Transformation of Microfinance Institutions and its Effects on Financial Inclusion in Africa

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Abstract

The shift away from the not-for-profit microfinance institutions (MFIs) model has seen the rise of commercial MFIs in forms like commercial banks, credit unions, and rural banks in addition to the not-for-profit non-governmental organisations (NGOs). The shift arose partly due to neo-liberalism and the need for MFIs to reach the financially excluded more sustainably than had been the case. In this article, we therefore examine how the shift has affected financial inclusion in Africa, utilising data from the Microfinance Information Exchange (MIX). Our results shows that the change from the NGO model to the commercial models could negatively affect the depth of financial outreach, especially given that NGOs characteristically have better outreach to women and advance smaller denomination loans on average. Also, NGOs have a higher median gross loans compared to other legal forms of MFIs except credit unions/ cooperatives; although commercial banks have the highest average gross loans. These results remain robust upon removing outliers and controlling for factors that affect the ability of MFIs to offer financial services to the poor.

1 Background

In 1992, PRODEM, a micro-finance institution (MFI) in Bolivia converted from a non-governmental organization (NGO) to a commercial bank, adopting the name BANCOSOL. In fact, in the immediate past three decades numerous NGO MFIs across the globe have adopted the commercial forms of microfinance (Table 1). In this article, we examine how the conversion of MFIs to the commercial model affects financial inclusion in terms of the depth and breadth of outreach to the financially excluded. Depth refers to the extent of the traditional financially excluded clients reached by MFIs, such that if an MFI reaches more financially excluded people like women and the poor, then it is said to achieve higher deeper outreach. Breadth, on the other hand refers to the sheer number of clients reached regardless of their level of financial exclusion. Thus, an MFI that offers more loans to many people has more breadth of outreach. In other words, we explore the way that transformation of MFIs typically drives their average loan balance per borrower, the proportion of women borrowers and gross loans. The former two metrics capture depth while the latter proxies breadth.

The study focuses on Africa, a continent that is the epicentre of financial exclusion despite remarkable economic progress of the last three decades (Beck and Cull 2014; Allen, Otchere, and Senbet 2011). Evaluating the effects of transformation by using global metrics is likely to mask regional heterogeneity, given that these effects could manifest differently in varying settings (D'Espallier et al. 2017; D'Espallier, Hudon, and Szafarz 2013).[1]

Most pioneer microfinance institutions adopted a not-for-profit model (Dichter 1996), operating mainly as non-governmental organizations (NGOs). However, the dominance of neo-liberalism in organisation of production has seen many donors scale back and push MFIs to strive for financial sustainability (Bateman 2010). The arguments for the commercial approach to running microfinance activities revolve around sustainability. The financial sustainability school posits that MFIs can best serve the financially excluded when they have a degree of financial self-sufficiency (Kodongo and Kendi 2013). For instance, profit-oriented MFIs could serve the relatively well-off at market rates and use the proceeds (profits) to subsidize services to the poor more than when reliant on donations and subsidies alone. Hence, beyond being sustainable, MFIs pursuing the for-profit model may experience mission expansion (Mersland and Strøm 2010; Louis, Seret, and Baesens 2013). Also, donor funds are volatile and subject to political and economic conditions (Garmaise and Natividad 2013; D'Espallier, Hudon, and Szafarz 2017). In this respect, a substantial body of research finds that the transformation of microfinance institutions enhances outreach to the financially excluded (Frank, Lynch, and Schneider-Moretto 2008; Gutiérrez-Nieto, Serrano-Cinca, and Molinero 2009; Mersland and Strøm 2010; Quayes 2012; Mia and Lee 2017; D'Espallier, Hudon, and Szafarz 2013).

The proponents of MFI transformation point to the concerning possibility of mission drift whereby MFIs reduce the focus on providing financial services to the financially excluded in favour of making profits, which some researchers have found to be the case (Louis, Seret, and Baesens 2013; Bos and Millone 2015; D'Espallier, Hudon, and Szafarz 2013; Hartarska and Mersland 2012). Two theories can be said to underpin the MFI transformation phenomenon. The first is the agency theory on the conflicts between providers of capital and managers. In a quest to minimize agency conflicts, managers may consciously or sub-consciously place less emphasis on the social mission of MFIs, reaching out to the financially excluded. Instead, managers may more overtly focus on the pursuit of financial returns for shareholders and debt-holders, and thus causing mission drift. The theory presumes that all fund providers are driven by financial returns, which is not always the case.

The second one, the institutional theory examines the rise, persistence and decline of institutional structures over time. The central premise here is the drivers of the adoption and decline of certain institutional norms (Powell and DiMaggio 2012). In this respect, some institutionalists claim that prevailing institutional culture is a stronger driver than market forces in driving the adoption or rejection of emergent institutional structures. Institutionalists posit that one of the drivers is coercion. In the case of MFIs, some donors have put implicit or explicit pressure towards financial sustainability. Additionally, the adoption of institutional norms in most cases arises out of the need to fit into the institutional environment. The desire to be compliant may explain the prevalence of NGOs not-for-profit type MFIs in the early years of microfinance paradigm and the trend towards the transformation of MFIs to commercial entities that is now ongoing. Importantly, institutional theory sheds light on the dilemmas

[1] We use the terms financial sustainability/ efficiency/ profitability on the one hand, and social performance/ outreach on the other, interchangeably. By Financial sustainability, we refer to the capability of a firm to turn a profit which allows it to meet its obligations without relying on donations and subsidies. Social performance/ outreach is the firms ability to reach out and avail financial services to the financially excluded members of society including the poor, women, and rural dwellers- referring to both breadth and depth.

Table 1: Sample of Transformed MFIs

Institution	Country	Year	Converted_to
Finansol	Colombia	1993	Commercial Finance Company
OIBM	Malawi	2002	NBFI
PRIDE	Tanzania	2009	NBFI
Kenya Women Finance Trust	Kenya	2010	NBFI
Faulu	Kenya	2010	NBFI
OI-SASL	Ghana	2013	NBFI

Source: Authors' construction from the literature

Note:

[1] This is a snapshot of the many MFIs that have converted over the years accross the globe

managers face when institutional norms change (Thornton, Ocasio, and Lounsbury 2015). For instance, how can managers of MFIs reconcile financial sustainability with the original primacy of outreach to the financially excluded?

As noted earlier, research outcomes on the effects of the transformation of microfinance institutions is mixed. Morduch and Ogden (2019) argue that if commercial MFIs could sustainably achieve both financial sustainability while also reaching the poor, then NGOs would not exist. In that context, therefore, the most important question relates to the way that the transformation of MFIs would affect their core mission of providing financial services to the financially excluded. The issue is important not only due to the legitimacy that MFIs derive from serving the financially excluded, but also because financial inclusion is central to alleviating poverty and achieving inclusive growth and is a key dimension of financial development. In this article, we use data from the Microfinance Information Exchange (MIX) to evaluate the ways that transformation of MFIs affects financial inclusion in Africa.

We capture the extent of financial inclusion in Africa by using three metrics: the percentage of female borrowers, average loan balance per borrower, and the ratio of gross loan portfolio to assets of each MFI (D'Espallier et al. 2017). The first two proxy the depth of outreach, with greater outreach to women an indicating deeper outreach to women, a population that forms a substantial proportion of the financially excluded in Africa (Ayyagari, Demirguc-Kunt, and Maksimovic 2013). Higher average loan balance per borrower, on the other hand, corresponds to lower depth of outreach to any group of the financially excluded. The presumption is that financially excluded people usually borrow in smaller denominations which has drawn reservations from some researchers who argue poor people could progressively demand bigger denominations of loans as they get better off. Also, MFIs regularly use progressive lending where people who successfully pay off loans qualify for bigger loan amounts. Finally, gross loans to assets capture the breadth of outreach, with higher values of the ratio being indicative of wider and better breadth.

We have organized the rest of the article as follows. Section 1.1 highlights the results of the study. In section 2, we review the background literature on MFI transformation. In section 3, we describe the methodology and, in section 4, we present and discuss the results and close with concluding remarks in section 5.

1.1 Summary of Results

Overall, we find that the conversion away from the NGO, not-for-profit model in Africa is harmful to both the depth and breadth of financial inclusion. NGO-type MFIs consistently outperform the commercial-oriented MFIs regarding the outreach to women borrowers. Additionally, NGO-type MFIs have the lowest average loan balance per borrower, an indicator that they reach out to the poorest and, presumably, more financially excluded people. Turning to the ratio of gross loans to assets, NGO-type MFIs come second to credit unions/ cooperatives, thus indicating that breadth and depth of outreach are not necessarily mutually exclusive. Further examination of the trend indicate that MFIs that are profit oriented do reflect a measure of mission drift. Noting that serving poor, financially excluded people is costly, and given that profit-orientation implies the presence of interest expense on debt capital and dividends on equity capital, the documented results are consistent with the literature that opposes commercialization of MFIs. What seems odd is that NGO-type MFIs could be lending more in terms of gross loans (breadth) than most commercial oriented MFIs, though it turns out that both cooperatives and NGO-type MFIs hold the lowest volume of assets relative to other legal types. Furthermore, the other important drivers of financial inclusion are: age of MFI,

operating expense to assets ratio, donations to assets ratio, capital to assets ratio, asset structure, size, education and profit margin. In the next section, we highlight the methodology and then go to the details of the results.

2 Theory and Empirical Literature

The extent to which transformation of MFIs affects financial inclusion has been subjected to substantial empirical literature. However, there is a lack of consensus on the outcomes about its effects. Theories underlying aspects of the transformation of MFIs are the agency theory (Jensen and Meckling 1976) and institutional theory (Powell and DiMaggio 2012). Agency theory in this case implies that injection of commercial capital, a consequence of transformation, is likely to motivate managers to target financial return at the expense of social return, so as to satisfy shareholders and debt-holders, the conventional providers of commercial capital. From this perspective, transformation implies that mission drift is inevitable. Indeed, Morduch and Ogden (2019) argue that if mission drift is not an issue in microfinance, then the NGOs MFI model would not exist, meaning that NGOs (not-for-profit) MFIs exist to fill a gap left by commercial MFIs.

The institutionalists weigh in respect to the way certain organizational structures dominate and ultimately decline and get discarded (Powell and DiMaggio 2012). Institutionalists note that in certain situations, people adopt given structures without critical scrutiny to merely fit in the prevailing institutional environment. This argument could partly explain the prevalence of NGOs at the early stages of microfinance evolution and the current rise of MFI commercialization. However, the pressure to change takes several forms, with the most notable one being coercive pressure where stakeholders put overt or covert pressure for MFIs to convert. In the case of MFIs, the pressure to adopt commercial model came with the rise of neo-liberalism (Bateman 2010), with major donors like USAID signalling their expectation that MFIs be more financially sustainable (D'Espallier, Hudon, and Szafarz 2013). The problem for MFIs that transform is how best to balance between social goals of reaching the poor and the commercial goals that come with commercial capital and decline of donor funding.

Thornton (2002) and Thornton, Ocasio, and Lounsbury (2015) note that "the meaning and legitimacy of various sources of organisational identity, strategy and structure are shaped by a prevailing institutional logic." The management of transformed MFIs have the option of identifying with microfinance as a social pursuit by emphasizing social goals over profits or they may view microfinance as a financial venture by placing profits over social outreach. The former corresponds to the welfare model of microfinance which posits that the social mission of microfinance is incompatible with the profit motive. The latter is the financial sustainability model which views financial returns as a precondition for sustainable pursuit of financial goals of reaching the financially excluded. The third model, the win-win approach attempts to reconcile the welfare and sustainability approach, proposing that financial and social performance are not always substitutes but are complementary each other. Different researchers have availed evidence in support of either school as described next.

As noted, support for MFI transformation rests of two major grounds. First, donations are subject to social, economic, and political conditions (Garmaise and Natividad 2013; Armendáriz et al. 2013; D'Espallier, Hudon, and Szafarz 2017). Consequently, some researchers argue that microfinance can only be sustainable if MFIs have a level of financial self-sufficiency. In this regard, some scholars note that MFIs could advance financial services to the financially well-off and use the proceeds (profits) to reach more financially excluded people at subsidized rates which would then lead to "mission expansion" as opposed to "mission drift." Frank, Lynch, and Schneider-Moretto (2008) provides empirical support for these arguments noting that transformed MFIs score higher in terms of client outreach and number of female clients reached, although the proportion of female clients reached declines. They also find that transformed MFIs record higher growth in gross loan portfolio with better product diversification. Similarly, D'Espallier et al. (2017) finds that transformed MFIs charge a lower rate of interest to micro-borrowers, while Louis, Seret, and Baesens (2013), using self-organizing maps and k-means clustering, finds a positive relationship between financial sustainability and social performance to imply that steps to enhance financial sustainability are good. Other researchers that have found a positive link between financial and social efficiency include Gutiérrez-Nieto, Serrano-Cinca, and Molinero (2009), Mersland and Strøm (2010), and Quayes (2012).

On the contrary, several researchers have found transformation to be harmful in terms of outreach to the financially excluded. For instance, D'Espallier et al. (2017) find that although transformed MFIs charge lower interest, they experience a drop in operating expenses while average loan sizes increase indicative of mission drift. Mia and Lee

(2017) also find a trade-off between depth of outreach and the profit motive of MFIs in Bangladesh using both static and dynamic panel data methods. D'Espallier, Hudon, and Szafarz (2013) notes that MFIs with little or no subsidies exhibit greater mission drift. In our case, NGOs have the hignest donations, impluying that they may exhibit greater social inclination. For instance, firms in Africa and Asia compensate for low subsidies by charging higher interest rates, while those in Latin America serve fewer women. In Europe and Central Asia, the tendency is to serve fewer poor clients. Bos and Millone (2015) also notes that MFIs that stay close their original mission are the most socially efficient while those that attempt to pursue a double bottom line are relatively inefficient. Further, they note that not all MFIs suffer mission drift the same way, arguing that MFIs with high input-output efficiency may not experience mission drift at all.

Besides, Campion and White (1999) argue that the presence or absence of mission drift in a transformed MFI is a corporate governance issue, and an outcome of the challenges of the scaling up of MF services. They note that good corporate governance allows the management to balance between financial performance and outreach. It means that mission drift problems could be addressed through proper corporate governance regardless of whether an MFI is an NGO or commercial entity. Moreover, Marti and Scherer (2016) argue that different social groups such as employees, management, and MFI clients are likely to have different views, including varying definitions of social welfare. Thus, the presence or absence of mission drift may not arise out of deliberate management decisions, but instead, out of conflicting viewpoints on the meaning of social welfare between stakeholders. Given the conflicting evidence and viewpoints regarding mission drift in MFIs, the arguments by Morduch (1999) and Morduch (2000) that the microfinance industry should accommodate different legal forms of MFIs to serve different clients' needs appears to be valid.

3 Method

We run fixed and random effects models dependent on the results of the Hausmann Tests (see Appendix 1). the fixed effects models are designed to study the causes of changes within an entity. The fixed-effects model does this by controlling for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics, such as culture (Torres-Reyna 2007). On the other hand, Random effect models assist in controlling for unobserved heterogeneity when the heterogeneity is constant over time and uncorrelated with the explanatory variables. Following M. R. Roberts and Whited (2013), we fit the following model.

$$y_{it} = \hat{a} + \hat{b}x_{it} + \mu_{it} \tag{1}$$

In this case, y_{it} is the independent variable; one of percent of female borrowers, average loan balance per borrower, and gross loan portfolio to total assets. The first two metrics capture financial depth while gross loans captures the breadth of outreach.

Also, x_{it} is a matrix of independent variables. The variable of interest in our case is the current legal status that enters the model as a dummy representing NGOs, NBFIs, commercial banks, rural banks and credit unions/ cooperatives (Ayyagari, Demirguc-Kunt, and Maksimovic 2013). The other control variables include age dummy, a dummy for region, operating expenses to assets ratio, donations to assets ratio, equity capital to assets ratio, asset structure, size (logarithm of total assets), education, and profit margin captured from the literature (Ayyagari, Demirguc-Kunt, and Maksimovic 2013; D'Espallier et al. 2017; D'Espallier, Hudon, and Szafarz 2013).

Finally, μ_{it} is the error term that we assume has zero mean conditional on x_{it}.

Further,

$$\mu_{it} = c_i + \varepsilon_{it} \tag{2}$$

In the equation, c_i captures the aggregate effects of the unobserved, time-invariant explanatory variables for y_{it}.

In the case where c_i and x_{it} are correlated, then c_i is a fixed effect, otherwise, it is a random effect. Note that the existence of fixed effects implies the presence of endogeneity. For random effects, on the other hand, endogeneity

is not a concern. However, the random-effects model affects the computation of standard errors (M. R. Roberts and Whited 2013). To eliminate the fixed effect that is prone to endogeneity, we run the within estimator (Clark, Linzer, and others 2015). We present the results in the next section.

4 Results

In this section, we begin by visualizing the variables followed by summary statistics for the data. We then run and discuss the results of the regression model.

4.1 Data Visualization

We start by visualizing the numeric variables against the current legal status of MFIs. We use the median of the variables to stand for the variables. Figure 1 (Panel A) shows that NGOs exhibit the highest median operating expense to assets ratio followed by NBFIs while credit unions trail. As we see later in the analysis, operating expenses positively relate with the depth of outreach- percent of female borrowers and depth of outreach in terms of gross loans to assets. Therefore, NGOs will tend to do better in terms of social outreach as they incur more cost to reach out to the financially excluded. Indeed, literature shows that outreach to the poor is expensive partly due to the dis-economies of scale in serving the poor, financially excluded clients (Mia and Lee 2017). The consequence of the transformation of MFIs to the for-profit approach to microfinance is that managers could trim operating expenses to increase profits hurting financial inclusion.

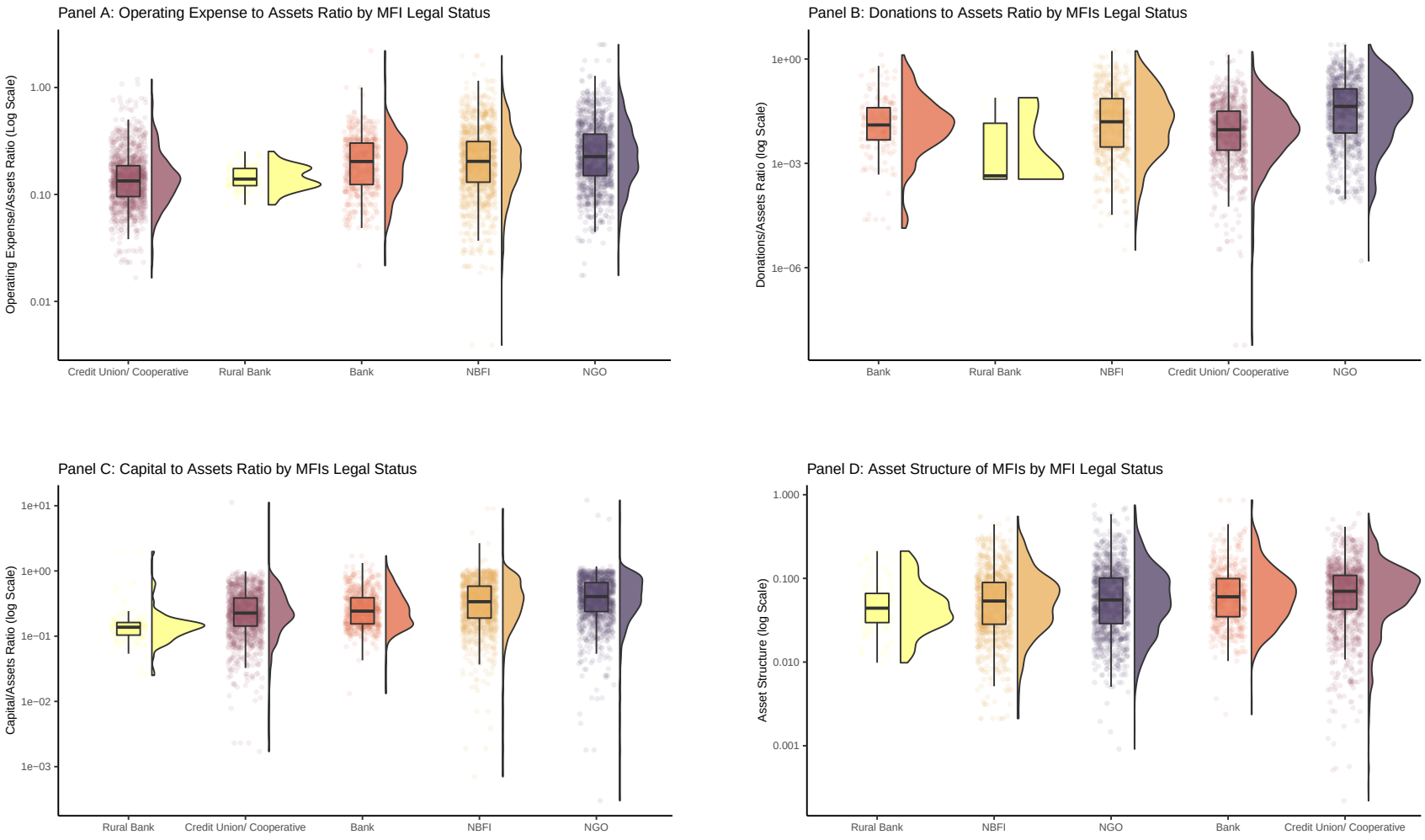
As expected NGOs receive the highest share of donations followed by, surprisingly, credit unions and NBFIs while commercial banks receive the least donations (Figure 1- Panel B). The result relating to NGOs is not surprising given they are rooted in the welfare model of microfinance and that most donors are likely to channel their funds to MFIs that place social performance over profits. When commercial capital almost entirely replaces donations, then it is likely that outreach to the poor maybe affected (P. W. Roberts 2013) given that managers may place emphasis on impressing shareholders and debt-holders in line with the agency theory. As noted, D'Espallier, Hudon, and Szafarz (2013) notes that MFIs with little or no subsidies exhibit greater mission drift. Outreach to the poor would suffer even more where the providers of capital do not have a sense of the hybrid nature of microfinance. However, the rise of blended finance where commercial capital funds social causes may partly mitigate this scenario (Attridge and Engen 2019).

Donations do not prevent NGOs and NBFIs from raising capital as they have the highest capital to assets ratio- which captures equity injections (Figure 1: Panel C). Commercial banks, credit unions and rural banks follow in that order. The observation is surprising given that NGOs and NBFIs still exhibit a high level of social performance even in the presence of a relatively high capital to assets component. It could imply, therefore, that the profit vs social orientation of an MFI could be driven not just by the needs of the providers of funds but also by the internal governance, mission, and strategic vision of an MFI (Campion and White 1999). In this respect, an MFI social mission could outweigh the needs of capital providers. Also, the equity capital NGOs may attract may be preferential in terms of expected returns, as is the case with blended finance (Rode et al. 2019). In this case, donors could provide cheap capital which does not put pressure on management to make high interest/ dividends payments and hence allow MFIs to remain on the social performance path (Lopatta and Tchikov 2016).

Appendix 10 and 11 show the visualization for Debt to equity ratio and deposits to assets ratio indicating that while NGOs attract more equity capital, rural banks, commercial banks, and credit unions rely more on debt, especially deposits to finance their operations. The analysis shows that while all MFIs are raising capital, the sources are different for commercial MFIs vis-a-vis NGOs. While NGOs are inclined to equity, commercial MFIs rely more on debt. Debt capital gives rise to fixed obligations that may exercebate mission drift, and hence the conversion of NGOs to commercial entities could be harmful to social outreach. However, the relative inability to garner deposits maybe detrimental to NGOs ability to access cheap capital.

Lastly, for asset structure (tangibility), the ratio of non-current assets to total assets, credit unions lead followed by commercial banks, NGOs, NBFIs, and rural banks. Asset structure captures the extent to which MFIs invest in physical infrastructure relative to the total asset base. Credit unions tend to serve a narrow geographic region and would traditionally put up brick and mortar branches to serve their customers (McKillop and Wilson 2011). Like

credit unions, commercial banks tended to have more branches, having taken root before the advent of fintech that may reduce the need for physical branches. NGOs, NBFIs, and rural banks have the lowest rates of asset tangibility being of more recent origin, making use of rural agents to meet customers rather than set up an expansive network of branches (Kent and Dacin 2013).



Source: Authors' construction from MIX Data. NB: The y−Axis is in log scale

Figure 1: Operating Expense, Donations, Capital and Asset Structure of MFIs by Legal Status

Overall, the pattern indicates that while NGOs spend the most in operating expense to reach the financially excluded, these efforts come at the expense of profitability. on the contrary, profit-oriented MFIs are keen to manage expenses which improves profitability, presumably at the expense of outreach to the financially excluded. It is worth noting that NGOs have a relatively low asset base and hold relatively fewer non-current assets to total assets. The observation could mean that NGOs do not invest heavily in brick and mortar branches or serve a relatively limited geographic range. Finally, despite the push towards commercial capital, NGOs have the highest capital (equity) to asset ratio- of which much could be from investors keen on social performance and not profits (Mia and Lee 2017).

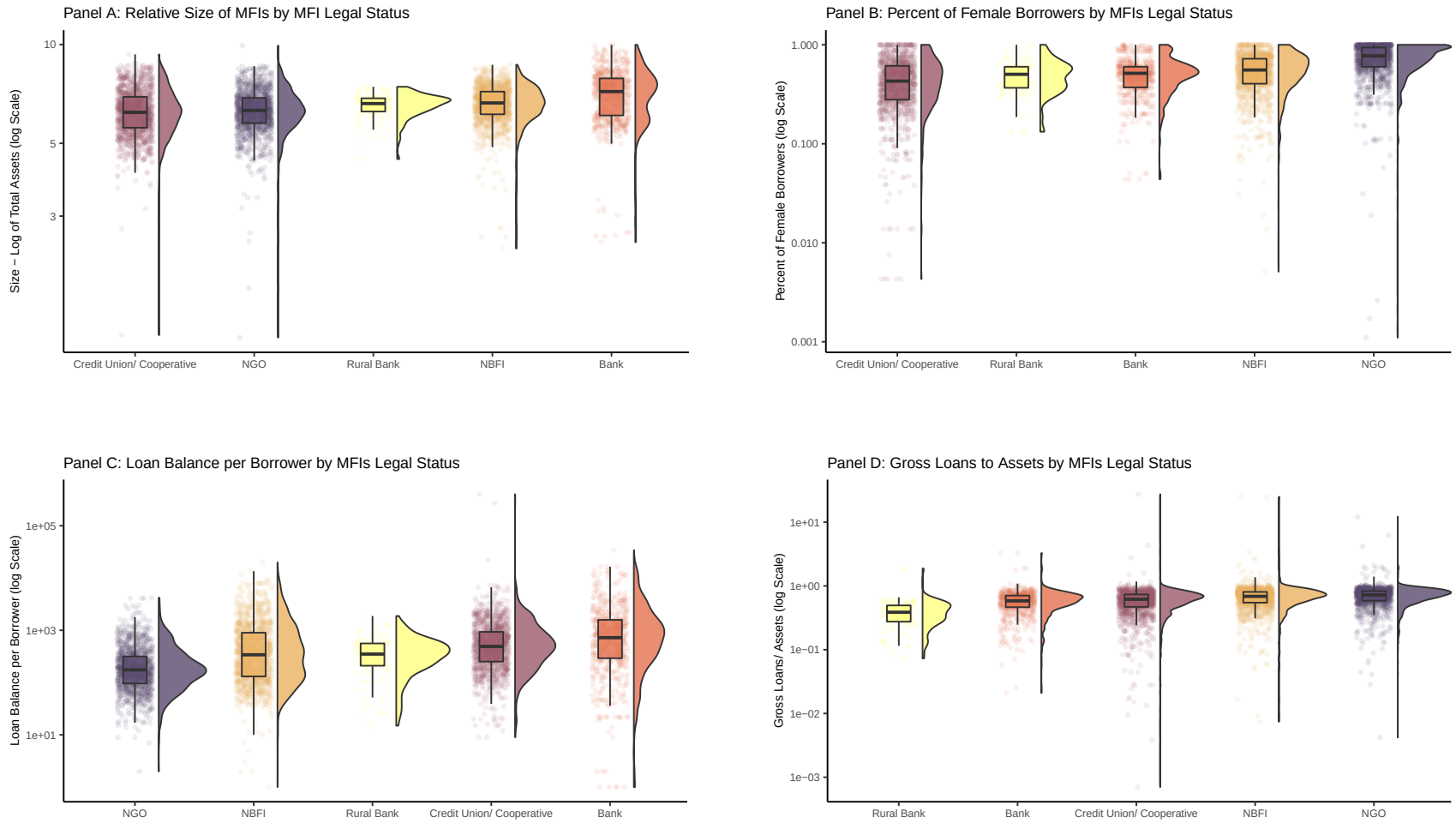
We now turn to Figure 2. The first graph (Figure 2- Panel A) shows that commercial banks are the largest in terms of total assets, while NGOs and cooperatives are the smallest in that order. Banks tend to have a much broader geographic presence and hence attract more clients which, in turn means more assets. Again, capital adequacy requirements by central banks have implications on the assets that banks hold. Also, commercial banks are generally dominant in many developing countries meaning that they have a long operating history which implies a bigger size (Levine 2002).

Turning to profitability, we find that rural banks and commercial banks post the highest median profits, while NBFIs and NGOs trail (Figure 2- Panel B). The result probably partially illustrates the emphasis on social performance versus financial performance that management take- with NGOs and NBFIs more likely to favour the social aspect. When we take this result together with the observation that NGOs tend to have more operating profits, we may conclude that the desire by managers of commercial banks and other for-profit MFIs to mitigate agency conflicts leads to less operating expenses, more profitability and hence lower outreach to the financially excluded (Jensen and Meckling 1976).

Commercial banks and credit unions have the highest average loan balance per borrower, while NBFIs and NGOs come last in that order (Figure 2- Panel 3). As an indicator of outreach to the poor, average loan balance per borrower is better when lower as it indicates that poorer people get access to financial services. Again, it appears that profit-orientation by commercial banks may cause MFIs to reach less financially excluded people in favour of making profits. For credit unions, the observation could arise due to the limited geographic range of operations where they serve people with a common interest like occupation, meaning that their members may not be suffering from financial exclusion in the first place (Armendáriz et al. 2013).

NGOs have the highest median gross loans, which is surprising given their relatively smaller size. On the other hand, banks and rural banks, respectively have the lowest gross loans to assets meaning they are less efficient in converting their assets into credit (Figure 2- Panel 4). Again, it goes to show, at least in the case of Africa that breadth and depth of financial outreach are not always mutually exclusive. In this case, NGOs are able to reach the poorest borrowers, going by the percent of female borrowers and average loan balance per borrower, while at the same time reaching a wide customer base as indicated by the gross loans to assets. The evidence so far leans towards the welfare approach where profitability is incompatible with outreach to the financially excluded (Lopatta and Tchikov 2016).

Figure 3 shows the correlation matrix and a graphical view of the relationships between the numeric variables. First, there is high skewness exhibited by donations to assets ratio, average loan balance per borrower and gross loans to assets ratio. It means that relatively few firms account for a huge chunk of the donations received, in this case among NGOs, cooperatives and NBFIs. The highest correlation exists between operating expenses to assets ratio and donations to assets ratio, meaning that donor funded MFIs have more operating expenses probably because they are less constrained by profit/ interest seeking shareholders and debt holders. Taken together, this observation may imply that if it is expensive to administer and monitor small loans, then the profit oriented model is not good for financial inclusion as it constrains the ability to spend. The summary statistics in Table 2, Table 3, and Table 4 highlight the discussed issues but offer a wider array of statistical measures including the mean, standard deviation and the quantiles.



Source: Authors' construction from MIX Data

The y−Axis is in log scale

Figure 2: Size, Profit Margin, Average Loan Balance per Borrower and Gross of MFIs by Legal Status

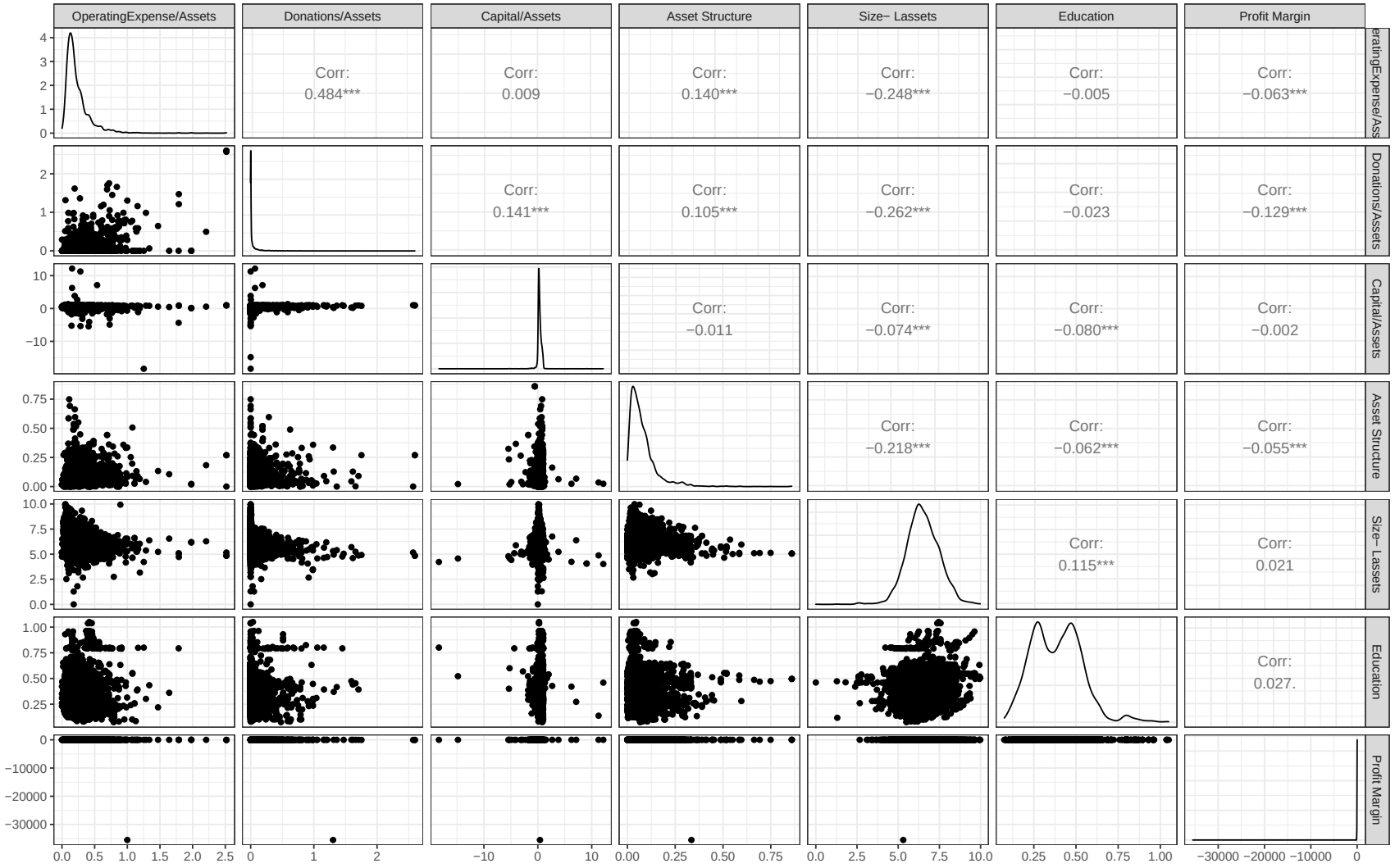


Figure 3: Correlation Matrix for Independent Variables

4.2 Trends in Dependent and Independent Variables

Figure 4 below shows the trends over time for donations, capital, profits and operating expense to assets ratio. Figure 4 (*Panel A*) shows that median donations to assets ratio has been on a downward spiral for the period 1999-2019. The observation confirms the neo-liberal shift where donors expect MFIs to be more financially self-sustainable. The trend is expected given the abundance of literature on the conversion of MFIs from NGOs to the commercial model, and the subsequent drop in donor funding (D'Espallier et al. 2017). As donations dry up, we expect the debt and equity components to fill the void.

Interestingly, capital to assets ratio, which captures the extent of the equity capital injection is also on a downward trend in spite of the drive towards commercialization of MFIs (*Figure 4, Panel B*). The observation could be due to a rise in the total asset base of MFIs as they scale up with equity capital being a relatively smaller component of capital compared to debt. *Appendix 8* shows a steady increase in the debt/equity ratio which means that most MFIs, like commercial banks, use debt (including deposits) to finance their operations. In this respect, debt gives rise to fixed obligations which could hurt profitability during economic downturns.

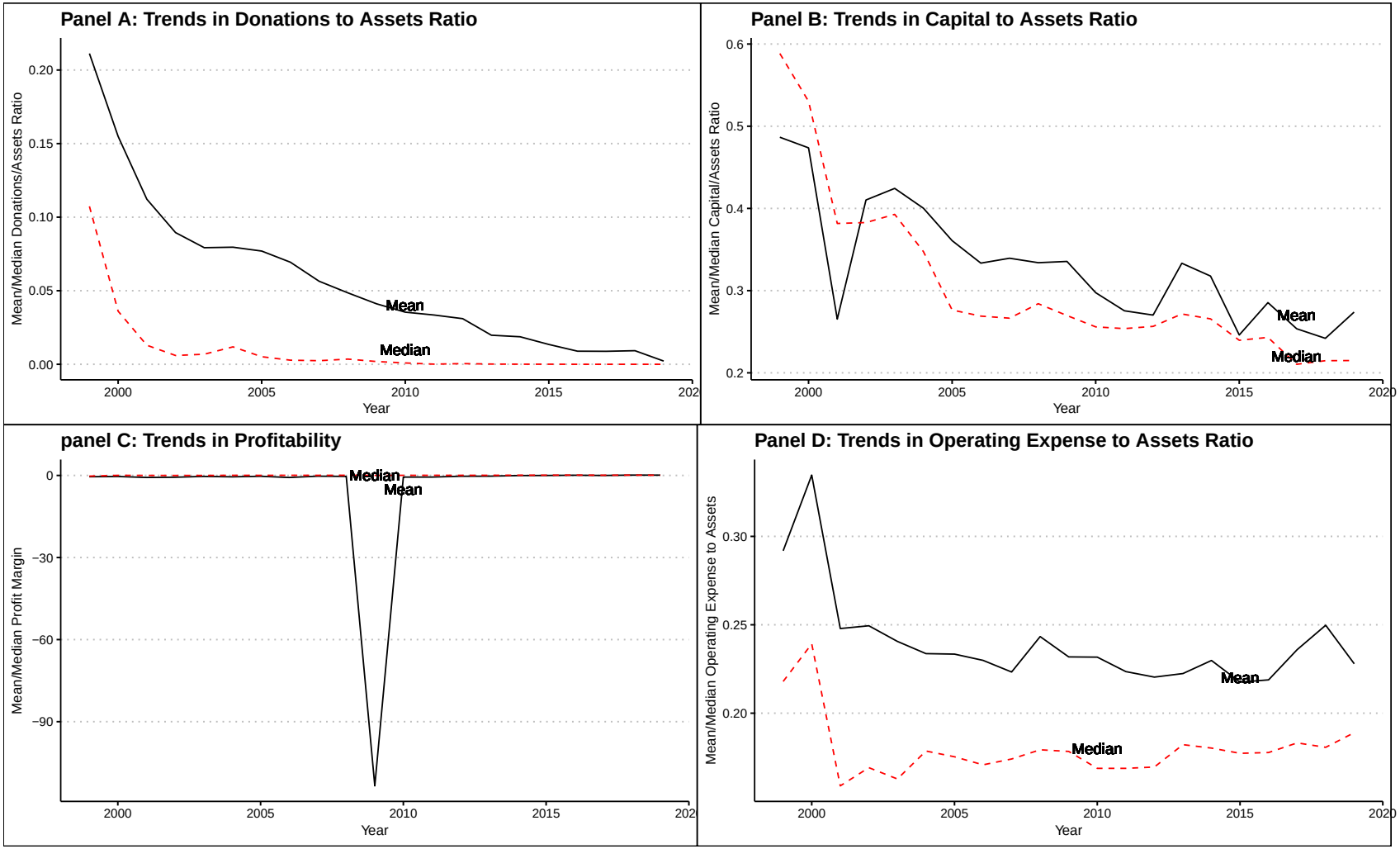
MFI profitability in Figure 4 (*Panel C*) shows that the median profitability for MFIs is very low and almost invariant over time except *for a major deep in mean profitability around 2008-2009 during the global financial crisis period. The result is consistent with the empirical regularity that shows microfinance to be a low margin business (Hartarska and Mersland 2012). An important observation is that there is no distinctive changes in profitability even as more MFIs adopt the commercial model. This means that either the commercialization was not very successful in generating profits or that the extent to which MFIs were able to make profits post-transformation was peculiar to each MFI or to each of the legal forms of microfinance.

Lastly for Figure 4 (*Panel D*), operating expenses to assets ratio remains approximately constant except for a dip in 1999-2000 period. As the regressions results show, operating expense to assets relate positively relate to depth and breadth of outreach. In this case, the drop in the ratio between 1999 to early 2000's could have worsened financial inclusion outcomes. However, the operating expenses ratio has levelled off which could indicate a sustained commitment to outreach even in the face of the desire to make profits.

We turn to Figure 5 which shows a rise in MFI size, average loan balance per borrower, and gross loans to total assets, while the percent of female borrowers is on a downward trend. The rise in the average loans balance per borrower and the concomitant drop in the proportion of female borrowers indicates a consistent drop in the outreach of MFIs to the financially excluded as MFIs rely less on donations and more on commercial capital. It further shows the effects of the neo-liberal, for-profit paradigm which may hurt the social performance of MFIs, specifically the depth of outreach. However, it appears the breadth of outreach is getting better with time as MFIs give more loans. Taken together, it implies that MFIs give larger loans to less financially excluded people in a bid to make ample financial return to allow for financial sustainability and pay dividends and interest to investors.

Appendices 12-14 show the breakdown of the trends for percent of female borrowers, average loan balance per borrower and gross loans to assets. For women borrowers, the trend is generally downwards except for commercial banks which have low outreach to women but that is relatively constant. the trend indicates weakening depth of outreach. For average loan balance per borrower, NGOs and rural banks remain relatively constant while other legal forms have rising average loans sizes which is indicative with worsening outreach by banks, credit unions, and NBFIs. Lastly, except for rural banks, gross loans are on a rising trend indicating rising breadth of outreach.

4.3 Descriptive Statistics



Source: Authors' construction from MIX data

Table 2: Summary Statistics for Categrical Independent Variables

Variable	Completeness	Counts
currentlegalstatus	1	Cre: 1427, NBF: 1318, NGO: 1280, Ban: 619
age	1	Mat: 2558, New: 1200, You: 1024

Source:

Authors' construction from the MIX data

Note:

[1] Legal status include NGO, Non-Bank Financial Institutions (NBFIs), Credit Unions, and Banks

[2] Age has mature MFIs older than 8 years, young ones (4 - 8 years), and new ones that are 4 years or less

Table 3: Summary Statistics for Numeric Dependent Variables

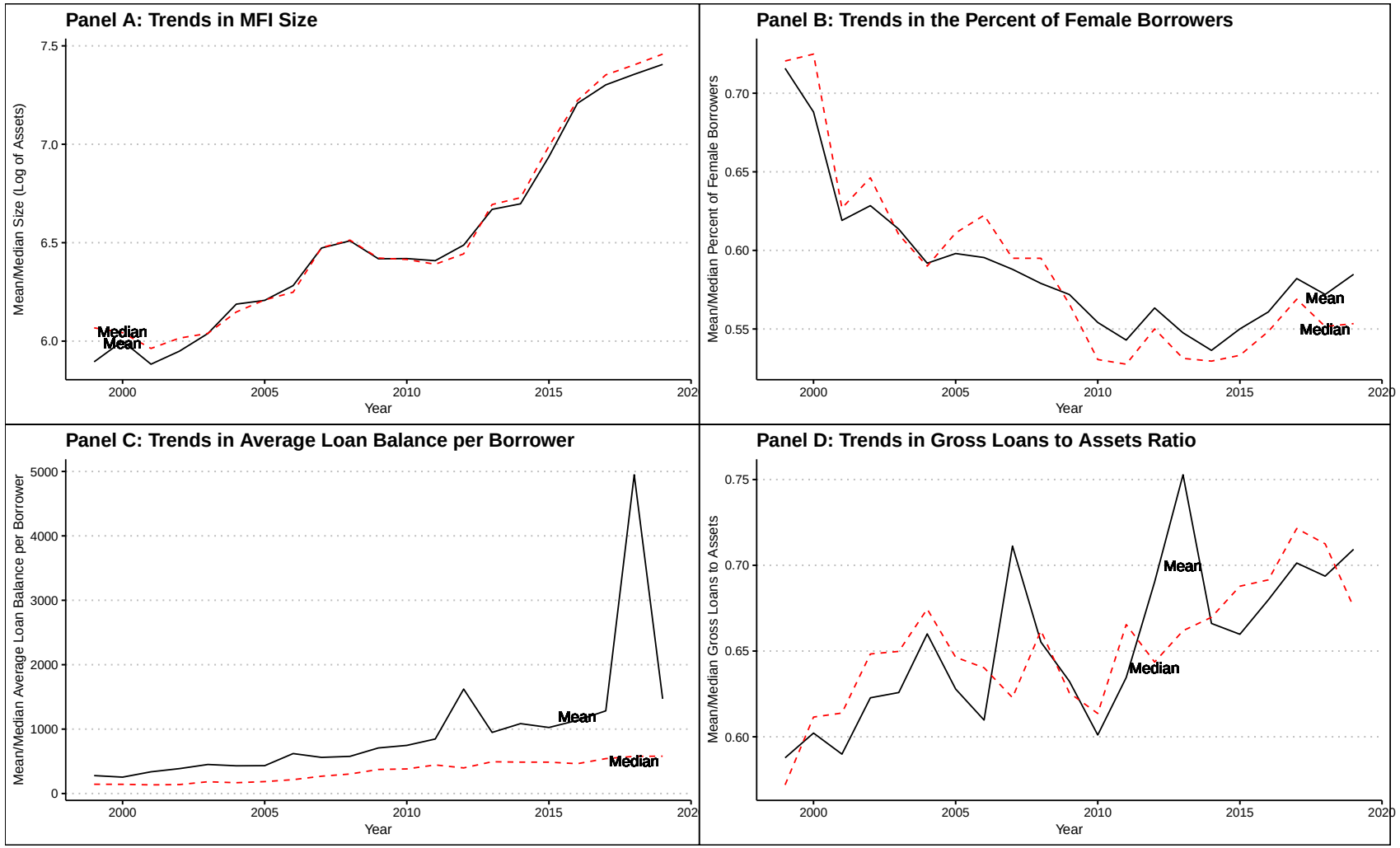
Variable	currentlegalstatus	Mean	SD	Min	Q1	Median	Q3	Max
percent_of_female_borrowers	NGO	0.735	2.26e-01	0.000	0.598	0.772	0.940	1.00e+00
percent_of_female_borrowers	Bank	0.515	2.01e-01	0.044	0.371	0.515	0.600	1.00e+00
percent_of_female_borrowers	NBFI	0.562	2.25e-01	0.000	0.402	0.553	0.722	1.00e+00
percent_of_female_borrowers	Credit Union/ Cooperative	0.462	2.40e-01	0.000	0.279	0.429	0.613	1.00e+00
percent_of_female_borrowers	Rural Bank	0.501	1.91e-01	0.132	0.368	0.503	0.600	1.00e+00
average_loan_balance_per_borrower	NGO	286.234	3.91e+02	0.000	96.000	174.000	316.000	4.19e+03
average_loan_balance_per_borrower	Bank	1573.007	2.80e+03	0.000	275.250	712.500	1584.000	3.40e+04
average_loan_balance_per_borrower	NBFI	819.685	1.44e+03	0.000	130.750	338.000	897.250	1.99e+04
average_loan_balance_per_borrower	Credit Union/ Cooperative	1316.286	1.36e+04	0.000	250.750	490.500	933.250	4.01e+05
average_loan_balance_per_borrower	Rural Bank	410.194	3.02e+02	15.000	210.000	351.000	561.000	1.88e+03
gross_loan_portfolio_to_total_assets	NGO	0.718	4.29e-01	0.004	0.586	0.721	0.833	1.22e+01
gross_loan_portfolio_to_total_assets	Bank	0.571	2.74e-01	0.000	0.449	0.582	0.703	3.28e+00
gross_loan_portfolio_to_total_assets	NBFI	0.710	9.90e-01	0.000	0.546	0.686	0.806	2.50e+01
gross_loan_portfolio_to_total_assets	Credit Union/ Cooperative	0.609	7.58e-01	0.000	0.466	0.616	0.735	2.74e+01
gross_loan_portfolio_to_total_assets	Rural Bank	0.396	2.31e-01	0.073	0.275	0.387	0.495	1.87e+00

Source:

Authors' construction from the MIX data

Note:

[1] The summary statistics are disaggregated by MFI legal status



Source: Authors' construction from MIX data

Figure 4: Trends in MFI Size, Female Borrowers, Average Loan Balances, and Gross Loans

Table 4: Summary Statistics for Continous Independent Variables

Variable	currentlegalstatus	Mean	SD	Min	Q1	Median	Q3	Max
operating_expense_assets	NGO	0.291	0.239	0.00e+00	0.150	0.226	0.365	2.517
operating_expense_assets	Bank	0.228	0.158	2.20e-02	0.124	0.203	0.302	2.207
operating_expense_assets	NBFI	0.260	0.209	4.00e-03	0.130	0.204	0.312	1.979
operating_expense_assets	Credit Union/ Cooperative	0.160	0.114	0.00e+00	0.095	0.134	0.184	1.192
operating_expense_assets	Rural Bank	0.146	0.038	8.00e-02	0.121	0.139	0.175	0.252
donations_assets_ratio	NGO	0.100	0.232	-3.00e-03	0.000	0.011	0.094	2.598
donations_assets_ratio	Bank	0.019	0.087	0.00e+00	0.000	0.000	0.005	1.304
donations_assets_ratio	NBFI	0.040	0.129	-1.00e-03	0.000	0.000	0.018	1.706
donations_assets_ratio	Credit Union/ Cooperative	0.021	0.082	0.00e+00	0.000	0.001	0.014	1.617
donations_assets_ratio	Rural Bank	0.002	0.010	0.00e+00	0.000	0.000	0.000	0.077
capital_asset_ratio	NGO	0.418	0.760	-1.84e+01	0.219	0.381	0.644	12.150
capital_asset_ratio	Bank	0.306	0.232	-5.69e-01	0.154	0.239	0.387	1.699
capital_asset_ratio	NBFI	0.388	0.479	-1.78e+00	0.176	0.324	0.567	9.047
capital_asset_ratio	Credit Union/ Cooperative	0.196	0.674	-1.48e+01	0.107	0.208	0.360	11.269
capital_asset_ratio	Rural Bank	0.176	0.244	-1.33e-01	0.103	0.137	0.162	1.982
asset_structure	NGO	0.079	0.082	0.00e+00	0.028	0.055	0.100	0.749
asset_structure	Bank	0.083	0.089	0.00e+00	0.035	0.060	0.099	0.860
asset_structure	NBFI	0.071	0.066	0.00e+00	0.028	0.054	0.089	0.551
asset_structure	Credit Union/ Cooperative	0.085	0.068	0.00e+00	0.042	0.070	0.108	0.596
asset_structure	Rural Bank	0.057	0.045	0.00e+00	0.030	0.043	0.066	0.212
lassets	NGO	6.315	0.927	0.00e+00	5.758	6.294	6.874	9.927
lassets	Bank	7.072	1.242	2.50e+00	6.078	7.189	7.885	9.979
lassets	NBFI	6.620	0.820	2.39e+00	6.129	6.637	7.185	8.677
lassets	Credit Union/ Cooperative	6.276	0.984	1.30e+00	5.577	6.214	6.927	9.332
lassets	Rural Bank	6.519	0.547	4.48e+00	6.248	6.608	6.856	7.433
education	NGO	0.419	0.163	7.50e-02	0.286	0.419	0.497	1.050
education	Bank	0.405	0.152	8.10e-02	0.282	0.459	0.506	0.957
education	NBFI	0.377	0.143	1.01e-01	0.264	0.363	0.484	0.963
education	Credit Union/ Cooperative	0.343	0.122	1.17e-01	0.248	0.310	0.436	0.600
education	Rural Bank	0.484	0.042	4.59e-01	0.463	0.474	0.487	0.689
profit_margin	NGO	-0.505	3.435	-4.91e+01	-0.298	0.030	0.171	3.623
profit_margin	Bank	-70.782	1584.244	-3.55e+04	-0.069	0.113	0.225	0.811
profit_margin	NBFI	-0.360	1.993	-4.54e+01	-0.258	0.037	0.180	3.555
profit_margin	Credit Union/ Cooperative	-0.349	2.362	-5.04e+01	-0.229	0.048	0.213	6.202
profit_margin	Rural Bank	0.161	0.225	-1.89e+00	0.144	0.191	0.246	0.434

Source:

Authors' construction from the MIX data

Note:

[1] The summary statistics are disaggregated by MFI legal status

4.4 Regression Analysis

This section describes the results of the regression models that are contained in Table 5 and Table 6, Appendix 1 together with the results of the exploratory data analysis. Table 5 shows the output for the fixed effects model (see results of the Hausmann test in appendix 2).[2] Table 6 shows the random effects and the pooled OLS models. We describe the effects of transformation on each of the dependent variables- percent of women borrowers, average loan balance per borrower and gross loans to assets.

4.4.1 *Percent of Women Borrowers*

The legal status of an MFI is a significant driver of outreach to women, with NGOs faring better. Other positive drivers of outreach to women include education, operating expenses to assets ratio, profit margin and capital-to-assets ratio. Region is also important as North Africa fares worse than Sub-Sahara Africa despite the fact that it is represented entirely by NGOs in the sample. Table 6 of the random effects and pooled OLS model shows that NGOs outperform other legal forms of MFIs in reaching out to women. The result implies that the transformation of MFIs has the potential to negatively impact on financial inclusion efforts as commercial MFIs are less keen to reach the financially excluded, which contradicts some previous research (Joann Ledgerwood 1998; Joanna Ledgerwood and White 2006; Hartarska and Mersland 2012; Bos and Millone 2015).

The results gain more credence when we examine operating expenses to assets ratio. There is a positive and significant relationship between operating expense to assets ratio on the one hand and percent of women borrowers on the other. It means that an MFI has to spend more to reach financially excluded clients, which in turn means fewer profits at a given level of revenue. As expected, the conversion of MFIs from NGOs to the commercial model could lead to a reduction in operating expenses in the quest for profits in line with the profit incentive arising from the agency theory (Eisenhardt 1989). Hence, it follows that a quest for profit is bad for financial inclusion by causing mission drift in line with prior research (Wagenaar 2012; P. W. Roberts 2013; Lopatta and Tchikov 2016; Mia and Lee 2017). Except in the unlikely scenario where MFIs generate profits by raising revenue without lowering costs, Africa should rethink the case for transformation of MFIs.

Indeed profitability has a positive relationship albeit insignificant effects on the percent of women borrowers. With this hindsight it would appear like the viable explanation for the profitability-operating expense-financial inclusion issue is that for commercial MFIs, a reduction in operating expenses (implying an increase in profitability) in the short run is warranted if it translates into higher profits that allow the MFIs to reach more financially excluded clients while cross subsidizing them in the median and long term. However, D'Espallier et al. (2017) note that for transformed MFIs, profits tend to drop in the short term but not necessarily in the long term.The drop in profitability is driven by transformed MFIs charging lower interest rates, a contentious issue in micro-finance. It would be worthy examining the dynamics between profitability, operating expense and financial inclusion for MFIs over a longer period.

The significant control variables are education and region. Education varies positively with outreach to women as does region. A country in Northern Africa has lower outreach to women than an otherwise similar country in Sub-Sahara Africa which could be due to religious beliefs that harm financial inclusion for women (Hassan, Hossain, and Unsal 2018). It is notable that North Africa has only NGOs in the sample meaning that cultural and religious inclinations play a bigger role in driving financial inclusion than the operating model of MFIs. Education also appears to play a key role in financial inclusion arising from its empowerment in terms of women joining the formal labour market and financial literacy that allows for better financial decision making (Zins and Weill 2016; Chikalipah 2017).

The observed relationships largely hold even when we winsorise the data (see *Appendix 1*). The only exception is capital to assets ratio and profit margin which turn out to have a significant positive relationships with outreach to women. These results suggest that larger firms are more likely to experience mission drift after conversion. However, even after winsorizing the data, NGOs still do better at financing women in line with research from the welfare approach to microfinance (Kodongo and Kendi 2013). To sum this up, the quest improve outreach to women would best be achieved by targeting NGOs with capital funding, especially with the rise of blended finance - commercial capital for social projects, ceteris paribus. The other variables in the model are not significant but are

[2] Further, Appendix 3 and 4 show that there are significant effects and hence in all models, we favour the fixed effects and random effects models over pooled OLS. However, we run both the fixed and random effects model to allow us interpret the results from the dummy that drops out in the fixed effects model.

worth mentioning. For instance, older firms have lower levels of outreach to women which could imply that firms loose focus on financial inclusion as they mature and get financially independent. Next, we examine average loan balance per borrower.

4.4.2 *Average Loan Balance per Borrower*

Like the percent of female borrowers, average loan balance per borrower captures how deep an MFI goes to reach the financially excluded, who typically would demand smaller loans. Thus, the smaller the average loan balance the better the outreach. The major criticism of the average loan balance per borrower as an indicator of financial inclusion is that a larger average loan balance could result from progressive lending or arise as clients get better off (Abeysekera, Oguzoglu, and Le 2014). Again, researchers could be wrongly proclaiming mission drift for MFIs operating in countries that have relatively fewer indigent clients (Armendáriz et al. 2013). Importantly, the presence of some extremely high loans granted to some clients could tilt the average loan balance upwards (Market 2015). Despite these shortcomings, it is a useful metric as it is easily quantifiable and data readily available..[3]

The key observation is that NGOs consistently offers smaller average loan sizes compared to other legal forms of MFIs, although the result is only significant for credit unions/ cooperatives. Consistent with the outreach to women, the observation would suggest that NGOs reach the financially excluded better than do commercial forms of MFIs. It would then imply that the conversion of MFIs from NGOs to legal forms is harmful to financial inclusion as the welfare school argues. Indeed, D'Espallier et al. (2017) and Mia and Lee (2017), using a global dataset of MFIs find that after transformation, average loan balances go up which is consistent with our finding. Accordingly Peck Christen and Cook (2001) argue that commercial logic has, over time, displaced the welfare approach to addressing financial exclusion.

Furthermore, Older MFIs have lower average loan balance per borrower relative to newer ones. The relationship could hold as older firms tend to reach out to more financially excluded clients given their stable financial base, operational experience, and linkage to donors who emphasize social performance (Bos and Millone 2015). However, the larger the MFIs asset base, the higher the average loan balance, meaning that it is older but relatively smaller firms that better focus on their mission. Overall, it would imply that the growth of an MFI comes at the expense of outreach to the financially excluded (Armendáriz et al. 2013).

Moreover, capital to asset ratio has a positive relationship with average loan balance, while profit margin relates negatively with average loan size. For capital, the observation would imply that entry of commercial capital negatively influences the extent of financial inclusion given that poorer people tend to demand smaller loans (Mersland and Strøm 2010). As noted, however, some forms of commercial capital could allow MFIs to reach more financially excluded customers. It appears that the nature of capital injection - pure commercial versus preferential commercial capital may have a bearing on the extent that an MFI focuses on profit generation relative to social outreach (D'Espallier, Hudon, and Szafarz 2013).

As noted in the case of female borrowers, profitability is good for financial inclusion. While short run profitability may hurt financial inclusion, it appears like it could be useful in extending financial inclusion in the long and medium terms (Louis, Seret, and Baesens 2013; Quayes 2012) which is in line with the win-win school of microfinance (Kodongo and Kendi 2013). Hence, it would be useful to examine the inter-temporal dynamics between capital, profitability, breadth of outreach and depth of outreach of microfinance institutions in Africa.

The insignificant drivers of average loan balance per borrower include region, operating expense to assets ratio, donations to assets ratio, asset structure, and education. That said, the relationship between operating expense ratio, donations to assets ratio and average loan size is positive, pointing to a negative but insignificant effect of operating expenses and donations on financial inclusion (D'Espallier et al. 2017). For education, the sign is negative meaning that education has a positive but insignificant impact on financial inclusion, an observation consistent with the one on percent of female borrowers in the immediate section above. Asset structure exhibits mixed results. The results remain robust even after removing extreme values (see *Appendix 1*). The next section examines the breadth of outreach captured using gross loans to assets ratio.

[3] when interpreting these results, note that a smaller average loan balance per borrower indicates better depth of outreach. Therefore, variables that have a negative coefficient have a positive influence on the depth of outreach

Table 5: Output of Fixed Effects Model

	Dependent Variables								
	Social Performance								
	FemaleClients	FemaleClients	FemaleClients	AverageLoan	AverageLoan	AverageLoan	GrossLoans	GrossLoans	GrossLoans
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Age: Young	−0.009	−0.009	−0.010	−1,138.000***	−1,143.000***	−1,238.000***	0.117***	0.118***	0.131***
	(0.013)	(0.013)	(0.014)	(347.000)	(350.000)	(387.000)	(0.031)	(0.031)	(0.034)
Age: Mature	−0.005	−0.005	−0.005	−1,533.000**	−1,537.000**	−1,657.000**	0.163***	0.164***	0.176***
	(0.018)	(0.018)	(0.019)	(600.000)	(607.000)	(648.000)	(0.040)	(0.040)	(0.044)
Operating Expense	0.067*	0.067*	0.072*	1,775.000	1,787.000	2,205.000	0.279***	0.280***	0.306***
	(0.036)	(0.036)	(0.037)	(1,844.000)	(1,872.000)	(1,978.000)	(0.090)	(0.091)	(0.097)
Donations/Assets	−0.012	−0.012	−0.016	1,663.000	1,662.000	1,478.000	−0.315***	−0.316***	−0.324***
	(0.031)	(0.032)	(0.034)	(1,227.000)	(1,237.000)	(1,338.000)	(0.100)	(0.101)	(0.105)
Capital/Assets	−0.004	−0.004	−0.007	797.000***	797.000***	1,049.000***	1.100***	1.100***	1.260***
	(0.007)	(0.007)	(0.010)	(244.000)	(247.000)	(339.000)	(0.034)	(0.035)	(0.047)
Asset Structure	0.081	0.083	0.076	478.000	558.000	−1,137.000	−0.730***	−0.722***	−1.050***
	(0.081)	(0.081)	(0.088)	(3,930.000)	(4,074.000)	(4,311.000)	(0.218)	(0.226)	(0.250)
Size(Lassets)	0.011	0.011	0.012	7,398.000***	7,412.000***	7,832.000***	−0.087***	−0.088***	−0.047
	(0.014)	(0.014)	(0.015)	(868.000)	(877.000)	(945.000)	(0.034)	(0.034)	(0.037)
Education	0.192**	0.193**	0.205**	−2,370.000	−2,355.000	−2,604.000	0.008	0.007	−0.029
	(0.090)	(0.090)	(0.093)	(3,472.000)	(3,506.000)	(3,708.000)	(0.189)	(0.191)	(0.212)
Profit Margin	0.002	0.002	0.003	−159.000***	−160.000***	−160.000***	0.015***	0.016***	0.014***
	(0.002)	(0.002)	(0.002)	(39.500)	(40.000)	(39.900)	(0.004)	(0.004)	(0.004)
F	4.230***	4.210***	4.130***	8.200***	7.980***	7.840***	108.395***	106.966***	101.779***
DF	3240	3210	2950	3380	3340	3030	3497	3405	3056
Data	Full	>=3 Years	>=5 Years	Full	>=3 Years	>=5 Years	Full	>=3 Years	>=5 Years
Observations	3,243	3,209	2,948	3,381	3,335	3,027	3,497	3,405	3,056
R^2	0.043	0.043	0.045	0.075	0.075	0.080	0.517	0.518	0.527
Adjusted R^2	−0.088	−0.083	−0.063	−0.057	−0.050	−0.026	0.444	0.451	0.473

Note: *p<0.1; **p<0.05; ***p<0.01

Table 6: Output of Random Effects and Pooled OLS Models

	Dependent Variables					
	Social Performance					
	FemaleClients-Random	FemaleClients-Pooled	AverageLoan- Random	AverageLoan- Pooled	GrossLoans- Random	GrossLoans- Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Legal: Bank	−0.214***	−0.182***	276.000	276.000	−0.013	−0.061
	(0.044)	(0.043)	(585.000)	(585.000)	(0.053)	(0.046)
Legal: NBFI	−0.181***	−0.178***	152.000	152.000	0.027	−0.008
	(0.030)	(0.029)	(379.000)	(379.000)	(0.038)	(0.034)
Legal: Coop	−0.260***	−0.236***	872.000**	872.000**	0.088**	0.043
	(0.030)	(0.030)	(388.000)	(388.000)	(0.039)	(0.035)
Legal: Rural Bank	−0.241***	−0.214***	112.000	112.000	−0.119	−0.185**
	(0.061)	(0.050)	(570.000)	(570.000)	(0.078)	(0.073)
Age: Young	−0.010	−0.011	−314.000	−314.000	0.077***	0.049*
	(0.012)	(0.017)	(305.000)	(305.000)	(0.028)	(0.029)
Age: Mature	−0.010	−0.024	−641.000*	−641.000*	0.117***	0.077**
	(0.017)	(0.023)	(340.000)	(340.000)	(0.030)	(0.031)
Region: SSA	0.098*	0.088	456.000	456.000	−0.060	−0.034
	(0.054)	(0.059)	(650.000)	(650.000)	(0.081)	(0.068)
Operating Expense	0.098***	0.295***	403.000	403.000	0.208***	0.121
	(0.034)	(0.062)	(1,083.000)	(1,083.000)	(0.070)	(0.076)
Donations/Assets	−0.007	0.028	374.000	374.000	−0.383***	−0.474***
	(0.032)	(0.053)	(619.000)	(619.000)	(0.094)	(0.099)
Capital/Assets	0.002	0.048***	95.400	95.400	0.924***	0.777***
	(0.007)	(0.015)	(154.000)	(154.000)	(0.029)	(0.028)
Asset Structure	0.035	−0.168	1,901.000	1,901.000	−0.787***	−0.828***
	(0.077)	(0.131)	(1,387.000)	(1,387.000)	(0.164)	(0.168)
Size(Lassets)	−0.001	−0.022	1,013.000***	1,013.000***	−0.024	−0.005
	(0.011)	(0.014)	(197.000)	(197.000)	(0.017)	(0.017)
Education	0.188***	0.172**	305.000	305.000	0.115	0.128
	(0.071)	(0.079)	(962.000)	(962.000)	(0.094)	(0.089)
Profit Margin	0.002	0.001	−31.200	−31.200	0.011***	0.008**
	(0.002)	(0.003)	(20.800)	(20.800)	(0.003)	(0.004)
Constant	0.632***	0.716***	−6,631.000***	−6,631.000***	0.184	0.249
	(0.096)	(0.115)	(1,453.000)	(1,453.000)	(0.161)	(0.155)
F	27.3***	38.1***	89.4***	2.63***	3017***	71.5***
DF	3240	3210	2950	3380	3340	3030
Data	Full	Full	>=3 Years	>=3 Years	>=5 Years	>=5 Years
Observations	3,243	3,243	3,381	3,381	3,497	3,497

4.4.3 *Gross Loans to Assets Ratio*

Gross loans capture the breadth of outreach, that is the number of people reached and the volume of credit that an MFI disburses. While it is desirable for MFIs to enhance their depth of outreach by reaching female borrowers and micro-borrowers, the sheer scale of such lending also matters (D'Espallier, Hudon, and Szafarz 2013). In the best case scenario, we should have an MFI that reaches the most financially excluded borrowers but that also offers more gross loans, meaning that it reaches more of the financially excluded. Gross loans to assets ratio exhibits a much stronger relationship with the independent variables with a coefficient of determination (adjusted R-Squared) of 0.467. The significant variables are MFI legal status, age, operating expenses to assets, donations to assets, capital-asset ratio, asset structure, size, and profit margin.

Although the legal status of an MFI is marginally significant in driving gross loans, NGOs have the greatest gross loans portfolios than all other legal forms except credit unions/ cooperatives and NBFIs. Hence, although NGOs exhibit more depth, it is not at the expense of breadth. Cooperatives have the highest gross loans which may reflect their closed nature serving a limited geographic region or people with common interests who opt to pool their savings (McKillop and Wilson 2011). NBFIs, unlike NGOs, have the advantage of having access to commercial equity and capital which as we see later positively drives breadth of outreach in terms of gross loans.

As expected, older firms have more gross loans to assets given their longer presence in the market implying a greater market share. Size is weakly negatively related to gross loans, meaning that older firms greater gross loans to assets is a result of better intermediation probably arising from management experience and expertise. Operating expenses to assets ratio also positively relate to gross loans. MFIs that have a higher spending capacity give out more loans, probably due to their greater market share (Gutierrez-Nieto, Serrano-Cinca, and Molinero 2007). Capital to assets ratio and profit margin also positively relate to gross loans. In this respect, it appears that breadth of outreach would best be achieved via commercial organizations that aim to maximize profits. Also, to broaden outreach, equity capital plays a positive role, meaning that commercialization could aid the expansion of gross loans in support of the win-win approach to microfinance (Kodongo and Kendi 2013).

On the other hand, donations are negatively related to gross loans. In this case, it appears that donors may not be keen on breadth but rather emphasize depth that research shows is best done through not-for-profit MFIs like NGOs (D'Espallier et al. 2017; Bos and Millone 2015). MFIs that are more dependent on donations are most likely small and young and hence the low gross loans to assets. Again, asset structure have a significant negative relationship with gross loans. In this case, MFIs that tie a lot of their resources in physical assets have less breadth of outreach which is a case for the adoption of technology in place of brick and mortar branches (D'Espallier, Hudon, and Szafarz 2017). As noted, the size of an MFI is weakly negatively related to the gross loan portfolio to assets ratio.

A final important aspect is the way gross loans to assets relate to measures of depth of outreach. Appendix 6 captures the relationship. While gross loans appear to weakly correlate negatively with average loan balance per borrower, there is a substantial positive correlation between gross loans and percent of female borrowers. But examining the scatter plots shows that outliers drive the little correlation between these variables. The positive correlation between percent of women borrowers and average loan balance per borrower support the claim that smaller loans indicate deeper outreach (Ayyagari, Demirguc-Kunt, and Maksimovic 2013). Hence it is possible for MFIs to pursue both financial inclusion depth and breadth without trade-offs. However, it is not clear at what point the breadth of outreach may negatively affect the depth of outreach especially in Africa.

4.4.4 *Robustness Checks*

Our robustness checks encompass three matters. First, the study employs three financial metrics to capture financial inclusion - percent of women borrowers, average loan balance per borrower and gross loans to assets ratio. The second aspect relates to outliers which could affect the regression estimates. To control for outliers, we run regressions using winsorized data. Precisely, we remove the top 10% and the bottom 10% of the data and run the random effects, fixed effects and pooled OLS. Overall, the results remain largely robust to extreme values. Lastly, we correct the standard errors for cross-sectional dependence and serial correlation by presenting panel corrected standard errors (PCSE) to cater for serial correlation and cross-sectional dependence, a common issue in panel data (see Appendix 5).

5 Conclusion

MFI avail financial services to the financially excluded including women, rural dwellers,people living in remote locations and the poor. There is a paradigm shift from the NGO not-for-profit model of microfinance to the commercial model that stresses financial sustainability over and above outreach to the financially excluded. In this article, we have examined the transformation of microfinance institutions in Africa and its potential effects on financial inclusion. We found that NGOs perform best in measures of financial depth- percent of women borrowers and average loan balance per borrower. Although banks lead in terms of financial breadth - the gross loans to assets ratio, NGOs do not perform poorly either and, in fact, exhibit higher median gross loans to assets ratio than other legal forms, including banks. The result suggest that transformation could adversely affect financial inclusion in Africa if allowed to occur without appropriate interventions and support. Capital positively drives all aspects of financial inclusion but is significant for gross loans. Hence, microfinance institutions- including those that are not NGOs- could fare well in financial inclusion if affordable capital is available. Interestingly, profitability is positively related to gross loans although MFI do not need to transform to make profits. Operating expenses also positively drive depth and breadth of outreach and hence targeted tax breaks could allow MFIs to incur costs of reaching the financially excluded clients without a severe dent on profitability. Donations, negatively impact breadth of outreach while education and region are only important regarding depth - the percent of female borrowers. Asset structure, donations, and size of an MFI negatively relate to gross loans. Overall, the transformation of MFIs in Africa needs an appropriate framework to mitigate possible mission drift.

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Appendices

6.1 Appendix 1: Regression Results for Winsorized Data

Table 7: Regression Models Using Winsorized Data

	Dependent Variables								
					Social Performance				
	FemaleClients	FemaleClients	FemaleClients	AverageLoan	AverageLoan	AverageLoan	GrossLoans	GrossLoans	GrossLoans
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Legal: Bank	−0.144***		−0.131***	−71.500		−71.500	−0.069		−0.088*
	(0.049)		(0.049)	(712.000)		(712.000)	(0.056)		(0.051)
Legal: NBFI	−0.172***		−0.163***	188.000		188.000	−0.0002		−0.013
	(0.033)		(0.031)	(444.000)		(444.000)	(0.039)		(0.036)
Legal: Coop	−0.211***	0.113	−0.193***	1,116.000**	1,684.000	1,116.000**	0.021	−0.015	0.008
	(0.035)	(0.130)	(0.034)	(518.000)	(1,971.000)	(518.000)	(0.043)	(0.103)	(0.040)
Legal: Rural Bank	−0.209***		−0.167***	−140.000		−140.000	−0.317***		−0.341***
	(0.059)		(0.052)	(732.000)		(732.000)	(0.093)		(0.089)
Age: Young	−0.022	−0.019	−0.043**	−43.300	−939.000***	−43.300	0.069	0.082*	0.066
	(0.016)	(0.016)	(0.020)	(265.000)	(360.000)	(265.000)	(0.050)	(0.047)	(0.052)
Age: Mature	−0.023	−0.017	−0.052*	−184.000	−1,220.000**	−184.000	0.112**	0.127***	0.099*
	(0.021)	(0.022)	(0.029)	(339.000)	(610.000)	(339.000)	(0.051)	(0.048)	(0.054)
Region: SSA	0.086		0.092	468.000		468.000	−0.110		−0.091
	(0.058)		(0.058)	(763.000)		(763.000)	(0.068)		(0.062)
Operating Expense	0.162**	0.086	0.471***	2,567.000	2,858.000	2,567.000	0.539***	0.938***	0.436***
	(0.072)	(0.078)	(0.114)	(1,683.000)	(3,080.000)	(1,683.000)	(0.143)	(0.226)	(0.140)
Donations/Assets	2.230	1.410	10.700***	−93,698.000*	141.000	−93,698.000*	−5.840	0.884	−7.750*
	(1.500)	(1.500)	(2.620)	(50,487.000)	(63,343.000)	(50,487.000)	(4.170)	(4.540)	(4.210)
Capital/Assets	0.077***	0.069**	0.110**	358.000	3,893.000***	358.000	0.147**	0.107	0.160**
	(0.029)	(0.029)	(0.047)	(766.000)	(1,292.000)	(766.000)	(0.069)	(0.083)	(0.068)
Asset Structure	0.105	0.215	−0.397*	3,622.000	−342.000	3,622.000	−1.150***	−0.977*	−1.140***
	(0.136)	(0.143)	(0.232)	(3,607.000)	(7,163.000)	(3,607.000)	(0.337)	(0.525)	(0.320)
Size(Lassets)	−0.008	0.008	−0.032*	797.000***	7,756.000***	797.000***	−0.069***	−0.258***	−0.054**
	(0.014)	(0.018)	(0.017)	(247.000)	(1,188.000)	(247.000)	(0.023)	(0.043)	(0.022)
Education	0.215***	0.229**	0.202**	1,113.000	−3,770.000	1,113.000	−0.078	−0.114	−0.047
	(0.082)	(0.102)	(0.091)	(1,353.000)	(4,209.000)	(1,353.000)	(0.104)	(0.176)	(0.104)
Profit Margin	0.049**	0.042**	0.089***	−24.100	−1,824.000*	−24.100	0.230***	0.221***	0.239***
	(0.019)	(0.020)	(0.033)	(609.000)	(1,008.000)	(609.000)	(0.054)	(0.058)	(0.055)
Constant	0.602***		0.687***	−6,091.000***		−6,091.000***	0.982***		0.923***
	(0.118)		(0.143)	(2,078.000)		(2,078.000)	(0.204)		(0.203)
F	4.230***	4.210***	4.130***	8.200***	7.980***	7.840***	108.395***	106.966***	101.779***
DF	3240	3210	2950	3380	3340	3030	3497	3405	3056
Model	Random	Fixed	Pooled	Random	Fixed	Pooled	Random	Fixed	Pooled
Observations	2,656	2,656	2,656	2,681	2,681	2,681	2,716	2,716	2,716
R^2	0.116	0.055	0.308	0.027	0.067	0.027	0.044	0.037	0.056
Adjusted R^2	0.104	−0.060	0.299	0.015	−0.047	0.015	0.032	−0.082	0.044

Note: *p<0.1; **p<0.05; ***p<0.01

Table 8: ‘Results of the Hausmann Test for Fixed versus Random Effects‘

Dependent_variable	Statistic	P.value	Parameter	Alternative
Percent of Female Borrowers	29.7	0.001	10	one model is inconsistent
Average Loan Balance per Borrower	114.7	0.000	10	one model is inconsistent
Gross Loan Portfolio to Total Assets	386.7	0.000	10	one model is inconsistent

6.2 Appendix 2: The Hausmann Test

In this section, we run the Hausmann test for the choice between fixed effects and random effects model.Also, we check for the choice between pooled OLS and random effects models. Finally, we present the output from the regression analysis. Appendix 2 shows the results of the Hausmann test. The test favours the fixed effects model given that the null hypothesis is the random effects.

Table 9: Results of the F test for individual effects for Fixed Effects versus Pooled OLS

Dependent_variable	statistic	Method	Alternative
Percent of women borrowers	23.0000***	F test for individual effects	Significant effects
Average Loan Balance per Borrower	1.0000***	F test for individual effects	Significant effects
Gross Loans to Total Assets	5.0000***	F test for individual effects	Significant effects

6.3 Appendix 3: Fixed Effects vs Pooled OLS

The table below shows that there are significant effects and the test favours fixed effects model over the pooled OLS.

Table 10: Results of the Langrage Multiplier Test for Random Effects versus Pooled OLS

Dependent_variable	statistic	Method	Alternative
Percent of Women Borrowers	85.5000***	Lagrange Multiplier Test - (Honda) for unbalanced panels	Significant effects
Average Loan Balance per Borrower	2.2400***	Lagrange Multiplier Test - (Honda) for unbalanced panels	Significant effects
Gross Loans to Total Assets	22.3000***	Lagrange Multiplier Test - (Honda) for unbalanced panels	Significant effects

6.4 Appendix 4: Random Effects vs Pooled OLS

Again, the Table below shows results of the Langrage multiplier test that favors the random effects model over the pooled OLS.

Table 11: Results of the PCD Test for Cross-Sectional Dependence

Dependent_variable	Model	Chisq	df
Percent of women borrowers	Fixed Effects	99564***	53076
Average loan balance per borrower	Fixed Effects	0.0000***	59759
Gross loans to total assets	Fixed Effects	0.0000***	68598
Percent of women borrowers	Random effects	99764***	53076
Average loan balance per borrower	Random Effects	0.0000***	59759
Gross loans to total assets	Random effects	0.0000***	68598

6.5 Appendix 5: Test for Cross-Sectional Dependence

The table below shows that there is high cross-sectional dependence in the dataset. For this reason, we run and present the panel corrected standard errors.

6.6 Appendix 6: Correlation Matrix for Dependent Variables

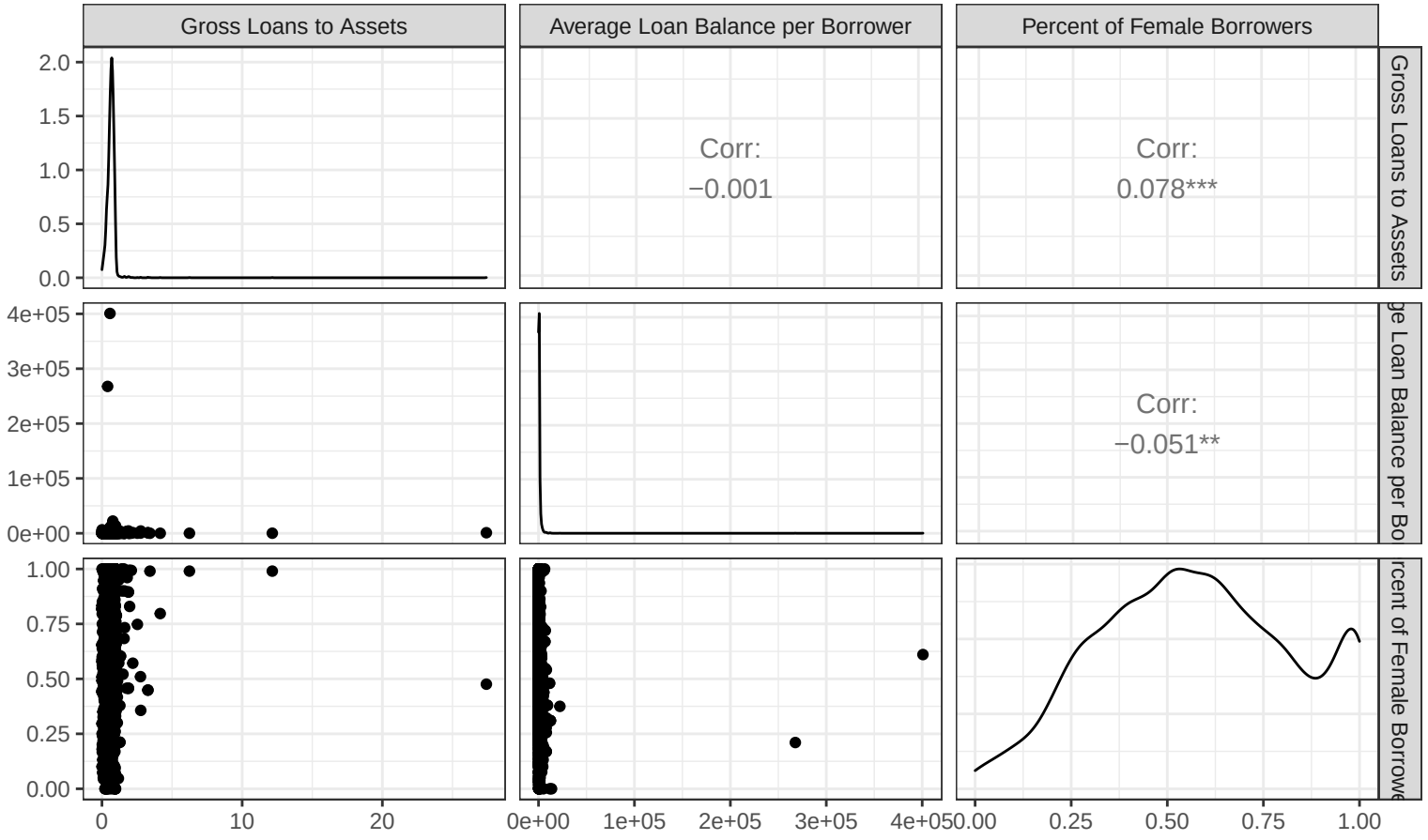

Figure 5: Correlation Between Gross Loans to Assets, Average Loan Balance per Borrower, and Percent of Female Borrowers

6.7 Appendix 7: Residuals Diagnostics for Models for Full Data

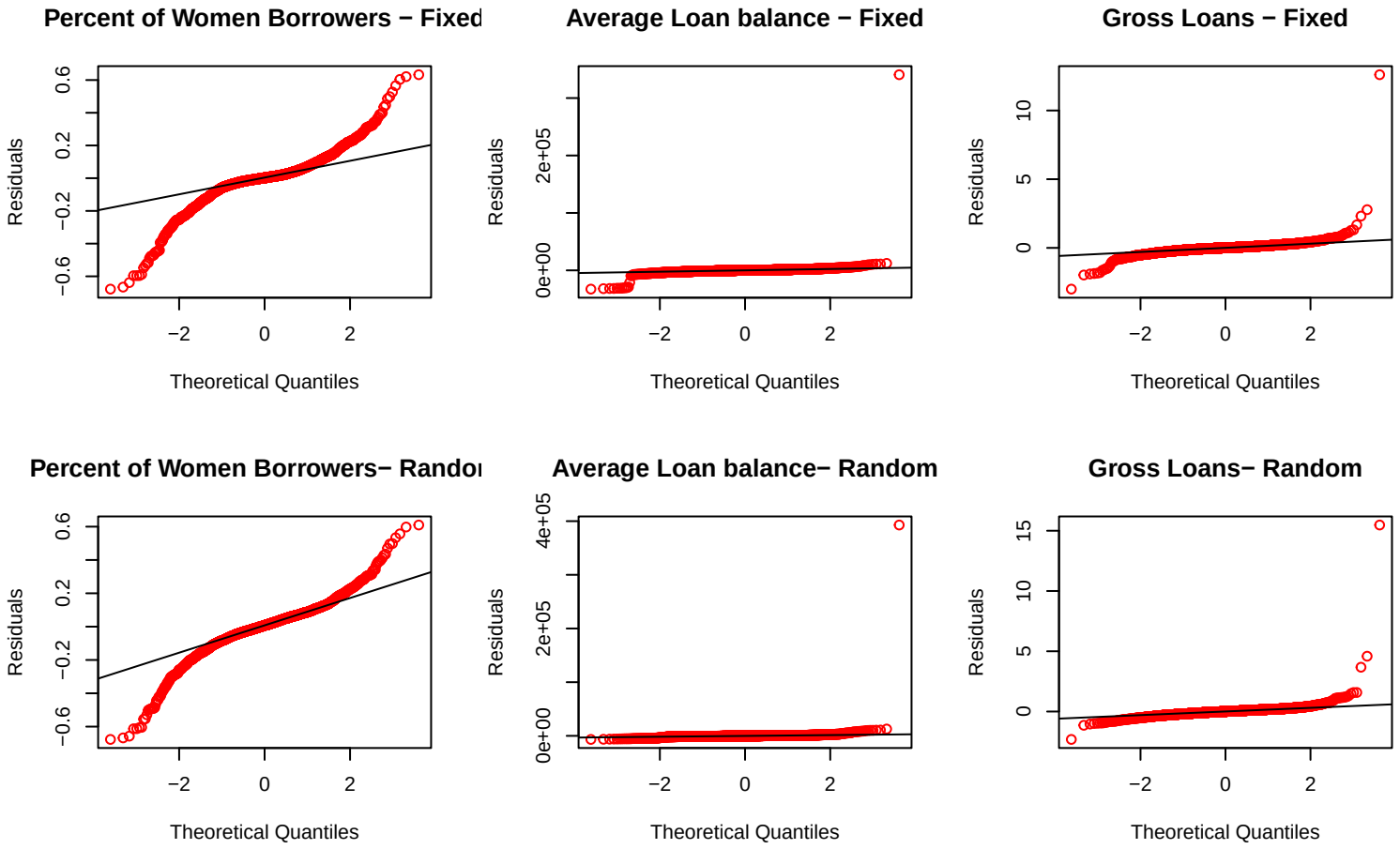

Figure 6: Normal QQ Plots for the Fixed and Radom Effects Regression Models

6.8 Appendix 8: Residuals Diagnostics for Models for Winsorised Data

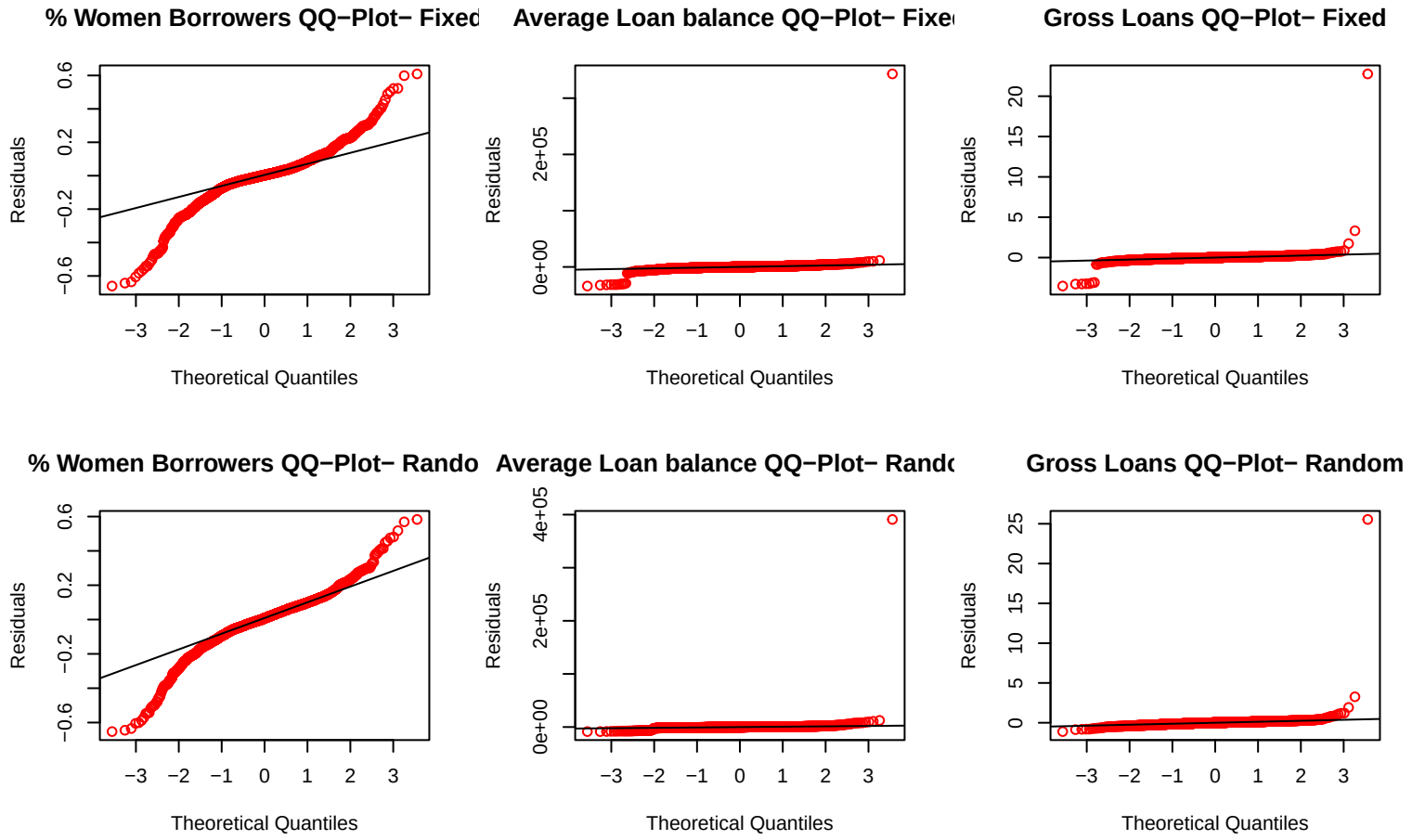

Figure 7: Normal QQ Plots for Regressions Using Winsorized Data

6.9 Appendix 9: Trends in Debt to Equity Ratio

6.10 Appendix 10: Debt to Equity Ratio by MFI Legal Status

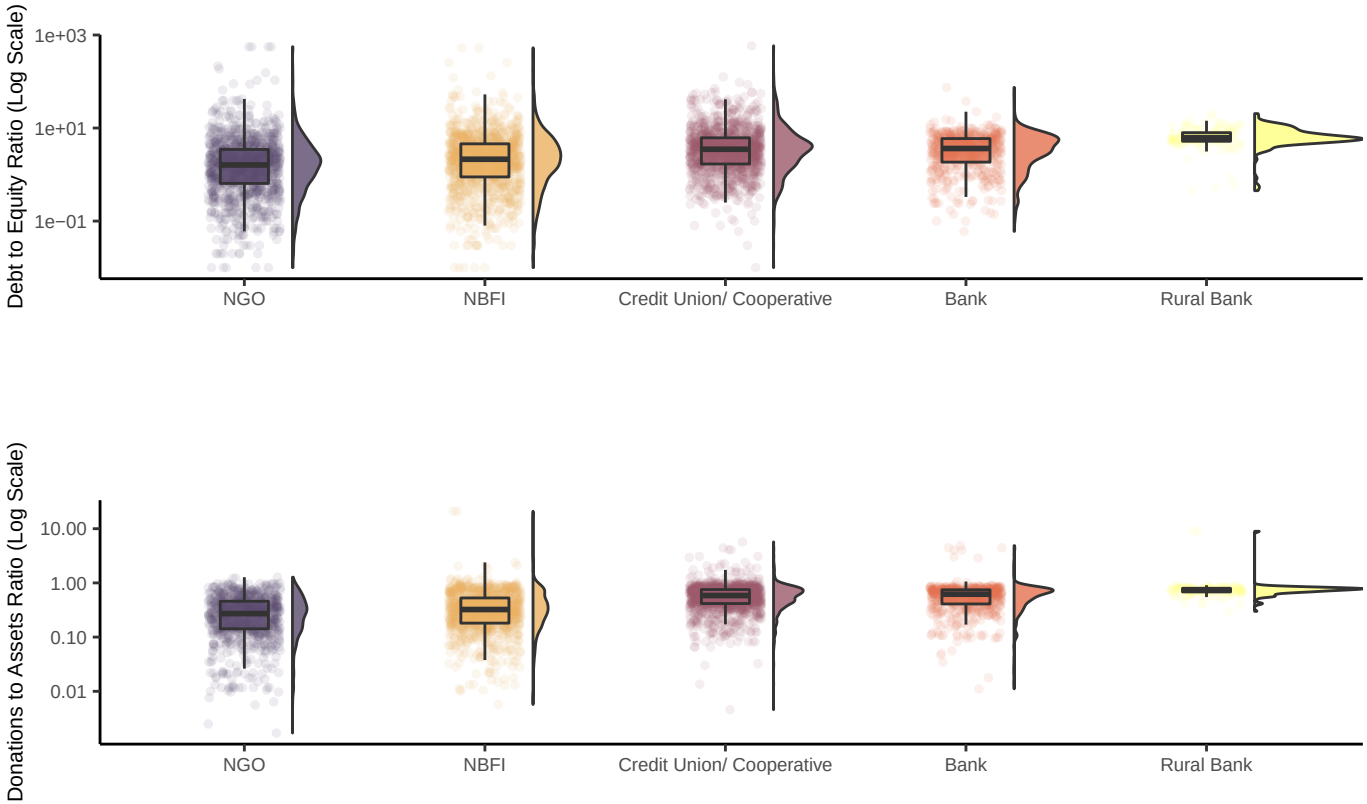

Figure 8: Debt to Equity Ratio by MFI Legal Status

6.11 Appendix 11: Percent of Women Borrowers by MFI type

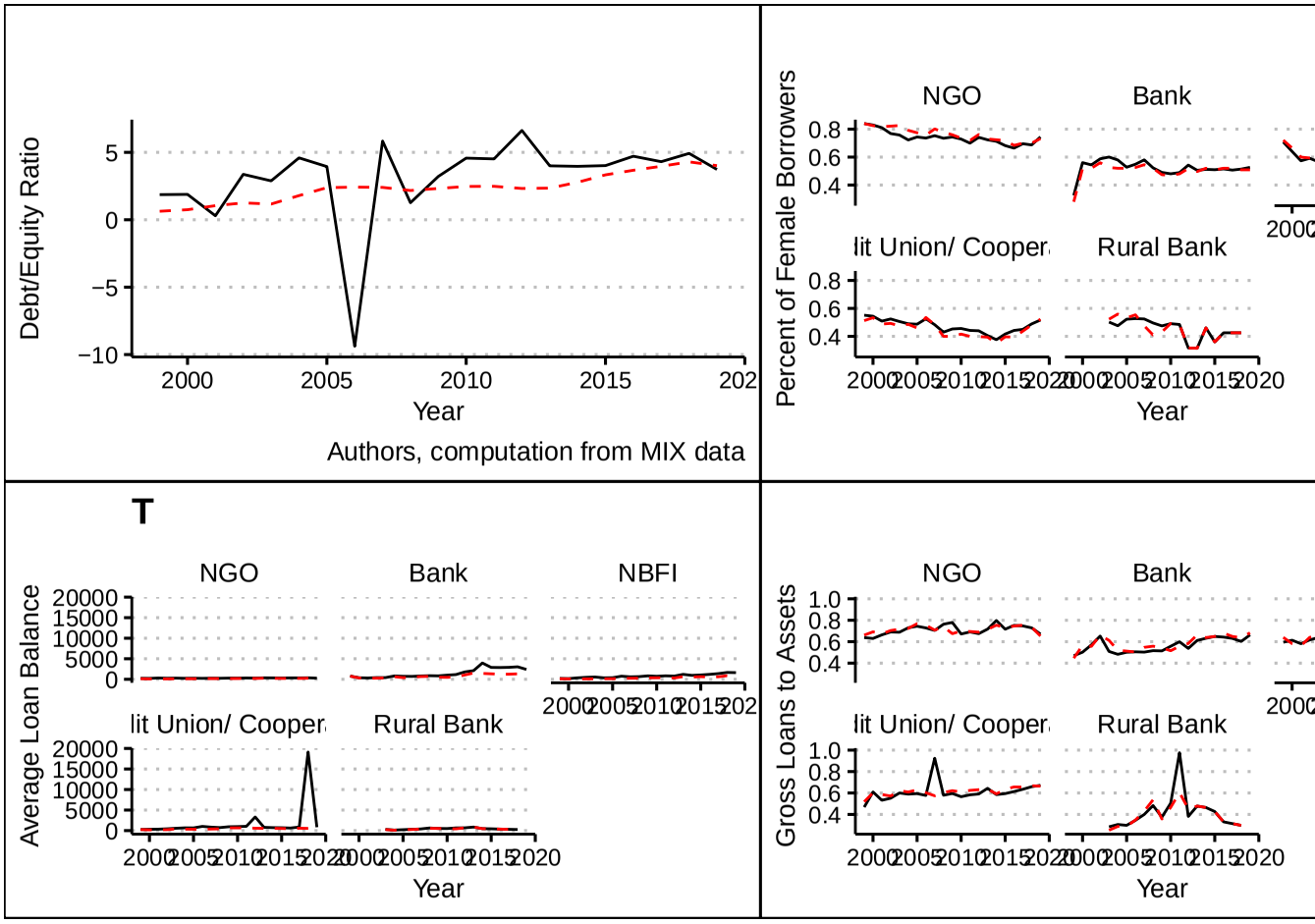

Figure 9: Trends in the Percent of Female Borrowers by Legal Tradition