

## Abstract

In this paper we perform a formal analysis of the objective function of a financial cooperative (FC) to investigate to which extent they may be suited to finance SME under conditions of economic and financial reforms in developing countries. We also perform a less formal analysis on the nature and role of the "common bond" in the decision making process by FC. The formal model allows us to state that FC are financial intermediaries that are likely to be in a position to offer credit to business that may find it difficult to obtain financing by the stock banking system. Or at least that they will be much less likely to engage in credit rationing other thing equal than a traditional stock bank, making them financial intermediaries suitable for SME financing. The analysis of the "common bond" yields two results that allow us to qualify the result obtained from the formal model. The first one confirms that FC, as forms of corporate organizations specially adapted to specific niches of the market, may indeed be able to resolve some of the information asymmetries and high transaction cost problems that characterize credit markets for SME enterprises. However, this analysis also yields two other important conclusions that limit the generality of this result. The two limitations are: i) The success in promoting the establishment of FC is likely to be dependent on the level of spontaneous sociability that exist in the society. For those societies with a high level of spontaneous sociability promoting the establishment of FC may be a relatively easy task. The establishment of a network of FC may, however, be more difficult in societies with a low level of spontaneous sociability. ii) Given that the common bond plays a central role in giving the FC the competing edge to limit the problems of information asymmetry, transaction costs and moral hazard, not every SME is likely to have equal access to cooperative financing. A relatively close association to the community that is at the base of the cooperative's common bond will be a necessary condition for accessing FC financing. We draw a number of regulatory and policy implications of the modeling exercise.

# Financial Cooperatives: A "market solution" to SME and rural ...nancing

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# Financial Cooperatives:

## A "market solution" to SME and rural financing

### 1 Introduction

A substantial body of economic literature supports the drive toward market based price and allocation of financial resources. This literature rests on the idea that FL will improve allocation of financial resources and promote savings. In both cases the supposed outcome is an increase in level and efficiency of economic activity. There appears to exist a reasonable agreement that a deepening of the financial system accompanied by the creation of new instruments and institutions is indeed the long-term effect of a FL process. Further, empirical evidence suggests that since the beginning of the 1990's there exists a direct relationship between structural reforms and economic growth, with the slowest reformers displaying the lowest growth rates (Lora and Barrera, [13]). However, the short term effects are rightfully being put under scrutiny. If there are a few success stories, i.e. FL processes that have been implemented that led to a smooth transition in the financial system, many are not. In these cases, FL led to a crisis in the financial system accompanied with a severe slow-down in growth or contraction of the GNP.

There are two components to this problem. One is the effect of the FL process on the fragility of the financial system. The second is the effect of FL on credit to the real sector and, combined with other restructuring programs, the distribution of wealth. Since McKinnon ([17], [16], [15]) and Le<sup>o</sup> [12], many have maintained that FL increases the savings available to the productive sector for real investment. More recently, Fischer and Chenard [4] have argued that FL may cause, at least in the short run, a credit crunch to the real sector in addition to creating particularly fragile conditions for the banking sector. Much more serious (a credit crunch, however severe it may be, is temporary), there have been casual observations that suggest that there is a shift in the credit allocation by banks. This shift would consist in a relative reduction of credit to small and medium size enterprises (SME) with a concentration of credit to larger firms in the economy.<sup>1</sup> This pattern of credit allocation could have a negative effect on several key indicators in the economy such as income distribution, employment, ownership concentration and perhaps even growth in GDP. For the purpose of this paper we will include under SME all traditionally defined small and medium sized business plus family based business, independent workers and farmers. That is, the smallest producing units in an economy.

In effect, the relationship between structural reforms and deterioration in the distribution of wealth is being publicized more and more often in LA as these reforms take hold. The table below shows some tendencies in poverty as reported by the CEPAL (Commission Económica para la America Latina) suggesting that in the majority of countries included in the survey poverty indicators worsened since the start of the big reform wave of the end of the 1980's and beginning of the 1990's. There appear to exist a relatively clear pattern to this trend with the losers being easily identified. Most of the deterioration results from a loss among mostly rural population, predominantly among peasants, small farmers and agricultural products related business, a sector we have included in our definition of SME. This sector rarely is able to profit from the internationalization of the economy and an export driven economic strategy. In a study of poverty in Colombia,

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<sup>1</sup>See, for example, a detailed description of this phenomena in the case of Mexico in Garrido [7]. We do not intend to argue in this paper about the importance of SME in an economy. Just to make the point we may mentioned a few statistics provided by the United States Small Business Administration. A vast majority of business in the United States are small, over 90% have fewer than 20 employees. Small firms accounted for between 40 and 50 percent of GNP and over 60% of net job growth in the 1980's.

Bernal, Cárdenas, Nuñez and Sánchez [1] show that during the 1990's income inequality (based on several poverty and wealth distribution indicators) has increased substantially after having fallen substantially during the late 1970's and early 1980's and remained stable during the rest of the 1980's. In fact the Gini coefficient was in 1996 back to the level of the late 1970's. The period of increase in income inequality is precisely during the time in which economic and financial reforms in Colombia took hold. However, interestingly, based on the statistics, the authors attribute the increase in inequality not to structural reforms but on macroeconomic instability.

The other sector that is most hardly hit is the urban SME business. Although statistics about this phenomenon are harder to obtain, a few examples will help to make the point. In Colombia the deepest liberalization effort was initiated in 1990. This liberalization program is made responsible for the loss of 30,000 jobs between 1990-92 and for the loss of 150,000 jobs between 1990-96. In a large measure, as a result of this restructuring program, between 1994 and 1997, 6000 business were closed, an unprecedented number in Colombia's recent history. The fact that these reported closures caused the loss of "only " 24,000 jobs points clearly that they were mostly SME. Only about 10% of these business have sales that exceed 10 million dollars. Another example is Argentina's toy industry. Between 1991 and 1996, as a consequence of the liberalization program initiated in the late 1980's, the share of imports in the toys market passed from 6% to 80%. This resulted in 170 out of 200 toys manufacturers being closed, predominantly SME. The problems facing the SME of Latin America sector are so serious that the Inter-American Development Bank felt compelled to launch programs of support to find solutions to SME problems in Argentina, Colombia, Mexico, Ecuador, Costa Rica and Peru with an average value of 10 million dollars each.

#### Indicators of Change in Poverty in Latin America a/

Magnitude of poverty in 1994 b/	Tendencies 1994-1996 c/	Today's poverty compared to 1980
Low (less than 15%)		
Argentina	increased +	higher
Uruguay	stationary	lower
Medium (15% to 30%)		
Chili	stationary	equal
Costa Rica	stationary	lower
High (31% to 50%)		
Brazil	stationary	equal
Colombia	increased +	higher
Mexico	decreased	equal
Peru	increased +	higher
Very High (more than 50%)		
Bolivia	increased	higher

Source: CEPAL. a/ The sign means that the change was more than 4%; b/ % of homes under poverty line; c/ Estimated evolution between 1994 and 1996 based on changes in macroeconomic variables related to poverty indicators.

The set of problems that face businesses, both large and small, following structural reforms are, in one way, similar: i) facing global markets; ii) rapidly changing and ever more demanding consumer demands; iii) technological innovation; and, above all, iv) the need to invest to adapt to the new market environment. However, while the funds needed to finance investment by most large business are well served by domestic as well as

international banks, the same cannot be said for SME. In effect, although the investment needs in this new competitive environment are similar for both large and SME, the latter appear to face a much more serious restrictions in the availability of credit. In both cases, rural as well as urban SME, the set of problems facing the entrepreneur are complex. In the case of rural "business," one of the reasons for the crisis that follow the liberalization of the economy is that they often produce types of food that are of local consumption and of limited value in the international markets. In the case of urban based SME, these have most likely been operating under the shadow of high import barriers. Globalization shifts consumption patterns with a much larger share of internationally traded goods. A shift toward internationally traded products or the adaptation to new market conditions require investments in fixed assets and technology for which funding is hard to find. In the case of rural business, the low margins available in the traditional sectors does not allow for an accumulation of equity capital while credit –for rural or urban SME– is hard to obtain. The point is that, although the financial sector may not be directly responsible for the failure of many business following liberalization, the difficulties that SME face in obtaining debt financing, aggravates considerably the problem. In fact, the United States image of the small business as one that is starved for capital, is reproduced –perhaps even amplified– in most EM undergoing or not a liberalization of their economy. The effect is amplified by the fact that in most EM firms use still more debt than industrialized countries' firms, and that small firms use more debt than larger ones. In the United States a number of regulatory and legislative initiatives have been put forward to better address the financial needs of small business (see Humes and Samolyk, [8] and Weinberg [28]).

Few voices are suggesting that this means that one should return to a policy of inward oriented development of import substitution with high state intervention and financial repression. However, there is clear need to develop mechanisms that compensate for the perverse effects of the liberalization of the economy (and financial markets). It is in this context that we intend to investigate the role of the cooperative portion of the financial system can play in alleviating some of these perverse effects of economic reforms.

But why our interest in FC? Traditionally, in EM, financing needs of SME have been (more or less efficiently) met by three types of programs: i) by directed credit plans usually accompanied by controls and/or subsidies on interest rates through the commercial banking system (financial repression); ii) through development banks acting as direct lenders or "second floor" sources of financing directed at SME;<sup>2</sup> iii) through FC. Of these three mechanisms the first has largely been abandoned due to the negative effect of the development of the financial system and on the efficiency of credit allocation in the economy. The second, development banks, has lost much of its former glamour as sources of "official financing" dry out or lose most of their subsidized character. Both these mechanisms are strongly dependent on a paternalistic state with a heavy presence in the economy and the availability of subsidized financing. The third, FC, is dependent on neither a paternalistic state nor concessionary official financing. FC are a response of the market itself to mobilize local resources and making them available to SME and small local consumers through a particular institutional arrangement. In other words, FC appear to be a "market solution" to the problem of SME financing that is not dependent of the direct intervention and paternalism of the state in the economy. It is precisely this latter

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<sup>2</sup>In recent years it has become more common for development banks to use FC to channel sometimes quite substantial portions of their credit portfolios to the final borrowers. They see in the FC an institution particularly suited to provide financing to micro and SME. Examples of these are: the recently created alliance between the Business Development Bank of Canada and the Credit Union Central of Canada that target enterprises with less than 100 employees and total sales under 7.4 million C\$; the Instituto de Fomento Industrial (IFI), the development bank of Colombia has a very important program of lending to FC that then relends to final customers, SME in the wide sense we have defined above.

point, that motivates primarily this paper and its title and that we want to investigate in depth in this study. As noted by the World Council of Credit Unions (WOCCU)<sup>3</sup>, "credit unions distinguish themselves from the other (...nancial) players by perfecting ...nancial intermediation between net savers and net borrowers at the local level instead of relying on external funds." In other words they are eÆcient mobilizers and allocators of savings at the local level and thus becoming important factors in local development of apparently capital-scarce communities. The WOCCU also reports that on average 25% of a credit union's portfolio consists of micro...nance transactions (understood as transactions, deposits or credits, between 100 and 1000 US\$). Further, women make up a high proportion of FC membership worldwide, making them particularly useful to channel women entrepreneurship ...nancing.<sup>4</sup> We do not intend to emphasize the often referred to altruistic nature of cooperatives. On the contrary, to qualify as a "market solution " we must show that (...nancial) cooperatives are an adaptation of corporate organization to speci...c market conditions that allows it to operate eÆciently and competitively under those conditions, better so than other forms of corporate organizations such as stock banks for example.

Credit unions (and ...nancial cooperatives in general)<sup>5</sup> are a special type of ...nancial intermediary. They are considered a part of the "solidary economy " with rules of operation that are diÆerent of those of stock banks. As noted by Smith, Cargill and Meyer (SCM,[23]) among others, in a FC members are both owners of the intermediary and consumers (suppliers) of its output (input). The FC is an institution that is considered particularly diÆicult to modelize with some exactitude.. The reason is that the nature of the objective function is complicated by the (six) solidarity principles that rule the functioning of any cooperative. For this reason a pro...t maximizing objective function is generally considered inadequate to represent the behavior of FC. A FC, typically has a general non-pro...t objective, but this objective is attached to three other objectives that aÆect directly its management style: maximize services to its members at minimum cost; return the surplus of operations (pro...ts) to its members; or alternatively accumulate those surpluses in forms of capital reserves to strengthen the institution and facilitate its growth. Also, because the FC intermediates between its member-savers and its members-borrowers, a conÆict of interests arises. The importance of this conÆict is that there is a considerable shift of interests away from savers to borrowers, something that doesn't happen in a stock bank. This particular feature, added to the fact that most members (savers and borrowers) are small participants in the economy, appears to make FC of particular interest to SME, whether in the context of FL or not. Thus, FC appear to oÆer a "market solution " to the problem of SME ...nancing, at least for some segments of it. This solution contrasts with most of the initiatives that have been put forward recently in the United States in that these latter require government intervention in the ...nancial markets to create the conditions that will facilitate SME ...nancing.

However not everything is wonderfully perfect in a FC. The very features that make FC a likely candidate to provide eÆciently credit to the least favored sectors of the economy,

<sup>3</sup> "Technically speaking...Micro...nance " Perspectives (the Journal of the WCOCCU), March/April 1997. Internet Issue: [www.woccu.org/1pubpg.htm](http://www.woccu.org/1pubpg.htm).

<sup>4</sup>The WOCCU reports [9] that at the end of 1992 there were 87% of women membership in Lesotho, between 50 and 61% in Monserrat, Costa Rica, Seychelles, Philippines, Japan and Sri Lanka, and between 30% and 49% in nine other countries.

<sup>5</sup>The International Cooperative Alliance [9] defines credit unions as "legally constituted not-for-pro...t co-operative ...nancial institutions chartered and supervised, for the most part, under national co-operative law and created to meet the basic ...nancial service needs of primarily low and middle income citizens who generally cannot obtain these services through the existing banking system. The expression "credit unions " to describe ...nancial cooperatives is a practice established predominantly in the United States. We will adopt the more general concept of ...nancial cooperatives in the text while keeping the title of the paper with the expression credit union.

are also sources of important problems. For example, in FC with a strong borrower control the likelihood of moral hazard arising is large, leading to severe problems of confidence in the system, that if not regulated accordingly, can seriously hinder the development of the sector.

Which takes us to another important issue in FC: the role of the common bond that unites the members of a cooperative. The source of this bond can be quite varied including: a profession, employment, region, etc. The fact is that, whatever its source, it is present in every and each FC. This common bond is not only a source of contention (and litigation) by American banks that want to stop the advance of credit unions in the United States, but a genuine source of strength—which we will simply label “social capital”—for FC and that appears to play a role in credit allocation decisions by these. This issue has largely been ignored from the more formal economic literature on FC in the United States or elsewhere. We intend to investigate the issue of the common bond as part of the credit allocation process.

The purpose of this paper is thus to investigate concretely the question of the value of FC, as a “market solution,” to finance SME in developing economies, specially those undergoing a process of FL. We will use two methodological approaches to the research. First we will use a standard neo-classical rational expectations modeling approach to investigate issues of credit allocation in absence of the common bond. We will focus on a comparative analysis of the behavior of a FC versus that of a stock bank, as suggested by neoclassical constrained optimization problem. As a collateral element we will also investigate the very important question of the effect of FL on the risk exposure of FC. Then, abandoning this more formal methodological framework we will investigate the role of the common bond using an approach that takes many elements of the recent works by Fukuyama [6]. Finally, retaking the formal modeling approach (not included in this version of the paper) we will then attempt to incorporate some elements of the common bond issue in our model of the cooperative.

The organization of the paper is as follows: In section 2 we provide some factual and legal information related to FC; in section 3 we focus on the formulation of the model that will be the basis of the analysis; in section 4 we will start exploiting this model to investigate the main questions of the paper: first by comparing the credit granting/rationing behavior of FC vs. stock banks in general; in section 5 we take up the discussion of the role of the common bond in the functioning of a FC. Section 6 provides conclusions and policy recommendations.

## 2 The growth of FC in EM.

Taken by the number of institutions, together with agricultural and housing cooperatives, credit unions (or rather “financial cooperatives”, FC) constitute the most important group of cooperatives in emerging markets.<sup>6</sup> The WOCCU reported in 1996 a membership of 36,244 credit unions worldwide with around 90 million members. These numbers by no means represent the totality of population of FC worldwide. Membership in many countries is either absent (Germany, with a very substantial cooperative movement, among others) or under represented (e.g. Japan also with an important movement of FC). In a group of nine Latin-American countries (Argentina, Bolivia, Brazil, Colombia, Chile, Paraguay, Peru, Uruguay, Venezuela), out of the total number of 28,300 cooperatives in existence in 17 different categories, about 3,800 are FC. In some countries (e.g. Colombia), they may constitute as much as 30% of the total number of cooperative in existence. When taken by asset size, FC rank first accounting for a large portion of the assets held by the

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<sup>6</sup>Statistics in this section taken from [18] and various unpublished documents.

cooperative sector.

In those countries in which the appropriate legal framework has been provided, or the legislation is not designed explicitly to deter the establishment and growth of FC, these financial intermediaries have been witnessing growth rates that approach or exceed those of the United States, Germany and other industrialized countries. Between 1972, when the WOCCU first started to report world-wide FC statistics, and 1993, both savings and loans have both grown at the impressive annual rates of 15%. In Colombia, although the number of FC fell from about 1500 in 1990 to about 1300 in 1997, assets grew by more than ten times passing from about 350 million dollars in 1990 to just below 5.0 billion dollars in 1997.<sup>7</sup> This represents approximately 12% of the stock banking sector in 1997. These growth rates are far superior to the doubling of assets of United States based CU between 1987 and 1997 (compared to a growth of 53% for the stock banking system over the same period). Further, still in Colombia, between 1990 and 1994, the growth of assets of FC exceeded the growth of assets of the stock-based financial intermediaries by a ratio of more than 3 to 1. Although Colombia has developed a legislation that is not adverse to the development of FC, in practice it has not gone beyond creating a favorable legal environment. On the other hand, the regulatory framework is close to calamitous, with the responsible agency highly politicized, underbudgeted, understaffed, and overworked. It is remarkable that under such conditions, the FC were able to display such a dynamic growth.

Although the growth rates appear impressive, the relative importance of cooperatives in the financial system doesn't. However, the picture changes again when we consider the population that is being touched by the two systems. In Colombia nearly one person out of five (about 2.5 million members, up from 1.0 million in 1990, of course, coming from the lower income brackets of society) uses a FC as their main banking relation. This suggests that the social impact (measured by the access given to the population to services in the formal financial system) far exceeds what the relative value of assets would suggest. World-wide, the proportion of working age population who are members of FC is considerable in a number of countries. At the end of 1993, WOCCU-members (that do not cover totally the world FC movement) "penetration" was 100% in Dominica, ranged from 30% to 49% in five other countries and from 10% to 29% in another 16 countries.

These growth rates, as in the United States, have resulted in strong reactions from the stock banking sector in some countries. They see the FC nibbling at the feet of their customer base and gaining market share. Although (for example in the United States) this has been blamed on the special status of FC for tax purposes, Canada is an example where no tax advantages exist for FC and are nonetheless gaining market share against the stock banking sector.

### 3 The model

In this section we introduce a neo-classical formal model of a financial intermediary adapted to the particular problem of the FC. We adopt here some elements of the objective function formulated by SCM [23].<sup>8</sup> Assume a FC with an objective function that depends on the value to members of their transactions with the FC. There are two types of members in a typical FC. Those whose principal relationship with the FC is that of

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<sup>7</sup>An interesting note is that these FC are backed by a "capital" of 1.2 billion dollars or nearly 23%, far above the somewhat above 10% average capitalization of the commercial banking system.

<sup>8</sup>Theoretical research on CU is rather sparse, with most research on the subject taking an empirical character. Among the few examples of theoretically oriented CU research we can mention specially Smith, Cargill and Meyer[23]. These authors also carry out an informative discussion of the characteristics of a CU's objective function and how it has been represented in the literature up to the writing of the paper.

a saver, and those that are principally borrowers.<sup>9</sup> As SCM we represent the value to borrowers and to savers by the difference between the interest rate the FC charges (pays) to members and the best alternative reference market rate available at the time, net of costs and (in the case of borrowers) adjusted to the risk of loans. Assuming an overall environment of credit rationing, we assume that the availability of more credit to borrowers is valued higher than the availability of less credit. We also assume that FC are able to raise funds in the market (through deposits, CDT or bonds) from non-members.<sup>10</sup> We articulate the "conflict" of interests that the FC has to solve by maximizing a function that contains a weighted utilities of both borrowers and savers (shareholders) net of costs. Further key assumptions are:

- <sup>2</sup> projects to be financed by the FC are non divisible; as in standard credit rationing literature this yields the result that a particular borrower is financed or not, partial financing is not allowed;
- <sup>2</sup> each investment,  $i$ ; generates a random end-of-period cash flow of  $X$  with density  $f(X; i)$ ; where  $i$  is an index of risk of the project and hence borrower;<sup>11</sup>.

We also assume that the expected return from a loan, excluding financing and verification costs can be described by the following equation:

$$E[V_f] = A \int_0^{qR_i g} X f(X; i) dX + Lr_L \int_{qR_i g}^{\infty} f(X; i) dX$$

This representation of the value of the firm is quite standard and has been used by Stiglitz and Weiss [24] and [25] among others. The first term of the r.h.s. of this equation represents the return to the lender in case of defaults, over which the liquidation value of the project is less than the nominal value of the loan,  $LR$ ; and the second term the payoff to the lender in case that the cash flows of the project are sufficient to cover debt service, i.e. over which the value of the project exceeds  $LR$ ;  $q = L/A$  is the debt gearing ratio of the project with assets  $A$ ;  $L$  is the quantity of funds placed in the risky firm ( $r$ );  $R$  is the rate earned (charged) on these assets;  $X$  is a random variable representing the terminal cash flows of the borrower;  $f(X; i)$  is the probability density function for a borrower of risk class  $i$ . In this particular formulation, the parameter  $g = G/A$  represents the guarantees,  $G$ , that the firm is putting up to obtain the loan, in this case expressed in units of the firms' assets,  $A$ . The reason for including guarantees (in contrast, for example to Stiglitz and Weiss [24] who use the firms' equity investment, or Tybout [25], who uses none) is that in most emerging markets they play a very special role in lending activities, in many ways quite different from the practices of most industrialized economies. By and large, project related guarantees are of little value in lending activities while the guarantees demanded by lenders are mostly real estate or cash guarantees (see [5]). This is particularly true for EM based SME where a long standing tradition exists of collateralizing business loans with real estate. Although it is true that many SME owners possess enough real estate to collateralize their business loans (in which case their access to the loan market will be much easier), many more are not in that position. In practice, a substantial portion of SME loans in a typical EM bank appear as personal-unsecured loans in their books. While

<sup>9</sup>There is, of course, nothing special in this. This is indeed the same type of situation that exists in a standard commercial bank. The particularity of a FC resides in the way they attempt to satisfy the expectations of these two types of members.

<sup>10</sup>Alternatively, members can invest in the FC either buying shares or making standard deposits that are assumed to be compensated at standard market rates.

<sup>11</sup>The parameter  $i$  can also be considered to be the "index of pessimism" of Tybout [25] and Virmani [26].

in the case of a real estate secured loan default for whatever reason, genuine insolvency or moral hazard related, can easily be resolved by seizing the real estate collateral, this is not possible in the absence of such collateral. The inclusion of this parameter in the model will allow us to perform some interesting experiments related to credit granting behavior that occur around changes in the value of the guarantee (lending rates, rationing, etc.).

The objective function for the bank, that incorporates elements of those used by SCM [23] for FC and Jaśee and Modigliani [10] or Stiglitz and Wise [24] for banks, can be written as follows

$$\text{Maximize } : \theta [A(r_{LM} - R)q_i g] + \# \quad (1)$$

$$(1 - \theta) \left[ L r_L - q_{R_i} g \int_0^{R_1} f(X; ! ) dX + A \int_0^{R_{q_{R_i} g}} f(X; ! ) dX + A q ((R_i - r_{DM}) - V) \right]$$

Further restrictions are that  $A \geq 0; q \geq 0$ : The r.h.s. of the first line in (1) is the payoff to the member-borrower, while the second and third lines represent the payoff to the member-saver.  $\theta$  is the relative utility weight assigned to the borrowing and saving function (thus this is a utility maximization model);  $r_{iM}; i = L; D$  represent the alternative reference lending (L) and deposit (D) rates available in the market;  $V(!)$  are risk dependent project monitoring and outcome verification costs that are a function of the project size and the leverage. We also assume that borrowers and savers are either net borrowers or net savers, and that the positions that result from the transaction are all net positions. The purpose of this distinction is to insure that the two types of participants act accordingly. A closer inspection of the objective function presented above reveals that we define as "benefit" arising from the intermediation process of the FC the reduction in cost (to borrowers) and increase in savings rates (for lender/savers) over that of a market based benchmark. As formulated, in the case of the saver member there is also a value attached to the capitalization of the FC as an increase in retained earning tends to increase the utility of the saver member.

Like in most applications of similar models, there is the implicit assumption of a two-period model in which the FC contracts the funds from members and depositors/bondholders and then turns around and decides on the portfolio allocation. The positions are then liquidated in the second period. Thus, the rates paid by the FC are not made a function of the portfolio allocation.

With respect to the risk characteristics of the borrowers, we say that a borrower K, is a "better" risk class than a borrower H, if

$$\int_0^{Z_1} f(X_K; !_K) dX \cdot \int_0^{Z_1} f(X_H; !_H) dX \quad (2)$$

For convenience we adopt the definition of "mean preserving risk" of Rothschild and Stiglitz [22] and will say that an increase in  $!$  is a mean preserving risk increase if the two following conditions are met:

$$\int_0^{Z_1} [dF(X; !)=d!] dX = 0 \quad (3)$$

$$\int_0^{Z_y} [dF(X; !)=d!] dX \leq 0 \text{ for } 0 < y < 1$$

where  $F(X; !)$  is the cumulative function for institution of risk  $!$ . Given definition (3), a financial institution will be more "risk tolerant" the higher the  $!$  it will be willing to

accept, or the less sensitive lending parameters (such as lending rates and loan size) are to changes in  $\beta$ .

After some algebra and integration by parts, the objective function (1) can be rewritten<sup>12</sup>

$$\text{Maximize: } \beta [A((r_{LM} - R)q_i - g)] + (1 - \beta) A - q(R_i - r_{DM})_i - V q_i \int_0^{qR_i - g} F(x; \beta) dX \quad (4)$$

To the restriction presented above we must add one policy restriction of inequality of the second term in squared brackets, i.e.

$$q(R_i - r_{DM})_i - V q_i \int_0^{qR_i - g} F(x; \beta) dX \leq k \quad (5)$$

where  $k$  represents the growth of capitalization objective self-imposed by the FC (but also often forced upon the FC by law) and, as noted in the introduction, quite common among cooperatives.

Before we proceed, a few comments on this objective function are in order. First, the explicit introduction of a risk function for the borrower's assets,  $\int_0^{qR_i - g} F(x; \beta) dX$ ; using traditional methodology addresses the problems of the somewhat casual treatment of risk present in the model of SCM. Second, this objective function allows us to evaluate two extreme situations. The case of  $\beta = 1:0$  is the case of a borrower oriented FC, in which the interest of the borrowers are paramount in the decision making process. The other extreme,  $\beta = 0$ , it is the interest of the shareholder members that becomes paramount. Note that in this case the terms in the right square bracket becomes simply the residual income to shareholders after covering interest and verification expenses. In this extreme, the FC is managed essentially as a shareholder profit maximizing stock bank. By the rules of operations of FC, in particular the nature of voting rights and the rules of board composition, most of them will be between these extreme cases. The main reason for using this particular formulation is to facilitate an evaluation of the effect of FC operating rules on credit allocation practices, including: nature of the loan offer function and the role of guarantees on lending rates and size of the loan. For simplicity of presentation we will label borrower-controlled cooperatives  $FC_b$ ; and saver-controlled cooperatives  $FC_s$ :

Another aspect of this formulation that requires some elaboration is the use of the function  $V(\beta)$  that can be justified on several grounds. Here  $\beta$  measures simultaneously two components that affect the project verification costs associated with a loan: i) the information asymmetry between the intermediary and the borrower about the risk of the project, and that translates into information gathering costs; and ii) the monitoring costs destined to reduce moral hazard on the side of the project owners. On both accounts SME fare poorly in comparison to large businesses.

Information asymmetry. Overall, the literature on the role of information asymmetry and firm financing suggests that the risk associated to projects undertaken by SME is generally more difficult to assess than those of large, well established business. As noted by Weinberg [28], information asymmetry problems in intermediation "weigh more heavily on small firms." In particular, empirical evidence reported by Lacker [11] and Ellienhausen and Wolken [3] supports the proposition that there exist an inverse relation between the expected deviation of a benchmark of a frictionless and information symmetric market and firm size.

Monitoring costs. As with information asymmetry, SME are harder to monitor than larger business. Further, SME need to be monitored more severely than larger business.

<sup>12</sup>The convexity of the objective function can be established by taking the first and second derivatives of  $P_b$  with respect to  $q_r$ . These yield  $\partial P_b / \partial q_r = (R_f - q_r^2)$  and  $2R_f - q_r^3$  respectively.

This is particularly true for EM based SME where a long standing tradition exists of collateralizing business loans with real estate. Although it is true that many SME owners possess enough real estate to collateralize their business loans (in which case their access to the loan market will be much easier), many more are not in that position. In practice, a substantial portion of SME loans in a typical EM bank, appear as personal-unsecured loans in their books. In the absence of real estate collateral, monitoring becomes much more important. While in the case of a real estate secured loan default for whatever reason, can easily be resolved by seizing the real estate collateral, this is not possible in the absence of such collateral. Hence the need of enhance monitoring to prevent moral hazard.

The result of both the higher information asymmetry and the need of more close monitoring results in a unit cost of  $V(i)$  that is generally higher for SME than for larger business.

## 4 The loan offer and credit rationing

Equation 4, evaluated at a level of utility  $U = U_0$ , will yield the combinations of contract terms that the FC will offer when credit markets are in equilibrium. In particular, we will be interested in the way  $i, q; V; A$  and  $g$  will affect the rate at which the FC will offer the loan to the borrowing member.<sup>13</sup> We are always interested in comparing the response of a FC with that of a stock bank. We will do this by obtaining the differentials of interest and then taking the limits of this for  $\theta = 0$  (saver controlled financial cooperative,  $FC_S$ , equivalent to profit maximizing stock bank, PMSB) and  $\theta = 1:0$  (borrower controlled cooperative,  $FC_B$ ) respectively.

### 4.1 The riskiness of the borrower

This is perhaps the most important issue related to social value of FC. Undoubtedly, offering better and cheaper services to bank-services users is a very worthwhile objective for any policy maker. However, in the context of emerging markets (and even industrialized countries), the flexibility FC offer to reach potential productive-sector borrowers that are not traditionally covered by PMSB is, by far, a more important policy maker concern. In the context of the analysis of this section, much of this flexibility passes by the level of risk tolerance FC display in its lending policy. For this reason we will focus considerable attention to this point.

With respect to the riskiness of the borrower we can say that, as should be expected, lenders of any sort will charge a higher rate to borrowers with a lower likelihood of repaying their loan. However, there are some clear differences between FC and PMSB. To interpret these results one should remember the definitions given above, specially equation (3) about the riskiness of borrowers. Specially,

$$\frac{dR}{di} = \frac{(1 - \theta) i_s}{i^\theta q + (1 - \theta) i_s} \frac{\int_0^{qR_i g} \frac{\partial F(x; i)}{\partial i} dx}{q(1 - F(qR_i g; i))} \quad (6)$$

<sup>13</sup>We do not need to focus on the loan demand function. The reason is that from the point of view of the firm nothing changes from the situation that was studied by Stiglitz and Weiss [24]. Our assumption of net borrower guarantees that this is the case. Thus all theorems that were shown to hold and the demand function described by these authors do hold in our situation too. This implies, for example, that for a given interest rate, there is a critical value of firm riskiness such that a firm borrows from the bank if and only if it is above that critical value. Further, as the interest rate increases, critical value of riskiness below which firms do not apply for loans also increases.

To see that  $\beta$  is  $\geq 0$ , note first what occurs in the case that  $\theta = 1$  (that is a borrower controlled FC). Taking the limit of the function at  $\theta = 1$  we obtain:

$$\lim_{\theta \rightarrow 1} \frac{d\beta}{d\theta} = \frac{\int_0^{\infty} \frac{R(qR_i g; w)}{q(1 - \beta + \beta F(qR_i g; w))} F(x; w) dx}{q(1 - \beta + \beta F(qR_i g; 1))} \geq 0$$

unambiguously.<sup>14</sup> Further, the slope of the function is a direct function of  $\beta$ ; the marginal cost of not satisfying the capital accumulation objective. In absence of an explicit objective of accumulation of capital this slope is

$$\lim_{\theta \rightarrow 1} \frac{d\beta}{d\theta} = 0$$

that is the FC is insensitive to changes in risk of the borrower. In other words, in a borrower controlled FC the absence of specific objectives or regulatory imposed targets of capital accumulation, FC will have little restraints in providing loans with risk insensitive rates subsidizing in this way risky borrowers at the cost of savers.

On the other hand, when  $\theta = 0$ ; the equivalent of a shareholder profit maximizing stock bank, then  $\beta$  becomes, independent of the value of  $\beta$ ,

$$\lim_{\theta \rightarrow 0} \frac{d\beta}{d\theta} = \frac{\int_0^{\infty} \frac{R(qR_i g; w)}{(1 - \beta F(qR_i g; w))q} F(x; w) dx}{q} \geq 0 \quad (7)$$

unambiguously, since  $1 - \beta F(qR_i g; 1) > 0$ .<sup>15</sup> That is, a FC with  $0 < \theta < 1$  will characteristically be more tolerant in the interest rate they are prepared to charge to borrowers that may present a riskier profile than a stock bank. Further, note that, without going to the extreme case of  $\theta = 0$ ; a reduction of  $\theta$  enhances the effect of  $\beta$ . In other words, the larger  $\beta$  and the smaller  $\theta$ , the closer the credit union is to the behavior of a profit maximizing stock bank. This would be the case of a FC that places a considerable weight to the accumulation of reserve capital.

This result has some interesting policy implications for regulators who have to take some position toward issues such as the importance of accumulating reserve capital through "operating surpluses" among the cooperatives they supervise. One of them is that, a mechanism to restrain excessive risk taking by FC can be implemented by requiring relatively high standards of capital accumulation. That is, capital standards could be used as a regulatory instrument to reduce some of the moral hazard problems that arise in the case of borrower dominated FC. However, although from the regulatory point of view, to increase for example the solvency of the institution, it might be desirable that FC place a reasonable emphasis to strengthening its capital base, this objective may go against the socially desirable objective of displaying a more tolerant lending policy toward higher risk borrowers. We will have more to say about this and other results in the following section.

## 4.2 The role of income taxes

Taxation on operating surpluses often being an issue, we can stretch a bit the model and evaluate the effect of income taxes on the surpluses on the behavior of FC. While in some countries (including Canada among many) FC are taxed on their surpluses, in others they are not (e.g. United States). To do this we simply include a term  $\tau =$

<sup>14</sup>It is unambiguously positive because the numerator is positive, and since  $0 < F(qR_i g; 1) < 1$ , so is the denominator.

<sup>15</sup>This and other conditions that characterize the loan offer of a stock bank are equivalent to those that are reported in Tybout [25], pp. 476-477.

$(1 - T)$ , where  $T$  is the income tax rate on surpluses.  $\lambda$  affects multiplicatively both the second squared bracket of equation (4) and the left hand side of equation (5). The result, because the bracket represents the expected before-taxes income, and the second because we are making the standard assumption that earnings are retained after taxes. The result of incorporating these taxes in the model on the sensitivity of rates to riskiness of the borrower is simply

$$\frac{dR}{d\lambda} = \frac{(1 - \tau) \lambda \int_0^{R_i} F(x; \lambda) dx}{\lambda q + (1 - \tau) \lambda \int_0^{R_i} F(qR_i; g; \lambda) dx} > 0; \quad (8)$$

i.e. unambiguously positive as before. Interestingly, the effect of an increase in the tax rate,  $T$ , has the same effect as a decrease in  $\lambda$ ; i.e. a decrease of the slope  $dR/d\lambda$ . This somewhat surprising result can be explained in economic terms from the fact that by sharing more of the benefits with members by reducing the rates charged on loans (or increasing the rate paid to investor-members, or increasing the subsidy of services to members) avoids some of the taxes. This would mean, for example, in the current debate in the United States about taxation of Credit Unions, that the introduction of income taxes could lead to a more aggressive lending policy by these. One wonders if that is what PMSB, that are leading the battle for bringing the Credit Unions under the IRS, would like to see happen. But then, why don't we observe the same effect of taxes on the banks? The reason is simple, benefit of investors and borrowers is not part of the objective function of the PMSB, thus the effect disappears. Mathematically, when  $\tau = 0$ ; then equation (8) reduces to (7) and taxes play no role on the sensitivity of risk on the lending rates, confirming the economic interpretation made above. On the other hand, the effect should be present in a borrower dominated FC. Indeed if we set  $\tau = 1$ ; in equation (8) we obtain

$$\lim_{\tau \rightarrow 1} \frac{dR}{d\lambda} = \frac{\lambda \int_0^{R_i} F(x; w) dx}{q(1 - \lambda) \int_0^{R_i} F(qR_i; g; w) dx + \lambda} > 0;$$

with the effect reappearing.

### 4.3 The role of guarantees

As noted before, guarantees play a very special role in lending in EM, with real estate guarantees still being largely the most dominant form of collateral demanded by financial intermediaries. There are several reasons for that, but legal and regulatory constraints are among the most important factors that make it difficult to use movable property as loan collateral.<sup>16</sup> About half of the credit offered in the United States is secured by some kind of movable property and non-bank institutions that lend against movable property –such as leasing and finance companies– do almost as much lending as banks. In contrast, banks in EM rarely make loans secured by movable property. That is, the borrower must own real estate that can be attached if they do not pay. In practice, because the cost of mortgaging property are usually high, most banks loans are unsecured, but made to borrowers that own real estate. They may still make unsecured loans to those who own little or no real estate to put up as collateral, but these are likely to be smaller with high interest rates and short maturities. The issue is of more importance than would appear

<sup>16</sup>In Mexico the use of inventory as collateral for loans is prohibited by law! Fleisig [5] mentions three main obstacles to the use of movable property as guarantee. 1) the creation of security interest is difficult, expensive and uncertain; 2) the perfection of security interests –the public demonstration of their existence and the establishment of their priority– is not effectively possible; and 3) the enforcement of security interests is slow and expensive.

at first sight. In most industrialized economies one would not expect that fluctuations in real estate prices would have much of an impact beyond the quality of credit in, say, the construction, related industries and real estate property.<sup>17</sup> Not so in EM. There the value of real estate guarantees can influence considerably the credit market for all productive sectors in the economy in a direct way. There are several questions that can be addressed relating to guarantees and credit granting.

The first question is a rather obvious one but worth making the point for its implications. In the objective function the term  $\int_0^{qR_i/g} F(x;!)dx$  represents the measure of risk. How does a change in the value of guarantees affect this measure of risk? This can be seen by taking the derivative of this expression with respect to  $g$ :

$$\frac{\partial}{\partial g} \int_0^{qR_i/g} F(x;!)dx = -F(qR_i/g;w)$$

where  $F(qR_i/g;w)$  should be interpreted as the probability of failure for a given level of guarantee,  $g$ . This derivative is unambiguously negative, that is, the probability of failure is inversely related to the value of the guarantees. This somewhat trivial mathematical result suggests a deeper problem for the credit market in EM. Foremost among the problems, from the point of view of financial intermediaries, is the fact that fluctuations in the value of real estate affects the quality of its loan portfolio, whether this is a real estate or construction related loan or not. Borrowers with a collateral of high value will be inclined to avoid failure in their projects to prevent the high value asset from being transferred to the bank. However, when the value of real estate guarantees fall, the incentive to keep the project afloat falls proportionally with the loss in value of the collateral. Further, the higher the quality and value of the collateral, the stronger will be the incentive to restrain from engaging in "moral hazard" on the side of the borrower. On the other hand, when market values of real estate fall, this restraint loses its power, and borrowers are more likely to engage in moral hazard. Therefore, losses in market value of real estate collateral has the simultaneous effect of increasing the probability of losses on the loans and the presence of moral hazard problems in lending. This is an unexpected and unwanted source of additional instability for credit markets in developing countries.

The second one is the relationship between the lending rates and the quality of the guarantees:

$$\frac{dR}{dg} := -i \frac{i^* + (1 - i^*) F(qR_i/g;!) )}{q(i^* + (1 - i^*) F(qR_i/g;!))} < 0$$

As with the riskiness of the project,  $!$ ; we can easily interpret the sign of this derivative by looking at both extreme cases. For  $i^* = 1$  ( $FC_b$ )

$$\lim_{i^* \rightarrow 1} \frac{dR}{dg} := -i \frac{1 + F(qR_i/g;w)}{q(1 + F(qR_i/g;w))} < 0$$

obviously, and for  $i^* = 0$  ( $FC_s$ )

$$\lim_{i^* \rightarrow 0} \frac{dR}{dg} := -i \frac{F(qR_i/g;w)}{(1 - F(qR_i/g;w))q} < 0$$

but with

<sup>17</sup>However, as Bernanke [?] and others have shown, there is a closer relationship between financial crisis and the real estate/construction sector than was originally thought. This relationship comes mostly through the high labor content of the construction industry. As this falls, unemployment and other social and economic indicators deteriorate too. This reflects eventually in the performance of the financial sector.

$$\frac{dR}{dg} \Big|_{\theta=1} > \frac{dR}{dg} \Big|_{\theta=0}$$

suggesting a simplistic interpretation that lending rates are more sensitive to the value of guarantees in a  $FC_B$  than in a  $FC_S$  or PMSB. However, the picture is more complex than that. The reason is that the value of the guarantee is of concern to both the savers and the borrowers. Borrowers would prefer a low engagement in guarantees, while the opposite occurs with the saver. We can get a better picture of the importance of guarantees if we take the derivative with respect to  $\theta$ ,

$$\frac{\partial}{\partial \theta} \frac{\partial R}{\partial g} = \frac{1 - \beta_i - 2F(qR_i; g; w) + 2\beta_i F(qR_i; g; w)}{q(1 - 2\theta + \beta_i F(qR_i; g; w) + \theta F(qR_i; g; w)) + \beta_i F(qR_i; g; w)}^2$$

This equation suggests that there is indeed a more complex behavior to lending rates with changes in  $g$ . In fact the sensibility of the rates to changes in  $g$  is a function of the level of insolvency risk. For small probabilities, an increase in  $\theta$  will cause a reduction in the slope of response, i.e. at relatively low probabilities the FC will tend to be more tolerant than PMSB. However, the opposite occurs with high insolvency probabilities. This suggests a more "reasonable" behavior on the side of the FC than SB. The source of this difference in behavior of FC and PMSB resides, once again, in the different nature of the objective function of both institutions. While in the case of a PMSB (whose objective function is limited to the second term of the r.h.s. of equation 4) the guarantee only affect the failure probability, in the case of the FC, the guarantee appears on both terms of the r.h.s of equation 4. Thus, the interest of borrowers, who will benefit from reduced collateral requirements, are also taken into consideration. This leads to a more tolerant attitude with respect to guarantees by FC than by PMSB. But this is true only for relatively low levels of insolvency risk. When this risk increases beyond a certain limit, the loss in utility from increased insolvency risk exceeds the gain in utility from reduced guarantee requirements. As in the case of the sensitivity of lending rates to the riskiness of the borrower, here  $\beta_i$  also plays a role. For a constant insolvency risk of the borrower, the larger  $\beta_i$ , the sooner the derivative will change sign.

The third relevant question related to the value of guarantees, is the sensitivity of credit granting activity to the value of collaterals.. Does a fall in the value of real estate guarantees affect credit allocation strategies provoking a "credit crunch"? The analysis of this question is somewhat more complex than in the previous cases. However using the same approach used before we can more easily identify the signs of the derivatives:

$$\frac{dq}{dg} = \frac{\theta_i (1 - \beta_i) F(qR_i; g; w)}{\theta (rLM_i - R) + (1 - \theta) (rDM + V_i - R(1 - \beta_i F(qR_i; g; w)))}$$

When  $\theta = 1$  and  $\theta = 0$ ;

$$\lim_{\theta \rightarrow 1} \frac{\partial dq}{\partial g} = \frac{1 - \beta_i F(qR_i; g; w)}{(rLM_i - R) + \beta_i (rDM + V_i - R(1 - \beta_i F(qR_i; g; w)))} > 0 \quad (9)$$

$$\lim_{\theta \rightarrow 0} \frac{\partial dq}{\partial g} = \frac{F(qR_i; g; w)}{rDM + V_i - R(1 - \beta_i F(qR_i; g; w))} > 0 \quad (10)$$

respectively. For most reasonable situations, that is, those where PMSB or FC pay interest rates that are reasonably close to those of a market benchmark, it should be true that  $rDM + V_i - R(1 - \beta_i F(qR_i; g; w)) > 0$  and thus, that both limits are less than zero. One

thing that is clear in this result is that a bank or FC will tend to restrict availability of credit as the value of guarantees falls. The picture can be made clearer by taking the derivative of the expression with respect to  $\theta$ : This derivative yields,

$$\frac{\partial \mu}{\partial \theta} \frac{dq}{dg} = \frac{(1 - \theta)(R_i - r_{DM}) V_i F(q R_i g; w)(2R_i - r_{LM})}{[\theta(r_{LM} - 2R) + (1 - \theta)(R_i - r_{DM}) V_i F(q R_i g; w) R]^2} < 0$$

if the numerator is negative, and this will occur if

$$R_i - r_{LM} < \frac{V_i + F(q R_i g; w) R}{1 - \theta F(q R_i g; w)}$$

FC would have to provide a huge discount for member loans for this condition not to be true. That is, under the most reasonable conditions, with an increase in  $\theta$  the changes in  $g$  have an increasingly smaller effect on  $q$ : This means that borrowers of FC with an objective function that is not equivalent to that of a PMSB, are less likely to be rationed due to the unavailability or fall in value of guarantees, be these real estate or movable property.

At a more practical level it is interesting to note that most of the lending done by FC in many EM is not against real or movable property, but rather against a multiplier of the participation shares owned by the member of the cooperative who borrows. If this borrower's share participation is insufficient to "collateralize" the loan of required size, this member can obtain additional borrowing rights by using as collateral the participation shares of other members of the FC. This means that the real estate collateral plays a lesser role or has disappeared completely in this type of transactions. To illustrate this point, we provide an example of an "average" FC in Colombia. In that case, 91% of assets were lent against "personal guarantees" (i.e. participation shares) and only 9% against real or movable property.

Taking all these factors together it is quite evident that FC present in EM a considerably more flexible approach to borrowers who cannot easily come up with marketable real (or movable) property as collateral for their financing needs. This is so on two accounts, on one side a more flexible and less "collateral-dependent" lending approach that derives from the nature of the objective function of the FC itself. On the other, on the use of alternative forms of collateral that are not possible in a conventional SB institution. This analysis has regulatory implications that we will explore in the conclusions of the paper.

#### 4.4 Borrower controlled FC and moral hazard

In the introduction we mentioned the possibility that FC that are controlled by borrowers may be prone to engage in moral hazard with respect to savers. By formulation we have not made rates paid for funds raised in the market dependent on the risk of the FC and its portfolio. This is equivalent to assuming that these rates are fixed, an assumption that is quite common in these types of models. Further, in the previous section we have shown that FC display a larger tolerance to measures of risk such as the overall likelihood of repayment, verification costs and quality of guarantees (albeit with some refinements). However, there are not only good things associated to this result. In fact this tolerance could be considered as a double edge knife. While there is clearly a benefit for SME when financial intermediaries display a larger tolerance to actual and perceived risk, this same tolerance can soon become a serious problem of moral hazard and agency conflict. To evaluate this situation more closely, let us look at the FOC of the objective function with respect to the measure of risk  $\beta$ : We should keep in mind that, as shown above, the

rate,  $R$ ; charged to the borrowers is a positive function of  $\beta$  and that the same should be expected from the representative market lending rate  $r_{LM}$ :

$$\frac{\partial V}{\partial \beta} = (r_{LM} + R)q + (1 - \beta) R_i q - \int_0^{qR(\beta)} \frac{\partial}{\partial \beta} F(x; \beta) dx - F(qR(\beta); g; \beta) R_i q = 0$$

This equation can conveniently be reduced to:

$$F(qR(\beta); g; \beta) = (1 - \beta) \epsilon + \frac{\beta}{1 - \beta} \frac{r_{LM}}{R_i} (1 - \beta)$$

where

$$\epsilon = \frac{\int_0^{qR(\beta)} \frac{\partial}{\partial \beta} F(x; \beta) dx}{R_i q}$$

and  $r_{LM}$  and  $R_i$  are the derivatives of  $r_{LM}$  and  $R$  with respect to  $\beta$ .<sup>18</sup> For a FC with  $\beta = 0$ ;  $F(qR(\beta); g; \beta) = (1 - \beta) \epsilon$ , however this failure probability increases rapidly and in a non-linear fashion with both  $\beta$  and the ratio of subsidy the FC passes on to borrowers,  $r_{LM} = R_i$ . It could be argued that, besides the lending rate, verification costs may be proportional to risk and that a financial intermediary may require higher levels of guarantees for firms with higher risk. Including these dependencies complicates the mathematics considerably.

We illustrate the situation (that ignores the dependencies of  $V$  and  $g$  on risk) in Figure 1. On the horizontal axis we have plotted the level of borrower/lender control over the FC,  $\beta$  (expressed as  $1 - \beta$ ); and on the vertical axis the level of risk,  $\beta$ ; the cooperative is likely to assume. Also on the vertical axis, but on the lower branch, we have represented the probability of failure,  $F(\cdot)$ : For simplicity we have drawn the relationship  $\{\beta; \beta\}$  in a linear fashion. We have also drawn two representative utility functions,  $U^0$ , for a saver dominated FC, and  $U^1$ , for a borrower dominated FC<sub>B</sub>.

Clearly, FC are open to serious abuses when dominated by borrower members, a situation that is not that uncommon.<sup>19</sup> Both the tolerance to risk of borrower-members and the level of subsidy contributes to undermine the solvability of the FC. This is one of the areas in which most clearly regulation and control is required. We will touch on this specific issue later in the paper.

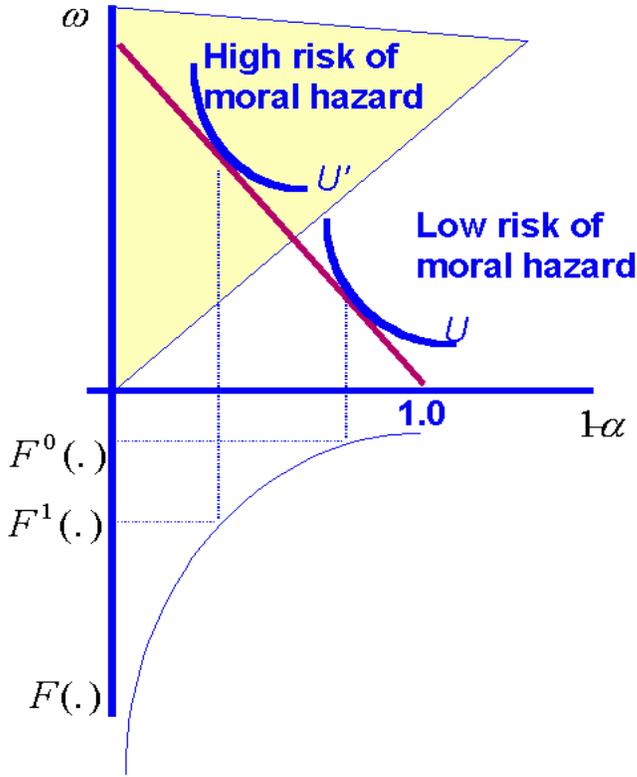
## 5 The common bond and the problems of financial intermediation

As announced in the introduction we intend to use a less formal approach to analyze the common bond. The reason for doing this is that, besides the difficulties of taking the analysis to a mathematical level, some of the richness of the issue would most surely be lost in the process. The reader should be aware that the section is exploratory and by no means represents a finished presentation.

<sup>18</sup>That is, the ratio  $r_{LM} = R_i$  is an indicator of the relative tolerance with respect to the market or the rate of change in the subsidy the FC passes on to borrowers. For most situations, if the FC satisfies its role of providing its members competitive rates, this ratio will be larger than one, making the term in brackets positive.

<sup>19</sup>An extreme situation that occurred in Colombia comes to mind. A small FC, with assets of 1.6 million dollars (but over 3,000 members!), had its portfolio of loans concentrated into a single borrower (a chicken grower) to the tune of 1.3 million dollars with very little equity in the capital structure of the business. Clearly, the FC had essentially been setup to finance this entrepreneur. The FC was eventually dissolved with heavy losses to savers after long and protracted negotiations with the borrower as he defaulted on his loan.

Figure 1: Risk tolerance, moral hazard and failure risk in financial cooperatives



The common bond issue is a very important one for cooperatives of all types including FC. This is so, not only from the legal point of view (in the United States common bond regulation is a limiting factor in the market expansion possibilities of credit unions and battle ...eld between banks and credit unions), but also from the operational point of view. In fact most of the literature on cooperatives is ...lled with references to the solidary character of the cooperative and of each of its members to the interests of the particular community at the base of the common bond. The inclusion of this common bond in the analysis has been considered by many (e.g. Reichert and Rubens [20], Mason and Lollar, [14], Black and Dugger [2], Smith, Cargill and Meyer [23], Wolken and Navratil [29]) to be fundamental to introduce some realism into the process of modeling the decisions by credit union managers. Yet to our judgement the issue has been treated only in a rather casual manner lacking the strength of a consistent theoretical framework on which empirical tests could be built. For example, Black and Dugger [2] note that "this common bond is assumed to reduce cost of gathering credit information, reducing bad debt losses and manifests itself in many other ways...and that they have been able to be assured of greater member loyalty as a result of their unique ability to serve member needs where they work ". Some others (Smith, Cargill and Meyer [23] and myself in the model developed in the previous section) have chosen to model the objective function as a balance of interest between borrowing and saving members. On the other hand some authors have attributed the "loyalty " of members to strictly economic factors such as the monetary bene...ts accruing to members in the form of lower-than-market loan rates to borrowers and higher-than-market deposit rates to savers (e.g. Mason and Lollar, [14]).

We do not disagree with this assessment, particularly that of Black and Dugger [2], about the implications of the existence of the common bond. However, these arguments are incomplete and leave many open questions. It is not clear why, at the margin, stock banks could not compete with FC in providing these material bene...ts to their clients. Thus, we wish to go further in developing the idea, embedding it in a wider framework of corporate organization analysis. More concretely, although we recognize that monetary bene...ts that may accrue to members from the activity will influence "loyalty," these bene...ts are not at the center of the particularity of ...nancial cooperatives. The reasons are simply that: i) they do not explain the capacity of FC to operate in market niches and at economies of scale that preclude the penetration by competing ...nancial intermediaries such as stock banks; ii) the "loyalty " would vanish as soon as a FC would not offer the said monetary bene...ts to its members; iii) consistent with the strictly "rational " character of the "loyalty ", it should have no effect on the opportunistic behavior of members. This would leave without explanation one of the main arguments that supports the often good relative performance of credit union loan portfolios.

The central hypothesis we propose in this section is that the cooperative form of corporate organization (in this case used in the context of a ...nancial intermediary) exploits optimally the bene...ts of "trust " that results from the existence of the common bond. They do this speci...cally to save on the transaction costs associated with incomplete ...nancial contracts, limited capacity to enforce these contracts, and control potential opportunistic behavior in which the members of the cooperative may engage. In other words, the ...nancial cooperative can be viewed as an innovation in corporate organization of a ...nancial intermediary that reduces the transaction costs associated with certain segments of the loan market by exploiting the economies that result from trust. The size of this economy is directly related to the strength of the common bond between the members of the cooperative. This hypothesis implies that a (...nancial) cooperative is a specialized form of corporate organization, specially adapted to exploit market segments in which the presence of a common bond of some sort allows exploiting competitively relations of trust that exist between members of the community that is at the base of the common

bond. These market segments may include those in which banks fail to operate altogether or those in which FC manage to compete successfully with stock bank organizations<sup>20</sup> Hence, the notion of FC as a "market solution," a corporate organization adaptation to specific market segments with specific characteristics. But, in doing so, have we not simply introduced an additional layer of ideas ("trust" in this case) without really adding any information? The answer to this is no, because the notion of trust (as adopted in this paper) and its role and value in human and economic relations has been recognized by several authors. This specific line of argument will be taken up in the following paragraphs.

Some defenders of the cooperative movement may argue that we are ignoring another important aspect of cooperative financing: the solidary principles of helping the other members of the community that is at the base of the principles of cooperativism (the "altruistic" side of decisions by FC). That might be so, but this would not explain why FC can operate in a particular niche of the loan market that is considered too risky by most other financial intermediaries, and do this efficiently. Also, we will argue that if the proposition made above is true, this is already a huge step in understanding the functioning of the corporate organization of the financial cooperative and the mechanisms it uses to solve problems of information asymmetry and moral hazard that the stock banking system has not been able to solve, or do so at a prohibitive cost, preventing them from penetrating the specific market.

## 5.1 The market niche of FC

But, backtracking a bit in our line of argument, why is it that the cooperative can reach segments of the market that are inaccessible to (or avoided by) stock financial intermediaries? Cooperatives display non-performing loan portfolios that are sometimes the envy of stock banks, or in the worst case do not seem to be systematically higher than those of stock banks precisely in that portion of the market from which banks stay out. In the current dominant regulatory framework and capital standards, a low non-performing portfolio should be an incentive for SB to seek penetration of this market. Not only would this segment of the market provide a diversification effect with respect to the rest of the loan portfolio, but the often low default rates would improve the overall quality of the loan portfolio and reduce capital requirements and provisions. Yet, this low default rates do not encourage banks to compete with cooperatives in their market niches (although the reverse is true).<sup>21</sup> However, whether non-performing portfolio are lower or higher than in a stock bank is immaterial for our argument. What is material is that FC are capable of operating in certain niches of the market in which banks are not, or are not willing to. Furthermore, they are capable of expanding and competing in some niches of the market that were traditionally served by stock banks. And they can do this in a way that guarantees the continuity of the enterprise in the market in which it operates. That is, FC are, just as banks, a sustainable economic activity that is capable of fulfilling its social charter, provide a tangible benefit to its members and grow in the process.

One explanation for this could reside precisely in the high transaction costs associated with the operation of this particular niche of the market. High information asymmetry,

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<sup>20</sup>Other factors can contribute to the "safety" of assets of a FC that are not necessarily related to the notion of trust resulting from the common bond. One of them, and often alluded to, is the fact that FC assets are serviced by their members through payroll deductions from the employer/firm that is the supporting link of the common bond. For the purpose of this analysis we will ignore these additional factors although they evidently strengthen the case.

<sup>21</sup>This statement is not strictly true. In fact one of the biggest success stories in banking in the United States, Bank One, was built precisely by penetrating massively a niche of the market that was largely a "reserve" of the American credit union movement, the consumer loan market. Further, the popularization of credit cards has allowed most financial institutions to aggressively penetrate a increasingly large consumer loan market by providing the credit lines that back the cards.

small size of contracts, absence (or doubtful quality) of real guarantees, are all factors that increase the unit cost of doing transactions with this portion of the market. These costs will remain high when the relations of trust that result from the common bond cannot be used to control the opportunistic behavior (mostly moral hazard) that is encouraged when the parties engage in a financial contract. FC can reduce these transaction costs by exploiting the information available in the particular social setting in which the members operate; limit additional information acquisition searches; reducing moral hazard limiting controls; reducing controls over quality of collateral, etc.<sup>22</sup>. Further, since administrators, members of the several collective supervisory board are drawn from the same community of that of borrowers, the FC in its whole possesses a high level of information about its client or means to exercise pressure on the same in a way that is difficult to reproduce in a stock bank. This level of information may, under certain conditions, allow the FC to make efficient allocation of resources in terms of placing funds to projects that will provide the highest economic return to its owners as well as the community as a whole. But most of all, the common bond supports observance of the terms of the financial contracts on the basic relation of trust between the members of the community on which the common bond is based. If this is the case then the cooperative form of financial intermediation would be an organizational innovation to the problem of accessing certain high unit cost segments of the loan market in which the existence of a minimum level of trust based on a common bond allows reduction of transaction costs to a point of making the operation in this market feasible.

Even for cooperatives, the costs of negotiation and information production that result from doing operations to a member of the community on which the common bond is based are inferior to those that would be incurred from doing transactions with a non-member with an arms-length relation to the cooperative. That is, in absence or dilution of the common bond, the FC loses the comparative advantage it has over other financial intermediaries in the system.

It should be noted that this is not a naive attempt of idealizing the cooperative enhancing its social virtues and altruistic nature. On the contrary. As we had the chance to show in no uncertain terms, the cooperative provides an environment in which agency conflicts can be quite important and, if unchecked can lead to significant wealth transfers from savers to either managing agents or borrowers. This is rather an attempt to identify those institutional and organizational factors that make of a cooperative a successful enterprise operating in some particular segments of the credit market where other participants are not.

## 5.2 The economic value of trust

Before we proceed along this line of thought we must define what do we mean by "trust" and what is the economic value of the same in the context of financial contracts. Fukuyama

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<sup>22</sup>In fact, the use of participation shares owned by the borrower and often supplemented by those of other members as collateral for loan operations, tend to reduce the need to engage in collateral quality controls on the side of the FC and also reinforce the participation of other members of the community –those that have provided the additional collateral– in controlling the behavior of the borrower. On the negative side, the ability to borrow using the "equity participation" (often by a large multiple of the participation) as collateral could be viewed as a leveraging of the equity participation of the member in the FC. This leveraging, explicitly prohibited in many countries by regulation for stock banks, tends to reduce the "quality of capital." We borrow the term "quality of capital" from Rojas-Suarez (...) who questions the value of the equity positions by bank owners in Latin America as a restraining element for risk taking, due to the fact that much of that equity has been leveraged (directly or indirectly) with borrowings from the institution owned. See the reference for more details. Using a strictly rational expectations argument, one result of this leveraging of equity would be a loss of loyalty on the side of the member toward the FC.

[6] has made brilliantly the point of the importance of human bonds in social and economic organizations. The title of his book, *Trust*, is suggestive enough. This single powerful idea has allowed him to formulate a theory of business enterprise organization that attempts to explain the differences in business size and control practices at the international level in such varied societies as those of the United States, Japan, Korea, Taiwan, Italy, France, Germany among others. The arguments of Fukuyama [6] have a bearing on the functioning and operation of FC also. To see this we must first formulate his central hypothesis so that we can then apply these concepts to the context of cooperative enterprises.

In the concept of the author, the nature of economic organizations are strongly influenced by cultural factors, in particular those that affect the interpersonal relations between individuals and the trust these individual can put in the engagements assumed by these. Although Fukuyama admits the importance of the "selfish man" in the rational expectations analytical framework in the decision making by individuals, he argues that this "selfish man" model cannot be used to describe entirely human economic behavior. Further, he argues, it provides little explanatory power to describe differences in economic organizations across societies, and the way these economic organizations operate. These, can much easier be explained by looking at the forms of social organization based on voluntary and non-voluntary bonding activities such as churches, professional organizations, clubs (among the voluntary) and family, clans, etc. (among the non-voluntary) and the relative importance they have taken in different societies. Societies with a rich development of voluntary bonding organizations have created economic organizations that are large, complex, with a hierarchical structure of professional managers and that are world leaders in their respective field. The capacity to create this organizations resides in the intrinsic trust that exists between individual and that has essentially been learned in voluntary bonding organizations of all sort (including business enterprises themselves). In other societies, where voluntary bonding organizations have had little development or have been suppressed by the state, the individuals experience limits them to trust only or predominantly family bonds (essentially, a non-voluntary bond) and yielding economic organizations, sometime highly efficient, but of limited scope and complexity. This capacity to trust individuals other than family members is what Fukuyama calls "spontaneous sociability" or (without clear distinction) "social capital."

There are in fact two fundamental ways in which individuals may engage in transactions: One is based on formal contracts and that are the fundamental innovation of modern economic life and that they require the effective presence of Max Weber's [27] "legal coercive power" that guarantees the execution of the contract. The second is based on trust. This trust depends on the spontaneous attitude of individuals toward others based on a number of cultural factors including the aforementioned involuntary and voluntary bonding tradition. In fact, the later form was by far the dominant before legal and institutional innovations allowed the massive use of contractually based engagements. The evolution of formal contract based relations allowed engagements with ever widening circles of individuals that would otherwise have no reason to trust each other.<sup>23</sup> However, this emphasis on formal contractual relations (with all their implications in terms of information gathering, monitoring and moral hazard or adverse selection) does not eliminate engagements based on trust, even though these may often be backed by some kind of limited formalization through essentially incomplete contracts. However, this limited formalization does not eliminate the intrinsic economic value of trust, as an alternative to the "legal coercive power" to control opportunistic behavior (and in the words of Williamson, "limited rationality"), specially in those cases in which the level of transaction costs associated with a full formalization may make the engagement prohibitive or

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<sup>23</sup>Of course, it is on these formal contracts that neoclassical rational expectations theories focus their attention.

simply the parties consider these costs unnecessary for the level of trust existing among them.

### 5.3 The role of trust in a FC and how to promote it

Cooperatives, including FC, have the property of being a voluntary bonding organizations. In a way, the existence of trust is a fundamental component of any cooperative that endorses, even faintly, the (seven) basic principles of cooperativism.

Interestingly, the countries whose "social capital " has allowed them to develop the largest capitalist corporate organizations (Canada, Germany, Japan and the United States) are also the countries in which cooperatives, and in particular, ...nancial cooperatives, have managed to attain among the largest presence in terms of their market share of ...nancial assets or deposits as well as in membership. This suggests that the development of cooperative organizations has less to do with dominant ideological thinking than with the capacity of a society to give rise to complex corporate structures that are highly dependent upon extended trust relations. For example in Japan, there exist several cooperative groups that operate around one large central cooperative bank. The most notable of these is the Norichikin around which operate about 10,000 cooperatives with 11 million members and combined assets of 900 billion dollars. The second group is the Shinkin or group of "Popular Banks " with over 430 banks, 8.5 million members specialized in small industrial and commercial enterprises. In the United States and Canada the (...nancial) cooperative movements counts with about 70 and 10 million members or 25% and 32% of the population respectively (Paradis, [19]).

One could be tempted to attribute a higher importance to trust under those conditions in which the institutional and legal framework does not guarantee the respect of formal agreements. It is a well established idea that the value of a ...nancial contract is largely dependent upon the institutional framework that enforces its observance, including the impartiality in its enforcement (Weber's legal coercitive power). The best designed contract is of no use when opportunistic behavior encourages the parties to take advantage of the same and the affected counterparty has no recourse to defend his/her interests. Under these conditions the options available to individuals are to either abstain from engaging in contractual relations (including ...nancial) or to rely more on trusted partnerships that may result from some other bonding structure (including family relations, churches, etc.) to which the cooperative is attached. If this would be the case one should observe that (...nancial) cooperatives would ...nd more success and adepts among societies that have an institutional development that guarantees only a low enforceability of contracts. That is, other things equal, FC should have a more important market share as providers of ...nancial services in developing countries than in industrialized countries. It might indeed be true that FC may provide a form of corporate organization better adapted to the characteristics of the loan market in many of the developing countries, presumably those with the poorest institutional development. However, this reasoning could lead to error. As we observed before, some of the countries in which FC have reached their most impressive development are also countries in which the institutional and legal frameworks that guarantees enforceability of contracts are the most developed (e.g. Canada, Germany, Japan, and the United States). This observation is a powerful argument to reject the hypothesis that the institutional and legal framework to enforce contracts plays in itself a determinant role in the development of FC.

What appears to be more important is that these four countries are also those with the highest "social capital " where bonding and trust is at its highest and corporate organizations have reached their highest level of sophistication. It would then appear that cooperatives are built on, and largely depend upon, the capacity of members of a society

to associate based on basically trustful relations through voluntary bonding relations with members other than, say, the closest relative or extended families. The observation then that countries for which every evidence exists that they display the highest social capital or "spontaneous sociability" (to borrow another expression of Fukuyama) are also countries in which the cooperative movement is highly dynamic and has an important market presence, provides a strong argument in favor of the hypothesis that the FC is an organizational form that exploits efficiently the social capital of trust pre-existing in the society as a whole.<sup>24</sup> Further, it is likely that in those societies in which this spontaneous sociability and trust in interpersonal relations are best established, the cooperative form of organization is bound to more closely reach its organizational objectives and where it may attain, other things constant, the highest level of success. Thus, besides the legal framework to which we have already referred to in previous section, the possibilities of success of the cooperative form of financial intermediary may be significantly influenced by the strength of the interpersonal trust relations or spontaneous sociability that may be dominant in the society as a whole. This in turn would determine the role the FC may ultimately be able to play "as market solution" to facilitate the economic development of a region or locality. This would imply that one should expect differing levels of success of FC under conditions that might otherwise appear to be similar, including the existence or not of a friendly legal framework. In a more operational way, observing already established expressions of spontaneous sociability, in the form of different form of voluntary bonding organizations including different forms of clubs, church groups, etc. may provide a hint about the likelihood of success of initiating a cooperative form of organization, be this to provide financial or other services.

What is perhaps particularly important for many developing countries is that, while the cooperative exploits the pre-existing social capital, its success contributes to building additional social capital that increases the organizational capacity of the particular social group in which the cooperative operates and with it the economic potential of the group.

#### 5.4 On the "quality" of common bonds

We have argued that exploiting efficiently the economies in transaction costs resulting from the existence of the common bond is what makes the cooperative an innovation in corporate organization that make it particularly suitable to operate in certain niches of the loan market. Now we want to go one step further and analyze the different forms of common bonds (the nature of the community that is at the base of the common bond) and evaluate the role they can play in favoring or not SME financing.

For operational purposes we will talk about the "quality" of the common bond. With this we mean the strength of the relations of trust between members of an organic community that conform the member base of the FC that results from the existence of the particular common bond. The use of the expression "quality" is the same as the one made by Rojas-Suarez and Weisbrod [21] when referring to "quality of capital." The higher the

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<sup>24</sup>See Fukuyama [6] for a detailed description of the sources of "social capital" in Germany, Japan and the United States. The case of Canada is less evident. Besides making appeal to the similarities that exist in the historic development of the United States and Canada, there are some additional arguments that would support this view of Canada as a country with high "social capital" favorable for the development of a strong cooperative movement. The province in which the cooperative movement has been the strongest is Quebec, where the Movement Desjardins constitutes the largest provincial "bank" with over 50% of the provinces financial assets under its control. The particular historic evolution of this province, with its well-known dispute with the English-dominated political system, has forced the french-Canadian population to depend largely on its own community organizations to cope with the various social problems facing them. As a result, Quebec society has developed a high capacity of spontaneous organization that has contributed to the development of "social capital" in the province. The cooperative movement has not only benefited of this enhanced "social capital" but most likely contributes substantially to it.

"quality " of the common bond, the more competitive the FC will be in servicing the segment of the loan market that exists in the particular community. A higher "quality " of common bond will result in lower information gathering costs, lower risk of moral hazard and savings in monitoring costs. This will traduce in a more eÆcient allocation of credit at lower cost to borrowers.

One thing that becomes immediately evident is that the "quality " of the common bond is a function of at least two aspects. One is the generalized level of spontaneous sociability that may exist in the society as a whole. This is also the variable that is the hardest to inÆuence in any signiÆcant way. The second is directly related with the nature or source of the bonding that is at the base of the organic community on which the FC ...nds its membership support. The more cultural elements that exist in common among individuals that constitute the organic community that is at the base of the common bond, the highest, presumably, will be the "quality " of this bond.

Size of FC may also have an eÆect of the "quality "of the common bond, but not necessarily so. The larger the spontaneous sociability at the level of society as a whole, the lower will be the incidence of size on common bond quality. In societies with a less developed spontaneous sociability, the speciÆc knowledge of the individuals that participate in the community may become much more important. As the size of the community to which the FC serves increases, the more diÆuse becomes the information available of the average individual increasing information gathering costs, monitoring costs and the more likely that some of them may be tempted to engage in moral hazard. Both of these factors will aÆect the eÆciency of operation of the FC.

Professional groups and syndicates (labor as well as professional) are examples of organic communities that often serve as a base for the development of cooperative activities. These communities provide an excellent quality bond since, besides belonging to a common social grouping, professional ethics take an important place in the attitude of its members with the syndicate often taking a special interest in the standards of behavior of individual members in representation of the community as a whole. One might be tempted to conclude that among the diÆerent forms of common bond, the one that oÆers the lowest "quality" is the one based on geographical location. What would it be in a geographical location that would provide that spontaneous sociability and social capital that would facilitate the formation of the common bond and the relation of trust necessary to make a successful FC? Providing theoretical argument in favor of the strength of the regionally based common bond is not easy. However, experience provides some interesting teachings. Two of the most successful networks of FC have developed in Canada (more speciÆcally in the province of Quebec) and Germany. In both of these cases the dominant form of common bond is the regional location of the community. By far the largest majority of FC, in Quebec and Germany, are town or parish based FC, although other forms of common bonds do co-exist.

From the point of view of the management of the cooperative, these observations about the common bond and the role it plays in providing the base of the competitive edge of the cooperative, have some interesting implications. To mention just one, it follows that a FC will be able to develop most of its competitive edge by playing up the particular characteristics of the common bond that is at the base of the cooperative thus reinforcing the relations of trust that result of the same. This would suggest, on the other hand, that those cooperatives that attempt to distance themselves of their "humble origin " and seek to look more and more like a bank, risk loosing on their most important capital, the "social capital " of internal trust that allows them to compete successfully with other ...nancial intermediaries operating in the market.

## 5.5 Testable hypothesis about the role of the common bond

The arguments presented above lead to some testable hypothesis. The actual execution of these tests remains to be done. For the purpose of specifying these hypothesis let us recall the central proposition of section 5: The financial cooperative is an innovation in corporate organization of a financial intermediary that reduces the transaction costs associated with certain high-cost segments of the loan market by exploiting the economies that result from trust. The size of this economy is directly related to the strength of the common bond between the members of the cooperative. This proposition has to be decomposed into several elements to make it testable. We will suggest the simplest possible tests without excluding the possibility that other, more sophisticated designs, may yield more powerful results.

- <sup>2</sup> The proposition that financial cooperative is an innovation in corporate organization of a financial intermediary that reduces the transaction costs associated with high-cost segments of the loan market by exploiting the economies that result from trust, could be tested by comparing unit transaction costs of SB and FC, while controlling for other factors that could affect these in one direction or other.
- <sup>2</sup> Within the cooperative sector, these unit transaction costs should be related to the strength of the common bond. As noted before, bonds of different nature may translate into varying levels of trust present in the transactions. Thus, these differentials in trust, classified qualitatively or measured quantitatively should be inversely correlated with unit transaction costs.
- <sup>2</sup> The rates of default on loans, a significant measure of operating costs could also used as a separate proxy of "transaction costs ." As noted before, differences in these rates should make it possible to compare FC and SB by factors similar to the ones mentioned in the two previous points.

## 6 Conclusions and Recommendations

A formal analysis of the objective function of a FC allows us to state that these are financial intermediaries that are likely to be in a position to offer credit to businesses that may find it difficult to obtain financing by the stock banking system. At least, they will be much less likely to engage in credit rationing, other thing equal, than a traditional stock bank, making them financial intermediaries suitable for SME financing. The less formal analysis carried out in the section on the nature and role of the common bond in the decision making by FC yields two results that force us to qualify the results obtained from the formal model. The first one confirms that FC, as forms of corporate organizations specially adapted to specific niches of the market, may indeed be able to resolve some of the information asymmetries and high transaction cost problems that characterize credit markets for SME enterprises. However, this analysis also yields two other important conclusions that limit the generality of this result. The two limitations are: i) The success in promoting the establishment of FC is likely to be dependent on the level of spontaneous sociability that exist in the society. For those societies with a high level of spontaneous sociability, promoting the establishment of FC may be a relatively easy task. The establishment of a network of FC may, however, be more difficult in societies with a low level of spontaneous sociability. ii) Given that the common bond plays a central role in giving the FC the competing edge to limit the problems of information asymmetry, transaction costs and moral hazard, not every SME is likely to have equal access to cooperative financing. A relatively close association to the community that is

at the base of the cooperative's common bond will be a necessary condition for accessing FC financing.

To conclude, we will provide concrete policy recommendations that appear to us, to follow from the main conclusions of the analysis.

## 6.1 Regulatory and policy implications of this study

### 6.1.1 FC Regulation

- <sup>2</sup> One of the most urgent and critical areas to regulate is the introduction of limits on the influence that borrowers may have in FC decision making. This is so because borrower-controlled FC are more likely to expropriate savers to their advantage and to incur in moral hazard. This should be accompanied with regulations that tend to reinforce the supervisory power of the democratic instances (member assemblies) and special control committees of the cooperative. Regulatory measures in both of these directions would tend to limit the risk that exists of an excessive moral hazard on the side of the administrator/agents and the possibility that savers may be exploited in borrower-controlled FC (See section 4.4).
- <sup>2</sup> Regulators can restrain risk-taking by FC and the subsidy they may offer to higher-risk borrowers (in borrower controlled FC) by imposing upon the FC a relatively high earnings retention requirement for the purpose of capitalizing the cooperative. Further, these requirements should not be based on a proportion of earnings only but rather, at least some of it, as a specific growth on equity (See section 4.1).
- <sup>2</sup> The elimination of a tax-free status of FC is likely to reduce the size of the overall surplus available to members for redistribution. However, it is likely to encourage the distribution of these benefits in the form of pre-tax expenses thus reducing after-tax earning and most likely capital accumulation in the form of retained earnings. Thus, the most deleterious effect of taxing FC would be a potential reduction in the growth of capitalization of FC (See section 4.2).
- <sup>2</sup> The use of participation shares as collateral for borrowing should be regulated. This practice has some very substantial beneficial effects both in terms of making credit accessible to borrowers who do not possess real estate collateral to back their loans and increase cross supervision (by other members) of borrowers. However, the practice can lead to abuses that must be prevented by setting reasonable limits to the allowed multipliers applicable to the borrower itself and to borrowed rights from other members (See section 4.3). This will also limit automatically the concentration in asset exposure to individual members.
- <sup>2</sup> The discussion on the competitive value of the common bond suggests a few regulatory initiatives destined to strengthen the standing of FC as financial intermediaries. The detailed discussion that provides support for these recommendations can be found in section 5 of this paper. They are:
  - Regulation should limit practices that tend to weaken the common bond, such as expansionary policies that abandon or switch the nature of the common bond (professional, employment, residence).
  - In the case of cooperatives that are built on a common bond of residence, regulation should favor the creation of networks or federations of cooperatives rather than large regional or national cooperatives. The formation of networks is necessary to facilitate the provision of services at the national level that require economies of scale beyond that of local cooperatives.

### 6.1.2 SME financing policy

- <sup>2</sup> Rural and urban areas with difficult access to credit originating from the stock banking system would benefit from a policy that promotes the creation of FC. To facilitate access to credit by SME in these regions, preferences should be given to FC whose defining common bond should be of regional or professional (agricultural, medical, electrical, etc.) nature. FC whose defining common bond is based on an attachment to a common enterprise would appear of relatively little use to promote SME financing.
- <sup>2</sup> Given that the size of the FC may have an effect on the quality of the common bond, with largest FC likely to have the loosest or lowest quality common bond, it appears reasonable to promote the creation of confederation of small to medium size FC (combined possibly with institutions of second level) rather than fewer large ones. In this way the quality of the common bond tends to be preserved. Since this may affect the capacity to provide services to its members –specially for those services where economies of scale are important– the confederation and pooling of services would tend to improve the quality of the same while preserving quality of bonding. The international experience on these confederation and pooling activities is rich and can be used to develop specific policies to promote it.

## References

- [1] Raquel Bernal, Mauricio Cárdenas, Jairo Nuñez, and Fabio Sanchez. Macroeconomic performance and inequality in Colombia: 1976-1996. Technical report, Latin American and Caribbean Economic Association, Bogota, Colombia, 1997.
- [2] Harold Black and Robert H. Dugger. Credit union structure, growth and regulatory problems. *Journal of Finance*, pages 529–539, 1981.
- [3] Gregory E. Elliehausen and John D. Wolken. Bank markets and the use of financial services by small and medium-sized business. Technical Report Staff Studies 160, Washington: Board of Governors of the Federal Reserve System, 1990.
- [4] Klaus P. Fischer and Martin Chenard. Financial liberalization causes banking system fragility. Technical Report WP 9713, Centre de recherche en économie et finance appliquées (CREFA)- Laval University, 1997.
- [5] Heywood Fleisig. Secured transactions: The power of collateral. *Finance and Development*, pages 44–46, June 1996.
- [6] Francis Fukuyama. *Confianza (Trust)*. Editorial Atlántida, Buenos Aires, 1996.
- [7] Celso Garrido. Financial liberalization in Mexico: What went wrong. *Journal of International Finance*, 4, Special Issue on Business Finance in Emerging Markets: forthcoming, 1996.
- [8] R. Wetmore Humes and Katherine A. Samolyk. Does small business need a financial mix? *Economic Commentary*, FRB of Cleveland, May 1993.
- [9] ICA. Savings and credit co-operatives - 'credit unions'. Technical Report Background Information Note 9, International Cooperative Alliance, 1995.
- [10] Dwight M. Jaree and Franco Modigliani. A theory and test of credit rationing. *American Economic Review*, 59:850–872, December 1969.

- [11] Jeffrey M. Lacker. Does adverse selection justify government intervention in loan markets? *Economic Quarterly*, FRB of Richmond, 80:61–95, Winter 1994.
- [12] N. H. Leff. Capital markets in less developed countries: The group principle. In R.I. McKinnon, editor, *Economic Growth and Development*, pages 97–122. Marcel Dekker, New York, 1975.
- [13] Eduardo Lora and Felipe Barrera. A decade of structural reforms in latin america: Measurement and growth effects. Technical report, Inter-American Development Bank, July 1997.
- [14] J. Mason and J. Lollar. Developing market driven strategies for credit union growth and survival. *Journal of Professional Services Marketing*, 2:91–108, Fall/Winter 1986.
- [15] Roland I. McKinnon. *Money and Capital Markets in Development*. Brookings Institution, Washington, D.C., 1973.
- [16] Ronald I McKinnon. Macroeconomic instability and moral hazard in banking in a liberalizing economy. In P. et al Brock, editor, *Latin American Debt Adjustment*, pages 99–111. Praeger, New York, 1989.
- [17] Ronald I. McKinnon. *The Order of Economic Liberalization: Financial Control in the Transition to a Market Economy*. The Johns Hopkins University Press, Baltimore and London, 1993.
- [18] OCA Organizacion de Las Cooperativas de América. *Cooperativismo Latinoamericano En Cifras*. Consultamérica, Bogotá, Colombia, 1995.
- [19] Ghislain Paradis. *El movimiento cooperativo bancario: Un actor comprometido y poderoso para el desarrollo*, Diciembre 1997. Bogota, Colombia.
- [20] Alan K Reichert and Jack H. Rubens. Risk management techniques employed within the u.s. credit union industry. *Journal of Business Finance and Accounting*, 21:15–35, January 1994.
- [21] Liliana Rojas-Suárez and Steve R. Weisbrod. Toward an effective regulatory and supervisory framework for latin america. Technical Report WPS 336, InterAmerican Development Bank (IADB), 1997.
- [22] Michael Rotschild and Joseph E. Stiglitz. Increasing risk: I. a definition. *Journal of Economic Theory*, pages 225–243, 1970.
- [23] Donald J. Smith, Thomas F Cargill, and Robert A. Meyer. Credit unions: An economic theory of credit unions. *Journal of Finance*, 36:519–538, May 1981.
- [24] Joseph Stiglitz and A. Weiss. Credit rationing in markets with imperfect information. *American Economic Review*, 71:394–410, June 1981.
- [25] James R. Tybout. Interest control and credit allocation in developing countries. *Journal of Money, Credit, and Banking*, 16:474–487, November 1984.
- [26] Arvind Virmani. The nature of credit markets in developing countries: A framework for policy analysis. Technical Report 524, The World Bank, 1982.
- [27] Max Weber. *Economy and Society: An Outline of Interpretive Society*. University of California Press, Berkeley, 1978.

- [28] John A. Weinberg. Firm size, finance and investment. *Economic Quarterly*, FRB of Richmond, 80:19–38, Winter 1994.
- [29] John D. Wolken and Frank J. Navratil. Economies of scale in credit unions: Further evidences. *Journal of Finance*, June 1981.