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Community Development Financial Institutions: Board Size and Diversity asGovernance Mechanisms

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Abstract:

CDFIs serve an important social function because they provide access to financial services to underserved low-income individuals and households. Understanding which governance mechanisms promote efficient use of scarce resources that these organizations control is important because only sustainable institutions have the potential to revitalize low-income communities and change low-income individuals' lives in the long-term. The focus of this paper is on evaluating the impact of board size and diversity on the performance of two types of CDFIs: Community Development Credit Unions and Community Development Loan Funds. The results show that CD Credit Unions with larger boards are more efficient in delivering outreach, but board size is not related to CD Loan Funds' performance. There is some evidence that CDCUs with boards dominated by women are more efficient in fulfilling their outreach missions but CDLFs with more gender and racially diverse boards achieve worse financial results suggesting that group cohesion may be important in organizations with multiple, especially non-complementary, objectives (such as outreach and financial self-sufficiency). The results also suggest that there is room for direct involvement of banks in community development activities rather than relying only on investment and lending to intermediaries such as CDFIs.

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1. Introduction

Nationwide, low-income individuals and communities find it increasingly challenging to access financial services offered by conventional financial institutions, as these institutions streamline their operations to become more competitive in the global environment. Non-traditional financial institutions, such as Community Development Financial Institutions (CDFIs), improve low-income individuals' access to finance by providing financial services otherwise unavailable to low-income communities.

While it is difficult to precisely estimate the size of the industry, it is clear that CDFIs channel substantial resources. An estimated 1000 CDFIs are currently active in the US and survey data shows that in 2004 the asset base of the CDFIs participating in the CDFI Data Project was $16.9 billion. According to the data of the CDFI Fund at the US Department of Treasury, CDFIs leveraged 67.5 million in financial aid provided by the Fund alone to attract additional 1.8 billion in private and other non-CDFI Fund dollars.

Understanding what governance structures help the efficient allocation of resources controlled by CDFIs is very important because the disciplining role of market forces is attenuated as many CDFIs are not regulated or are loosely regulated non-profits, quasi-governmental organizations or credit unions. CDFIs receive donor funds and donors receive non-pecuniary rewards and satisfaction from funding various activities and, thus, have less incentive to monitor the organizations they support. The purpose of this study is to identify what governance structures are most conducive to efficient allocation of scarce financial resources.

CDFIs strive to achieve outreach and sustainability and measure returns in both financial and social terms. In organizations with dual objectives, where market forces cannot play their usual disciplining role, the board of directors plays an increasingly important role (Holmstrom, 1999). Thus, the ability of the board to steer the organization towards achieving the double bottom line of outreach and sustainability will likely impact the success of CDFIs.

The corporate governance literature recognizes board size and board diversity as two mechanisms that affect firm performance. This paper focuses on the role of boards in Community Development Credit Unions (CDCUs) and Community Development Loan Funds (CDLF). In the empirical analysis, CDFI performance measured in terms of outreach and sustainability is modeled as a function of board size, measured by the number of board members, board diversity, measured as the proportion of women and minorities on the board and by diversity indexes, key CDFI characteristics such as CDFI size, CDFI age, and risk characteristics as well as local socioeconomic conditions.

The results show that CD Credit Unions with larger boards are more efficient in delivering outreach services as suggested by studies showing that organizations with multiple objectives need larger boards. In CD Loan Funds, board size does not affect performance. There is some evidence that CDCUs with boards dominated by women are more efficient in fulfilling their outreach missions but CDLFs with more gender and racially diverse boards achieve worse financial results suggesting that group cohesion may be important in organizations with multiple, especially non-complementary, objectives (such as outreach and financial self-sufficiency). The results also shed some light on the impact of bank loans, presumably extended by banks to obtain Community Reinvestment Act credit, on CDFI performance. CDCUs with higher proportion of bank loans in their

liabilities achieve worse financial results, while CDLF with larger proportion of bank loans in their liability achieve better financial results.

The rest of the paper is organized as follows: part two provides a brief overview of the CDFIs industry and Community Development Credit Unions and Community Development Loan Funds in particular, part three presents the framework of analysis, part four describes the data, part five discusses the results, and part six concludes.

2. Overview of Community Development Financial Institutions

CDFIs expand the frontier of finance by providing financial services to low-income communities and individuals who have limited access to financial services, affordable credit, and investment capital. The concept of community development dates back to the 1800s, but the modern CDFI industry started to take shape in late 1960s and early 1970s. In the 1990s, the industry expanded dramatically with the creation of a government agency (CDFI Fund) with the authority to provide funding to individual CDFIs and their partners, and with the change in the Community Reinvestment Act (CRA) that explicitly recognized loans and investments in CDFIs as a qualified CRA activity (CDFI Report). Improved enforcement of the CRA during this time period also contributed to the expansion of the industry (Benjamin et al., 2004). Although the growing record of success inspires confidence in the industry and attracts additional lenders, little is known about these organizations' performance and governance.

The CDFI industry consists of several organizational types—Community Development Banks (CDBs), Community Development Credit Unions (CDCUs), Community Development Loan Fund (CDLFs), and Community Development Venture Capital Funds (CDVCs). The focus of this research is on comparing the efficiency and the impact of board size and diversity in CDLFs and CDCUs.

Community Development (also called Business Development) Loan Funds (CDLFs) lend capital to businesses and nonprofit organizations that may not be able to qualify for conventional loans. With their lending, CDLFs pursue various social goals such as promoting economic growth and job creation in low-income areas, stabilizing population declines in distressed communities, improving the availability and quality of community facilities in under-served markets, increasing the number of businesses owned by women and ethnic minorities, and promoting the growth of businesses that do not harm the environment (Caskey & Hollister, 2001).

Community Development Credit Unions are financial institutions chartered by state or federal governments to accept deposits, cash checks, make loans, issue credit cards and provide many other financial services to their members. The National Credit Union Administration (NCUA) data shows that the number of credit unions specifically designated as low-income grew from 142 in 1990 to over 600 by 2004. However, not all low-income credit unions are Community Development Credit Unions. Only credit unions with a mission of community development are considered CDFIs. In order to qualify as Community Development, over half of a Credit Union members must fall into at least one of the following four categories: 1/ be a member of a household whose income is less than 80% of the median household income; 2/ reside in a public housing project and have qualified for such residency on the basis of income; 3/ be a recipient in a community action program ("CAP"); or 4/ be a full-time or part-time student in a high school, vocational school, college or university (Benjamin et al., 2002).

Designation as a CDCU is beneficial because it allows the institution to accept non-member deposits from financial institutions. These deposits help CDCUs build their deposit base faster than without the funds from other financial institutions. Depository institutions have incentives to assist CDCUs by providing loans, grants and deposits in

order to satisfy Community Reinvestment Act requirements to engage in lending, service, and investment activities within the area where the depository institution operates.

In general, there is a lack of clarity regarding the role of CDFIs within the financial system and, in particular, their relationship to mainstream lenders and investors. For example, it is not yet clear if CDFIs and banks are competitors or partners or perhaps something else. As Benjamin et al. (2004) observe, such questions are complex because they involve ideological, political, and fiscal complexities.

It is reasonable to expect that CDCU's do not compete with community banks for clients because the two groups serve different clientele. Lack of good data on CDFIs so far has limited the ability to analyze CDFIs' performance as well as the nature of their relationships with banks. It is reasonable to assume that community banks benefit from funding CDCUs and CDLFs and thus avoid the cost of lending to clientele that banks have no expertise in serving. Since lending to low-income communities and households is costly and informationally opaque, it may be better if CDFIs are encouraged to do the actual lending to low-income communities. Moreover, banks receive credit under the Community Reinvestment Act for investment in CDFIs, an thus have even more incentives to cooperate on various projects with CDFIs. It is not clear, however, how this collaboration affects the performance of the CDFIs themselves. This research sheds some light on these important issues.

Data constraints do not permit studying how governance affects performance of two other types of CDFIs – Community Development Banks (a type of Community Bank devoted to Community Development Activities) and Community Development Venture Capital Funds (organizations that provide equity and near-equity capital to small

businesses).[1]

One of the reasons for the lack of understating of the effectiveness of CDFIs is the considerable diversity of not only organizations that qualify as CDFIs but also of the types of services offered. CDFIs offer a wide range of services like affordable housing loans, small business loans, payment facilities training, deposits etc. Some of the more sophisticated CDFIs simultaneously offer many of these services but many specialize in several services only. This makes it difficult (if not impossible) to make comparisons of the performance of entities that comprise the industry.

3. Framework of Analysis of Governance and Performance

The unique features of CDFIs make the study of how governance affects performance challenging. First, as section two indicates, there is significant organizational diversity in the CDFI industry which complicates the empirical analysis. More importantly, however, CDFIs need to fulfill the outreach mission by serving low-income clients while remaining financially viable (sustainable). Thus, CDFIs share characteristics of both banks and non-profits. The challenge of evaluating the effect that these organizations' governance has on performance is addressed by estimating the impact of the governance mechanisms on both financial self-sustainability and (in)efficiency of delivering outreach, and by formulating and testing hypotheses based on insights from the literature on corporate governance, governance in banks, and in non-profit organizations.

A focus on both outreach and sustainability is necessary because there is no evidence that organizations with the best financial results are most successful in their

[1] For a definition of community banks and an overview of their history, present state and future see DeYoung 2004; Community Development Venture Funds are described in Benjamin 2004.

outreach mission.[2] On the contrary, lending to small businesses is more expensive because of their high level of informational opacity (Berger and Udell, 1998). Moreover, provision of financial services to low-income customers is expensive due to the higher screening, monitoring, and contract enforcement costs. Therefore, estimating the impact of governance mechanisms on both performance dimensions may provide insights into possible tradeoffs between outreach and sustainability.

Governance refers to the mechanisms through which investors and other providers of funds ensure themselves that their funds will be used according to the intended purposes.[3] Such control mechanisms are necessary because managers and providers of funds may have diverging preferences and objectives. For example, CDFI managers may work towards fulfilling the outreach mission but they may also have preferences for non-pecuniary rewards. In the corporate governance literature, this problem is known as the agency problem.

The board of directors is an internal governance mechanism that helps resolve the agency problems between stakeholders and managers. Board members' incentives are aligned with those of the Principals (providers of funds) because of the provision that the board can be held legally responsible for failing to perform effective monitoring. In addition, in for-profit firms, board members are compensated and poor performance can lead to loss of income. In non-profit organizations, board members offer their reputation as collateral to the public and will try to minimize the risk of losing it (Handy, 1995). Although directors may have considerable incentives to slack off or get along with managers, peer policing decreases the incidence of inappropriate behavior (Fama and

[2] In the international development finance literature, many Microfinance Institutions with the best financial indicators also achieve the best outreach, but the debate on whether outreach and sustainability are substitutes or complements is still ongoing (Morduch, 2000, Navajas *et al.*, 2000).

[3] This definition is based on the definition by Shleifer and Vishny (1997) where corporate governance is defined as the mechanism through which shareholders (providers of funds) ensure themselves that they will receive maximum return on their investments.

Jensen, 1983a; Holmstrom, 1999). Even if board members are not paid, they volunteer their time because the mission of the organization matters to them. Board members no longer committed to the mission leave, and substitution is done by the remaining board members based on mutually agreed upon criteria (Fama and Jensen, 1983b).

The recent waves of corporate scandals indicate that there is much room for improvement of the governance practices even in the best run organizations. Given the lack of competition among CDFIs, given that these organizations measure returns in both financial and social terms, and given the challenges of serving the target population, the board's ability to steer the organization toward achieving the double bottom line of outreach and profitability will likely impact the success of the CDFIs because the board plays a significant role in organizations with dual objectives (Holmstrom, 1999).

3.1 Board size as a governance mechanism

A significant part of the empirical literature has focused on the impact of board size on performance. The main idea put forward is that larger boards are less effective than smaller boards because when the board gets too big, free riding by some directors may become an issue (Jensen, 1993; Lipton and Lorch, 1992). This hypothesis is confirmed by studies of both large corporate boards and boards of small firms (Yermack, 1996; Eisenber, Sungren, and Wells, 1998). Compared to other organizations, financial intermediaries have larger boards. The impact of board size on performance in financial firms is less clear. For example, Adams and Mehran (2003) found that larger boards are less efficient monitors, while Belkhir (2004) found positive relationship between performance (ROA and Tobin's Q) and board size. Exploring the impact of board size and composition in financial firms is especially important because of the relatively limited research in this area (Macey and O'Hara, 2003).

Oster and Reagan (2004) study the impact of board size in non-profit firms and put

forward the hypothesis that, in these organizations, board size may need to be larger because of the additional duties of board members to supervise fundraising. However, these authors do not find evidence to support their hypothesis. On the contrary, they find that only personal charitable giving by board members increases with board size, but an increase in board size reduces oversight and thus may not improve the productivity of the newly committed resources.

Given the similarities between CDFIs and banks and nonprofits, insight on the impact of board size and composition on firm performance also comes from studies that deal with organizations with multiple goals. Aggarwal and Nanda (2004) focus exclusively on the relationship between board size and firm performance in the contemporary corporation where managers are required to perform multiple tasks. They model the management team as a risk-averse agent who performs multiple tasks for a firm controlled by multiple principals (the board of directors) who differ in the relative value they place on each task. Aggarwal and Nanda show that smaller boards offer stronger pay-performance incentives to their managers, which may explain why these firms have higher value.

Holmstron and Milgrom (1991) argue, however, that high-powered incentives may not be appropriate when the result of the agent's effort to pursue a second task (say provide more micro-loans in addition to maintaining a level of profitability and covering costs) is poorly approximated by the outcome of this task (say because the result is lower returns generated from these loans of less than $25,000 each). In this situation, higher powered incentives may only work if the two tasks are complements. Thus, lower powered incentives conditioned on the easily observable output (financial results) may be appropriate in a multitask environment. The empirical results by Aggarwal and Nanda confirm that the number of social objectives (community, diversity, environment, etc.) that a firm pursues is positively related to board size but the board size is negatively related to

managerial incentives. Thus, larger boards may be better in multi-purpose organizations when strong managerial incentives should not be employed.

Given that CDFIs pursue double bottom line objectives and given that, for these organizations, high powered incentives may not be appropriate, the hypothesis to be tested is:

Hypothesis 1

H 0: Board size does not affect performance

H 1: CDFIs with larger boards perform better.

3.2 Board Diversity as a governance mechanism

Board diversity is another aspect of governance that has attracted attention. Traditionally, women and minorities have been underrepresented on the corporate board, especially in banking. As a result, numerous proposals to improve board diversity have emerged. Two different reasons for board diversity are given. The first reason is the equity consideration—it should be promoted because it is fair to do so. For example, Higgs (2003) points out that, although approximately 30% of managers in the UK corporate sector are female, women hold only 6% of non-executive director positions. The second reason given for promoting board diversity is that it may help shareholder wealth maximization (Brancato and Patterson, 1999). In addition, more diverse boards may also have better relations with customers, suppliers and employees (Ellis and Keys, 2003).

Empirical results so far help make the case for board diversity in large corporations. Westphal and Milton (2000) find that board diversity improves firm performance and shareholder wealth. Carter, Simkins and Simpson (2003) also found significant positive relationships between the fraction of women and minorities on the board and firm value for the case of Fortune 1000 companies. In addition, they found that

the proportion of women and minorities on boards increases with firm size. For the case of non-profits, evidence shows that women directors spend more time on monitoring activities but, perhaps because non-profit boards are very diverse, better performing organizations do not have proportionally more women and minorities on the boards (Oster and O'Reagan, 2004).

Organizational scholars have pointed out that diverse top management teams may disagree more, and the same may be true for CDFI boards. Thus, to improve board effectiveness, it may not be enough to simply increase the number of female and minority directors on the board but it may also require additional mechanisms to ensure cooperation between directors (Eisenhardt, Kahwajy and Bourgeois, 1997). Kanter (1977) suggests that when uncertainty is high, explicit pay-performance contracts are too costly and group homogeneity is more valuable. Adams and Ferreira (2004) focus on the impact of board diversity (measured as the percentage of women on the board) on firm performance and find that, indeed, firms with more diverse boards provide their directors with more pay-performance incentives. In addition, firms facing more variability in their stock returns have fewer women on their boards of directors.

Since CDFIs activities are not only characterized by high uncertainty but also by very few explicit incentives, group homogeneity may be an important mechanism to ensure cooperation between board members and thus effective governance. Thus, while board diversity may be desirable, it may come at a cost given the high level of uncertainty that exists in organizations with multiple objectives, which is incompatible with the pay-performance incentives generated by more diverse boards. The second empirical hypothesis to be tested is: *Hypothesis 2*

H0: In CDFI boards, diversity is not related to performance.

H1: In CDFI boards, diversity affects performance.

The empirical model used to test these hypotheses is

$$Performance_{it} = \alpha_1 + \beta_1 Board\ Size_i + \beta_2 Gender\ Diversity_i + \beta_3 Race\ Diversity_i + \sum_{j=1}^{m} \beta_j Controls_{ij} + \varepsilon_{i,t} \quad (1)$$

where performance is measured by several indicators of performance, board size is measured by the number of board members, and the vector of controls includes organizational size, age, leverage, and local socio-economic conditions.

Identifying appropriate measure of CDFI performance is a challenge. In international development finance, performance of microfinance institutions which are the international counterpart of CDFIs, is measured not only in terms of financial returns (sustainability) but also in terms of outreach, namely, how well these institutions fulfill their mission to serve the target clientele.[4] Since serving more and poorer clients is expensive, it is likely that the financial performance of CDFIs is affected by their outreach mission. Thus, while the ultimate objective of a CDFI is to provide financial services to disadvantaged populations in a sustainable manner, it is likely that the impact of the board size and composition on outreach indicators will be different from the impact on financial performance.

This paper uses two measures of performance. The first measure is financial self-sustainability, measured as the ratio of earned operating revenue to operating cost. This is a widely accepted measure of financial performance in development finance and the most complete variable of financial performance available from the dataset.[5] The second indicator of performance is an indicator of inefficiency in delivery of outreach derived from a cost minimization problem. This measure is appropriate because both for-profit and

[4] Navajas et al. (2000) define several dimensions of outreach.
[5] Ideally, return on assets would be used but the data does not permit constructing a good approximation of ROA for sufficient number of observations.

non-profit CDFIs minimize costs. Thus, the inefficiency coefficients estimated using the stochastic frontier method will be the dependent variable in the regressions that explore the impact of board size and composition.

In the banking literature a few studies have used this measure of performance as the dependent variable to explore the impact of various governance mechanisms. For example, the impact of board independence on efficiency is studied by Berger and Mester (1997). They do not find a relationship between the percentage of board members who are insiders and bank cost efficiency and conclude that board independence has no impact on cost efficiency. The role of management ownership on bank profit efficiency is studied by DeYong, Spong and Sullivan (2001). They find that hiring external manager improves bank efficiency but only if the interests of owners are aligned with those of managers via managerial shareholdings.

Using cost-inefficiency as the dependent variable has many advantages and draws from substantial banking literature. In addition to providing estimates of inefficiency of each group of CDFIs—Loan Funds and Credit Unions—efficiency analysis helps understand whether each CDFI type is characterized by economies of scale. This may be important because evidence from consumer finance suggests that lending to the poor is expensive because of the need to spread high fixed cost over large number of accounts (Flannery and Samolyk, 2004). In addition, it is well established that economies of scale in banking exist mainly in very small banks. De Young et al. (2004) consider the case of community banks and find that economies of scale exhaust at about $100 million in assets, and Featherstone and Moss (1994) show that, for agricultural banks, scale economies exhaust at about $60 million of assets.

To obtain the predicted inefficiency coefficients, a stochastic cost frontier is estimated. The translog functional form is the most common functional form in the

literature and it used to here as well.[6] An advantage of using predicted coefficients of inefficiency as the dependent variable in a second stage regression is that the underlining cost minimization process of the two types of CDFI can be modeled differently, therefore, accounting for differences in the types of outputs they produce. For example, CD Loan Funds offer loans (usually business loans) but do not collect deposits and do not provide other financial services; thus, it is reasonable to model CDLFs as producing one aggregate output – loans. On the other hand, CDCUs extend loans, collect deposits, and provide other services. These additional types of services are modeled as different outputs since the translog functional form permits multiple outputs.

For the purpose of this study, the major advantage of using stochastic frontier analysis to generate inefficiency measures is that it can accommodate the double bottom-line objective of CDFIs because output can be measured either in dollar value of services or in number of services provided. When outputs are measured as the number of services provided, the resulting inefficiency coefficients capture the two objectives of CDFIs – outreach and sustainability, that is, the objective to serve as many clients as possible by minimizing costs.

Therefore, output in the CDLFs cost function is measured by the number of loans outstanding. There are three outputs in the cost function of CDCUs—number of loans outstanding, number of depositors and number of clients to whom other services (including

[6] The translog function takes the form of

$$\ln(C) = \alpha_0 + \sum_j \alpha_j \ln(p_j) + \sum_k \beta_k \ln(y_k) + \frac{1}{2}\sum_j \sum_i \gamma_{ji} \ln(p_j)\ln(p_i)$$

$$+ \frac{1}{2}\sum_k \sum_l \delta_{kl} \ln(y_k)\ln(y_l) + \sum_j \sum_k \rho_{jk} \ln(p_j)\ln(y_k) + \ln u + \ln \varepsilon$$

where C is total cost, y's are output levels, p's are input prices, $\alpha, \beta, \gamma, \delta, and\ \rho$ are parameters to be estimated, and $\ln u$ is the inefficiency term assumed to be one-sided (half-normally distributed) and $\ln \varepsilon$ is two sided normally distributed. Standard restrictions are imposed in the estimation by dividing all prices and quantities by the price of physical capital (PCAP).

training) were provided. Total costs (TC) are defined as the sum of operating and financing costs. Labor input price is defined as personnel cost divided by the number of employees (or full time employee equivalent, where part time employment is common). The price of physical capital is calculated as the ratio of operating expenses minus personnel expenses to net fixed assets. The price of financial capital is calculated as the weighted cost of capital, where the price of borrowed capital is the interest expense over borrowed capital and the price of equity is proxied by the average annual deposit rate.[7] The estimated inefficiency coefficients are then used as the dependent variable and its summary characteristics are described in the next section.

4. Data

The data for this analysis are obtained from the CDFI Data Project, which collected survey data in 2002, 2003 and 2004. The total population of CDFIs is estimated to be about 1000 organizations (CDFI Data Project) and about a third provided information each year.[8] Observations with missing financial, board size, and composition data were excluded from the analysis. Due to data limitations, the analysis focuses on two groups of CDFIs -- Community Development Loan Funds and Community Development Credit Unions. Venture Funds and Banks were excluded from the analysis because they represent a small part of CDFIs (4 and 4 percent respectively) and also because all CDVCs and most CD banks provided data anonymously and local socioeconomic conditions could not be controlled for.[9] Anonymously provided data by CDLF and CDCUs were also excluded

[7] The annual average deposit rate is used because a part of the CDFIs in the sample are non-profit; thus it is necessary to accommodate the non-distribution constraint.
[8] Detailed description and summary statistics of the surveys are available from http://www.communitybanking.org.
[9] The total number of observations for banks is 78 of which only 32 observations are with data on board size or composition, and most provided their information anonymously; in addition, income statement data for efficiency analysis data could be collected for only about 17 observations. Thus, the sample of banks is too

from the analysis.[10]

The total number of observations varies from 170 to 183 for CD Loan Funds, and from 170 to 260 for CD Credit Unions. There is difference in the number of observations in the two groups of regressions because some organizations provided information only on the number of loans and services (and the variables necessary for the cost frontier estimation) and some provided information only on the self-sufficiency ratio.

Definitions of the variables used in the regression analysis are in Table 1 and a breakout of board size and composition by organizational type is presented in Table 2. The differences in board characteristics in Table 2 suggest that the impact of board size and composition on performance should be evaluated separately for the two different types. The data reveals that CDCUs have smaller board consisting on average of 7.8 members with a range from 4 to 15 (2.1 standard deviation), while CD Loan Funds have larger boards, consisting on average of 12.9 members with significantly larger range of 3 to 50 board members (standard deviation of 6.3).

Turning to racial diversity, data reveal that CDFIs boards differ from that of other financial institutions where women and minority represent a small percent of the board members. The average percentage of minorities in CDCU boards is 59.4 percent with a standard deviation of 41, and the average percentage of minorities in CDLF is 30 percent with a standard deviation of 25. A significant part of the CDCU boards are homogenous, however. About a third of the boards consist of minorities only and 20 percent of the boards do not have minorities. Half of CDCU boards are dominated by minorities (that is, minorities represent more than 50 percent of the total number of board members).

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small to be included in this analysis.

[10] The main results of the analysis did not change substantially with regressions using slightly larger number of observations but without a variable that controls for the impact of local socio-economic conditions were estimated.

In CDLFs, the share of minorities is 30 percent on average with a standard deviation of 25. Only 16.9 percent of boards are dominated by minorities, 16 percent do not have minority representatives and only 2 percent consist of minorities only.

In terms of gender diversity, the share of women on the board is similar in both groups of CDFIs with 42 percent in credit unions (22 standard deviation) and 38.3 percent in CDLF (19 standards deviation). More CDCUs have boards with majority women (30.6 percent) than CDLF, where only 16.3 percent of the boards are with majority women. The two extremes in boards– no women or women only—are very rare in both CDFI types. For example, only three percent of the boards in CDCUs do not have any women on the board and only three percent have only women on the board. The situation is similar in CDLFs: only one percent of the boards do not have any women and only one percent of the boards consist of women only.

Summary statistics of the variables used in the analysis are presented in Table 3. The performance of the two CDFI types differs. The average self-sufficiency ratio is 1.001 percent in CD Credit Unions and it ranges from 0.19 in the least self-sufficient to 1.99 in the most self-sufficient, with a standard deviation of 0.31. The average self–sufficiency ratio in CD Loan Funds is only 0.61 percent, ranging from 0.04 percent to 1.88 percent in CD Loan Funds, with a standard deviation of 0.30.

Since CD Credit Unions and CD Loan Funds have different outreach objectives with CUs providing loans, saving, and training, and Loan Funds providing loans only, there is no expectation that their efficiency in outreach will be the same. The distance-to-frontier variable measuring how inefficient CDFIs are in providing outreach, obtained after estimating separate translog cost function for CDCUs and CDLFs. The two groups have different level of inefficiency. The average inefficiency for CD Credit Unions is 0.45 with a standard deviation of 0.23. For CD Loan Funds, the average inefficiency was 0.73, with

a standard deviation of 0.40.[11]

In addition, efficiency analysis provides information on whether CDFIs have constant, decreasing, or increasing returns to scale. Analysis revealed that CD Credit Unions exhibit constant returns to scale, while results of Loan Funds translog cost estimation, where output was the number of loans, show that CDLFs exhibit increasing returns to scale. This is consistent with findings by Bates (2000) who argues that larger CDFIs have better chance of succeeding in their mission.

CDFIs are diverse in terms of size measured here in total assets. The distribution of CD Credit Unions is skewed with median of about $2.8 million in total assets but average size of $17.1 and thus the standard deviation is very large. The situation is similar with the group of Loan Funds, where total assets are on average 27.7 million with median value of 5.6 and large standard deviation.

As expected, CDCUs are older (33.2 years on average) and CDLFs are relatively younger (average of 13.7 years). Reflecting differences in capital structure, the capital ratio (equity to total assets) for CDCUs is 0.099 and 0.408 for CDLFs. In addition, bank loans represent 11.8 percent of the liability of CDCUs and 31.7 percent of the liability of CDLFs. There is also a significant difference in the levels of subsidy—it is 12.8 percent for CDCUs and 153 percent for CDLFs. The level of risk is comparable, however, with loan loss reserve ratio of 1.4 percent for CDCUs and 2.1 percent for CDLFs. The data reveal that CDCUs operate in poorer counties with average household income of $21,406, while the average household income in counties where CDLFs operate is $24,390.[12]

[11] These measures seem low compared to results in the banking literature but it is important to underline that inefficiency in banking may be low because of the strong competition and because inefficiency measures are lower when output is measured as the volume of services rather than number of clients. Clearly, serving more clients is more difficult than distributing larger amounts of loans.

[12] Values are in 2002 dollar equivalent obtained from US Census data.

5. Discussion of the Results

Table 4 presents the results from estimation of (1) using the sample of CD Credit Unions and financial self-sufficiency ratio as the dependent variable and Table 5 contains the results of estimation using the sample of CD Credit Unions and the inefficiency coefficient (distance-to-frontier) used to measure inefficiency in provision of outreach as the dependent variable. For each measure of financial sustainability–self-sufficiency and inefficiency, three specifications with alternative measures of board diversity are estimated. Table 6 contains the results from estimation of (1) for the sample of CD Loan Funds with self-sufficiency ratio as the dependent variable, while Table 7 contains results for the sample of CD Loan Funds with inefficiency as the dependent variable. In each table, three specifications with three different measures of board diversity were estimated. The first specification, presented in the first column, uses the proportion of women and minorities on the board (PFEMALE and PMIN respectively), the second specification uses two dummy variables that measure whether the boards are dominated by minorities and women respectively and the last specification uses indexes of gender and race diversity (GENDIV and RACEDIV) which measures the proportion of one gender or racial group versus another (definitions of the variables are in Table 2). Each specification also includes board size, institution-specific characteristics and local socio-economic conditions. In each model, board size is specified linearly because estimations showed that adding non-linear terms does not improve the model and tests confirmed that board size should be specified linearly.

5.1 Board Size

A. Community Development Credit Unions

In the regression in Table 4, the sign of the board size coefficient is negative but not statistically significant, indicating that there is no relationship between board size an

financial self-sustainability in CD Credit Unions, thus failing to reject the null that board size does not affect performance. However, this result changes when performance is measured in terms of inefficiency (the dependent variable is distance-to-frontier). These results are presented in Table 5. The variable *BSIZE* is negative and statistically significant in all three specifications indicating that CDCUs with larger boards are less inefficient. Thus, the null hypothesis that board size does not affect CDCUs efficiency is rejected in favor of the alternative that CDCUs with larger boards are more efficient in serving their clients and better able to satisfy their outreach mission.

B. Community Development Loan Funds

Results from the sample of Community Development Loan Funds presented in Tables 6 and 7 show that, irrespective of how performance is measured (financial self-sustainability or inefficiency), board size does not influence performance since none of the coefficients is statistically significant. Thus, the first null hypothesis that there is no relationship between board size and performance cannot be rejected for the case of CDLFs.

Overall, only results from estimation of the impact of board size on efficiency in outreach provision in CD Credit Unions support the theoretical conjecture that larger boards contribute to better performance in organizations with multiple tasks, in this case CD Credit Unions, but the evidence also shows that not all performance measures are affected by board size even in CDCUs.

5.2 Board Diversity

A. Community Development Credit Unions

Before turning to the results, it is important to re-iterate that, compared to other organizations and especially financial firms, CDCUs have an unusual representation of minorities and women on their boards. Results from the first two columns in Table 4 show that there is no statistically significant relationship between the percentage of women and

minorities on the board and financial self-sustainability in CD Credit Unions. Also, there is no relationship between boards dominated by women and minorities and self-sustainability. However, CDCUs with more racially diverse boards, that is boards that have relatively larger groups of either minorities or whites, have worse financial self-sustainability ratio (Model 3 in Table 4). The negative relationship is statistically significant at the 5 percent level and permits rejection of the null versus the alternative that boards with less cohesion may produce adverse financial results. This relationship is reversed when performance is measured in terms of inefficiency. Model 3 in Table 5 shows negative and statistically significant relationship between the coefficient that measures race diversity and inefficiency, indicating that CDCUs with boards that have larger groups of members of the same race seem to be more efficient at delivering outreach.

Boards dominated by women are more efficient as indicated by the negative relationship between the gender dummy (DFEM) and inefficiency. However, results from Model 3 indicate that boards where the two genders form relatively larger groups (for example, a board with 40 percent women and 60 percent men, or a board with 60 percent women and 40 percent men) are less efficient in delivering outreach than less diversified boards (for example a board with 20 percent women and 80 percent men, or a board with 80 percent women and 20 percent men). Thus it seems that not only group cohesion matters but also which of the multiple objectives (sustainability or outreach) each group/cohort will choose to support.

B. Community Development Loan Funds

The results of the analysis of the impact of board diversity on CD Loan Funds performance reject the null hypothesis that board diversity has no impact on performance

in favor of the alternative that in these organizations more diversified boards (both in terms of gender and race diversity) deliver worse financial results. All coefficients that measure board diversity in CD Loan Funds are negative and statistically significant.

The average board consists of 13 members of which 5 are women. *Ceteris paribus,* the same board with 6 women would be associated with 0.025 points lower self-sufficiency ratio (increase from 5 to 6 women is 8 percent increase in PFEMALE thus -0.332*0.08=0.025). This magnitude in not large in absolute terms but is significant when compared to the average self-sufficiency ratio of 0.62. The magnitude of race diversity is similar. A change from the average 4 to 5 members is associated with reduced self-sufficiency of 0.023 points. Results from Model 2 in Table 6 indicate that CDLFs with boards dominated by minorities have on average 0.18 points lower self-sufficiency ratio than CDFLs with boards not dominated by minorities, while CDLF dominated by women have 0.084 points lower self-sufficiency ratio than CDLFs with boards not dominated by women.

CDLFs with larger proportion of minority are more inefficient in their provision of outreach (Model 1 in Table 7). Furthermore, racial as well as gender representation becomes more equal, boards are less able to efficiently provide outreach as indicated by the positive and statistically significant coefficient on GENDIV and RACEDIV (Model 3, Table 7).

Overall, unlike previous studies that focus on industries with lower level of board diversity and a single value maximization objective that find evidence of positive impact of board diversity on firm's value (financial performance), the results of this analysis indicate that in CDFIs, board diversity may not be the mechanism to promote better performance in CDFIs. Gender and race diversity of the board of CDLFs are associated with a negative impact on performance (self-sufficiency and efficiency) providing

evidence in support of Hypothesis 2, while CDFIS with boards dominated by women seem to be more efficient. These results are consistent with the results of Adams and Ferreira (2004) and indeed suggest that, in firms with multiple objectives and, thus, high level of uncertainty, group cohesion may be important in terms of helping the board to steer the organization to achieve better results. It is also possible that other characteristics, such as stakes in the organization or professional qualifications, may matter more than simply gender and race diversity.

Since CDFIs have significant presence of women and minorities on the board, this may reflect self-selection issues. Although some authors have raised the issue of possible endogeneity problem in the impact of board size and composition on performance (Hermalin and Weisbach, 2003), empirical studies have failed to show that this is the case (Belkhir, 2004; Beiner, Drobetz, Schmid and Zimmermann, 2003). Several tests (Hausman tests and a test described Wooldridge, 2002, Chapter 15) used here showed that board composition is not endogenous.[13] Future work may be needed to find instruments that better reflect the objectives of the boards and, perhaps, their size and composition and thus provide a definite answer on whether board diversity and size arise endogenously determined in CDFIs.

5.3 The impact of other variables

The results of this paper also shed some light on the effect of bank loans on CDFIs' performance. The impact of bank funds on the CD Credit Unions and on CD Loan Funds is different. Higher proportion of bank loans to total liabilities in CD Credit Unions is

[13] These tests rely on including variables that can serve as reliable instruments to identify possible endogeneity (the variables must not affect performance but must be correlated with the suspected endogenous variable). Finding such variables is a challenge and tests are often very sensitive to the specific variables used (in this case the variables were population poor in the served area and population minorities in the served area). Since results indicate that estimations suffer from the "weak instrument" problem, the results are not presented here.

associated with lower self-sustainability ratio, with 10 point increase in the ratio associated with 0.05 point lower self-sufficiency ratio. In CDLFs the results are the opposite, however. A 0.10 points increase in the bank liability ratio is associated with 0.05 points increase in the self-sufficiency ratio. In both cases, however, bank liability is not associated with efficient provision of outreach, except in the case of CDLFs but this link is very weak. These results may suggest that community banks and community development banks in particular do not necessarily improve their outreach by lending to intermediary CDFIs and may indicate that there is still room for community banks' direct involvement in serving low-income communities.

Somewhat surprisingly, larger CDCUs and larger CDLFs are less efficient in serving many clients, although larger CD Loan Funds have better self-sufficiency ratios; for example, a 10 percent increase in the size of these organizations increases the ratio by about 0.07 points.

Better capitalized CD Credit Unions are more efficient (less inefficient) in providing large number of services, while better capitalized CD Loans Funds have lower self-sufficiency ratio. The results indicate that CDCUs financial performance has improved with age since the coefficient on *Age* is positive and statistically significant in the regressions in Table 4. The results do not indicate improvement with age in CD Loan Funds, however.

The results provide a very strong support for the benefits of imposing hard budget constraints on these organizations. In all specifications and for both types of CDFIs, larger ratio of subsidy to total revenue is associated with less efficient provision of services. As expected, higher level of risk as measured by loan loss reserve ratio is associated with inferior financial performance in both CDFI types.

CDFIs usually work in areas with significant level of poverty and/or higher

proportion of minorities. The results of this research indicate that CDFIs operating in counties with lower household income are more inefficient. Similarly, CDLF operating in these area have lower self-sufficiency ratios. Thus, providing financial services efficiently to disadvantaged clients in poor areas remains a challenge even for the CDFIs specializing in serving this segment of the population.

6. Conclusions

CDFIs serve an important social function because they provide access to financial services to underserved low-income individuals and communities. Understanding what governance mechanisms promote efficient allocation of scarce resources that these organizations control matters because only sustainable institutions have the potential to revitalize low-income communities and change low-income individuals' lives in the long-term. In the absence of market forces that could discipline CDFIs, it is important to understand how internal mechanisms of control, such as the board, affect these organizations' performance.

The focus of this paper was on evaluating the impact of board size and composition on CDFIs' performance. The results show that CD Credit Unions with larger boards are more efficient in delivering outreach services consistent with studies showing that organizations with multiple objectives need larger boards. In CD Loan Funds, board size does not affect performance. There is some evidence that CDCUs with boards dominated by women are more efficient in fulfilling their outreach missions. However, CDLFs with more gender and racially diverse boards achieve worse financial results suggesting that group cohesion may be important in organizations with multiple, especially non-complementary, objectives (such as outreach and financial self-sufficiency). The results also shed some light on the impact of bank loans, presumably extended by banks to obtain Community Reinvestment Act Credit, on CDFI performance. CDCUs with higher

proportion of bank loans in their liabilities achieve worse financial results, while CDLFs with larger proportion of bank loans achieve better financial results.

The implications derived from these results are consistent with the notion that when organizations with multiple tasks face high level of uncertainty and do not have internal mechanism to ensure board cooperation, group cohesion becomes an important mechanism that ensures success of the group decision making process. CDFIs boards are gender and racially diverse. In these organizations and, in CDLFs in particular, adding more women or minorities may lead to worse financial results. In addition, larger boards in CDCUs may be desirable as it may improve efficient use of resources in serving many clients and meeting these institutions' outreach mission.

The results from this paper also suggest that perhaps there is room for direct involvement of banks in community development activities because indirect involvement via bank loans to CDFIs does not improve these organizations' efficient delivery of outreach, except in the case of CDLF but the relationship is weak. Moreover, lending to each type of CDFI has different impact on these organizations' ability to become financially self-sufficient, so cooperation via lending to CDLF may be preferable to lending to CDCUs.

Future work may need to expand on the relationship between CDFIs and banks perhaps by clarifying the terms of CRA related bank lending to CDFIs and banks' own community development activities. Survey data collection from CDFIs is a relatively recent phenomenon, thus, further and more comprehensive collection of data will permit the use of more sophisticated panel data techniques (such as the Arrelano-Bond method that requires at least 4 years of data) to examine in more detail the impact of board size and diversity on CDFI performance.

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Table 1 Definition of the Variables Used in the Analysis

Variable Name	Variable Description
Dependent Variables	
Self-sufficiency	The ratio of earned operating income to operating expense
Inefficiency coefficient	Inefficiency estimates from a stochastic frontier estimation of a translog functional form
Independent Variables	
BSIZE	Number of Board Members
PMIN	Share of minority on the board
PFEMALE	Share of female board members
GENDIV	Gender diversity = SHAREFEM if SHAREFEM < 0.5; = 1-SHAREFEM if SHAREFEM > 0.5
RACEDIV	Gender diversity = SHAREMIN if SHAREMIN < 0.5; = 1-SHAREMIN if SHAREMIN > 0.5
DFEM	Dummy variable that takes the value of 1 if more than 50 % of the board members are women, zero otherwise
DMIN	Dummy variable that takes the value of 1 if more than 50 % of the board members are minority, zero otherwise
Equity_TA	Equity-to-Total Assets ratio
TA	Total assets in $'000
Age	CDFI age, years since inception
SUBS	Level of subsidy calculated as or contributed revenue to operating revenue
LLOSS	Loan loss reserve ratio calculated
PCINCOME	Per capita income in the county/state in which the CDFI operate; Source: Census Data
BLIAB	Bank loan as a proportion of liability

Table 2. Description of Board Size and Composition by CDFI Type

Board Characteristics	CU	LF
No Board Members (mean)	7.8	12.9
(st. deviation)	(2.1)	(6.3)
Range	4--15	3--50
Minorities (%)	59.4	30.0
(st. deviation)	(41)	(25)
Boards dominated by minorities (5)	51.3	16.9
Boards without minority (%)	20	16
Boards with minority only (%)	34	20
Female (%)	42	38.3
(st. deviation)	(22)	(18)
Boards dominated by women (%)	30.6	16.3
Board without women	3	1
Boards with only women (%)	3	1
Total observations	331	433

Table 3. Summary Statistics of the Variables

Variables	CU	LF
Inefficiency coefficient	0.450	0.737
	(0.230)	(0.404)
Self-sufficiency ratio	1.024	.602
	(.284)	(.309)
BSIZE	7.834	12.972
	(2.134)	(5.415)
SHAREFEM	.423	.373
	(.217)	(.158)
SHAREMIN	.542	.290
	(.412)	(.237)
DMIN	.513	.169
	(.501)	(.375)
DFEM	.306	.163
	(.462)	(.369)
GENDIVERS	.310	.338
	(.131)	(.122)
RACEDIVERS	.122	.224
	(.167)	(.155)
BLIAB	.118	.317
	(.182)	(.326)
Equity_TA	.099	.408
	(.051)	(.232)
TA	17,000,000	27,700,000
	6,470,000	(9,720,000
TA (in log)	15.175	15.957
	(1.629)	(1.398)
Age	33.152	13.688
	(19.408)	(7.912)
SUBS	.128	1.530
	(.518)	(19.062)
LLOSS	.014	.021
	(.025)	(.041)
PCINCOME	21,405	24,389
	(7,195)	(7,106)

Table 4. Pooled OLS on the Impact of Board Size and Diversity on Financial Performance in Community Development Credit Unions

	(1)	(2)	(3)
Constant	1.037***	1.074***	0.871***
	(0.222)	(0.221)	(0.192)
BSIZE	-0.006	-0.005	-0.002
	(0.008)	(0.008)	(0.008)
PMIN	0.021		
	(0.044)		
PFEMALE	-0.091		
	(0.089)		
DMIN		0.002	
		(0.040)	
DFEM		-0.056	
		(0.039)	
GENDIV			-0.102
			(0.121)
RACEDIV			-0.250**
			(0.123)
BLIAB	-0.522***	-0.527***	-0.467***
	(0.134)	(0.137)	(0.133)
TA	-0.000	-0.004	0.010
	(0.012)	(0.012)	(0.010)
Equity_TA	0.452	0.444	0.539
	(0.429)	(0.432)	(0.400)
Age	0.002*	0.002*	0.002
	(0.001)	(0.001)	(0.001)
LLOSS	-1.225***	-1.199***	-1.178***
	(0.294)	(0.286)	(0.308)
PCINCOME	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Observations	260	260	260
R-squared	0.26	0.26	0.27

Notes: ***, ** and * denote significant level at 1%, 5% and 10% respectively. Robust standard errors are in parentheses.

The dependent variable is operational self-sufficiency measured as earned revenue to operating expense

Table 5. Pooled OLS on the Impact of Board Size and Diversity on Inefficiency in Delivering Outreach in Community Development Credit Unions

	(1)	(2)	(3)
Constant	-2.645***	-2.685***	-2.784***
	(0.720)	(0.745)	(0.698)
Board Size	-0.018**	-0.017**	-0.025***
	(0.009)	(0.008)	(0.009)
PMIN	0.085		
	(0.055)		
PFEMALE	-0.103		
	(0.069)		
DMIN		0.066	
		(0.045)	
DFEM		-0.065**	
		(0.031)	
GENDIV			0.306**
			(0.137)
RACEDIV			-0.278**
			(0.129)
BLIAB	-0.148	-0.173	-0.054
	(0.108)	(0.114)	(0.088)
TA	0.042***	0.040***	0.047***
	(0.013)	(0.013)	(0.012)
Equity_TA	-0.911**	-0.886**	-0.941**
	(0.417)	(0.431)	(0.400)
Age	0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)
SUBS	0.539***	0.532***	0.582***
	(0.104)	(0.101)	(0.108)
LLOSS	-1.118	-0.762	-0.666
	(1.143)	(1.139)	(1.046)
PCINCOME	0.265***	0.270***	0.271***
	(0.067)	(0.070)	(0.066)
Observations	122	122	122
R-squared	0.41	0.42	0.44

Notes: ***, ** and * denote significant level at 1%, 5% and 10% respectively. Robust standard errors are in parentheses.

The dependent variable is the coefficient of inefficiency of CDCUs estimated via the stochastic frontier method and a translog cost function.

Table 6. Pooled OLS on the Impact of Board Size and Diversity on Financial Performance in Community Development Loan Funds

	(1)	(3)	(5)
Constant	-0.026	-0.101	-0.007
	(0.233)	(0.233)	(0.228)
BSIZE	-0.004	-0.002	-0.004
	(0.004)	(0.005)	(0.004)
PMIN	-0.301***		
	(0.081)		
PFEMALE	-0.332**		
	(0.128)		
DMIN		-0.186***	
		(0.044)	
DFEM		-0.084**	
		(0.042)	
GENDIV			-0.562***
			(0.181)
RACEDIV			-0.306**
			(0.121)
BLIAB	0.230***	0.210***	0.260***
	(0.061)	(0.065)	(0.065)
TA	0.073***	0.069***	0.076***
	(0.014)	(0.015)	(0.013)
Equity_TA	-0.306***	-0.305***	-0.299***
	(0.079)	(0.083)	(0.082)
Age	0.004	0.004	0.003
	(0.003)	(0.003)	(0.003)
LLOSS	-1.632***	-1.727***	-1.598***
	(0.397)	(0.450)	(0.444)
PCINCOME	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
Observations	181	183	181
R-squared	0.38	0.36	0.38

Notes: ***, ** and * denote significant level at 1%, 5% and 10% respectively. Robust standard errors are in parentheses.

The dependent variable is operational self-sufficiency measured as earned revenue to operating expense

Table 7. Pooled OLS on the Impact of Board Size and Diversity on Inefficiency in Delivering Outreach in Community Development Loan Funds

	(1)	(2)	(3)
Constant	-4.166***	-4.741***	-4.016***
	(1.148)	(1.082)	(1.077)
BSIZE	0.004	0.000	0.005
	(0.005)	(0.005)	(0.005)
PMIN	0.346***		
	(0.128)		
PFEMALE	0.142		
	(0.149)		
DMIN		0.029	
		(0.068)	
DFEM		-0.075	
		(0.065)	
GENDIV			0.434**
			(0.177)
RACEDIV			0.411**
			(0.173)
BLIAB	-0.088	-0.050	-0.125*
	(0.069)	(0.069)	(0.073)
TA	0.161***	0.169***	0.160***
	(0.017)	(0.018)	(0.018)
Equity_TA	0.233**	0.170*	0.233**
	(0.100)	(0.101)	(0.101)
Age	0.002	0.002	0.002
	(0.003)	(0.003)	(0.002)
SUBS	0.148*	0.227***	0.145*
	(0.089)	(0.085)	(0.085)
LLOSS	0.233	0.210	0.153
	(0.507)	(0.429)	(0.489)
PCINCOME	0.193*	0.256**	0.168*
	(0.118)	(0.108)	(0.110)
Observations	170	170	170
R-squared	0.45	0.42	0.46

Notes: ***, ** and * denote significant level at 1%, 5% and 10% respectively. Robust standard errors are in parentheses.

The dependent variable is the coefficient of inefficiency of CDLFs estimated via the stochastic frontier method and a translog cost function.