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The influence of the CEO's business education on the performance of hybrid organizations: the case of the global microfinance industry

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The influence of the CEO's business education on the performance of Hybrid Organizations: The case of the global microfinance industry

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Abstract

Microfinance institutions (MFIs) are typical examples of hybrid organizations, meaning organizations pursuing both a financial and social logic. This study examines the question of whether financial and social performance improves when an MFI's chief executive officer (CEO) has a business education. We apply the random effects instrumental variable regression method to examine the influence of the CEO's business education on the MFI's financial and social performance. Our panel dataset that includes 353 MFIs from across the globe indicates that 'only' 55 percent of the MFIs have a CEO with a business education. The empirical results indicate that MFIs with CEOs who have a business education perform significantly better, financially and socially, than MFIs managed by CEOs with other types of educational backgrounds. The findings suggest that CEOs with a business education seem better at managing the much-debated trade-off between providing small loans and producing healthy financial results.

Keywords CEOs; Business Education; Microfinance; Performance; Hybrid Organizations

JEL Classifications M12; G21

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1.0 Introduction

Who should manage microfinance institutions (MFIs)? Chief executive officers (CEOs) of MFIs work with two institutional logics, i.e., development logic and banking logic (Battilana and Dorado, 2010). The banking logic requires ensuring financial sustainability, i.e., sufficient income to cover operating expenses while the development logic requires the provision of relevant banking services to poor segments of the population. Since banking services for low-income families mirror

traditional banking, one would expect that CEOs with a banking background and business education are the best candidates to manage MFIs. This is, however, often not what is observed in practice. Since microfinance also has a development logic, it attracts managers with diverse educational backgrounds. In fact, the dataset applied in this paper indicates that ‘only’ 55% of the MFIs have a CEO with a business education. It is, therefore, an open empirical question as to what kind of CEO’s educational background enables the optimal management of the two logics in MFIs. In this study, we look into this problem by testing whether MFIs in which CEOs have a business education achieve better financial and social performance than MFIs managed by CEOs with other educational backgrounds. This is a relevant research question because many MFIs in the near future could be replacing their founder CEOs (Randøy, Strøm, and Mersland, 2015). Moreover, MFIs are typical examples of social enterprises, often referred to as hybrid organizations, which are firms claiming to have social objectives alongside their aim of being profitable (Battilana and Dorado, 2010; Miller, Grimes, McMullen, and Vogus, 2012). This paper is therefore relevant also outside the microfinance setting (Lepoutre, Justo, Terjesen, and Bosma, 2013).

Existing empirical research on the relationship between the CEO’s business education and an organization’s performance uses data from traditional industries and banks (Bertrand and Schoar, 2003; Gottesman and Morey, 2010). Using data from MFIs, researchers have examined the influence and association of a CEO’s founder status (Randøy et al., 2015), a CEO’s gender (Périlleux and Szafarz, 2015; Strøm, D’Espallier, and Mersland, 2014), and the dual role of being the CEO and board chair (Galema, Lensink, and Mersland, 2012) on an MFI’s performance. Thus far a gap remains, both theoretically and empirically, when it comes to studying the association between a CEO’s type of education and an MFI’s performance.

Understanding the relationship between the CEO's type of education and the MFI's performance is important. The kind of education the CEO has received may be a resource that is critical for increasing the productivity and performance of organizations considered vital for the further development of the industry (Cull, Demirgüç-Kunt, and Morduch, 2007). After all, MFIs already serve more than 200 million micro-enterprises and low-income families with loans, and there is still an enormous untapped market of several billion persons (Cull, Demirgüç-Kunt, and Morduch, 2014).

This study focuses on CEOs, because they provide leadership and take a lead in decision making, and so their central role in this regard means they are critical for the success of organizations (Wittmer, 1991). Identifying whether CEO characteristics, like educational background, can enhance MFIs' performance and outreach is thus crucial. We further argue that a CEO's business education is an important resource for the organization, for it provides a basic understanding of the organization's complexity and the institutional environment in which it operates. Thus, the type of education of the CEO influences her/his strategic choices, so that MFIs where the CEOs have a background in business education might achieve a better performance than MFIs managed by CEOs without a business education background. Similar to Randøy et al. (2015) we test this hypothesis using the random effects instrumental variable regression method on a global panel dataset consisting of 353 MFIs.

Our results suggest that MFIs managed by CEOs with a business education are more profitable and cost efficient, and reach out to poorer clients. This latter finding is particularly interesting, since some might fear that letting CEOs with a business profile manage MFIs could lead to a mission drift away from serving poorer clients. Accordingly, CEOs with a business education seem better at managing the much-debated trade-off between providing small loans and producing healthy

financial results. Thus, our finding should motivate MFIs and their boards to increasingly search for candidates from traditional banks and businesses when hiring new managers.

The rest of the paper proceeds as follows. Section 2 presents existing research on the relationship between CEOs' profiles and MFIs' performance, while section 3 lays out the theory and hypotheses we set out to test. Next, in section 4, we present the data and methodology followed by section 5 where we present descriptive statistics. Section 6 presents and discusses the results and section 7 concludes with theoretical and practical implications of this study.

2.0 Chief executive officers and MFIs' performance

Over the last years, the microfinance industry has come under attack. In particular, the high interest rates often reaching 50% per annum and sometimes passing 100% have been criticized and considered one of the reasons why researchers struggle to identify strong evidence for a positive client impact from borrowing small amounts of money (Banerjee, Karlan, and Zinman, 2015). As a consequence, there is now increased understanding of the importance of identifying factors that can improve MFIs' efficiency and performance (Mersland and Strøm, 2010).

This paper falls into this stream of literature where searching for factors that may influence MFIs' performance is core. In particular, researchers have tested the influence of governance on MFIs' performance but they have generally struggled to identify coherent relationships (Hartarska, 2005; Mersland and Strøm, 2009). A few recent papers have shifted focus from governance to management and have come up with interesting results, indicating that an MFI's performance seems to be significantly influenced by the CEO's knowledge, background and profile. For example, Galema et al. (2012) investigated the influence of a powerful CEO, operationalized as a CEO combining the role of being the MFI's board president/chair. The findings indicate that MFIs,

particularly non-profit MFIs, with more powerful CEOs, are more likely to record poor performance. Another example is Strøm et al. (2014), who examined the influence of the CEO's gender on an MFI's performance. The results show that MFIs in which the CEO is female achieve better performance. They argue that the improved performance of MFIs in which the CEO is female is probably related to the focus on targeting female clients in microfinance.

Likewise, Périlleux and Szafarz (2015) examined female leadership and social performance in microfinance cooperatives. They found that female managers reporting to male-dominated boards issue larger loan sizes than female managers reporting to female-dominated boards. The study by Hartarska (2005), which is a corporate governance study, also includes the CEO's experience as an explanatory variable. She found that there is a positive relationship between the CEO's years of experience and the MFI's financial performance. Finally, Randøy et al. (2015) found that MFIs in which the CEO is also the founder of the MFI achieve better performance, both socially and financially, than MFIs managed by hired CEOs. Thus, they argue that CEOs who are also founders are intrinsically motivated to fulfil the organization's mission.

With this background, we find it interesting to further deepen our understanding of how the CEO, in this case his/her educational background, may influence an MFI's performance. Moreover, this study is relevant not only for the microfinance industry but also for the rapid growing phenomenon of 'hybrid organizations'. In a type of business that is aimed at pursuing social performance alongside financial performance it is not obvious how CEOs with a business education will balance the conflicting goals.

3.0 Theoretical background and hypotheses

Recent research on MFIs indicates that human resources have a great influence on how the organizations pursues and balances the banking logic and development logic (Battilana and Dorado, 2010). Nevertheless, thus far, there has been no literature on how resource endowments like the CEO's business education influences MFIs' performance. The CEO's business education represents a resource endowment in the form of human capital (Barney, 1991; Lindorff and Jonson, 2013; Soriano and Castrogiovanni, 2012). It may differentiate one organization's competitiveness¹ from another in terms of knowledge, skills and abilities (Baptista, Karaöz, and Mendonça, 2014; Boone and van Witteloostuijn, 1996; Watson, Stewart, and BarNir, 2003).

Boards of MFIs should, therefore, be concerned with the type of education a candidate should have when looking to replace a CEO (Hoffman, Schniederjans, and Sebor, 2004; Kaplan, Klebanov, and Sorensen, 2012). The boards may be inclined to follow, for example, Ghoshal (2005) suggestion that CEOs with a business education are primarily concerned about financial profits. Hence, these CEOs may put less effort into implementing the development logic of the organization. There is, however, a stream of empirical research that refutes such claims, because business education is also supposed to instil moral reasoning in the individual. It suggests that a CEO with a business education may well implement the MFI development logic because business education knowledge induces altruistic behaviour (Francois, 2000; Neubaum, Pagell, Drexler, McKee-Ryan, and Larson, 2009).

¹ Barney (1991)), argues that the business education of a manager can be acquired in the market, and so it cannot represent a competitive advantage. However, the argument may not apply to this study since, obviously, some MFI boards opt to hire CEOs without a business education, and we therefore compare MFIs in which the CEO has a business education and those MFIs with CEOs without a business education.

Furthermore, proponents of normative isomorphism from the institutional theory, e.g., DiMaggio and Powell (1983, pp. 152-153), suggest that hiring and socialization induce the commitment of employees to the organization's mission. Hence, we argue that business education could nurture altruistic behaviour, which is having a basic understanding of the complexity of transactions between stakeholders and the environment in which the organization operates (Finkelstein, 1992; Neubaum et al., 2009). Subsequently, it influences the CEO's strategic choices through her/his ability to apply competencies that result not only in economic benefits for the firms they manage but also in sustaining social development.

However, whether a CEO with a business education determines the better or worse performance of a hybrid organization — in this case an MFI — is an unanswered question, and deserves to be studied. In particular, the hiring of CEOs stands out as one of the most decisive issues when it comes to meeting the objectives of both financial sustainability and having a social mission. This paper is thus an empirical response to Battilana and Dorado (2010) who, based on two case studies, claim that the profile of top managers to a large extent decides whether an MFI manages to balance the two institutional logics. Using business education as a profile for CEOs, this paper also responds to documented challenges that MFIs face when it comes to balancing the two institutional logics (Hermes and Lensink, 2007).

Existing empirical research on small private firms and publicly traded firms have generally found a positive financial effect of having a business-educated CEO. For example, mutual funds managed by CEOs with business education are operated efficiently and achieve superior performance (Golec, 1996; Gottesman and Morey, 2006). Likewise, Bertrand and Schoar (2003) found evidence that managers of large publicly traded organizations in the US with business education achieve a high return on assets, and the profitability and productivity of small and

medium enterprises increase when the CEO has acquired a business education (Soriano and Castrogiovanni, 2012).

On the other hand, Henle (2006) found that business education enhances the understanding of ethical considerations that need to be incorporated when making strategic decisions. The ethical considerations may well apply to the development logic of MFIs. Lewis, Walls, and Dowell (2014) examined CEOs' degrees (e.g. MBA) and organizations' compliance with environmental disclosure. Their findings indicate that firms managed by CEOs with a business education comply, largely, with the institutional pressure of environmental disclosure. Although Ghoshal (2005) claims that CEOs with a business education are primarily concerned about financial profits, recent empirical evidence found that firms in which the CEO has a business education implement activities that are not only financially beneficial to the firm but are also socially responsible (Slater and Dixon-Fowler, 2010). Moreover, Neubaum et al. (2009) show that having a business education induces moral reasoning that could promote the altruistic behaviour (*Francois, 2000*) of the individual, which should be positive for the social development mission of the MFI. Following the theoretical and empirical discussion in the previous sections we, therefore, hypothesize that:

Hypothesis 1: *MFIs managed by CEOs with a business education achieve better financial performance than MFIs managed by CEOs without a business education.*

Hypothesis 2: *MFIs managed by CEOs with a business education achieve better social performance than MFIs managed by CEOs without a business education.*

4.0 Data and Methodology

4.1 Data

The dataset applied is an extended version of the one used by Randøy et al. (2015). The sample consists of data from publically available MFIs' rating reports between 1996 and 2011. The data exclude some of the largest commercial MFIs that are typically rated by traditional rating agencies like Standard & Poor (S&P) or Moody. Consequently, we restrict MFIs to those rated by the top five rating agencies specialized in microfinance, namely MicroRate, Microfinanza, Planet Rating, Crisil, and M-Cril. Their assessment reports are available on the rating agencies' websites or other websites such as www.ratingfund2.org. The Rating Fund of the Consultative Group to Assist the Poor (CGAP) has approved the rating agencies. The rating reports contain information about the MFI and its governance, management, financial profile and operations. The final sample includes 353 MFIs from 76 countries that have all willingly chosen to become rated.

4.2 Measurement of variables

4.2.1 Dependent variables

The literature on MFIs applies two logics to assess performance; first, financial performance that encompasses the banking logic and second social performance that assesses the development logic. **Table 1** presents the dependent variables and their definitions. The variables are those typically included in empirical microfinance research (Cull et al., 2007; Hermes, Lensink, and Meesters, 2011; Randøy et al., 2015; Strøm et al., 2014). The return on assets (ROA) indicates an MFI's bottom line performance. In microfinance, ROA is often considered a better proxy than the return on equity (ROE), since debt leverage levels vary considerably across MFIs. Nevertheless, as a robustness check we also include the ROE.

Another important financial performance variable is loan default. After all, microfinance became an alternative to public credit schemes in the 1950-1970's, when default rates of 50% or more were common (Hulme and Mosley, 1996). Mersland and Strøm (2010) argue that controlling operational

costs should be core in the management of MFIs. Thus, we include the operational costs ratio as well as the personnel expense variable. We also include the MFI's financial expense ratio. Furthermore, we apply a logarithm transformation to the personnel costs and loan defaults because their residuals are right skewed (MacKinnon and Magee, 1990; Zarembka, 1990).

Table 1 further lists our social performance proxies. The most used social performance measurement in microfinance research is average loan size (Ahlin, Lin, and Maio, 2011; Cull et al., 2007; Mersland and Strøm, 2009).

Table 1 Definition and measurements of dependent variables

| Dependent variables | Definition |
|-----------------------------------|--|
| <i>Financial performance</i> | |
| Return on assets | Net operating income/Average annual assets |
| Return on equity | Net operating income/Average annual equity |
| Operational costs | Operating expenses/Loan portfolio |
| Personnel costs | The natural logarithm of personnel expenses/total numbers of employees |
| Financial expenses | Financial expenses/Loan portfolio |
| Loan default (par30) ² | The natural logarithm of outstanding loan for >30 days/Outstanding portfolio |
| <i>Social performance</i> | |
| Average loan size | Loan portfolio/Numbers of credit clients |
| Female clients | Percentage of female clients |
| Growth of total clients base | Total clients _t /Total clients _{t-1} |
| Credit clients | Total number of credit clients |

Although researchers are well aware that some MFIs combine larger loans with smaller loans, thereby increasing their average loan sizes (Armendáriz and Szafarz, 2011), it is still considered the best available proxy because the MFI that offers smaller loans is on average assumed to reach poorer clients, since they cannot afford large loans. Moreover, average loan size is the most used social performance benchmark monitored by social investors in microfinance (Mersland and Strøm, 2010).

² As alternative proxies for loan defaults, we have also tested (unreported) the write-off and loan provision ratios, which yield similar results to those reported in this paper on PaR30.

In addition to reaching as many poor clients as possible, often called ‘depth of outreach,’ the development logic in microfinance also has a ‘breadth of outreach’ dimension. A socially oriented MFI should serve as many clients as possible. Thus, we use growth in total number of clients as our second social performance proxy. To test the robustness of our results, we also include outreach to women (D'espallier, Guerin, and Mersland, 2013; Gutiérrez-Nieto, Serrano-Cinca, and Molinero, 2009), and total number of credit clients (Randøy et al., 2015) as additional proxies for social performance.

Next, Table 2 presents the independent and control variables. To measure the independent variable, we extract from the rating reports information about the type of education of the CEO. Although information about the education type of the CEO in the rating report is not mandatory, the rating agencies report education type when the CEO has a university degree. Hence, the independent variable is a dummy variable, indicating one if the CEO has the minimum of a three-year university degree in business or banking-related field, and zero if otherwise. We call this ‘business education’. In the rating reports, the zero categories (the non-business education CEOs) normally have a university degree but not in the field of business. Furthermore, rating reports that did not contain information about the CEOs’ education were not included in the dataset. Generally, there was no clear pattern for rating agencies to include or not include information about the CEOs’ education in their reports, and so included rating reports in the dataset seemed random.

We include sets of control variables and follow the procedure of applying a logarithmic transformation to any variable that is right skewed (Box and Cox, 1964; Emerson and Stoto, 1983). We include board size, a control variable commonly applied in microfinance research (Galema et al., 2012). We control for economies of scale in MFIs using MFI size (measured as the natural logarithm of total assets) (Hartarska, Shen, and Mersland, 2013). We include CEO tenure. The

tenure of the CEO is important because experience can probably offset educational background. We apply a self-constructed index based on information in the rating report, indicating, on a 1-7 scale, the level of market competition the MFI is facing to control for competition. We control for ownership form with a dummy variable indicating one if the MFI is owned by shareholders, and zero if otherwise. We follow Gottesman and Morey (2010) who included leverage and liquidity when they studied the relationship between the CEO's educational background and the firm's performance. We control for banking regulations with a dummy variable indicating one if the MFI is regulated by local banking authorities or zero if otherwise. Lastly, because we apply a global dataset, we control for macroeconomic factors using the Human Development Index (HDI), which ranks countries according to their health, education, and income levels. Furthermore, we include regional control variables (omitting Africa as the reference category), rating agency indicators (excluding one agency; M-cril) and year indicators. Table 2 presents the independent and control variables and their definitions.

Table 2 Definition and measurement of independent variables

| Independent variables | Definition |
|---------------------------------|---|
| CEO - business education | One if minimum of three years of university education in business, banking or similar, and zero otherwise |
| Board size | The number of board members |
| ln (Total assets) | The natural logarithms of total assets |
| CEO tenure | Total number of years the CEO has been in position |
| Competition | An index where 1 means little or no competition and 7 indicates strong competition |
| Shareholding firms | One if MFI is owned by shareholders and zero if otherwise |
| Leverage | The ratio of the total debt (including deposits) to total assets |
| Liquidity | The ratio of total cash and short-term investment to total assets |
| Banking regulations | One if the MFI is regulated by the country's national banking authorities, and zero otherwise |
| Human development index | A ranking for each country covering health, education and income GDP per capita |
| East Asia and the Pacific | One if the MFI is located in East Asia and the Pacific, zero otherwise |
| Eastern Europe and Central Asia | One if the MFI is located in Eastern Europe and Central Asia, zero otherwise |
| Latin America and the Caribbean | One if the MFI is located in Latin America and the Caribbean, zero otherwise |
| Middle East and North Africa | One if the MFI is located in the Middle East and North Africa, zero otherwise |
| South Asia | One if the MFI is located in South Asia, zero otherwise |

4.3 Method

We assume that an individual CEO at particular time t works in a specific MFI i . However, we understand that this assumption is too simple, as a CEO in a specific MFI i may influence its performance based on the strategic decisions made by a predecessor CEO in time $t-1$. In this section we address this issue as well as other sources of endogeneity using the instrumental variables approach.

The presence of a CEO with business education in an MFI may be a potential source of endogeneity. An MFI that performed well in the past performance could retain the current CEO with business education, or one that performed strongly could attract a candidate with business education to apply for the CEO position. This suggests the reverse causality in the CEO-performance relationship, and so interpreting the results becomes more challenging. To consider this, we use the instrumental variables (IV) approach.

We follow Randøy et al. (2015) procedure to document the CEO's business education using a time variable, MFI age. Concerning the IV conditions, first, one cannot associate current MFI performance with MFI age. Therefore, the instrument is exogenous as the number of years of operating as an MFI is not likely to have a direct influence on MFI performance (Randøy et al., 2015)³. Second, we expect a positive correlation between the respective instrument and the CEO's business education, because as the MFI get older, the more their business becomes specialized and

³ Some may find it strange that the performance of the MFI is not influenced by the age of the MFI. However, in microfinance research MFI experience is often included in empirical studies and researchers have not found a coherent significant relationship between the two (e.g., Hartarska, 2005; Mersland and Strøm, 2009). A reason for this might be because MFIs are often subsidized during their first years by donors ((Hudon and Traca, 2011). As a robustness check, we have run the model with number of branch offices as an alternative instrument variable and the results remain the same as those reported using MFI age as an instrument.

larger, and so it is more likely to hire a CEO with business education. Accordingly, the CEO with business education in this setting is an endogenous variable.

The endogenous explanatory variable of the CEO's business education has a value of one if the CEO has a university degree in business education and zero if otherwise. The dummy independent variable of the CEO's business education requires us to apply Heckman's dummy endogenous explanatory variable (Heckman, 1978). In the following section, we develop a model that addresses the problem of endogeneity in the relationship between a CEO's business education and the MFI's performance.

4.3.1 Model Estimation

As noted in the previous discussion, the educated in business CEO (EBCEO) is endogenous. We can remove the endogeneity problem if we find an appropriate instrument for EBCEO. Accordingly, we can infer a causal relationship between the presence of the CEO with business education and the performance of MFI. To account for the endogeneity of EBCEO, we apply the Heckman (1978) dummy endogenous variable estimation. To implement the dummy endogenous model, Wooldridge (2010) outlines IV regression procedures that involve instrument generation. Hence, we estimate the following model;

$$y_i = \alpha + \beta EBCEO + \varphi Controls + \mu_i \quad 1$$

Using generated IV from;

$$Instrument\ Z = P(EBCEO) | \xi, controls) \text{ for } EBCEO$$

Whereas;

y_i Represents the financial and social performance dependent variables

$EBCEO$ Represents the endogenous explanatory variable

Controls Represents Board size, MFI size, CEO tenure, competition, ownership type, leverage, liquidity, regulations, human development index, regional dummies, agency indicators and year indicators.

ζ Is the natural logarithm of MFI age (Randøy et al., 2015).

According to Wooldridge (2010), Z is the generated instrument. To obtain the generated instrument Z , Wooldridge (2010) recommends the following steps. *The first step* is to form a conditional probability as follows.

$$P(EBCEO|X, Controls)$$

Note: The control variables in the conditional probability equation include all variables except firm size. We run the following logit regression model:

$$P(EBCEO) = \beta_1 \ln MFIage + \gamma Controls + \epsilon_i \quad 2$$

From the logit regression, we obtain the fitted values and use them in the instrumental variable regression (Wooldridge, 2010, p. 939). This procedure of estimating the model $P(EBCEO)$ is robust as there is no need to correctly specify the model, because it is a linear projection that we need. *The second step* is to estimate equation 1 with the instrumental variable method using generated instrument Z for EBCEO. Although Randøy et al. (2015) follow a similar procedure, the difference is that the endogenous variable is the entrepreneur CEO, while this study has Education in Business CEO as the endogenous variable.

The binary nature of some of the variables, for example EBCEO, restricts us to using random effects instrumental variable models (Wooldridge, 2010). The fixed effect instrumental variable model is not an option in this case because the binary variables drop away in the fixed effect model during transformation.

Furthermore, the validity of the IV requires non-correlation with the random error term u . Likewise, the IV should have a non-zero coefficient, that is, it should be partially correlated with the instrumented endogenous explanatory variable once other explanatory exogenous variables are netted out (Wooldridge, 2010). The exogenous explanatory control variables include board size, MFI size, CEO tenure, competition, ownership type, leverage, liquidity, regulations, HDI, regional dummies, agency indicators and year indicators. We test this assumption using the Wald test, a procedure outlined by Wooldridge (2010, pp. 352-353).

5.0 Descriptive statistics

Table 3 reports descriptive statistics for the variables included in the study. Return on assets (ROA) is 2% and ROE 8%, illustrating that on average MFIs are financially sustainable, although they generally do not make much of a profit. On average, the operating expense ratio in the sample is 28%, and the average annual cost per staff member is US\$3765. Financial expenses on average make up 3% of the loan portfolio, indicating that MFIs are still mainly funded by equity or subsidized loans (Mersland and Urgeghe, 2013). The portfolio at risk for loans overdue for more than 30 days is 6%, indicating that microfinance clients tend to repay their loans on time. The average loan size is US\$820 and 63% of the clients are female, illustrating the ‘micro’ aspect and the focus on women in microfinance. The typical MFI serves 17062 credit clients.

While many may think that a banking business like microfinance will be managed by CEOs with a business education, **Table 3** indicates that ‘only’ around 55% of the MFIs have a CEO with a business-related university degree. Compared with regular banking this is a low percentage (Göhlmann and Vaubel, 2007). This illustrates that hybrid organizations, in this case MFIs, do not

necessarily follow traditional business patterns when hiring their CEOs, further illustrating the importance of this paper.

Table 3 Summary statistics

| Variable | Mean | Std. Dev. | Min | Max | N |
|--|----------|-----------|-------|-----------|------|
| <i>Dependent variables</i> | | | | | |
| <i>Financial performance variables</i> | | | | | |
| Return on assets | 0.02 | 0.11 | -0.99 | 0.56 | 1182 |
| Return on equity | 0.08 | 0.24 | -0.99 | 0.99 | 1371 |
| Operational costs | 0.28 | 0.18 | 0.02 | 0.98 | 1485 |
| Personnel costs | 4266 | 2254 | 4.194 | 8094 | 1377 |
| ln (Personnel costs) | 7.978 | 0.913 | 1.434 | 8.852 | 1216 |
| Financial expenses | 0.06 | 0.05 | 0.00 | 0.50 | 1450 |
| Loan default (par 30) | 0.06 | 0.09 | 0.00 | 0.97 | 1381 |
| ln (loan default (par 30)) | 0.06 | 0.08 | 0.00 | 0.68 | 1381 |
| <i>Social performance variables</i> | | | | | |
| Average loan size | 820.40 | 1429.08 | 15.43 | 24588.60 | 1523 |
| Female clients | 0.63 | 0.22 | 0.09 | 0.99 | 483 |
| Growth in total number of clients | 1.35 | 0.63 | 0.33 | 8.49 | 1379 |
| Total number of active credit clients | 17062.00 | 31704.76 | 10.00 | 351163.00 | 1525 |
| <i>Independent variable</i> | | | | | |
| CEO=Business education | 0.55 | 0.50 | 0.00 | 1.00 | 1301 |
| <i>Control variables</i> | | | | | |
| Board size | 7.11 | 3.30 | 1.00 | 23.00 | 1281 |
| Total assets | 1.20 | 26.90 | 0.02 | 279.00 | 1707 |
| ln (Total assets) | 15.19 | 1.49 | 9.87 | 19.45 | 1707 |
| CEO tenure | 6.16 | 5.00 | 1.00 | 31.00 | 1265 |
| Competition | 4.43 | 1.51 | 1.00 | 7.00 | 1305 |
| Shareholders firm | 0.34 | 0.47 | 0.00 | 1.00 | 1718 |
| Leverage | 0.67 | 0.41 | 0.01 | 6.40 | 1708 |
| Liquidity | 0.16 | 0.15 | 0.00 | 0.98 | 1705 |
| Regulations | 0.31 | 0.46 | 0.00 | 1.00 | 1721 |
| Human development index | 0.61 | 0.13 | 0.29 | 0.81 | 1547 |
| Africa | 0.24 | 0.43 | 0.00 | 1.00 | 1721 |
| East Asia and the Pacific | 0.06 | 0.24 | 0.00 | 1.00 | 1721 |
| Eastern Europe and Central Asia | 0.18 | 0.38 | 0.00 | 1.00 | 1721 |
| Latin America and the Caribbean | 0.39 | 0.49 | 0.00 | 1.00 | 1721 |
| The Middle East and North Africa | 0.04 | 0.20 | 0.00 | 1.00 | 1721 |
| South Asia | 0.09 | 0.29 | 0.00 | 1.00 | 1721 |

Note: In Table 3, the values of assets are in millions of US dollar. The ln (Personnel costs) is the natural logarithm of personnel costs. The ln (loan default (par30)) is the natural logarithm of loan defaults (par30).

The CEO has been in the position for approximately six years, and 34% of MFIs are owned by shareholders (the remainder are either member-based cooperatives or Non-Governmental Organizations). An MFI board, in average, is composed of seven members, and the average total

assets of an MFI are approximately twelve million US dollars. The 67% leverage ratio illustrates that MFIs on average still do not mirror banks, i.e., they do not mainly intermediate other people's money. Nevertheless, the ratio reflects that MFIs do access and need external financing to fund their loan portfolios. Liquidity (cash and short-term investment) consists of 16% of total assets. The self-composed competition index, based on information in the rating reports, has a score of 4.43 on a scale of one to seven, signaling that MFIs are now increasingly competing against each other. The sample indicates that 31% of the MFIs are regulated by national banking authorities. On a scale of zero to one, the average human development index for the countries where MFIs operate is 0.61. Most of the MFIs in the sample are located in Latin America and the Caribbean (39%), while 24% are located in Africa, 18% in Eastern Europe and Central Asia, 9% are located in South Asia, 6% in East Asia and the Pacific, and lastly 4% are located in the Middle East and North Africa.

In **Table 4**, the highest correlation is between shareholders firm and regulations (0.52). This is considered a low level and should not pose a problem in our estimations (Hair, Black, Babin, and Anderson, 2010). Likewise, the results from Multicollinearity Diagnostic Criteria indicate that 2.58 is the highest variance inflation factor (results not reported) against a cut-off point of 10, which rules out the possibility of multicollinearity. The correlation between the CEO with business education and CEO tenure is low (-0.06), showing that these aspects measure different aspects of CEO characteristics.

Table 4 Correlations Matrix

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---------------------------------------|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| (1) CEO=Business Education | 1 | -0.09 | 0.02 | -0.06 | -0.02 | 0.02 | -0.10 | -0.04 | 0.02 | 0.07 | -0.01 | -0.07 | 0.08 | 0.03 | -0.23 |
| (2) Board size | | 1 | 0.00 | -0.07 | -0.18 | -0.25 | 0.00 | 0.03 | -0.08 | -0.13 | 0.01 | -0.24 | -0.05 | 0.21 | 0.17 |
| (3) ln (Total assets) | | | 1 | 0.17 | 0.22 | 0.04 | 0.10 | -0.16 | 0.03 | 0.30 | -0.03 | 0.11 | 0.18 | 0.13 | -0.07 |
| (4) CEO tenure | | | | 1 | 0.15 | -0.05 | 0.07 | -0.06 | -0.12 | 0.16 | 0.12 | -0.05 | 0.12 | 0.01 | 0.13 |
| (5) Competition | | | | | 1 | -0.07 | 0.07 | -0.17 | -0.07 | 0.07 | 0.06 | -0.07 | 0.17 | -0.09 | 0.13 |
| (6) Shareholders firm | | | | | | 1 | 0.13 | 0.10 | 0.52 | -0.10 | 0.08 | 0.09 | -0.18 | -0.01 | -0.12 |
| (7) Leverage | | | | | | | 1 | 0.15 | 0.08 | 0.00 | 0.02 | 0.03 | -0.02 | -0.13 | 0.09 |
| (8) Liquidity | | | | | | | | 1 | 0.16 | -0.30 | -0.05 | -0.19 | -0.10 | 0.01 | -0.01 |
| (9) Regulations | | | | | | | | | 1 | -0.23 | 0.10 | 0.01 | -0.22 | -0.06 | -0.09 |
| (10) Human development index | | | | | | | | | | 1 | -0.05 | 0.35 | 0.49 | 0.03 | -0.15 |
| (11) East Asia and the Pacific | | | | | | | | | | | 1 | -0.13 | -0.19 | -0.05 | -0.06 |
| (12) Eastern Europe and Central Asia | | | | | | | | | | | | 1 | -0.41 | -0.11 | -0.13 |
| (13) Latin America and the Caribbean | | | | | | | | | | | | | 1 | -0.17 | -0.19 |
| (14) The Middle East and North Africa | | | | | | | | | | | | | | 1 | -0.05 |
| (15) South Asia | | | | | | | | | | | | | | | 1 |

Note: In Table 4 we present pair-wise correlations. We specified case-wise deletion option, so that correlations among variables reflect only observations for which there are no missing values.

6.0 Results and Discussion

6.1 Are MFIs with Business Educated CEOs different?

The mean comparison t-test (**Table 5**) provides initial evidence for the relationship between the CEO with business education and the MFI's performance. Interestingly, **Table 5** indicates that MFIs in which the CEO has a business education has a significantly higher mean of return on assets. **Table 5** also shows a significantly higher mean on return on equity for MFIs in which the CEO has a business education than MFIs in which the CEO has no business education. Moreover, the results of all the other financial performance indicators indicate that having a CEO with a business education is positive for the MFI. The operational costs ratio, personnel expenses ratio, financial expense ratio and portfolio at risk ratio consistently and significantly demonstrates that MFIs managed by a CEO with a business education perform financially better than MFIs managed by a CEO without a business education. Thus, these initial t-tests give reason to believe that the type of education has an influence on an MFI's financial performance.

When it comes to social performance, **Table 5** further shows that MFIs managed by business educated CEOs reach poorer clients (lower average loan sizes) and more credit clients than MFIs managed by CEOs without a business education. The two categories of CEOs seem to be equal when it comes to their focus on female clients, while MFIs managed by CEOs without a business education obtain higher growth rates than MFIs managed by business educated CEO. This latter finding is interesting since growth can also be considered a risk proxy, and from this perspective, CEOs with a business education seem to be more prudent.

Table 5 Performance Differences in MFIs with and Without Business Educated CEOs

| CEO business education status | CEO≠Business Education Mean | CEO=Business Education Mean | T-test Difference |
|-----------------------------------|-----------------------------------|-----------------------------------|----------------------|
| Financial performance | | | |
| Return on assets | 0.029 | 0.037 | -1.39* |
| Return on equity | 0.074 | 0.083 | -1.519* |
| Operational costs | 0.293 | 0.269 | 1.984** |
| Personnel costs | 4378.599 | 4113.861 | 1.648** |
| Financial expenses | 0.066 | 0.056 | 2.091** |
| Loan default (par 30) | 0.065 | 0.057 | 1.516* |
| Social performance | | | |
| Average loan size | 919.234 | 758.396 | 1.422* |
| Female clients | 0.622 | 0.637 | -0.772 |
| Growth in total number of clients | 1.455 | 1.350 | 2.290* |
| Credit clients | 7527.513 | 8861.852 | -3.072** |

Note: In Table 5, the p-value is based on the two-sample t-test with unequal variance, a parametric test. CEO=business education indicates a CEO with business education, and CEO≠business education indicates a CEO without business education.

6.2 Instrument generation

To implement the Heckman (1978) model, we first run the random effect logit model (equation 2).

Second, we generate the instrument by forming a fitted probability to obtain the instrument Z.

Third, we run a random effects instrument variable (IV) regression using equation 1. **Table 6** presents the random effects logit regression. The results in **Table 6** show that the coefficient on the time variable (MFI age) is positive and significantly related to whether the MFI is managed by a CEO with a business education.

Table 6 Random-effects logistic regression of the IV on the CEO business education and other control variables

| Independent variables | CEO business education |
|--------------------------------------|------------------------|
| ln(MFI age) | 1.644** |
| Board size | -0.171 |
| CEO tenure | 0.013 |
| Competition | -0.086 |
| Shareholders firm | 1.313 |
| Leverage | 0.032 |
| Liquidity | -1.227 |
| Regulations | 1.492 |
| Human development index | 2.303 |
| Constant | -14.602** |
| <i>Region dummies</i> | <i>Yes</i> |
| <i>Year indicators</i> | <i>Yes</i> |
| <i>Agency Indicators</i> | <i>Yes</i> |
| Observations | 1,082 |
| Number of MFIs | 320 |
| <i>P-value (χ^2)</i> | 0.000 |

6.3 Business Educated CEOs and MFIs' financial performance

Table 7 reports the random effects IV regression for the effect of CEO business education on return on assets (ROA) and return on equity (ROE). The effect of CEO business education on both the ROA and ROE is positive and significant (Model 1 and Model 2). This is in line with Bertrand and Schoar (2003), who found that firms in which the CEO has a business education are associated with improved financial performance. In **Table 7**, we further observe that the larger the MFI is, the better its performance, which is in line with Hartarska et al. (2013).

We also notice that being regulated has a positive influence on the ROA and ROE, while high liquidity ratios will naturally drive down the performance of the MFI. It is also interesting to see that MFIs operating in more developed markets (HDI) obtain better results. Hence, although microfinance is a banking model tailored for less developed markets, the business model works better, in terms of financial performance, when operating in more developed settings.

The ROA and ROE are composite measures often referred to as “bottom line” performance. It is therefore interesting to look more closely into the aspects of performance where education may actually have an effect. Are CEOs with a business education better at obtaining cheaper funding and improved repayment or do they achieve higher efficiency? Thus, in **Table 7** we also report the random effects IV regression for the effects of CEO business education on several cost variables that all have an influence on an MFI’s bottom line performance. Interestingly, the results indicate that having a business education is associated with improved performance on all the tested cost variables. Compared with MFIs managed by CEOs without a business education, MFIs managed by business educated CEOs have significantly lower operational costs, lower personnel costs, lower funding costs and lower loan losses (par30). Thus, taken together, the evidence is clear that having a CEO with a business education has a positive effect on all the aspects of an MFI’s financial performance.

Table 7 Random-effects IV regression: Financial performance as a function of a CEO business education

| Dependent variable | Return on assets | Return on equity | Operational cost | Personnel cost | Financial expense | Par30 |
|--------------------------|------------------|------------------|------------------|----------------|-------------------|------------|
| Independent variable | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
| CEO=Business Education | 0.083*** | 0.084** | -0.077*** | -0.285* | -0.018** | -0.936** |
| Board size | -0.000 | -0.001 | 0.002 | -0.008 | -0.000 | -0.018 |
| ln(Total assets) | 0.009*** | 0.011** | -0.018*** | 0.152*** | 0.003*** | -0.108** |
| CEO tenure | 0.001 | 0.001 | -0.002** | -0.013** | 0.000 | -0.007 |
| Competition | -0.002 | -0.007* | -0.000 | 0.063*** | 0.001** | 0.086** |
| Shareholders firm | -0.016* | -0.007 | 0.036*** | 0.158** | 0.002 | -0.013 |
| Leverage | -0.029*** | 0.022 | -0.030*** | -0.138 | 0.016*** | -0.032 |
| Liquidity | -0.122*** | -0.187*** | 0.080*** | -0.304 | 0.002 | 1.182*** |
| Regulations | 0.021** | 0.032* | -0.040*** | -0.209*** | 0.001 | 0.202 |
| Human development index | -0.024 | 0.013 | -0.000 | 0.462*** | 0.008 | 0.268 |
| Constant | -0.202*** | -0.102 | 0.606*** | 6.177*** | -0.028* | -1.660** |
| <i>Regional dummies</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> |
| <i>Years indicator</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> |
| <i>Agency dummies</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> |
| Observations | 1,057 | 970 | 935 | 793 | 844 | 967 |
| P-value (χ^2) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Overall R-squared | 0.150 | 0.090 | 0.073 | 0.453 | 0.202 | 0.104 |
| First-stage F statistics | 36.22 | 33.35 | 29.70 | 30.99 | 38.90 | 31.13 |
| Wald test for exogeneity | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Note: In Table 7, the endogenous variable is CEO=business education. Likewise, we consider ln (Total assets) as endogenous variable. Instruments: ln (MFI age). The zero coefficient value of the Wald test of exogeneity indicates that board size, CEO tenure, competition, shareholders' ownership, leverage ratio, liquidity ratio, being regulated and Human Development Index (HDI) are all exogenous explanatory variables. ***, **, and * denotes 0.01, 0.05, and 0.1 significant level.

6.4 Business Educated CEO and MFI's social performance

While the evidence seems clear when it comes to the effect of business education on an MFI's financial performance, we now turn to the MFI's social performance. **Table 8** reports the results of the random effects IV regressions for the effect of the CEO with a business education and other control variables on an MFI's social performance. First, we observe that the relationship between the CEO with a business education and average loan size, the most used proxy for social performance in microfinance research, is negative and significant. The result is in line with the claim that managers in MFIs care about serving poor clients with smaller average loan sizes because this social performance metric is normally used by stakeholders to assess the extent to which a particular MFI fulfils its social mission objective (D'Espallier, Hudon, and Szafarz, 2016).

Second, the effect of a CEO with a business education on the percentage of female clients is positive but not significant. The results suggest that MFIs which have business educated CEOs do not necessarily serve more female clients. As a social performance metric, reaching out to more female clients is an important empowerment objective for most MFIs. However, when female clients represents a clear majority of customers, an even higher percentage may not reflect the social performance accomplishment (Mersland, D'espallier, and Supphellen, 2013). Hence, it might be that the business educated CEO is a bit more pragmatic when it comes to the share of portfolio allocated to female clients, because a further increase in this share might not necessarily be beneficial for the institution (Mersland et al., 2013).

Although the effect of CEOs with a business education on the growth in total clients' base is positive, as expected, though not significant, its effect on total number of credit clients is positive and significant. The non-significant result of the growth in total clients' base suggests that business educated CEOs hesitate to go for strong growth because of the risks related to such a strategy.

Overall, the results on average loan size and total number of credit clients suggest that MFIs in which the CEO also has a business education cares about reaching more poor clients with small average loan sizes (D’Espallier et al., 2016).

The microfinance literature recognizes that measuring the social performance of MFIs is challenging and in particular average loan size should be used with care (Armendáriz and Szafarz, 2011). Thus recently, other metrics such as interest rate on loans charged to borrowers adds to the understanding of whether a particular MFI is performing well socially (Ghosh, 2011). Therefore, in unreported results, we proxy interest rates with portfolio yield and find positive effects on portfolio yield of MFIs in which the CEO has a business education. Generally, the result suggests that MFIs with CEOs with a business education could receive more in interest payments when serving poor borrowers with small average loan sizes. The overall results on social performance are therefore not as strong as for financial performance.⁴

We also run a set of additional unreported checks to see if both our financial and social performance results are robust. First, in each model, we include subsidies measured as donated equity/total equity (D’Espallier et al., 2016). Secondly, we included a dummy for whether the CEO had prior experience in business and/or banking as an additional control variable. A third check was done by adding an interaction variable of CEO business education with a large board because large boards mitigate agency costs in complex organizations like MFIs with competing logics (Galema et al., 2012). Lastly, a robustness check was done using an interaction variable of CEO

⁴ The result on portfolio yield should be interpreted with care since default levels may perturbate the accounted yield making it less fit to proxy the interest rate charged by the MFI.

business education with geographical regions as additional control variables. None of these alternative model specifications renders results that alter our former conclusions.⁵

⁵ The results from the robustness checks are available from the authors upon request.

Table 8 Random-effects IV regression: Social performance as a function CEO business education

| Dependent variables | Average loan size | Female clients | Growth in total number of clients | Total Credit clients |
|--------------------------|-------------------|----------------|-----------------------------------|----------------------|
| Independent variables | Model 1 | Model 2 | Model 3 | Model 4 |
| CEO=Bus. Education | -777.591** | 0.114 | 0.139 | 3,910.846*** |
| Board size | 5.396 | -0.004 | -0.003 | -127.271*** |
| ln(Total assets) | -10.316 | 0.002 | 0.004 | 37.124 |
| CEO tenure | 131.489*** | -0.001 | 0.035 | 3,552.818*** |
| Competition | -21.357 | 0.011 | -0.019 | -15.308 |
| Shareholders firm | 281.749** | -0.059*** | 0.141** | -626.133 |
| Leverage | 298.008** | -0.021* | 0.101 | 132.490 |
| Liquidity | -268.885 | -0.028 | 0.122 | -3,181.757** |
| Regulations | -110.334 | -0.040*** | 0.065 | -1,287.915** |
| Human Development index | -280.738 | -0.006 | -0.248* | 349.986 |
| Constant | -932.606 | 0.628*** | 0.328 | -43,034.752*** |
| <i>Region dummies</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> |
| <i>Year indicators</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> |
| <i>Agency indicators</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> | <i>Yes</i> |
| Observations | 1,072 | 477 | 732 | 857 |
| P-value(χ^2) | 0.000 | 0.000 | 0.005 | 0.000 |
| Overall R-squared | 0.14 | 0.19 | 0.06 | 0.37 |
| First-stage F statistics | 28.22 | 6.38 | 31.30 | 30.88 |
| Wald test for exogeneity | 0.000 | 0.000 | 0.005 | 0.000 |

Note: In Table 8, the endogenous variable is CEO=business education. Likewise, we consider ln (Total assets) as endogenous variable. Instruments: ln (MFI age). The zero coefficient value of the Wald test of exogeneity indicates that board size, CEO tenure, competition, shareholders' ownership, leverage ratio, liquidity ratio, being regulated and Human Development Index (HDI) are all exogenous explanatory variables. ***, **, and * denotes 0.01, 0.05, and 0.1 significant level.

7.0 Conclusions

The microfinance industry is still young and many MFIs are still managed by their founders (Randøy et al., 2015). In the years to come, many MFIs will replace their CEOs. At the same time the industry struggles with relatively poor performance and high operational costs (Mersland and Strøm, 2012). Studies searching for a relationship between the profile of the CEO and the MFI's performance, like this study, should therefore be relevant and in high demand. Moreover, MFIs are typical examples of hybrid organizations pursuing social objectives alongside financial objectives. In such organizations, it is not necessarily clear that typical business managers, i.e., those having a business education, will outperform managers with a different educational background. As far as we know, our study is the first to test whether having a business education is of benefit when managing hybrid organizations.

An interesting finding in itself in our dataset is that 'only' 55% of the MFIs in the sample are actually managed by CEOs with a business education. This is a much lower percentage than that found in traditional banking, and it illustrates that boards in hybrid organizations, in this case MFIs, seem to consider a wider set of expertise when hiring their CEOs.

Using an unbalanced panel dataset covering 16 years and including 353 MFIs from across the globe, we tested for the relationship between MFIs' performance and the educational background of their CEOs. Because of the reversed causality problem, we applied the instrument variable random effects regression method in our analysis. To develop our hypotheses, we drew on existing literature and the resource-based view and institutional theories. Thus, we hypothesized that having a business education should have a positive effect on both the financial and social performance of the MFI.

Our findings clearly support our hypotheses. MFIs managed by CEOs with a business education have a significantly better financial performance and also a better social performance than MFIs managed by CEOs with different educational backgrounds. Our findings are robust for all the tested financial performance proxies, namely ROA, ROE, operational costs, personnel costs, funding costs and default ratios. As for social performance, our findings are significant for average loan size and number of credit clients served. Taken together, the MFI benefits from having a CEO with a business education. In line with theory and former evidence on the effects of having a business education, we suggest that better performance is a result of the CEO's ability to make better strategic choices and induce moral reasoning in the organization. Our results support the literature that claims that business education creates profit-minded CEOs (Bertrand and Schoar, 2003; Ghoshal, 2005), who are also able to pursue social objectives (Slater and Dixon-Fowler, 2010). Our study is thus in line with several empirical studies upholding the importance of business education for those in managerial positions (Hansen, Ibarra, Peyer, von Bernuth, and Escallon, 2010; Terjesen and Willis, 2016).

When boards hire CEOs, they take, of course, much more into account than simply the educational background of the candidate. Networks, personality, experience and many other kinds of expertise are evaluated together with the candidate's education. Nevertheless, it must be relevant for boards of hybrid organizations to know that hiring CEOs with a business education will, on average, enhance not only their financial performance but also give them the potential to have a positive influence on their social performance. Our study should therefore be of practical importance for MFIs in particular and hybrid organizations in general. Furthermore, as noted by Stuart (2011), MFIs interested in serving more clients, i.e., being more social, need to be profitable in order to attract investors.

Several microfinance industry reports have highlighted the risks in the industry relating to the often poorly qualified human resources operating MFIs, and, in particular, the thin labour market for top level managers (CSFI, 2011, 2014). A reason for the thin labour market for managers is maybe because the boards of MFIs fear for their social mission if they were to hire bankers and candidates with a business background. We suggest that our study should motivate MFIs and their boards to increasingly search for candidates from traditional banks and businesses when hiring new managers.

In this study, we measure CEO business education as a formal university degree in fields like accounting, management, economics, banking or MBA. Such a proxy is relevant, although it has its limitations. For example, it may not well capture CEOs' ability that may drive their desire for achievement (Pfeffer, 1992). Thus, our investigation focuses only on the general dimension of CEO business education; we do not claim that all types of business education are equally associated with better MFI performance. Equally, we do not differentiate between the various levels (undergraduate, or postgraduate) achieved by the CEO in business education, and the quality of business school the CEO attended, so future studies could look into a more disentangled operationalization of the CEO business education (Gottesman and Morey, 2006). The operationalization of business education in our study also has a limitation because our dataset does not allow us to differentiate between those CEOs who received their business education after working as CEOs, and those who went direct to business school without prior work experience. We leave future studies to examine the moderating effects of the CEO's prior work experience on the relationship between CEO business education and the performance of MFIs (Soriano and Castrogiovanni, 2012).

Moreover, although employees drawn to work in microfinance (e.g., CEOs) could be motivated by the organizations' mission (Besley and Ghatak, 2005), the literature on traditional firms suggests a positive relationship between university/college degrees and wage levels (Cole and Mehran, 2016). Therefore, we leave future studies to examine whether there is a trade-off between the CEO's type of education and the CEO's wage level as well as the overall wage level in the MFI (Kuhn and Weinberger, 2002). Similarly, what aspects of business education result in superior management skills and whether educational background influences altruistic behaviour are relevant research questions, both generally and specifically, for the microfinance industry (Besley and Ghatak, 2005; Francois, 2000; Hermes and Lensink, 2007; Neubaum et al., 2009). Finally, the fact that we use a global dataset is not only a benefit. Country studies comparing the microfinance industry with other local industries would be interesting. For example, such studies would reveal whether MFIs actually have fewer or more CEOs with a business education than NGOs, local banks or other local industries. Altogether, we think there is scope for much more research when it comes to the managerial parts of operating MFIs in particular and hybrid organizations in general.

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