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EAST-WEST CENTER WORKING PAPERS

International Graduate Student Conference Series

No. 17, 2005

Integrating Gender Perspectives in Evaluating the Efficiency of Community-Oriented Financial Intermediaries

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This paper was presented at the 4th East-West Center International Graduate Student Conference, February 17-19, 2005 in Honolulu, Hawaii USA.

Integrating Gender Perspectives in Evaluating the Efficiency of Community-Oriented Financial Intermediaries
-- The Case of Credit Cooperatives in the Philippines

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Abstract

This paper first examines the extent of cost and profit inefficiencies of the Philippine credit cooperative system using stochastic frontier analysis (SFA). Then, it looks into the effects of certain variables on the cost and profit efficiencies of credit cooperatives. Three groups of correlates of inefficiency were used: market characteristics, agency costs and gender governance. Results suggest that market conditions can explain to a certain extent the differences in the efficiency among credit cooperatives. However, the correlates of agency costs do not have a clear-cut effect on the efficiency of credit cooperatives. What is more significant though in this study is the effect on efficiency of women participation in the governance of credit cooperatives. The correlates of gender governance indicate that empowering women not only through enhancing their access to credit but also through increasing their participation in shaping policies can improve the efficiency of credit cooperatives. Results seem to suggest that credit cooperatives that are managed predominantly by women would likely pursue greater cost efficiency than profit efficiency.

Keywords: gender governance, agency costs, efficiency, stochastic frontier

* Research Associate and President, respectively, Philippine Institute for Development Studies (PIDS). This is part of the Community-Oriented Financial Intermediaries (COFI) project jointly conducted by the PIDS and University of Laval, Canada. Financial support provided by International Development Research Centre (IDRC) and PIDS is gratefully acknowledged. The authors wish to thank the National Confederation of Cooperatives (NATCCO), especially Mr. Guillermo Cua, President of NATCCO, for allowing them to use NATCCO's database.

1. Introduction

The government has recently intensified its efforts to develop the microfinance market in the country. In line with these efforts, the Bangko Sentral ng Pilipinas (BSP), the country's central bank, has issued a series of circulars to implement the provisions of the General Banking Law of 2000 that aim to provide a regulatory environment conducive to the growth and development of the microfinance market. The government has also secured financial and technical assistance from donor agencies, such as the Asian Development Bank (ADB), International Fund for Agriculture Development (IFAD), and United Nations Development Programme (UNDP), among others, to boost support for such efforts.

The literature on microfinance has indeed been a booming industry in recent years particularly in developing countries. However, most of the studies on microfinance have focused on the sustainability of microfinance institutions. This is understandable because in the past governments around the world had used financial institutions as conduits of their subsidized credit programs. Microfinance institutions (MFIs) offer a broad range of financial services to low-income households and microenterprises using one or more microfinance technologies.[1] In the Philippines, MFIs may take different organizational forms. They may be rural banks, cooperative rural banks, credit-granting non-government organizations (NGOs) or credit cooperatives that are engaged in microfinance.[2] Recently, a few thrift banks have joined the microfinance market. A study by Lamberte and Desrochers (2002) examined the extent of cost and profit efficiency and effects of agency costs on the efficiency of cooperative rural banks in the Philippines. This study extends said analysis by focusing on the credit cooperative system in the Philippines and, at the same time, adding a gender dimension, which is a special feature of many microfinance programs.

As a participant in the country's financial market, the credit cooperative system's efficiency has important implications on the functioning of the national

[1] See Appendix A for the various microfinance methodologies.
[2] Credit-granting NGOs are normally registered with the Securities and Exchange Commission as a non-profit corporation. Credit cooperatives are the same as credit unions.

economy. Unfortunately, the issue on efficiency of the credit cooperative system has not been studied rigorously here and elsewhere.[3] This is in stark contrast to the plethora of studies dealing with the efficiency of banks. Thus, a study on the efficiency of the credit cooperative system, particularly on a Philippine setting, is of great importance to researchers and policymakers because of the system's potential role in the development of low-income communities.

Over the last several years, a number of studies on group-based lending programs around the globe has examined the issue of empowering women through greater access to finance. The obvious reason behind these studies is to determine whether participation in microfinance programs has significantly changed household behavior considering that many of these programs target women. However, none of these studies has ever examined the implications of women participation in credit programs on the efficiency of MFIs. This study therefore stresses the point that acknowledging gender issues in microfinance does not always necessarily mean directing a program towards women, like most of the existing microfinance programs do including those that are being done by innovative financial institutions. Equally important too is the need to recognize their crucial role as policymakers and managers of community-oriented financial intermediaries. The credit cooperatives as MFIs will be a natural subject for such a study.

Moreover, since the credit cooperative system is likely to be susceptible to problems related to agency costs, the presence of expense preference behavior in credit cooperatives is also investigated using potential correlates of agency costs and governance. As a manifestation of agency problem, expense preference in a firm exists when managers are willing to sacrifice owners' interest in order to maximize their own preference (Hasan and Lozano-Vivas 2001). In the financial system alone, to further provide information to bank managers and government officials, the effort on research studies worldwide focusing on the existence of expense preference behavior continues as several studies found consistent evidence on its existence.

More specifically, this paper attempts to address the following questions:

[3] Earlier studies on credit cooperatives in the Philippines have focused on financial management of cooperatives. For example, see Lamberte (1988), Lamberte and Balbosa (1988), and Agabin (1988).

1. To what extent are credit cooperatives in the Philippines efficient?
2. Do market conditions and agency costs affect the efficiency of credit cooperatives?
3. Does gender dimension feature in the efficiency of credit cooperatives?

The rest of the paper is structured as follows. Section 2 reviews the existing literature on women and microfinance with special reference to the Philippine case. Section 3 provides an overview of the Philippine cooperative movement with special emphasis on the credit cooperative system. Section 4 presents the major hypotheses that will be investigated. Section 5 discusses the empirical design for estimating cost and profit efficiency of credit cooperatives. Section 6 presents the empirical results and their implications. Section 7 concludes and outlines the scope for future research.

2. Integrating a Gender Perspective in Microfinance

The State of the Microcredit Summit Campaign 2001 Report discloses that 14.2 million of the world's poorest women, who account for almost 74 percent of the 19.3 million poorest people, have now access to financial services provided by MFIs.[4] This significant increase in their access to financial services is indeed a remarkable improvement over the past ten years. However, social discrimination still exists, as women's ability to benefit from this access is still limited simply because of their gender. Moreover, there is also a reduction in the loans allocated to women by some MFIs despite the fact that these institutions are expanding and offering new financial products. And it is still a predicament for women of not having a voice within the system in terms of leadership in MFIs, i.e., setting the vision, designing products, or implementing programs.

According to the World Bank report (2000-2001), greater poverty, slower economic growth, weaker governance and lower standard of living exist to societies with discrimination on the basis of gender. Another study (UNDP 1995) reveals that

[4] The Microcredit Summit Campaign defines *poorest* as the bottom half of those living below their nation's poverty line.

there is a strong correlation between gender empowerment measure and gender-related development indices, and Human Development Index.

The multiplier effect of women's access to capital and training programs cannot be understated as these programs mobilize their productive capacity to alleviate poverty and maximize economic output. Moreover, access to financial services upgrades their livelihood potential in combination with skills training, cooperatives development, and other capacity building schemes. Thus, well-designed microfinance policies and programs can make an important contribution to women empowerment. The study of Pitt and Khandker (1997) reveals that credit programs in Bangladesh have a significant impact on the welfare of the poor households, and this effect is greater when women are the program participants.

Group-based lending programs often target women. In the Philippines, women constitute a large proportion of the total number of borrowers of MFIs (Coke undated). However, unlike in Bangladesh, India and other African countries, majority of the credit programs of the MFIs in the Philippines do not exclusively provide products and services to women alone. But it is worth emphasizing that majority of these MFIs are dominated by women either as clients/members or employees or both.

Taking a closer look, the study conducted in the Philippines by Coke (undated) examined the factors influencing the choice of women on microfinance projects. The respondents of the survey conducted from March to May 2000 came from the Cooperative Rural Bank's Grameen Replication Program (GRP). The study reveals that borrowers with low bargaining power and with children responsibilities tend to choose projects that can be easily incorporated into their family life while those borrowers with high household bargaining power and fewer domestic responsibilities do exhibit entrepreneurial characteristics. The borrower's choice of business activity is limited by social norms, that is, what is perceived acceptable female activities, by female's need to participate in household production, and by female's relative standing in the household.

The Agricultural and Rural Development for Catanduanes, Inc. (ARDCI) was formed in 1998 out of the privatization of a government-sponsored credit program.

As of 1999, it served 11,000 households. Some 86 percent of its members were women. Interestingly, women currently participate in all levels of leadership in the organization. Its members employ a Grameen-style five member guarantee groups that hold weekly meetings to gather savings and repayments. About 86 percent of guarantee group leaders were women. ARDCI recognizes women's need for social responsibilities that extend beyond their domestic duties. Moreover, the organization acknowledges that there is a remarkable change in the programs when female members are given more responsibilities to chair their Savings and Loan System (SLS) or sit in the board of trustees.

In the early 1980s, the Alliance of Philippine Partners in Enterprise Development Inc. (APPEND), one of the largest networks of microfinance institutions in the Philippines, and Opportunity International Network (OIN), one of the largest providers of microfinance in the world, started a microfinance program for the poor through lending capital to women in slum areas of Metro Manila. Currently, they have a total of PhP525 million in loans to more than 125,748 micro-entrepreneurs, and have consistently posted an average repayment rate of 98 percent, indicating that the poor can be bankable and disciplined in managing credit and do not necessarily need government or donor "dole-outs" but access to financial services.[5] These groups established the Opportunity Microfinance Bank (OMB) in May 2001 to bring hope to more poor communities throughout the country by making much larger resources available to them in the form of micro-loans. By utilizing an innovative banking system, OMB brings its services to the poor through its field staff, who visit communities to identify potential clients and facilitate the formation of groups of women borrowers and savers.

The Negros Women for Tomorrow Foundation, Inc. (NWTF) was founded in 1984 with a mission to create opportunities for the self-employed by providing poor people with access to integrated credit facilities, and to reduce the exploitation of the poor by money-lenders through a comprehensive credit program. As of 31 December 2001, NWFT had 30,147 active borrowers, all of whom were also active savers. The average loan size was about US$116.

[5] One US dollar is roughly equivalent to 50 pesos.

By combining credit unions with village banking, the Credit Union Empowering and Strengthening (CUES) program in the Philippines by World Council of Credit Unions, Inc. (WOCCU) provides microfinance services and educational training in the country. As of March 2001, 11 WOCCU-affiliated credit unions served 89,652 members, 73.5 percent of whom were women (**Table 1**).

Table 1. Loan Portfolio Analysis
11 WOCCU Affiliated Filipino Credit Unions
March 2001
In US dollars

Loan Size	Number of Loans in Range	% of Number of Total Loans	% of Volume of Total Loans	Amount of Loans in Range
$1 – $200	34,225	71.60	22.20	2,226,767
$201 – $400	5,958	12.50	12.60	1,270,406
$401 – $600	2,973	6.20	10.90	1,094,048
$601+	4,631	9.70	54.30	5,459,142
Total	**47,787**	**100.00**	**100.00**	**10,050,363**

Source: WOCCU website: www.woccu.org

3. The Philippine Cooperative Movement

The Western concept of cooperativism was first introduced in the country over 100 years ago, albeit Filipino ancestors were already practicing it as manifested by the tradition of *bayanihan* or cooperation. It was in 1915 when the first cooperative-related law, the Rural Credit Cooperative Association Act (PA 2508), was enacted that facilitated the creation of agricultural credit associations and provided for their regulation. Since then, the cooperative movement in the country has survived and flourished despite the problems encountered by some of the cooperatives.

One of the major developments in the country's cooperative movement in the 1990s was the creation of the Cooperative Development Authority (CDA) through Republic Act (RA) No. 6939, which took effect on March 1990. The CDA, along with its 14 regional extension offices distributed nationwide, takes care of registration and supervises registered cooperatives in the country. It is also mandated to promote the viability and growth of cooperatives as instruments of equity, social justice and economic development.

Registered cooperatives enjoy several incentives. Under the Cooperative Code (RA No. 6938) of 1990, cooperatives, regardless of name and nature, are exempted from paying all national, city, provincial, municipal or barangay taxes of the accumulated reserves and undivided net savings of not more than PhP10 million. Such cooperatives are also exempted from customs duties, advance sales or compensating taxes on importation of machineries, equipment and spare parts for their own use and which are not locally available. They are also exempted from paying income and sales taxes for a period of ten years. Moreover, financial cooperatives are exempted from taxes imposed on banks; that is, they do not pay a gross receipts tax on the interest income they earn or documentary stamp tax on time deposit instruments. Interest income on deposits is not subject to the 20 percent withholding tax. Finally, deposits of financial cooperatives are not subject to the reserve requirement imposed by the BSP on bank deposits.

The Cooperative Code classifies cooperatives into the following: (1) credit cooperative which promotes thrift among its members and creates funds in order to grant loan for productive and provident purposes; (2) consumers cooperative whose primary purpose is to procure and distribute commodities to members and non-members; (3) producers cooperative which undertakes joint product whether agricultural or industrial; (4) marketing cooperative which engages in the supply of production inputs to members and markets their products; (5) service cooperative which engages in medical and dental care, hospitalization, transportation, insurance, housing, labor, electric light and power, communication and other services; and (6) multipurpose cooperative which combines two or more of the business activities of these different types of cooperatives. Despite the fact that the various cooperatives have highly differentiated functions, there is no specific regulatory framework for each type of cooperative.

The number of registered cooperatives as of June 2002 reached 62,665, of which 85.3 percent were multi-purpose cooperatives, 6.2 percent were credit cooperatives, and the balance comprised other types of cooperatives. As of December 2000, the total assets of cooperatives reached PhP23.2 billion, which was equivalent

to 0.7 percent of the entire banking system's assets and 35.6 percent of the rural banking system's assets.[6]

On a closer look, the credit cooperative system is the most significant and most organized subset in the entire cooperative movement. It is interesting to note that a few credit cooperatives have assets that have even exceeded the assets of the largest rural bank and some thrift banks. As of December 2000, the largest credit cooperative had assets amounting to PhP762 million. Unlike banks, credit cooperatives are unit institutions; that is, they do not have branches.

Female members constitute 55 percent of the total membership of credit cooperatives (**Table 2**). The authorized capital of credit cooperatives reached PhP2.45 billion, of which PhP647 million was subscribed and PhP216 million was paid-up. The newly registered credit cooperatives in the National Capital Region (NCR) contributed the highest authorized capital at PhP1 billion of which PhP278 million was subscribed and PhP98million was paid-up.

Table 2. Selected Data on Credit Cooperatives*
Values in pesos; share in percent
December 2001

Region	Members				Total Capital Structure		
			Share		Authorized	Subscribed	Paid-up
	Male	Female	Male	Female			
I	4,265	8,876	32.46	67.54	63,891,560	16,338,890	5,076,291
II	2,902	3,885	42.76	57.24	84,239,960	21,324,352	8,141,170
III	3,662	4,896	42.79	57.21	153,564,025	40,807,931	15,798,902
IV	6,864	8,116	45.82	54.18	161,725,685	45,651,245	16,267,799
V	6,025	12,127	33.19	66.81	121,419,350	33,719,905	14,970,306
VI	4,849	5,840	45.36	54.64	72,155,000	19,885,471	5,903,700
VII	1,198	1,569	43.30	56.70	310,784,404	78,311,226	20,189,579
VIII	4,302	6,373	40.30	59.70	143,836,200	37,005,100	9,944,518
IX	7,948	2,817	73.83	26.17	9,972,240	2,429,460	945,625
X	1,582	2,438	39.35	60.65	90,121,990	22,797,147	6,021,009
XI	4,283	4,841	46.94	53.06	111,845,280	23,664,620	6,959,941
XII	3,642	2,665	57.75	42.25	39,732,731	10,086,889	2,648,367
CAR	1,640	2,259	42.06	57.94	28,963,440	7,665,724	2,208,706
CARAGA	4,267	4,399	49.24	50.76	41,088,200	10,232,850	3,430,810
NCR	9,356	10,230	47.77	52.23	1,020,274,389	278,073,320	98,088,774
TOTAL	**66,785**	**81,331**	**45.09**	**54.91**	**2,453,614,454**	**647,994,130**	**216,595,496**

**For credit cooperatives with active status*
Source of raw data: Cooperative Development Authority

[6] This figure does not include delinquent cooperatives that fail to submit their financial statements.

Under the existing legal framework, cooperatives may federate or form into unions. The National Confederation of Cooperatives (NATCCO), which is one of the federations/unions of cooperatives in the country, was organized in 1977 to provide education and training to its members. It is the largest national federation in the country in terms of geographical reach, membership, financial capacity and array of services. In November 2002, it created a National Central Liquidity Fund (NCLF) with total funds now amounting to PhP51 million. This liquidity fund aims to provide cooperatives with a safe alternative to bank deposits wherein deposits are placed in risk-free investments with competitive yields and can be withdrawn anytime to service the emergency liquidity needs of members. Meanwhile, NATCCO is advocating for the passage of the Savings and Credit Act whose provisions include, among others, restricting the operations of financial cooperatives to be single-purpose cooperatives focusing on the delivery of financial services to its members.[7]

Table 3 presents data on the number of employees and members of NATCCO's credit cooperatives classified by gender. The share of female members in NATCCO's credit unions rose from 39.8 percent in 1993 to 57.2 percent in 1999. On the other hand, the proportion of women-employees had been consistently more than 60 percent during the same period.

4. Hypotheses

The major hypothesis of this paper is that credit cooperatives exhibit substantial economic inefficiencies. This is not, of course, uncommon among financial institutions here and elsewhere. Berger and Mester (1997b) noted that the inefficiencies found in many of the studies on efficiency they reviewed were substantially huge, consisting of 20 percent or more of the total banking system's costs and about half of the system's potential profits.

The differences in economic efficiency among credit cooperatives can be explained by certain factors, which are collectively called correlates of inefficiency. For purposes of this paper, these correlates are categorized into three groups, namely:

[7] Financial cooperatives and credit cooperatives are used interchangeably in this paper.

market characteristics; agency costs; and corporate governance. The characteristics of the market, such as degree of competition, level of economic development, etc., are external factors that can affect the credit cooperatives' efficiency. The existence of agency problem within a credit cooperative can affect its efficiency. An agency problem will likely emerge in an institution where managers pursue objectives that are different from those of shareholders. This manager-ownership agency conflict can easily emerge in mutual institutions, like credit cooperatives, that have widely diffused ownership.[8] Indeed, existing studies show that institutions that have more widely diffused ownership have on the average more expense preference than those that have concentrated ownership.[9] Members of credit cooperatives will have to incur additional monitoring costs to keep the interest of managers in line with their interest.

As mentioned earlier, empowering women through access to credit has been one of the features of microfinance programs. In a credit cooperative, women do not only borrow but, as members with one vote each, also take part in shaping policies of their cooperatives. Moreover, they may directly participate in the management of

Table 3. Classification of Members and Employees of Credit Cooperatives by Gender 1986 - 1999

	MEMBERS					EMPLOYEES				
Year	Total[1]	Male	Female	% Male	% Female	Total	Male	Female	% Male	% Female
1986	47,925	17,725	19,062	37.0	39.8	235	79	156	33.6	66.4
1987	54,511	19,997	21,980	36.7	40.3	290	104	186	35.9	64.1
1988	55,886	20,206	23,146	36.2	41.4	317	112	205	35.3	64.7
1989	60,896	22,763	25,489	37.4	41.9	336	121	215	36.0	64.0
1990	57,363	18,103	25,727	31.6	44.8	394	139	255	35.3	64.7
1991	55,043	17,374	23,894	31.6	43.4	383	131	252	34.2	65.8
1992	57,705	21,009	23,791	36.4	41.2	396	138	258	34.8	65.2
1993	63,020	22,506	24,560	35.7	39.0	406	143	263	35.2	64.8
1994	66,128	24,091	32,055	36.4	48.5	440	148	292	33.6	66.4
1995	60,223	20,264	34,375	33.6	57.1	419	143	276	34.1	65.9
1996	58,922	19,777	33,613	33.6	57.0	395	128	267	32.4	67.6
1997	54,760	17,558	31,670	32.1	57.8	394	134	260	34.0	66.0
1998	44,139	14,504	24,574	32.9	55.7	355	127	228	35.8	64.2
1999	47,458	14,767	27,159	31.1	57.2	382	140	242	36.6	63.4

[1] Sum of male and female; may not add up because there are coops without reporting the breakdowns.
Source of raw data: National Confederation of Cooperatives (NATCCO)

[8] The other two types of agency problems mentioned in the literature are: between stockholders and bondholders; and between specific groups of members, such as net-savers vs. net-borrowers (see Desrochers and Solé 2003). These will not be examined in this paper.
[9] See Hannand and Mavinga (1980) and Hasan and Lozano (1999), among others.

credit cooperatives. Thus, a governance structure of a credit cooperative in which women have greater participation in decision-making can have a distinguishing effect on efficiency.

To recapitulate, the major hypotheses of this paper are as follows:

Hypothesis I: Credit cooperatives have substantial cost and profit inefficiencies.

Hypothesis II: The characteristics or conditions of the market within which credit cooperatives operate can partly explain the differences in their efficiencies.

Hypothesis III: Agency cost problem affects the cost and profit efficiency of credit cooperatives.

Hypothesis IV: A governance structure of a credit cooperative that provides ample opportunities for women to participate in decision-making can partly explain the differences in the efficiencies among credit cooperatives.

These hypotheses will be decomposed and discussed further in Section 5.4 below.

5. Empirical Design

5.1. Efficiency measurement method

This paper uses a frontier analysis, which is a means to measure the relative performance of firms by objectively providing a numerical efficiency value and ranking them accordingly. It shows how close firms are to the "best-practice" frontier. Such analysis proves to be significant in providing information that is useful in either of the following: (a) in assessing the effects of deregulation, mergers and market structure on efficiency that may be valuable to the policymakers; (b) in dealing with

academic research studies on efficiency of a firm and its comparison to other efficiency approaches; or (c) in improving the performance of a firm by distinguishing the "best practices" and "worst practices" associated with the respective efficiency levels.

By employing data on accounting measures of costs, outputs, inputs, revenues, profits, etc., the frontier efficiency can be estimated given available data. Efficiency can be measured using parametric or non-parametric estimation techniques.[10] Non-parametric models include data envelopment analysis (DEA) and free disposal hull (FDH). Parametric models, on the other hand, include stochastic frontier approach (SFA), thick frontier approach (TFA) and distribution free approach (DFA).

For this paper, efficiency measures are calculated using the SFA. Under this approach, a credit cooperative is considered inefficient if its costs are higher or if its profits lower compared to those predicted for an efficient credit cooperative given the same existing conditions. The SFA, which is also referred to as the econometric frontier approach, specifies the relationship between output and input levels and decomposes the error term into two components: (a) a random error; and (b) an inefficiency component. The random error which is assumed to follow a symmetric distribution is the traditional normal error term with a zero mean and a constant variance while the inefficiency term is assumed to follow an asymmetric distribution and may be expressed as a half-normal, truncated normal, exponential or two-parameter gamma distribution. Furthermore, this approach distinguishes a functional form for the cost, profit, or production relationship among inputs, outputs and other factors.

The main drawback of this approach lies on the assumed shape of the frontier caused by imposing a functional form. As such, this implies that if the functional form is incorrect, the measured efficiency will be misleading. Despite the intense research efforts on efficiency frontier, researchers have not yet arrived at a consensus regarding the most preferred frontier method for determining the best-practice frontier.

[10] See Berger and Mester (1997) for a detailed discussion on these estimation approaches.

5.2. Cost and alternative profit functions

This paper estimates both the cost and profit efficiencies using the standard cost function and the alternative profit function to gain information about the performance of credit cooperatives. The cost function, which relates the variable costs on the prices of variable inputs, quantities of variable outputs, potential correlates of efficiency, random error and efficiency can be written in logarithmic form as:

$$\ln C = f_c(w, y, z, v) + \ln u_c + \ln \varepsilon_c \qquad (1)$$

where C measures the variable costs; f_c denotes a functional form; w is the vector of input prices; y is the vector of outputs; z represents the quantities of any fixed parameters; v is the set of potential correlates; u_c is the inefficiency factor; and ε_c is the random error.

The cost efficiency of a credit cooperative b, which ranges from 0 to 1 and equals one for the best-practice credit cooperative within the given sample and can be derived from the above cost function, is then defined as the estimated cost needed to produce credit cooperative b's output vector if the cooperative were as efficient as the best-practice cooperative in the sample facing the same exogenous variables (w,y,z,v) divided by the actual cost of credit cooperative b, adjusted for random error (Berger and Mester 1997b). This can be expressed as:

$$\text{Cost EFF}^{\,b} = \frac{\hat{C}^{min}}{\hat{C}^{b}} = \frac{\exp\left[f_c\left(w^b, y^b, z^b, v^b\right)\right] \times \exp\left[\ln \hat{u}_c^{\,min}\right]}{\exp\left[f_c\left(w^b, y^b, z^b, v^b\right)\right] \times \exp\left[\ln \hat{u}_c^{\,b}\right]} = \frac{\hat{u}_c^{\,min}}{\hat{u}_c^{\,b}} \qquad (2)$$

where $\hat{u}_c^{\,min}$ is the minimum $\hat{u}_c^{\,b}$ across all credit cooperatives in the sample.

On the other hand, the alternative profit relates profit to input prices rather than output prices indicating that output is held constant while output prices vary and may affect profits. Berger and Mester (1997b), using banking institutions, have pointed out that the alternative profit function may be helpful when one or more of the

following conditions hold: (a) there are substantial unmeasured differences in the quality of banking services; (b) outputs are not completely variable so that a bank cannot achieve every output scale and product mix; (c) output markets are not perfectly competitive so that banks have some market power over the prices they charge; and (d) output prices are not accurately measured so that they do not provide accurate guides to opportunities to earn revenues and profits in the standard profit function.

Needless to say, these conditions hold true in the case of the country's financial market and thus, to the credit cooperative system. This, then, justifies the usage of the alternative profit function in this paper instead of the standard profit function. For example, credit cooperatives differ in the quality of services as well as asset size. It is not unusual for bigger credit cooperatives in terms of asset to offer better and more extensive arrays of services to their members. In such case, the standard profit function treats these small and large cooperatives as if they have the same variable outputs and thus, may result to a scale bias. The alternative profit function, on the other hand, reduces this scale bias as it is able to compare the ability of the cooperatives to generate profit for the same level of output.

For the case of inaccuracies in the output price data of cooperatives which is very likely to be possible, the alternative profit function tries specifying other variables in the profit function that may produce a better fit in the estimation of the efficiency term. Specifically, the alternative profit function is written in logarithmic terms as:

$$\ln (\pi + \theta) = f(w,y,z,v) + \ln \varepsilon_{a_\pi} - \ln u_{a_\pi} \qquad (3)$$

where π denotes the variable profits of the credit cooperative; θ is a constant added to every credit cooperative's profit; y is the vector of outputs that yields different values for the inefficiency, $\ln u_{a_\pi}$, and random error term, $\ln \varepsilon_{a_\pi}$.

The alternative profit efficiency is expressed as the ratio of predicted actual profits to the predicted maximum profits for a best-practice credit cooperative and this is represented as follows:

$$\text{Alt } \pi \text{ EFF}^{\,b} = \frac{a\pi^{\,b}}{a\pi^{\,max}} = \frac{\{ \exp [f(w^b, y^b, z^b, v^b)] \times \exp [\ln \hat{u}_{\pi}{}^{b}] \} - \theta}{\{ \exp [f(w^b, y^b, z^b, v^b)] \times \exp [\ln \hat{u}_{a_\pi}{}^{max}] \} - \theta} \quad (4)$$

5.3. Functional form

To estimate the cost and alternative profit frontier functions, a translog functional form is chosen. This functional form is widely used because it allows some flexibility when estimating the frontier function.[11] Using two inputs and two outputs, the cost function for credit cooperative k at time t can be expressed as:

$$\begin{aligned} \ln C_{kt}(y,w,z) = {} & a_0 + \sum_{i=1}^{2} a_i \ln y_{ikt} + \tfrac{1}{2} \sum_{i=1}^{2}\sum_{j=1}^{2} a_{ij} \ln y_{ikt} y_{jkt} + \sum_{i=1}^{2} b_i \ln w_{ikt} \quad (5) \\ & + \tfrac{1}{2} \sum_{i=1}^{2}\sum_{j=1}^{2} b_{ij} \ln w_{ikt} + c_0 \ln z_{kt} + \tfrac{1}{2} c_1 (\ln z_{kt})^2 \\ & + \sum_{i=1}^{2}\sum_{j=1}^{2} d_{ij} \ln w_{ikt} \ln y_{jkt} + \sum_{i=1}^{2} e_i \ln w_{ikt} \ln z_{kt} \\ & + \sum_{i=1}^{2} f_i \ln y_{ikt} \ln z_{kt} + \ln \varepsilon_c + \ln u_c \end{aligned}$$

The ε and u are the inefficiency and random error terms, respectively. Following Berger and Mester (2001), one of the changes in the specification of the alternative profit function is on the dependent variable. For the profit function, ln C is replaced with ln [π + /π^{min}/ + 1], where /π^{min}/ indicates the absolute value of the minimum value of the profit over all cooperatives for the same year. Since profits can be negative, the value, θ = /π^{min}/ + 1, is added to every credit cooperative's dependent

[11] Some authors claim that specification bias may result from using a translog function over a sample of banks with different size and product mix. However, Berger and Mester (1997b) found that both the translog and Fourier-flexible functional forms generate basically the same average level and dispersion of measured efficiency. Also, the study shows that both functional forms ranked the individual banks in almost the same order.

variable so that the natural log is taken of a positive number.[12] Aside from this change, there is also a slight change in the above specification for the alternative profit function where the dependent variable is replaced with net profits and the inefficiency term is $-u$.

Coelli's Frontier Version 4.1 (1994) is used to estimate the profit and cost efficiency of a sample of credit cooperatives. The cost and profit models are estimated using maximum likelihood estimation (MLE) procedure. In Coelli's program, the cost efficiency is computed as the inverse of equation 2. The cost efficiency takes the value of 1 or higher; that is, a value of 1.10 implies that a credit cooperative has costs that are 10 percent above the minimum defined by the frontier. In other words, 10 percent of its costs are wasted relative to the "best-practice" credit cooperative producing the same output and facing the same conditions. The higher the value, the more cost inefficient the credit cooperative is. On the other hand, profit efficiency takes the value of between 0 and 1; that is, a profit efficiency estimate of 0.70 means that the credit cooperative is actually earning 70 percent of best-practice profits, or that that credit cooperative is losing 30 percent of possible profits.

5.4. Description of the Data

As mentioned earlier, there are several types of cooperatives in the Philippines. For purposes of this study, only credit cooperatives will be included in the analysis for three reasons. First, it will be easier to compare the results of this study, which focuses only on financial cooperatives, with other studies that analyzed cost and profit efficiencies of financial intermediaries. Non-financial and multi-purpose cooperatives include products and services that are non-financial in nature. Second, in a situation where standard chart of accounts are not imposed on cooperatives as in the case of the Philippines, the credit cooperatives appear to have a relatively homogeneous set of accounts compared to non-financial and multi-purpose cooperatives. Third, after going over the financial statements of various types of cooperatives made available to the researchers, credit cooperatives appear to have more organized financial statements than other types of cooperatives.

[12] Consequently, the credit cooperative with the lowest value of profit for that year will have a dependent variable of ln (1) = 0.

Unlike the BSP, the CDA does not rigorously supervise cooperatives. This explains why CDA does not have a database containing financial statements of credit cooperatives. In the absence of such source of data, this study uses balance sheets and income statements of NATCCO's member-cooperatives. It is to be noted that almost all of these financial statements are not audited by CDA, NATCCO or any of the country's reputable auditing firms. Only 134 out of more than 300 credit cooperatives in NATCCO's list could be included in the analysis because they have financial statements during the period 1990-1999. However, not all of them have complete financial statements for the period indicated because some started later while others simply did not furnish NATCCO complete financial reports. Still others had financial statements in some years that lack details or breakdown of financial items needed for the analyses, and therefore were weeded out of the sampling frame. Thus, the panel data are unbalanced and consist of only 338 observations.

The variable inputs and outputs used in this paper are defined using the intermediation approach. As pointed out by Berger and Humphrey (1997), this approach, as opposed to the production approach, is more suitable in analyzing firm level efficiency while the other approach is more applicable in measuring branch level efficiency. Since this approach takes into account the overall costs or profits of credit cooperatives, the intermediation approach is deemed most suitable for tackling the concerns regarding the economic viability of credit cooperatives.[13]

For the cost function (profit function), the dependent variable is the total cost (total profit) of each credit cooperative. The independent variables include two output quantities, namely total loans and securities, and two input prices, namely wage rate and interest rate on current liabilities including deposit liabilities. All variables are expressed in real terms using the consumer price index (CPI) with 1995 as the base year.

There are three sets of potential correlates of efficiency included in the paper. The measures of market characteristics include: banking density (POPBANK); real

[13] See Ferrier and Lovell (1990) for the case of banks.

gross regional domestic product (GRDP); and type of membership of credit cooperatives (MEMTYPE). POPBANK is measured as the ratio of population to the number of banking offices operating in the same province.[14] A higher ratio is likely to be associated with a less competitive financial market within a province. It is therefore expected that POPBANK reduces cost inefficiency (or increases cost efficiency) and improves profit efficiency of credit cooperatives. In other words, competitive pressures force credit cooperatives to become more cost and profit efficient.

GRDP is a proxy for the degree of economic development and sophistication of the financial market of a region where a credit cooperative is located.[15] A credit cooperative located in more economically developed regions of the country is expected to have lower cost inefficiency (or higher cost efficiency) and higher profit efficiency while a credit cooperative located in less economically developed regions is expected to have a higher cost inefficiency and lower profit efficiency.

Membership type (MEMTYPE) indicates the degree of openness of a credit cooperative as far as membership is concerned. More specifically, institution (or office)-based credit cooperative is less open compared to community-based credit cooperative. It has two competing effects on the efficiency of credit cooperatives. On the one hand, institution-based credit cooperative is likely to be associated with lower monitoring cost of their borrowers than community-based credit cooperatives. Thus, the former is expected to have lower cost inefficiency and higher profit efficiency than the latter. On the other hand, institution-based credit cooperatives will less likely be subject to market discipline than community-based credit cooperatives. It is therefore expected that the former will have higher cost inefficiency and lower profit efficiency than the latter. One of these competing effects can dominate the other.

The correlates of agency costs include the following: quantity of assets (ASSETMEMB); fixed assets to total assets ratio (FIXASSETS); sufficiency of financial margin (SUFMARG); and ratio of deposits to loans (DEPCRED).

[14] Although data on population are available at the municipal or city level, data on the number of banking offices are available only at the provincial level.
[15] Sub-national GDP is available only up to the regional level. The country is divided into 16 regions. A region comprises several provinces and cities.

ASSETMEMB is arrived at by dividing total assets by the total number of members of a cooperative. It is a measure of the degree of portfolio diversification; that is, having more assets will permit the credit cooperative to go into portfolio diversification. Thus, this correlate is expected to be associated with lower cost inefficiency and higher profit efficiency.

FIXASSETS is defined as the ratio of fixed assets to total assets. It measures the extent to which management uses funds for unproductive uses. Thus, higher values of FIXASSETS will likely increase cost inefficiency and lower profit efficiency of credit cooperatives.

SUFMARG is arrived at by taking the difference between financial income and financial cost and dividing the result by the operational costs. It measures the proportion of operational costs covered by the financial margin. A higher ratio is associated with more efficient management. Thus, SUFMARG will likely be negatively correlated with cost inefficiency and positively correlated with profit efficiency.

DEPCRED is a measure of funds acquired from members of the credit cooperative that are not used for financial intermediation, but rather wasted in inefficient operations such as maintaining luxury offices, vehicles, etc. It will therefore be associated with higher cost inefficiency and lower profit efficiency of credit cooperatives.

Finally, the gender aspect of governance includes two indicators. The first is WOMMEM, which is the proportion of women in the cooperative's total membership. Targeting women as borrowers proves to be beneficial to lenders in that repayment rates have been high.[16] This means that women are using credit to worthwhile economic activities and are conscientious in fulfilling their loan contracts. In addition, women as members of a credit cooperative are not only borrowers but as shareholders are also participants in shaping policies and in monitoring performance of their cooperatives. This can reduce monitoring costs of MFIs, which could lead to

[16] For example, see Hossain and Diaz (1997) in the case of CARD Bank in the Philippines.

lower cost inefficiency and higher profit efficiency. It is therefore expected that women-dominated credit cooperatives will incur less monitoring costs, thereby lowering the cost inefficiency and increasing the profit efficiency of credit cooperatives.

The second indicator is WOMEMP, which is the ratio of the number of women to the total number of employees or staff of a cooperative. Access to credit is not the only way to empower women. Women can also participate in the management of MFIs. In credit cooperatives where interpersonal relationship, leadership and trust are of paramount importance, women can be better managers. Thus, WOMEMP is expected to be negatively correlated with cost inefficiency and positively correlated with profit efficiency.

Table 4 presents a summary of the definitions of the variables used for the cost and alternative profit functions and the correlates of efficiency along with their descriptive statistics. The average asset per member was PhP13,042. The large standard deviation obtained for this variable indicates the wide dispersion of the asset size of the sample cooperatives. On the average, women constitute 58 of the cooperatives total membership and 69 percent of the staff.

Table 5 summarizes the expected relationship between the efficiency measures and the correlates of efficiency.

Table 4. Definition of Variables and Their Characteristics

Symbol	Variable Name and Definition	Mean	Std. Dev.
A. Cost and Alternative Profit Functions			
Dependent Variables			
Costs	Real Costs, in Phil. pesos, deflated by the Consumer Price Index (CPI) (1995=100)	5,451.29	16,309.53
π	Real Profit defined as net income, in pesos, deflated by the CPI	20,767.24	13,331.44
Independent Variables			
Variable Output Quantities			
Y1	Total loans, in pesos, deflated by the CPI	62,506.09	100,870.30
Y2	Securities: Total assets less total loans and fixed capital, in pesos, deflated by the CPI	15,933.33	31,147.70
Variable Input Prices			
W1	Real Wage rate: Salaries and benefits divided by total number of employees, in pesos by employee, deflated by the CPI (where total employees defined as full time employees + 1/2 part time employees)	582.32	623.64
W3	Real Price of deposits: Interest expenses on deposits divided by current liabilities, in pesos, adjusted by the inflation rate	8.16	11.95
B. Correlates			
Correlates of Market and Macro Economic Characteristics			
POPBANK	Banking density: Population/number of banks	1,225,809.00	891,974.90
GRDP	Real GDP of the region, in million pesos	51,750.48	38,207.46
MEMTYPE	Dummy variable for members type of the credit cooperatives: 1=institutional; 0=community	0.23	0.42
Agency Costs			
ASSETMEMB	Average quantity of assets (in pesos) by member	13,042.05	40,026.87
FIXASSETS	Proportion of fixed assets to total assets, in percentage	5.46	8.28
SUFMARG	Sufficiency of financial margin:(Financial income −Financial cost)/Operational costs, in percentage	3,011.39	9,912.64
DEPCRED	Proportion of deposits allocated to loans, in percentage	18.85	34.59
Gender Governance			
WOMMEM	Proportion of women to total members, in percentage	58.38	20.44
WOMEMP	Proportion of women to total employees, in percentage	69.22	22.69

Table 5. Expected Relationship Between Efficiency Measures and Correlates of Efficiency

	Cost Inefficiency	Profit Efficiency
Correlates of Market and Macro Economic Characteristics		
POPBANK	Positive	Negative
GRDP	Negative	Positive
MEMTYPE		
Agency Costs		
ASSETMEMB	Negative	Positive
FIXASSETS	Positive	Negative
SUFMARG	Negative	Positive
DEPCRED	Positive	Negative
Gender Governance		
WOMMEM	Negative	Positive
WOMEMP	Negative	Positive

6. Estimation Results

The estimated cost and alternative profit functions are presented in Appendix B. The discussions below will focus on the efficiency estimates and the effects of potential correlates on the efficiency of credit cooperatives.

6.1. Efficiency estimates

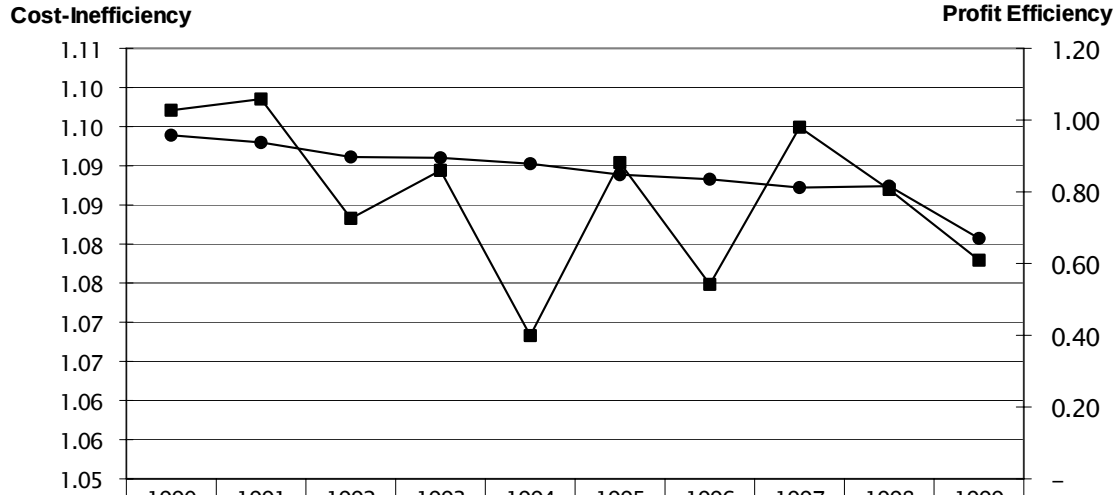
The mean cost inefficiency estimate of the credit cooperatives is 1.09. This suggests that, on average, 9 percent of the cooperative's costs are wasted relative to the best-practice credit cooperative in the system producing the same output and facing the same conditions. It is very close to the average cost inefficiency of 10.25 for cooperative rural banks in the Philippines (Lamberte and Desrochers 2003). In New South Wales, Australia, Esho (1999) found that credit unions were on average 20 percent cost-inefficient. It is to be noted that the most cost-inefficient credit cooperative in this study obtained an efficiency score of 1.67.

The mean profit efficiency estimate of the credit cooperatives is 0.86, implying that on the average the credit cooperatives are using only 86 percent of their

resources efficiently. This is 4 percentage points lower than that for cooperative rural banks (Lamberte and Desrochers 2003).

The average cost and profit efficiency estimates of the credit cooperatives for each year during the period 1990-1999 are presented in **Figure 1**. The average cost inefficiency score of cooperatives has been moving erratically during the indicated period. It generally tended to decline up until 1994, implying an improvement in cost efficiency, and reversed this trend afterwards. In contrast, the profit efficiency of credit cooperatives has consistently deteriorated from 96 percent in 1990 to 67 percent in 1999.

Figure 1. Efficiency Estimates, 1990 - 1999

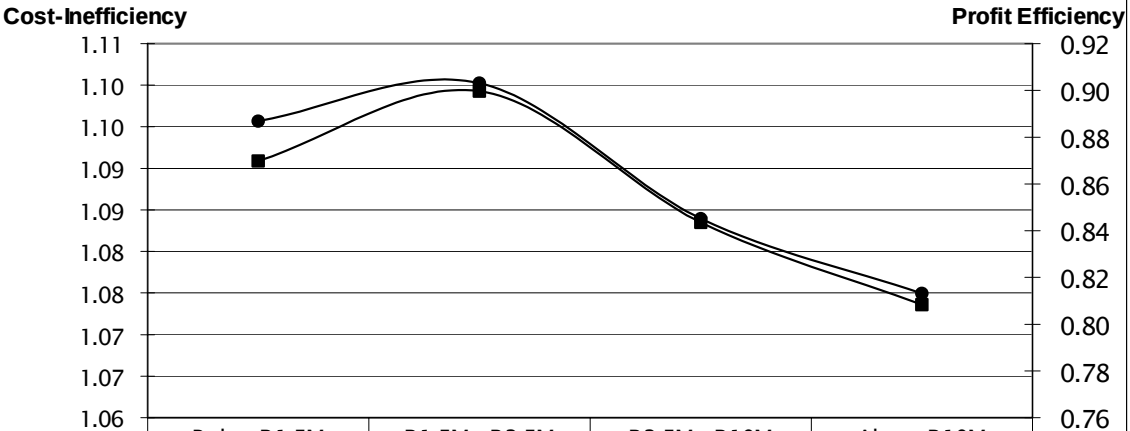


	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Cost	1.10	1.10	1.08	1.09	1.07	1.09	1.07	1.09	1.09	1.08
Profit	0.96	0.94	0.90	0.89	0.88	0.85	0.83	0.81	0.82	0.67

The credit cooperatives were categorized into the following four asset size groups: below PhP1.5 million; PhP1.5 million – PhP3.5 million; PhP3.5 million – PhP10 million; and above PhP10 million. Simple average of individual efficiency measures within each size group was calculated, and the results are presented in **Figure 2**. It can be gathered from this figure that the average cost inefficiency increases as the asset size of credit cooperatives increases from below PhP1.5 million to the PhP1.5 million-PhP3.5 million range, then declines as asset size increases further. Credit cooperatives with assets of more than PhP10 million appear to be the most cost-efficient, followed by those with assets of between PhP3.5 million and

PhP10 million. In contrast, profit efficiency improves as asset size of credit cooperatives increases from below PhP1.5 million to PhP1.5 million-PhP3.5 million range, then deteriorates as asset size increases further. The inverted U-curves for both cost inefficiency and profit efficiency measures when calculated by asset size group appear to be similar to those of cooperative rural banks found by Lamberte and Desrochers (2003) using SFA.

Figure 2. Efficiency Estimates By Asset Group, 1990 - 1999



	Below P1.5M	P1.5M – P3.5M	P3.5M – P10M	Above P10M
Cost	1.09	1.10	1.08	1.07
Profit	0.89	0.90	0.85	0.81

The results discussed above suggest that there is an inverse correlation between cost efficiency and profit efficiency of credit cooperatives. Indeed, the result from a correlation analysis shows that the measured cost inefficiency is positively correlated with alternative profit efficiency with a correlation coefficient of 0.42. This indicates that profit efficient credit cooperatives tend to be cost inefficient or vice-versa. This result seems to be counter-intuitive. However, Berger and Mester (1997) found similar result in the case of US banks. More specifically, they found that while profit efficiency of US banks improved dramatically, the cost efficiency actually worsened. They claimed that such findings could arise because of competitive pressures if, for example, firms with highly valued product mixes or high revenue efficiency feel less market discipline to control their costs. The other explanation they put forward is that much of what are measured as cost inefficiencies are actually unmeasured differences in product quality that required additional costs to create. This is consistent with their hypothesis that banks' goals over time are to maximize

profits and that they offer additional services that raised costs but increased revenues much more. In the case of the Philippines, it is possible that the credit cooperatives' objective over time is to minimize cost, not to offer additional services that could have increased their revenues more than the additional costs they incur.

6.2. Correlates of Efficiency

Table 6 presents the results from the maximum likelihood estimation that relates the measures of efficiency to potential correlates or factors that may help some of the efficiency differences among credit cooperatives. Before discussing the results, it should be recalled that the Coelli program produces cost inefficiency measure and profit efficiency measure.

Table 6. Final MLE Results

Correlates	Cost		Profit	
	Coefficient	T-ratio	Coefficient	T-ratio
Correlates of Market and Macro Economic Characteristics				
POPBANK	0.0000022	2.41*	(0.00000042)	(6.68)*
GRDP	0.0000044	1.24	(0.00001224)	(7.39)*
MEMTYPE	(2.0062040)	(1.92)*	(0.94198227)	(2.61)*
Agency Costs				
ASSETMEMB	0.0000156	2.22*	0.00000828	4.55*
FIXASSETS	0.1857550	2.40*	0.04458594	4.22*
SUFMARG	(0.0000198)	(1.04)	(0.00001795)	(6.00)*
DEPCRED	(0.0035956)	(1.22)	0.00558715	3.17*
Gender Governance				
WOMMEM	0.0109206	1.52	0.00627171	2.40*
WOMEMP	(0.0636703)	(2.28)*	(0.01636686)	(2.13)*

** Significant at 5% level*

6.2.1. Market Characteristics

The results show that POPBANK has a statistically significant effect on both cost inefficiency and profit efficiency of credit cooperatives. The signs of the coefficients conform to *a priori* expectations. It means that credit cooperatives that operate in an area where there are fewer banks serving the population feel less

competitive pressure, and therefore tend to be more cost inefficient and less profit efficient.

GRDP does not have a statistically significant effect on the cost inefficiency. It does have a statistically significant effect on profit efficiency but the direction of the effect does not conform to *a priori* expectation. This raises the issue of why inefficient credit cooperatives exist in more developed and sophisticated financial markets. It could be that certain people who are considered high credit risks are left of out of the financial markets, and the credit cooperatives are the only means for them to have access to financial services. On the other hand, credit cooperatives operating in less developed and sophisticated financial markets tend to be profit efficient as they likely include members that are better credit risks and concerned about the long-term viability of their credit cooperatives.

MEMTYPE appears to have a significant negative effect on both cost inefficiency and profit efficiency measures. Indeed, institution-based credit cooperatives can have better control of their cost compared with community-based cooperatives. However, they are less subject to market discipline, and hence, they tend to be profit inefficient.

In general, the results indicate that market conditions can explain to a certain extent the differences in the efficiency among credit cooperatives.

6.2.2. Correlates of Agency Costs

The effect of ASSETMEMB on cost inefficiency is significant. However, it does not conform to *a priori* expectation. On the other hand, the same correlate has a significant positive effect on profit, which confirms the hypothesis. The results seem to suggest that portfolio diversification can raise the cost of credit cooperatives. However, it can be more than offset by the additional revenues credit cooperatives generate through portfolio diversification.

The effect of FIXASSETS on cost inefficiency is statistically significant and consistent with the hypothesis. However, its effect on profit efficiency, which is

statistically significant, does not support the hypothesis. It could be that the fixed assets acquired by cooperatives are still minimal and limited only to those necessary for their efficient operation. Indeed, fixed assets of credit cooperatives averaged only 5 percent of total assets.

SUFMARG does not explain the differences in the cost inefficiency among credit cooperatives. In contrast, it has a statistically significant effect on profit efficiency. However, it does not conform to *a priori* expectation. This issue needs to be investigated further in future research.

Similarly, DEPCRED has no significant effect on the cost inefficiency but has a statistically significant effect on profit efficiency, which is inconsistent with the hypothesis. It is to be noted that most credit cooperatives in the Philippines especially the small ones still greatly rely on fixed deposits or share capital rather than on savings deposits to finance their lending operation.[17] Indeed, the deposit to loan ratio averages only 19 percent.

In summary, the correlates of agency costs do not have a clear-cut effect on the efficiency of credit cooperatives. It could be that credit cooperatives in the Philippines in general have not yet reached a certain size that makes agency cost a pervasive problem.

6.2.3. Governance and Participation of Women

WOMMEM has no significant effect on the cost inefficiency measure but it has a significant positive effect on the profit efficiency measure. The latter is consistent with the hypothesis. This suggests that empowering women not only through enhancing their access to credit but also through increasing their participation in shaping policies can improve the efficiency of the credit cooperative.

WOMEMP is negatively correlated with cost inefficiency, which confirms the hypothesis that the higher the proportion of female members in a cooperative, the less

[17] In a sense, they are more like the rotating savings and credit associations (ROSCAs) popular in developing countries in Asia.

cost inefficient (or the more cost efficient) the credit cooperative is. However, contrary to *a priori* expectations, WOMEMP exerts a negative influence on profit efficiency; that is, the higher the proportion of women in the cooperative's staff, the less profit efficient the credit cooperative is. The results seem to suggest that credit cooperatives that are managed predominantly by women would likely pursue greater cost efficiency than profit efficiency. This appears to be consistent with the earlier result regarding the inverse correlation between cost and profit inefficiency.

7. Conclusion and Scope for Future Research

7.1. Conclusion

This paper has evaluated the performance of the Philippine cooperative credit system using stochastic frontier analysis. The results suggest that they are inefficient, but their cost and profit inefficiencies are on average not too far from those of cooperative rural banks in the Philippines.

While cost inefficiency has been moving erratically during the period 1990-1999, profit efficiency appears to have consistently declined during the same period. Larger credit cooperatives appear to be more cost efficient than smaller ones. However, they also appear to be the less profit efficient than smaller ones. It could be that credit cooperatives pay more attention to cost efficiency than to profit efficiency. For long-term sustainability, credit cooperatives must pay increasing attention to profit efficiency.

The paper has also examined the impact of certain correlates on the efficiency of credit cooperatives. The conditions of the market within which credit cooperatives operate appear to exert influence on their efficiency. This means that certain policies aimed at improving the efficiency of the financial markets can have spillover effects on the efficiency of credit cooperatives. For instance, the more liberal bank entry and branching policy of the BSP can exert pressure on credit cooperatives to become more efficient. The correlates of agency cost appear to have no clear-cut effects on credit cooperatives. This is perhaps due to the fact that most credit cooperatives have not yet reached a certain size that can give rise to agency problem.

What is more significant though in this study is the effect on efficiency of women participation in the governance of credit cooperatives. Empowerment of women through access to credit and participation in shaping policies can enhance the profit efficiency of credit cooperatives. Given the preoccupation of credit cooperatives to cost efficiency, the dominance of women in the staff of credit cooperatives can help achieve that objective. However, a shift in emphasis to profit efficiency for long-run sustainability of credit cooperatives would require new management skills. In this regard, training staff of credit cooperatives will be in order.

Since majority of the MFIs in general and credit cooperatives in particular, do not solely provide services to women, it is still worth emphasizing the role of women as employees and members of these institutions as they create significant impact on the performance of the organization. The most essential in equal partnership within the credit cooperative system is the involvement of women, not just as beneficiaries of the lending programs, but more importantly in ensuring their equal participation in all aspects of decision making at all levels --- from policy making to program planning, up to the implementation and down to the evaluation process in order to appreciate more their roles and contribution to the credit cooperative system.

There are other issues that emerged in the course of conducting this study that need to be addressed. Although the cooperative system has been operational for more than half a century, still there is no prescribed uniform chart of accounts. The implementation of standardized chart of accounts was only imposed by the CDA in mid-2002 setting the deadline for compliance by end January 2003. Even this, there is already doubt whether CDA will relentlessly pursue this activity. The varying methods of bookkeeping, which impede the process of standardizing the means of measuring the capacity and performance of the cooperatives, prove to be a hindrance to the authorities in developing and implementing a good monitoring system. Indeed, there is an urgent need to intensify efforts and strengthen the implementation of the use of a uniform standard chart of accounts for credit cooperatives in order to improve the monitoring function of the CDA.

At present, it is evident that the CDA still lacks the capacity to efficiently regulate the cooperatives in the country. It is doing well in its developmental role of encouraging registration of cooperatives as indicated by the increasing number of registered cooperatives since its creation in 1990. However, a greater and more pressing concern lies on the efficiency of the CDA in performing its regulatory function, which appears to run in conflict to its developmental responsibility. This then requires an urgent need to resolve this conflicting issue that hinders the CDA in performing better. It may be well for CDA to retain its developmental function and transfer its supervisory and regulatory functions to another or new regulatory entity.

Knowing how the cooperative credit system fares in terms of efficiency in its operations is essential for both managerial and public policy as the system mirrors the activities of smaller individuals that comprise the communities. This, in a way, will guide the policymakers to properly supervise the industry.

In general, the performance of the microfinance market depends on how effective the policy, legal, supervisory and regulatory framework operates in the country. The other factor lies on the capabilities of the financial infrastructure (e.g. credit bureau, payment system) present in the country which can help improve the efficiency of the microfinance market. Thus, the consistency and capability of these factors are essential in strengthening microfinance in the country. Though microfinance is hardly a cure-all to poverty, from the broad spectrum of literature on microfinance, it is clearly established that it can contribute to poverty reduction.

7.2. Scope for Future Research

This paper is limited by the availability of the data. There would be a lot to gain by having a more access to a complete data set. Aside from the financial data, details on the structure within the credit cooperative are worth including i.e. cooperative officers. As provided in Section 54 of the Cooperative Code, the cooperatives are required to submit their Annual Reports (ARs) and Audited Financial Statements (AFS) and this could be a ground for revocation of authority of the cooperative to operate as these reports are significant to the CDA in performing and

improving its task in monitoring and evaluating the viability of the operating cooperatives.

However, as **Table 7** below shows, the compliance rate of the cooperatives is not very promising particularly in the submission of financial statements. It was only in 2000 that the average national compliance rate for AFS exceeded 50 percent. The obvious concern is on the capacity of the CDA to supervise the cooperatives even if these cooperatives comply with this particular requirement of the CDA. As suggested earlier, it is better to transfer its supervisory function to another entity so that the CDA can focus on its developmental function. Aside from these compliance rates, the other concern is on the basis of the quality of the submitted financial statements of the cooperatives thus suggesting a need to improve the poor record keeping practices of the financial cooperatives.

Table 7. Compliance to Regulatory Reporting
In percent

Year	Annual Report	Audited Financial Statement
1992	20.00	–
1993	40.00	34.00
1994	36.40	28.00
1995	54.20	43.19
1996	44.90	37.00
1997	36.49	32.45
1998	–	44.00
1999	–	–
2000	71.00	63.00

Source: CDA Annual Reports, 1990-2000

Another interesting exercise is to look into the issue of subsidy on the cooperatives, i.e., employment and office space subsidization. As stated by Esho (1999), omission to account subsidy may yield to biased results. As shown in this study, some standard costs incurred by credit cooperatives (fixed assets, labor, etc.) appear to be small, which could be due to the subsidies received by many of the credit cooperatives in the sample. Thus, future studies should capture subsidy bias and this will need a more detailed set of data from credit unions and cooperatives to allow this area to be explored. From the available data set, there are credit cooperatives that reported zero full-time employees and thus, most of their employees are either part time or volunteer.

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Appendix A

Microfinance Methodologies Practiced in the Philippines

The replication of the Grameen Bank Approach (GBA) is the most common methodology used in the Philippines. The concept of this approach reversed conventional banking practice by removing the need for collateral and created a banking system based on mutual trust, accountability, participation and creativity. This approach, which have proved to be effective in delivering financial services to the poor, follows the fundamental features of the Grameen Bank model:

(a) Exclusive focus and direct delivery of loans to the poor;
(b) Small loans which increase over-time based on good repayment performance;
(c) Weekly loan repayment;
(d) Conduct of weekly center meetings that include credit discipline enforcement and building self-esteem;
(e) Formation of homogenous groups by borrowers themselves;
(f) Close monitoring;
(g) Use of loans basically for income generating and asset creating activities;
(h) Non-collateralized loans secured through mutual guarantee of each other's loans; and
(i) Compulsory weekly savings.

Some microfinance institutions have modified this the Grameen Bank technology. For instance, the Center for Agriculture and Rural Development (CARD) provides more intensive training on project management and credit discipline to the prospective borrowers than the Grameen does (Hossain and Diaz 1997). Interestingly, this replication procedure works well in the country on the basis of sustainability and depth of outreach. To be more specific the average repayment rate of GBA Replicators under the ADB-IFAD RMFP reached 98.5 percent while the largest members of the Philippine Network for Helping the Hardcore Poor (Philnet) like the CARD, Tulay sa Pag-unlad Inc. (TSPI) and Negros Women for Tomorrow Foundation (NWTF) have repayment rates that stood at 98.5 percent to 99.5 percent.

The Agricultural Credit Policy Council (ACPC), an attached agency of the Department of Agriculture, initiated the "Grameen Bank Replication Program" in 1990. This program was participated by 23 replicators composed of NGOs, cooperatives and rural banks wherein most of these participants continued implementing GBA even after ACPC ended its program in 1997.

The Philnet, which promotes and initiates start-up microfinance NGOs and provides linkages through exposure training and technical advice, is another example of Grameen Replicators. It is a network consisting of 13 Grameen Bank Replicators. It has an outreach of 201,414 active borrowers with consolidated loans outstanding of PhP1.2 billion and PhP471 million of outstanding savings as of June 2002.

Another widely used methodology in the country, which is fast gaining ground among MFIs, is the Association for Social Advancement (ASA). It was established in 1979 in Bangladesh. ASA focused on social action, promoting legal rights, awareness and social justice for the poor until 1990. However, starting in 1991, ASA underwent major changes in its vision and programs, with a near exclusive focus on providing financial services to poor women in rural areas. From 85,753 clients in 1992, ASA has an outreach of 1.3 million active clients in 2001. ASA has the following basic features:

(a) Individual lending without peer pressure;
(b) Simple, standardized and cost effective branch structure, with only the branch manager and four loan officers. Having no accountant and other support staff like office assistant and cashier at the branch level;
(c) Simple, standardized bookkeeping and accounting operations. Everything is done manually at the branch level;
(d) Simple loan and savings products, also single product service;
(e) High degree of decentralization at the branch level;
(f) Delinquency controlled by sit-down or doorstep technique; zero tolerance;
(g) Fast expansion through cost-minimized operation since a branch becomes sustainable in nine months; and
(h) Formation of homogenous groups for credit repayment and savings/CBU collection

ASA was utilized by the Microfinance Support Project (MSP) which started in June 1999 and funded by the United Nations Development Programme (UNDP). It has a total outreach of 34,236 member clients and the total loan portfolio of its microfinance institutions stood at PhP67.8 million while accumulated savings reached P29 million as of September 2001.

Appendix B

Estimated Cost and Alternative Profit Functions

	Variable Name	Cost		Profit	
		Coefficient	T-ratio	Coefficient	T-ratio
α	Constant	0.004	0.003	7.413	19.927*
γ_1	Quantity of loans	(2.629)	(3.978)*	(1.416)	(5.814)*
γ_2	Quantity of securities	1.801	4.010*	(0.126)	(0.768)
β_1	Wage rate	1.683	2.347*	(0.079)	(0.394)
β_2	Price of deposits	0.191	1.252	0.109	1.822*
γ_{11}	Quantity of loans*Quantity of loans	1.562	6.459*	0.292	3.579*
γ_{22}	Quantity of securities*Quantity of securities	0.069	0.419	0.017	0.362
β_{11}	Wage rate*Wage rate	0.790	3.230*	0.011	(0.167)
β_{22}	Price of deposits*Price of deposits	(0.092)	(4.345)*	0.005	0.915
γ_{12}	Quantity of loans*Quantity of securities	(0.446)	(4.541)*	0.049	1.791*
η_{11}	Quantity of loans*Wage rate	(0.854)	(3.209)*	0.070	1.007
η_{12}	Quantity of loans*Price of deposits	0.190	3.734*	(0.025)	(1.572)
η_{21}	Quantity of securities*Wage rate	0.105	0.542	(0.065)	(1.018)
η_{22}	Quantity of securities*Price of deposits	(0.033)	(0.698)	(0.011)	(0.719)
β_{12}	Wage rate*Price of deposits	(0.175)	(3.135)*	0.006	0.296

** Significant at 5% level*