0.32	0.29	0.28	1.00					
DTE	1.31	0.10	0.02	-0.04	-0.05	-0.01	0.00	1.00				
LNASST	1.85	-0.33	-0.01	-0.10	-0.16	-0.07	-0.20	0.06	1.00			
REGULATED	1.27	0.02	-0.01	-0.08	-0.14	-0.16	-0.07	0.03	0.16	1.00		
MATURITY	1.46	-0.24	-0.17	0.00	0.04	-0.01	-0.11	-0.05	0.42	-0.12	1.00	
NGO	1.09	0.11	-0.05	0.01	0.07	0.06	0.17	-0.05	-0.07	-0.19	-0.03	1.00

Source: Authors' computation based on MIX Market data.

TABLE 3 Women board members, cost reduction, and operational self-sufficiency of MFIs.

	Low Presence of Women (equal or less than 33% of board members)	High Presence of Women (over 33% of board members)	t-Value	Pr( T  >  t )
	Mean			
Personnel expense/ assets	0.081	0.096	-2.179	0.029
Operating expense/ assets	0.138	0.156	-1.779	0.076
Cost per loan	367.396	389.79	-0.459	0.646
Operational self-sufficiency	1.196	1.352	-2.411	0.016

Source: Authors' computation based on MIX Market data. Based on the median value (0.33) of female board members, the sample is divided into two groups. The sample includes MFIs that have at least one woman board member. Negative t-value shows the direction of the relationship.

We investigate the presence of multicollinearity between the independent variables in two different ways (Table 2). On the one hand, we compute the variance inflation factor (VIF).<sup>5</sup> On the other hand, we look at the pairwise correlation among the independent variables. While the latter is not a direct measure of multicollinearity, a higher value of the correlation between two or more independent variables may reveal potential multicollinearity problems. In general, if pairwise correlation exceeds 0.80, then a problem of multicollinearity is likely to generate unstable parameters (Kennedy, 2008). Both the VIF and pairwise correlations in Table 2 are well below the maximum allowable levels.

Before turning to the regression output, we perform t-tests to better gauge the mechanism with which female participation in MFIs' staff, as well as female borrowers, can be related to MFIs' operational self-sufficiency (Table 3). In so doing, the main sample was divided into two parts, based on the median value of women's presence as board members, to allow comparisons.<sup>6</sup> We observe that a higher women presence as board members seems to put greater weight on the costs of MFIs, as both personnel expenses over assets and operating expense over assets are statistically significant at 5% and 10% levels respectively. The findings are also somewhat similar to Ghosh and Guha (2019), who find that the cost per borrower tends to increase when the number of female directors on a board of directors increases. Nonetheless, the significant difference in operational self-sufficiency suggests that the presence of more women board members is likely to enhance operational self-sufficiency, possibly because they are also likely to generate higher operational revenues.

## 5 | RESULTS

The results of the empirical analysis are reported in Tables 4a and 4b.<sup>7</sup> In general, we find that female participation is significantly related to MFIs' financial sustainability, albeit in different ways, based on either the position of the female stakeholder within the MFI hierarchy or her role as a customer. Female board members and female borrowers are the two segments that are positively associated with most of the financial performance variables used in the study.

Except in a few models, the estimated parameters for *FEMBOARD* are statistically significant and positively associated with all dependent variables, in line with similar previous studies by Strøm et al. (2014) and

<sup>7</sup>The overall fit of the models is reasonably good, as the F statistics/Chi<sup>2</sup> remain significant (1% and 5%) across the models.

<sup>5</sup>Several specialists in the field recommend that the maximum threshold of VIF should not be more than 10 (O'Brien, 2007) or 5 (Bahovec, 2011).

<sup>6</sup>We have selected board member to divide the sample instead of other variables because the board is considered the engine of an enterprise and all activities are determined by the guidance of board.

TABLE 4(A) Female participation, institutional characteristics, and financial performance of MFIs.

	Model-(1)	Model-(2)	Model-(3)	Model-(4)	Model-(5)	Model-(6)	Model-(7)	Model-(8)	Model-(9)
	Pooled OLS	REM	FEM	Pooled OLS	REM	FEM	Pooled OLS	REM	FEM
	Dependent Variable: YGL		Dependent Variable: ROA		Dependent Variable: ROE		Dependent Variable: ROE		
FEMBOARD	0.049 <sup>***</sup> (0.021)	0.038(0.024)	0.016(0.034)	0.059 <sup>***</sup> (0.016)	0.050 <sup>***</sup> (0.017)	0.037 <sup>***</sup> (0.022)	0.196 <sup>***</sup> (0.048)	0.201 <sup>***</sup> (0.055)	0.163 <sup>***</sup> (0.097)
FEMMAN	-0.028(0.019)	-0.018(0.022)	0.036(0.030)	-0.046 <sup>***</sup> (0.013)	-0.031 <sup>***</sup> (0.013)	-0.007(0.019)	-0.160 <sup>***</sup> (0.039)	-0.148 <sup>***</sup> (0.037)	-0.054(0.085)
FEMLOANOFF	-0.011(0.019)	-0.009(0.023)	-0.005(0.030)	-0.031 <sup>***</sup> (0.014)	-0.018(0.023)	-0.009(0.030)	-0.068(0.048)	-0.026(0.056)	0.060(0.062)
FEMBOR	0.086 <sup>***</sup> (0.025)	0.079 <sup>***</sup> (0.035)	0.047(0.048)	0.082 <sup>***</sup> (0.022)	0.058 <sup>***</sup> (0.024)	0.041 <sup>***</sup> (0.024)	0.200 <sup>***</sup> (0.081)	0.161 <sup>***</sup> (0.086)	0.117(0.082)
DTE	-0.002 <sup>***</sup> (0.001)	-0.002(0.001)	-0.002(0.003)	-0.001(0.001)	-0.002 <sup>***</sup> (0.001)	-0.003 <sup>***</sup> (0.002)	0.004(0.006)	-0.003(0.008)	-0.033 <sup>***</sup> (0.012)
LNASST	-0.006 <sup>***</sup> (0.003)	-0.007 <sup>***</sup> (0.004)	-0.005(0.011)	-0.009 <sup>***</sup> (0.002)	-0.012 <sup>***</sup> (0.003)	-0.002(0.007)	0.002(0.007)	-0.003(0.010)	0.002(0.023)
REGULATED	-0.038 <sup>***</sup> (0.018)	-0.017(0.026)	-	0.036 <sup>***</sup> (0.012)	0.054 <sup>***</sup> (0.016)	-	0.012(0.048)	0.065(0.043)	-
MATURED	-0.029 <sup>***</sup> (0.015)	-0.049 <sup>***</sup> (0.021)	-0.067 <sup>***</sup> (0.033)	-0.040 <sup>***</sup> (0.011)	-0.023 <sup>***</sup> (0.011)	-0.003(0.013)	-0.104 <sup>***</sup> (0.035)	-0.083 <sup>***</sup> (0.031)	0.017(0.031)
NGO	-0.035 <sup>***</sup> (0.016)	-0.026(0.022)	-	-0.036 <sup>***</sup> (0.013)	-0.040 <sup>***</sup> (0.019)	-	-0.142 <sup>***</sup> (0.045)	-0.139 <sup>***</sup> (0.058)	-
TEX	0.721 <sup>***</sup> (0.063)	0.613 <sup>***</sup> (0.077)	0.231 <sup>***</sup> (0.139)	-0.215 <sup>***</sup> (0.049)	-0.325 <sup>***</sup> (0.071)	-0.547 <sup>***</sup> (0.111)	-0.361 <sup>***</sup> (0.142)	-0.534 <sup>***</sup> (0.182)	-1.561 <sup>***</sup> (0.353)
STAFFTURN	-0.037(0.026)	-0.033(0.024)	-0.003(0.024)	-0.027(0.019)	-0.032(0.021)	-0.022(0.022)	-0.059(0.055)	-0.044(0.059)	0.041(0.083)
CONS	0.200 <sup>***</sup> (0.052)	0.238 <sup>***</sup> (0.063)	0.274(0.173)	0.219 <sup>***</sup> (0.035)	0.265 <sup>***</sup> (0.049)	0.187 <sup>***</sup> (0.108)	0.190 <sup>***</sup> (0.107)	0.266 <sup>***</sup> (0.145)	0.429(0.381)
Observations	400	400	400	400	400	400	399	399	399
F-Statistics/ Chi <sup>2</sup>	29.485 <sup>***</sup>	141.031 <sup>***</sup>	2.188 <sup>**</sup>	7.837 <sup>***</sup>	99.624 <sup>***</sup>	7.847 <sup>***</sup>	5.949 <sup>***</sup>	54.157 <sup>***</sup>	9.229
Breusch-Pagan LM Test	41.95 <sup>***</sup>				55.16 <sup>***</sup>			32.27 <sup>***</sup>	
Hausman Test			34.78 <sup>***</sup>		48.05 <sup>***</sup>			53.54 <sup>***</sup>	
R <sup>2</sup> (overall/ within)		0.534	0.125		0.240	0.351		0.114	0.242
Number of groups/ MFIs	172			172				171	

Source: Authors' computation based on MIX Market data. Standard errors in parentheses (standard errors are clustered at the MFI's level). \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01. Note: No coefficient/standard error values are available for time-invariant variables under the fixed-effects model. F-statistics are reported under OLS and FEM while Chi<sup>2</sup> is for REM. Overall R<sup>2</sup> is reported for pooled OLS and REM while within R<sup>2</sup> is for FEM.

TABLE 4 (B) Female participation, institutional characteristics, and financial performance of MFIs.

	Model- (10)	Model- (11)	Model- (12)	Model- (13)	Model- (14)	Model- (15)
	Pooled OLS	REM	FEM	Pooled OLS	REM	FEM
	Dependent Variable: PM		Dependent Variable: PAR30			
FEMBOARD	0.173 <sup>***</sup> (0.047)	0.117 <sup>**</sup> (0.051)	0.097(0.063)	-0.031 <sup>***</sup> (0.012)	-0.012(0.011)	0.008(0.013)
FEMMAN	-0.117 <sup>**</sup> (0.046)	-0.031(0.046)	0.056(0.071)	0.022(0.016)	0.007(0.014)	-0.009(0.018)
FEMLOANOFF	-0.120 <sup>**</sup> (0.050)	-0.013(0.056)	0.054(0.057)	0.041 <sup>**</sup> (0.018)	0.004(0.017)	-0.006(0.019)
FEMBOR	0.325 <sup>***</sup> (0.093)	0.198 <sup>**</sup> (0.095)	0.165 <sup>**</sup> (0.083)	-0.074 <sup>***</sup> (0.025)	-0.023(0.028)	0.039(0.036)
DTE	-0.001(0.003)	-0.005(0.003)	-0.006(0.006)	0.001(0.002)	0.002(0.001)	0.002(0.002)
LNASST	-0.022 <sup>***</sup> (0.006)	-0.028 <sup>***</sup> (0.010)	-0.001(0.025)	-0.004(0.002)	-0.002(0.002)	-0.002(0.007)
REGULATED	0.140 <sup>**</sup> (0.055)	0.158 <sup>**</sup> (0.080)	-	-0.010(0.014)	-0.028(0.020)	-
MATURED	-0.116 <sup>***</sup> (0.038)	-0.084 <sup>**</sup> (0.033)	-0.036(0.028)	0.013(0.009)	0.019 <sup>*</sup> (0.010)	0.015(0.012)
NGO	-0.149 <sup>**</sup> (0.067)	-0.196 <sup>*</sup> (0.111)	-	0.027 <sup>*</sup> (0.014)	0.027(0.018)	-
TEX	-1.266 <sup>***</sup> (0.178)	-1.768 <sup>***</sup> (0.299)	-2.569 <sup>***</sup> (0.405)	-0.070(0.056)	0.038(0.079)	0.312 <sup>**</sup> (0.130)
STAFFTURN	-0.054(0.068)	-0.103(0.074)	-0.086(0.071)	0.049 <sup>*</sup> (0.026)	0.043(0.028)	0.030(0.026)
CONS	0.669 <sup>***</sup> (0.120)	0.869 <sup>***</sup> (0.165)	0.657 <sup>*</sup> (0.385)	0.128 <sup>***</sup> (0.038)	0.070 <sup>*</sup> (0.041)	-0.021(0.104)
Observations	399	399	399	396	396	396
F Statistics/Chi <sup>2</sup>	11.000 <sup>***</sup>	101.866 <sup>***</sup>	6.569 <sup>***</sup>	5.970 <sup>***</sup>	25.025 <sup>***</sup>	2.297 <sup>**</sup>
Breusch-Pagan LM Test		88.16 <sup>***</sup>			52.810 <sup>***</sup>	
Hausman Test			47.88 <sup>***</sup>			46.440 <sup>***</sup>
R <sup>2</sup> (overall/within)	0.282	0.230	0.478	0.150	0.068	0.175
Number of groups/ MFIs		171			171	

Source: Authors' computation based on MIX Market data. Standard errors in parentheses (standard errors are clustered at the MFI's level). \*p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01. Note: F-statistics are reported under OLS and FEM while Chi<sup>2</sup> is for REM. Overall R<sup>2</sup> is reported for pooled OLS and REM while within R<sup>2</sup> is for FEM.

Vishwakarma (2017). The positive correlation between women's participation in the board level of MFIs and financial performance can be explained by women's strategic decisional skills regarding financial sustainability, like better relationships with various stakeholders involved with the MFIs' activities (Galbreath, 2011) and superior monitoring abilities. Nonetheless, heterogeneity in board composition can stimulate innovative ideas that foster good organizational culture (Vishwakarma, 2017). Nonetheless, our findings also chime with the argument of other scholars (Isidro & Sobral, 2015) who find that women in the board have a positive, albeit indirect, effect on the financial performance of firms in the European context.

As highlighted in several previous studies, women borrowers tend to be disciplined and committed to repay loan instalments on time, sometimes prompted by the need to maintain their social image. Such social ties, in return, provide better financial incentives to MFIs. This, along with outreach benefits, explains why the MFIs are not averse to the majority of their clients being female. Our findings underline that targeting more female clients (*FEMBORR*) results in better financial performance, echoing the findings of Abdullah and Quayes (2016). The results of this analysis also align with and support the Grameen Bank's decision to shift their client base towards women (Armendáriz & Morduch, 2000) due to social trust among the community members (Raj Aggarwal et al., 2015). Hence, there is evidence that in the EECA countries targeting female borrowers helps fulfil two of the main purposes of MFIs. On the other hand, targeting women in these countries could limit the incidence of a possible trade-off between outreach and sustainability, which cannot be excluded at the overall MFI level.

Our findings, therefore, support existing literature like Strøm et al. (2014), who find that female leadership relates positively to MFI performance. They also support the findings by D'Espallier et al. (2011), who showed that a higher percentage of female clients in MFIs is correlated with better repayment rates. On the other hand, in contrast to the above findings, our study also confirms studies that indicate that in the EECA context the presence of female managers and, to a lesser extent, female loan officers has a negative effect on some measures of MFI financial performance, although this is limited to some selected dependent variables and types of estimators. Specifically, female managers are found to have a negative significant effect on ROA, ROE, and PM, whereas a stronger presence of female loan officers is negatively related to ROA and PM.

On the negative effect of female managers, our findings contradict the existing literature of Mersland and Strøm (2009) and Hartarska et al. (2014). To the best of our knowledge, ours is the first empirical analysis showing that female managers may have adverse effects on MFI performance. On the negative effect of female loan officers, our results support the study by van den Berg et al. (2015), who observe that the influence of gender may differ in different settings. In some countries, bank managers and loan officers are responsible for collecting arrears payments (see, for example, Siwale & Ritchie, 2011, in Zambia). In doing so, they sometimes have to visit the houses of defaulters to urge them to repay their loans. Female managers and loan officers face higher safety concerns and cultural limitations when traveling to these places, compared to male officers. Hence, they may be less persuasive and less successful in collecting arrears payments, which might hinder firm performance. Some of the existing literature found similar evidence, explaining this with the suggestion that enterprises headed by women tend to be smaller (Ellis et al., 2010; Fischer et al., 1993; Kalleberg & Leicht, 1991; Rosa et al., 1996; Watson & Robinson, 2003), possibly due to women being more risk-averse (Cliff, 1998), less experienced in business practices (Loscocco et al., 1991), and having a narrower social network (Kelley et al., 2010; Loscocco et al., 2009) compared to men.

Concerning other variables included in the study, our findings reveal that total operating expenses as a share of total assets (*TEX*) have a negative effect on ROA, ROE, and PM. This is in line with the conventional findings whereby increasing cost will lead to decreased financial performance. However, the YGL tends to increase with operating expenditures, suggesting that loans that are more expensive to manage also provide higher yields. Given that transaction costs typically have a greater impact on low-value loans (those granted to the more marginalized), this is not necessarily a positive finding in terms of outreach, as it suggests that higher interest rates are charged on loans to the poorest.

The DTE is negatively associated with financial performance. Generally, past studies like Akhigbe and McNulty (2005), and Cull et al. (2007) suggest that banks with higher leverage have higher productivity and therefore greater financial sustainability. However, we find that DTE has a negative effect on the financial sustainability of MFIs, possibly due to a higher risk of default.

Regarding the size of the MFIs, larger MFIs are postulated to show higher sustainability, as their larger asset base could enable them to withstand shocks such as the 2008 financial crisis (Gohar & Batool, 2015). Besides that, larger MFIs may also benefit from economies of scale in providing financial services, which allow them to be more efficient, thus exhibiting better financial standards. On the contrary, we observe that bigger MFIs tend to have lower financial performance, as we find a negative relationship between the total assets (LNASTT) of MFIs and YGL, ROA, and PM.

It was initially anticipated that mature MFIs tend to have a better financial position as they have been running in the business for quite some time. For example, Cull et al. (2007), Ayayi and Senne (2010), and Hasan et al. (2019) found that more mature firms report better performance standards than their younger counterparts. However, younger MFIs also have strengths in terms of the ability to adapt to more up-to-date technologies or innovations as compared to older MFIs, which are more complacent in their more staid ways of managing operational activities. In line with this second hypothesis, our findings indicate that in EECA countries matured MFIs (MATURED) exhibit relatively lower financial sustainability.

To capture the fact that NGOs are more socially oriented, we have included a variable reflecting the legal status of MFIs, according to whether they are NGOs or not. Indeed, according to the literature, NGOs are generally found to have better social performance than commercial organizations like banks, non-bank financial institutions, credit co-operatives, and rural banks (Morduch, 1999). However, the status of NGOs can also negatively impact MFIs' financial performance as compared to commercially driven organizations, as NGOs are more inclined to provide assistance to the poor rather than being purely profit oriented. This is a possible explanation behind the negative relationship between NGO status (NGO) and financial performance observed in this analysis.

In terms of regulation, the dummy REGULATED is found to have a statistically positive relationship with ROA and PM. Based on this result, it can be argued that regulation has a positive overall effect on financial performance, confirming similar findings in other studies. Gohar and Batool (2015), for example, assert that regulations have a significant effect on an MFI's financial performance because customers put higher trust in regulated MFIs as the latter have certain rules and protocols to adhere to compared to MFIs that are not regulated. These rules are seen as ensuring that MFIs do not engage in any activities which can harm their business, thus guaranteeing the protection of customer interests. We conclude that, overall, regulation increases the financial performance of regulated MFIs as compared to unregulated MFIs.

Lastly, the effect of gendered and organizational variables on MFIs PAR30 was mostly insignificant despite some of them having an expected sign and some not, particularly when REM and FEM results are considered (Table 4b). Under REM, we found that only mature MFIs are estimated to observe higher repayment problem as the coefficient sign is positive. This finding is consistent with the earlier argument that mature MFIs are likely to perform worse financially (see Table 4a).

## 6 | CONCLUSIONS, POLICY IMPLICATIONS, AND DIRECTIONS FOR FUTURE RESEARCH

In this article, we evaluated the relationship between gender diversification and MFI financial performance in the EECA region. Through regression analysis, we investigated whether and how the presence of female directors, managers, loan officers, and clients can influence the financial performance of MFIs.

This study adds to the literature on microfinance in two ways. The first is to have considered the contribution of women in the MFI staff at every level of a firm's hierarchy. Indeed, most of the studies assessing this relationship

typically do not incorporate female participation at *all* hierarchical levels. This is an important aspect in light of the debate, now consolidated in the microfinance literature, on the trade-off between the pursuit of social objectives (outreach) and financial sustainability. The second innovative direction derives from having analysed a context that has not been investigated before: that of EECA countries. In this context, the descriptive statistics suggest some differences in the way of doing microfinance with the methods used in developing countries, which are much more studied in the literature. In particular, for the EECA area, the descriptive statistics of our study highlight the service of a considerably smaller number of female customers.

After considering female participation from both the institutional side and the client side, we found that the share of female stakeholders in the examined context correlates significantly with the financial performance of MFIs. On the one hand, the results of our analysis support the hypothesis that incorporating more women board members and clients enhances MFIs' financial sustainability, in a win-win situation for both sides. On the other hand, empirical evidence reveals that female managers and loan officers may negatively affect the financial performance of MFIs to some extent, although the empirical evidence is somewhat weak on this point.

Several other studies in the microfinance literature conclude that there are positive effects of having women on boards of directors. Scholars explain this outcome by asserting that women adopt less costly strategic decisions and have greater responsiveness towards financial sustainability, and have better relationships with stakeholders, thereby increasing accountability and ethical conduct, which eventually improve financial performance (Galbreath, 2011; Natividad, 2005; Adams & Ferreira, 2009; Erhardt et al., 2003; Mori et al., 2015; Mahadeo et al., 2012; Strøm et al., 2014; Gohar & Batool, 2015). The findings of our study support those of the existing literature regarding women borrowers. Especially in contexts of poverty, the limited mobility of women due to family duties and the higher social pressure in case of delayed loan repayment are the main motivations ascribed to better MFI financial performance when they have a higher proportion of female clients (D'Espallier et al., 2011; Khandker et al., 1995; Kevane & Wydick, 2001; Hulme, 1991; Gibbons & Kasim, 1991).

Conversely, and mirroring the results from the literature on sectors other than microfinance, MFIs managed by women do not seem to have better corporate and financial performance than those managed by men, at least in the EECA context. This is not a standard result in microfinance, where female managers are found to generate better performance for MFIs (Mersland & Strøm, 2009; Périlleux & Szafarz, 2015; Hartarska et al., 2014; Strøm et al., 2014). This advantage is often motivated by the greater ability of women managers and loan officers to understand the needs of female borrowers, and incorporating these into the design and implementation of financial products and other related services specifically tailored for women (Byrne, 1971; Augustine et al., 2016; Crosby et al., 1990; Lee & Dubinsky, 2003). In fact, one of the features of microfinance is the assistance to customers through non-financial support. In these activities, understanding the subordinate position of women, particularly in business and investment decisions, is fundamental to the success of a microfinance programme, perhaps more than the design of the loans themselves. However, the positive effects of gender association tend to occur in circumstances where the majority of the clientele is female. Whereas, in the context of the EECA countries, as well as in some areas of Western Europe and Latin America, the clientele tends to be predominantly male, or in any case not predominantly female, which could explain the findings in the literature regarding the impact of women managers and loan officers.

Specifically, regarding loan officers, we previously mentioned the impact of their subordination in society that can affect women when they are required to collect debts. Their authority when it comes to collecting loans and their persuasive ability could be diminished when they find themselves dealing with men, either because they are less able to understand the needs of the latter, or for cultural reasons that see women as subservient. The consequences for credit risk and the possible accumulation of bad loans on MFIs' financial performance are clear-cut.

These contextual differences would seem to leave a question mark over established theories positing the better performance of MFIs either managed by women or having a majority of female loan officers. The particular circumstances in low-income countries, on which most of the previous studies have focused, could be part of the explanation.

Overall, the implications of our study suggest that MFIs in the EECA context should consider a further review of their managerial practices, such as operational recruitment, to ensure that their decisions are not detrimental



towards achieving financial sustainability. This study suggests that placing women at the top of the decision-making process is likely to improve the financial sustainability of MFIs in the EECA area. As regards the lower levels of the hierarchy, particularly loan officers, it would be advisable for them to be supported in the loan collection phase and interaction with male customers, so that they can exploit more effective techniques, and feel more empowered in the loan collection phases. This could be implemented relatively quickly. In the mid- to long term, as lending to more women is associated with relatively better financial performance, MFIs could scale up their loan activities to more women since their representation in the client base is lower in the EECA region than the global average and other regions (e.g. South Asia). This could, in turn, contribute to solving the problem of insufficient effectiveness of women at the managerial level and loan collection level found in this study. Indeed, this negative impact on the financial performance of MFIs seems to originate from a poor synergy between female managers and loan officers, on the one hand, and predominantly male clients on the other. Furthermore, as highlighted earlier, one of the main obstacles for MFIs' financial sustainability is the operating cost. A major managerial implication of this finding is that top management of MFIs should find ways on how to improve their resource efficiency, probably by integrating information and communication technologies in their operation, as these have been found to minimize operating costs.

There are additional insights that stem from this research. First, since the DTE ratio appears negatively related to MFIs' financial performance, changing funding direction towards equity financing could enhance their overall financial performance. Second, regulation seems to enhance the financial performance of MFIs in EECA countries to some extent, hence it may be worthwhile to consider bringing all MFIs under carefully thought-through regulation to better monitor their activities and instil more confidence in this financial segment. Third, the maturity status of MFIs is found to have a negative impact on financial self-sustainability, perhaps because the older ones are not using up-to-date technologies, or innovating products and services, and thus lack operational improvement. Continuing their activity without further improvements to ensure financial sustainability could put them at the risk of closure in the near future.

Finally, despite contributing to the corporate governance literature considering the effect of gender on the financial performance of MFIs, this study has some limitations. For example, while trying to understand whether there is a beneficial or adverse effect from women's involvement in MFIs, all studies—including ours—jump from the presence of women to MFIs' performance, all too often failing to identify the mechanisms whereby "women do better" can lead to more efficiency. Future research would also benefit from the use of empirical methodologies to analyse causality issues between the two phenomena we have investigated in this study.

## ACKNOWLEDGEMENTS

We are thankful to the Editor and an anonymous reviewer for very constructive comments and suggestions on the earlier version of the article. Università degli Studi di Milano-Bicocca [Correction added on 17 May 2022, after first online publication: CRUI funding statement has been added.].

## DATA AVAILABILITY STATEMENT

Data available on request from the authors.

## ORCID

Md Aslam Mia  <https://orcid.org/0000-0002-6452-1126>

Lucia Dalla Pellegrina  <https://orcid.org/0000-0002-3648-7506>

Wai-Yan Wong  <https://orcid.org/0000-0003-4140-1890>

## REFERENCES

Abdullah, S., & Quayes, S. (2016). Do women borrowers augment financial performance of MFIs? *Applied Economics*, 48(57), 5593–5604. <https://doi.org/10.1080/00036846.2016.1181831>

- Abrar, A., & Javaid, A. Y. (2016). The impact of capital structure on the profitability of microfinance institutions. *South Asian Journal of Management Sciences*, 10(1), 21–37. <http://sajms.iurc.edu.pk//paper.php?id=Spring2016V10N1P3>
- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, 94(2), 291–309. <https://doi.org/10.1016/j.jfineco.2008.10.007>
- Adusei, M., Akomea, S. Y., & Poku, K. (2017). Board and management gender diversity and financial performance of microfinance institutions. *Cogent Business and Management*, 4(1), 1360030. <https://doi.org/10.1080/23311975.2017.1360030>
- Aggarwal, R., Goodell, J. W., & Selleck, L. J. (2015). Lending to women in microfinance: Role of social trust. *International Business Review*, 24(1), 55–65. <https://doi.org/10.1016/j.ibusrev.2014.05.008>
- Agier, I. (2012). The role of credit officers in the performance of micro loans. *Economics of Transition*, 20(2), 271–297. <https://doi.org/10.1111/j.1468-0351.2012.00434.x>
- Akhigbe, A., & McNulty, J. (2005). Profit efficiency sources and differences among small and large US commercial banks. *Journal of Economics and Finance*, 29(3), 289–299. <https://doi.org/10.1007/BF02761575>
- Amin, W., Qin, F., Rauf, A., & Ahmad, F. (2018). Effect of regulations on financial performance and outreach of MFIs. *Public Finance Quarterly*, 63(3), 345–354. [https://www.penzugyiszemle.hu/upload/pdf/penzugyi\\_szemle\\_angol/volume\\_63\\_2018\\_3/A\\_Amin\\_2018\\_3.pdf](https://www.penzugyiszemle.hu/upload/pdf/penzugyi_szemle_angol/volume_63_2018_3/A_Amin_2018_3.pdf)
- Armendáriz de Aghion, B., & Morduch, J. (2003). Microfinance beyond group lending. *Economics of Transition*, 8(2), 401–420. <https://doi.org/10.1111/1468-0351.00049>
- Armendáriz, B., & Morduch, J. (2005). *The economics of microfinance*. MIT Press.
- Augustine, D., Wheat, C. O., Jones, K. S., Baraldi, M., & Malgwi, C. A. (2016). Gender diversity within the workforce in the microfinance industry in Africa: Economic performance and sustainability. *Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration*, 33(3), 227–241. <https://doi.org/10.1002/cjas.1365>
- Awaworyi Churchill, S. (2020). Microfinance financial sustainability and outreach: Is there a trade-off? *Empirical Economics*, 59, 1329–1350. <https://doi.org/10.1007/s00181-019-01709-1>
- Ayayi, A., & Sene, M. (2010). What drives microfinance institutions' financial sustainability. *Journal of Developing Areas*, 44(1), 303–324. <http://www.jstor.org/stable/41428207>
- Ban, K.-M. (2010). Increasing uniform delivery through collective action. In Department of Economic and Social Affairs (Ed.), *Achieving Gender Equality, Women's Empowerment and Strengthening Development Cooperation, Dialogues at the Economic and Social Council* (pp. 12–15). United Nations. [https://www.un.org/en/ecosoc/docs/pdfs/10-50143\\_\(e\)\\_desa/dialogues\\_ecosoc\\_achieving\\_gender\\_equality\\_women\\_empowerment.pdf](https://www.un.org/en/ecosoc/docs/pdfs/10-50143_(e)_desa/dialogues_ecosoc_achieving_gender_equality_women_empowerment.pdf)
- Bahovec, V. (2011). Multicollinearity. In M. Lovric (Ed.), *International encyclopedia of statistical science* (pp. 869–870). Springer Verlag.
- Beck, T., Behr, P., & Guettler, A. (2013). Gender and banking: Are women better loan officers? *Review of Finance*, 17(4), 1279–1321. <https://doi.org/10.1093/rof/rfs028>
- Byrne, D. E. (1971). *The attraction paradigm*. Academic Press.
- Bossoutrot, S. K. (2005). *Microfinance in Russia: Broadening access to finance for micro and small entrepreneurs* (World Bank Working Paper No. 67). World Bank. <https://openknowledge.worldbank.org/handle/10986/7512>
- Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review*, 38(1), 33–53. <https://doi.org/10.1111/1540-6288.00034>
- Chesbrough, H., Ahern, S., Finn, M., & Guerraz, S. (2006). Business models for technology in the developing world: The role of non-governmental organizations. *California Management Review*, 48(3), 48–61. <https://doi.org/10.2307/41166349>
- Cliff, J. E. (1998). Does one size fit all? Exploring the relationship between attitudes towards growth, gender, and business size. *Journal of Business Venturing*, 13(6), 523–542. [https://doi.org/10.1016/S0883-9026\(97\)00071-2](https://doi.org/10.1016/S0883-9026(97)00071-2)
- Conning, J. (1999). Outreach, sustainability and leverage in microfinance lending: A contract design approach. *Journal of Development Economics*, 60(1), 51–77. [https://doi.org/10.1016/S0304-3878\(99\)00036-X](https://doi.org/10.1016/S0304-3878(99)00036-X)
- Crosby, L. A., Evans, K. R., & Cowles, D. (1990). Relationship quality in services selling: An interpersonal influence perspective. *Journal of Marketing*, 54(3), 68–81. <https://doi.org/10.1177/002224299005400306>
- Cull, R., Demirgüç-Kunt, A., & Morduch, J. (2007). Financial performance and outreach: A global analysis of leading micro-banks. *The Economic Journal*, 117(517), 107–133. <https://doi.org/10.1111/j.1468-0297.2007.02017.x>
- Deininger, K., Goyal, A., & Nagarajan, H. (2010). *Inheritance law reform and women's access to capital: evidence from India's Hindu succession act* (World Bank Policy Research Working Paper No. 5338). <https://openknowledge.worldbank.org/handle/10986/3823>
- D'Espallier, B., Guérin, I., & Mersland, R. (2011). Women and repayment in microfinance: A global analysis. *World Development*, 39(5), 758–772. <https://doi.org/10.1016/j.worlddev.2010.10.008>
- Dixon, R., Ritchie, J., & Siwale, J. (2007). Loan officers and loan 'delinquency' in microfinance: A Zambian case. *Accounting Forum*, 31(1), 47–71. <https://doi.org/10.1016/j.accfor.2006.11.005>

- Eckel, C. C., & Grossman, P. J. (2001). Chivalry and solidarity in ultimatum games. *Economic Inquiry*, 39(2), 171–188. <https://doi.org/10.1111/j.1465-7295.2001.tb00059.x>
- Ellis, A. N., Orlando, M. B., Muñoz Boudet, A. M., Piras, C., Reimao, M., Cutura, J., Frickenstein, J., & de Castro, O. (2010). *Women's economic opportunities in the formal private sector in Latin America and the Caribbean: A focus on entrepreneurship*. The International Bank for Reconstruction and Development/ World Bank. <https://publications.iadb.org/en/womens-economic-opportunities-formal-private-sector-latin-america-and-caribbean-focus>
- Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of directors diversity and firm financial performance. *Corporate Governance: An International Review*, 11(2), 102–112. <https://doi.org/10.1111/1467-8683.00011>
- Fischer, E. M., Reuber, A. R., & Dyke, L. S. (1993). A theoretical overview and extension of research on sex, gender, and entrepreneurship. *Journal of Business Venturing*, 8(2), 151–168. [https://doi.org/10.1016/0883-9026\(93\)90017-Y](https://doi.org/10.1016/0883-9026(93)90017-Y)
- Forster, S., Greene, S., & Pytkowska, J. (2003). *The state of microfinance in Central and Eastern Europe and the New Independent States*. Consultative Group to Assist the Poor. <http://mfc.org.pl/wp-content/uploads/2016/04/The-State-of-Microfinance-in-Central-and-Eastern-Europe-and-the-New-Independent-States-.pdf>
- Galbreath, J. (2011). Are there gender-related influences on corporate sustainability? A study of women on boards of directors. *Journal of Management and Organization*, 17(1), 17–38. <https://doi.org/10.5172/jmo.2011.17.1.17>
- Ghosh, C., & Guha, S. (2019). Role of gender on the performance of Indian microfinance institutions. *Gender in Management*, 34(6), 429–443. <https://doi.org/10.1108/GM-03-2019-0036>
- Gibbons, D., & Kasim, S. (1991). *Banking on the rural poor*. Center for Policy Research. Universiti Sains Malaysia.
- Gohar, R., & Batool, A. (2015). Effect of corporate governance on performance of microfinance institutions: A case from Pakistan. *Emerging Markets Finance and Trade*, 51(S6), S94–S106. <https://doi.org/10.1080/1540496X.2015.1080559>
- Gupta, N., & Mirchandani, A. (2020). Corporate governance and performance of microfinance institutions: Recent global evidences. *Journal of Management and Governance*, 24, 307–326. <https://doi.org/10.1007/s10997-018-9446-4>
- Gutiérrez-Nieto, B., Serrano-Cinca, C., & Molinero, C. M. (2007). Microfinance institutions and efficiency. *Omega*, 35(2), 131–142. <https://doi.org/10.1016/j.omega.2005.04.001>
- Hartarska, V., Caudill, S. B., & Gropper, D. M. (2006). *The cost structure of microfinance institutions in Eastern Europe and Central Asia* (William Davidson Institute Working Paper No. 809). William Davidson Institute at the University of Michigan. [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=905911](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=905911)
- Hartarska, V., Nadolnyak, D., & Mersland, R. (2014). Are women better bankers to the poor? Evidence from rural microfinance institutions. *American Journal of Agricultural Economics*, 96(5), 1291–1306. <https://doi.org/10.1093/ajae/aaU061>
- Hasan, T., Quayes, S., & Khalily, B. (2019). Role of governance on performance of microfinance institutions in Bangladesh. *Eurasian Economic Review*, 9(1), 91–106. <https://doi.org/10.1007/s40822-018-0102-8>
- Hulme, D. (1991). Field reports. The Malawi Mundi fund: Daughter of Grameen. *Journal of International Development*, 3(4), 427–431. <https://doi.org/10.1002/jid.4010030315>
- Isidro, H., & Sobral, M. (2015). The effects of women on corporate boards on firm value, financial performance, and ethical and social compliance. *Journal of Business Ethics*, 132(1), 1–19. <https://doi.org/10.1007/s10551-014-2302-9>
- Jamali, D. (2003). NGOs in development: Opportunities and challenges. *Labour and Management in Development Journal*, 4(2), 2–18. <http://hdl.handle.net/1885/40140>
- Kalleberg, A. L., & Leicht, K. T. (1991). Gender and organizational performance: Determinants of small business survival and success. *The Academy of Management Journal*, 34(1), 136–161. <https://doi.org/10.5465/256305>
- Kelley, D. J., Brush, C. G., Greene, P. G., & Litovsky, Y. (2010). *2010 Women's Report: Women entrepreneurs worldwide*. Global Entrepreneurship Monitor. <https://www.gemconsortium.org/report/gem-2010-womens-report>
- Kennedy, P. (2008). *A guide to econometrics*. (6th ed.). Wiley-Blackwell.
- Kessy, S. (2009). Microfinance and enterprises performance in Tanzania: Does gender matter? In S. Sigué, *Repositioning African business and development for the 21st century*. Proceedings of the 10th Annual Conference (pp. 125–131). <https://www.microfinancegateway.org/sites/default/files/mfg-en-paper-microfinance-and-enterprises-performance-in-tanzania-does-gender-matter-2009.pdf>
- Keavane, M., & Wydick, B. (2001). Microenterprise lending to female entrepreneurs: Sacrificing economic growth for poverty alleviation? *World Development*, 29(7), 1225–1236. [https://doi.org/10.1016/S0305-750X\(01\)00032-8](https://doi.org/10.1016/S0305-750X(01)00032-8)
- Khachatryan, K., Hartarska, V., & Grigoryan, A. (2017). Performance and capital structure of microfinance institutions in Eastern Europe and Central Asia. *Eastern European Economics*, 55(5), 395–419. <https://doi.org/10.1080/00128775.2017.1336064>
- Khandker, S. R., Khan, Z., & Khalily, B. (1995). *Sustainability of a government targeted credit program: Evidence from Bangladesh* (World Bank Discussion Paper No. 316). World Bank. <https://doi.org/10.1596/0-8213-3516-2>

- Kutsoati, E., & Morck, R. (2016). Family ties, inheritance rights, and successful poverty alleviation: Evidence from Ghana. In E. Sebastian, J. Simon, & N. W. David (Eds.), *African Successes, Volume II: Human Capital* (pp. 215–252). University of Chicago Press. <http://www.nber.org/chapters/c13378>
- Lee, S., & Dubinsky, A. (2003). Influence of salesperson characteristics and customer emotion on retail dyadic relationships. *The International Review of Retail, Distribution and Consumer Research*, 13(1), 21–36. <https://doi.org/10.1080/09593960321000051666>
- Loscocco, K. A., Monnat, S. M., Moore, G., & Lauber, K. B. (2009). Enterprising women: A comparison of women's and men's small business networks. *Gender and Society*, 23(3), 388–411. <https://doi.org/10.1177/0891243209336741>
- Loscocco, K. A., Robinson, J., Hall, R. H., & Allen, J. K. (1991). Gender and small business success: An inquiry into women's relative disadvantage. *Social Forces*, 70(1), 65–65. <https://doi.org/10.2307/2580062>
- Mahadeo, J. D., Soobaroyen, T., & Hanuman, V. O. (2012). Board composition and financial performance: Uncovering the effects of diversity in an emerging economy. *Journal of Business Ethics*, 105(3), 375–388. <https://doi.org/10.1007/s10551-011-0973-z>
- Mersland, R., & Strøm, R. Ø. (2009). Performance and governance in microfinance institutions. *Journal of Banking and Finance*, 33(4), 662–669. <https://doi.org/10.1016/j.jbankfin.2008.11.009>
- Mia, M. A., Banna, H., Noman, A. H. M., Alam, M. R., & Rana, M. S. (2021). Factors affecting borrowers' turnover in microfinance institutions: A panel evidence. *Annals of Public and Cooperative Economics*, 93(1), 55–84. <https://doi.org/10.1111/apce.12325>
- Microfinance barometer 2016. (2016, August). *Sustainable Development Goals: What are the stakes for microfinance?. Convergences*. <https://www.convergences.org/wp-content/uploads/2016/09/BMF-EN-FINAL-2016-Version-web.pdf>
- Morduch, J. (1999) The microfinance promise. *Journal of Economic Literature*, 37(4), 1569–1614. <https://doi.org/10.1257/jel.37.4.1569>
- Mori, N., Golesorkhi, S., Randøy, T., & Hermes, N. (2015). Board composition and outreach performance of microfinance institutions: Evidence from East Africa. *Strategic Change*, 24(1), 99–113. <https://doi.org/10.1002/jsc.2000>
- Morvant-Roux, S. (2011). Is microfinance the adequate tool to finance agriculture? In B. A. D. Armendáriz, & M. Labie (Eds.), *Handbook of microfinance* (pp. 421–436). World Scientific Publishing.
- Natividad, I. (2005, March). Women Directors and the global company. *Directors Monthly*, 13–15.
- Navajas, S., Schreiner, M., Meyer, R. L., Gonzalez-Vega, C., & Rodriguez-Meza, J. (2000). Microcredit and the poorest of the poor: Theory and evidence from Bolivia. *World Development*, 28(2), 333–346. [https://doi.org/10.1016/S0305-750X\(99\)00121-7](https://doi.org/10.1016/S0305-750X(99)00121-7)
- O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality and Quantity*, 41(5), 673–690. <https://doi.org/10.1007/s11135-006-9018-6>
- Périlleux, A., & Szafarz, A. (2015). Women leaders and social performance: Evidence from financial cooperatives in Senegal. *World Development*, 74, 437–452. <https://doi.org/10.1016/j.worlddev.2015.05.011>
- Prahalad, C. K. (2004). *The fortune at the bottom of the pyramid: Eradicating poverty through profits*. Pearson Education India.
- Quayes, S. (2015). Outreach and performance of microfinance institutions: A panel analysis. *Applied Economics*, 47(18), 1909–1925. <https://doi.org/10.1080/00036846.2014.1002891>
- Rosa, P., Carter, S., & Hamilton, D. (1996). Gender as a determinant of small business performance: Insights from a British study. *Small Business Economics*, 8(6), 463–478. <https://doi.org/10.1007/BF00390031>
- Sharma, M., & Zeller, M. (1997). Repayment performance in group-based credit programs in Bangladesh: An empirical analysis. *World Development*, 25(10), 1731–1742. [https://doi.org/10.1016/S0305-750X\(97\)00063-6](https://doi.org/10.1016/S0305-750X(97)00063-6)
- Siwale, J., & Ritchie, J. (2011, June 15–18). *Failure by design: The rise and fall of a microfinance institution in Zambia—a case of Pride Zambia* [Paper presentation]. 2nd European Research Conference on Microfinance, Groningen University, the Netherlands. <http://eprints.lincoln.ac.uk/id/eprint/5865/2/15B.Siwale.format.pdf>
- Strøm, R. Ø., D'Espallier, B., & Mersland, R. (2014). Female leadership, performance, and governance in microfinance institutions. *Journal of Banking and Finance*, 42, 60–75. <https://doi.org/10.1016/j.jbankfin.2014.01.014>
- van den Berg, M., Lensink, R., & Servin, R. (2015). Loan officers' gender and microfinance repayment rates. *The Journal of Development Studies*, 51(9), 1241–1254. <https://doi.org/10.1080/00220388.2014.997218>
- van den Brink-Muinen, A., van Dulmen, S., Messerli-Rohrbach, V., & Bensing, J. (2002). Do gender-dyads have different communication patterns? A comparative study in Western-European general practices. *Patient Education and Counseling*, 48(3), 253–264. [https://doi.org/10.1016/S0738-3991\(02\)00178-7](https://doi.org/10.1016/S0738-3991(02)00178-7)
- Vishwakarma, R. (2017). Women on board and its impact on performance: Evidence from microfinance sector. *Indian Journal of Corporate Governance*, 10(1), 58–73. <https://doi.org/10.1177/0974686217701465>
- Watson, J. & Robinson, S. (2003). Adjusting for risk in comparing the performances of male- and female-controlled SMEs. *Journal of Business Venturing*, 18(6), 773–788. [https://doi.org/10.1016/S0883-9026\(02\)00128-3](https://doi.org/10.1016/S0883-9026(02)00128-3)
- Wijesiri, M., Yaron, J., & Meoli, M. (2017). Assessing the financial and outreach efficiency of microfinance institutions: Do age and size matter? *Journal of Multinational Financial Management*, 40, 63–76. <https://doi.org/10.1016/j.mulfin.2017.05.004>

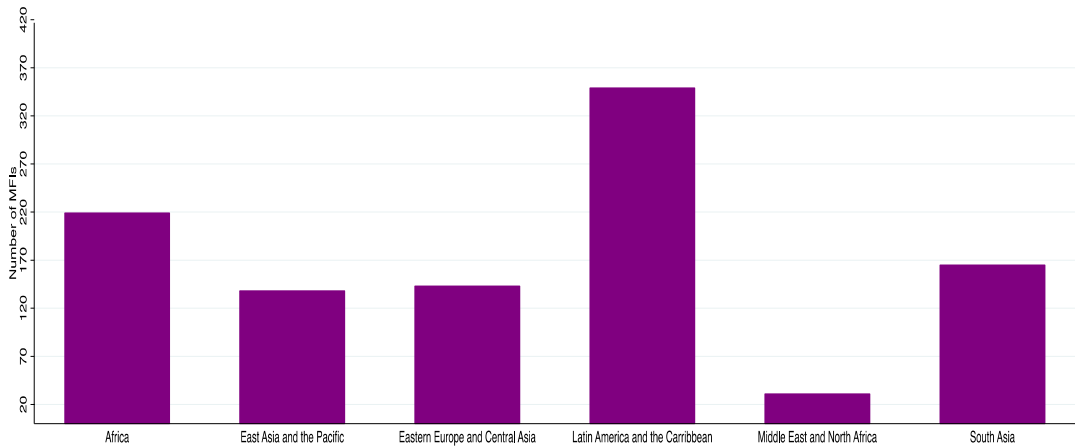
Wilburn, K. A. (2009). A model for partnering with not-for-profits to develop socially responsible businesses in a global environment. *Journal of Business Ethics*, 85(1), 111–120. <https://doi.org/10.1007/s10551-008-9951-5>

World Bank. MIX Market Social Performance Field Definitions. *MIX market* [Data set]. <https://datacatalog.worldbank.org/search/dataset/0038647>

**How to cite this article:** Mia, M. A., Dalla Pellegrina, L. & Wong, W-Y (2022). Female participation and financial performance of microfinance institutions: Evidence from transition economies. *Development Policy Review*, 40, e12602. <https://doi.org/10.1111/dpr.12602>

## APPENDIX A

**Figure A.1** shows the number of financial service providers (FSPs) in 2014 by region, comparing EECA countries with other geographical contexts. The EECA region has 143 FSPs. Latin America and the Caribbean has the highest number (349) while the Middle East and North Africa has the lowest number (31).



**FIGURE A.1** Regional distribution of financial service providers (FSPs)/MFIs in 2014

Source: Authors' estimates based on Microfinance barometer (2016). Note: Microfinance barometer only reports FSPs/MFIs that have provided data to MIX Market during the time of their analysis. Hence the actual number of FSPs/MFIs in these regions can be higher than the number reported here.

**Figure A.2** shows the total deposits, number of depositors and number of borrowers for the selected countries in the EECA region in 2014. Mongolia has the highest volume of deposits (USD 2.11 billion) and number of depositors (3.11 million) in the region. It is followed by Azerbaijan with USD 1.27 billion in deposits and 1.16 million depositors. However, in terms of amount of gross loan portfolio (GLP) and active borrower, Azerbaijan (USD 2.61 billion GLP and 0.81 million borrowers) outnumbered Mongolia (USD 2.37 billion GLP and 0.472 million borrowers). Our exploration in raw data also revealed that there were countries that have no reported depositor and deposit information for the year 2014.

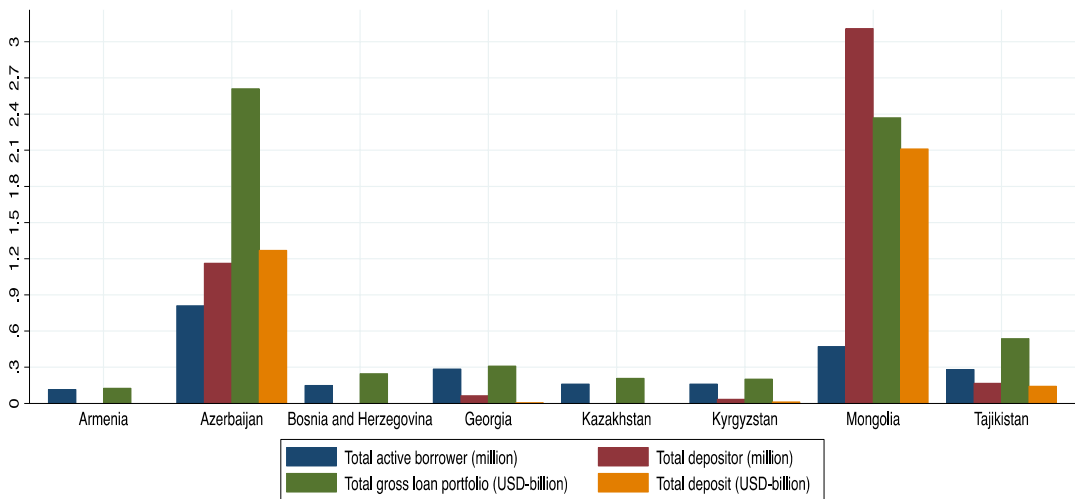


FIGURE A.2 Basic information on microfinance in EECA region in 2014 (selected countries).

Source: Authors' estimates based on MIX Market data. Note: We have only selected countries from the EECA region that have over 100,000 borrowers in this graph. As per our dataset, Armenia, Bosnia and Herzegovina, and Kazakhstan did not report depositors (savers) and deposit information for the year 2014.

Table A.1 shows the annual number of observed MFIs. Since 1996, there has been a steady increase in the number of submissions to the MIX Market to a peak of 313. However, subsequently there was a steady decline up to 2014, when there were only 93 MFIs submissions.

TABLE A.1 Frequency of observations: Years

Year	Frequency	Percent	Year	Frequency	Percent
1996	1	0.03	2006	258	8.82
1997	4	0.14	2007	324	11.07
1998	10	0.34	2008	313	10.7
1999	23	0.79	2009	268	9.16
2000	35	1.2	2010	260	8.89
2001	52	1.78	2011	241	8.24
2002	86	2.94	2012	206	7.04
2003	161	5.5	2013	154	5.26
2004	194	6.63	2014	93	3.18
2005	243	8.3			

Source: Authors' computation based on MIX Market data. Note: Since we used unbalanced panel data, many MFIs have missing data for relevant variables. Therefore, the actual number of observations used in the final regression varies. Kindly see Tables 4a and 4b for actual number of MFIs and observations used in the regression analysis.

In terms of geographical distribution, Table A.2 shows that countries located in Central Asia have a higher frequency of observations. For example, Russia has the highest frequency with 491 observations,<sup>8</sup> followed by Tajikistan with 277, and Azerbaijan with 258. Meanwhile, countries located in Eastern Europe have a lower number of observations. For example, Aland islands have the lowest frequency with only two observations, followed by Slovakia with three, and Hungary with four.

<sup>8</sup>The frequency of observations for each country is calculated as the number of MFIs belonging to that country times the number of years each MFI is observed.

TABLE A.2 Frequency of observations 1996–2014: Countries

Country	Freq.	Percent	Country	Freq.	Percent
Aland	2	0.07	Macedonia	48	1.64
Albania	75	2.56	Moldova	42	1.44
Armenia	135	4.61	Mongolia	86	2.94
Azerbaijan	258	8.82	Montenegro	26	0.89
Belarus	5	0.17	Poland	27	0.92
Bosnia and Herzegovina	191	6.53	Romania	75	2.56
Bulgaria	190	6.49	Russia	491	16.78
Croatia	16	0.55	Serbia	54	1.85
Georgia	142	4.85	Slovakia	3	0.10
Hungary	4	0.14	Tajikistan	277	9.47
Kazakhstan	236	8.07	Turkey	16	0.55
Kosovo	109	3.73	Ukraine	29	0.99
Kyrgyzstan	244	8.34	Uzbekistan	145	4.96
<b>Total</b>				<b>2,926</b>	<b>100</b>

Source: Authors' computation based on MIX Market data.