

# Governance, regulation and mutual financial intermediaries performance<sup>1</sup>

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## Abstract

This paper presents results of a research on the the impact of the governance, regulatory and supervisory environment on the performance of financial cooperatives (FC). I seek to respond to two different questions. The first is whether there are clearly identifiable models of financial cooperative governance, regulation and supervision (R&S). The second is, assuming that such models are identifiable, whether it is possible to develop a methodology to evaluate the level of system-wide performance of these models in a credible manner. Based on an analysis of 16 cases of "mature" FC systems we obtain the following result. There appear to be two dominant models of governance, R&S, one that we will call the *federated-network* model, and one that we will call the *atomized-competitive* model. These two systems present certain constant characteristics accross groups of countrie that seem to be related to historical factors contributing to their development. Further, FC operating under one of those systems, the *federated-network* appear to display either equal or superior (but not inferior) levels of performance than those operating under the other.

# Governance, regulation and mutual financial intermediaries performance

So will I turn her virtue into pitch,  
And out of her own goodness make the net  
That shall enmesh them all (Iago)  
*W. Shakespeare, Act II of "Othello"*

## 1 Introduction

This paper presents results of a research on the impact of the governance of systems of financial cooperatives (FC) on their performance. Specifically I seek to respond to two different questions:

1. Are the systems of financial cooperatives organized along clearly identifiable models of governance?
2. Assuming that such models are identifiable, is it possible to evaluate their system-wide performance in a credible manner?

That is, in this paper I investigate the institutional structure and the models of governance of FC. I attempt to, first, identify and categorize, and then compare the level of system-wide performance of a sample of FC systems. To achieve this I propose and justify the use of a Data Envelopment Analysis (DEA) based methodology that yield measures of relative performance of different models of governance of FC.

Based on an analysis of 16 cases of "mature" FC systems (mostly in industrialized countries) I conclude the following. i) There appear to exist two dominant models of organization of FC, one that I call the *centrally governed federated network* model, or simply *federated-network (FN)*, and one that I call the *atomized-competitive (AC)* model. These two models present constant features across groups of countries. These features are related to the regulatory environment and to historical factors that contributed to the development of the respective FC systems. ii) FC systems operating as FN appear to display either equal or superior (but not inferior) performance to those operating in a AC fashion. Although the analysis was performed with a small set of cases, contextual evidences suggest that it is unlikely that adding more cases or performance measure may invert results.

The importance of this research resides in the following two facts:

- While an extensive theoretical and empirical literature exists on joint stock type of banks, the largest or among the largest financial intermediaries in many countries –specially Europe– are not stock owned enterprises, but cooperatives.<sup>1</sup> Despite this relative importance little work has been done to model and describe their system-wide governance, which, as the present research suggests, is key to their performance.
- FC are, among financial intermediaries, the ones that most successfully provides access to financial services to sectors of the population otherwise excluded from these services by the urban-based financial system, chiefly the joint stock banking sector.<sup>2</sup> This includes the rural poor, farming and non-farming rural microenterprises, the urban poor and urban based microenterprises. They are also

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<sup>1</sup>It was generally believed that the importance of financial cooperatives (FC) would diminish with wealth of the population. Contrary to this expectation, network of FC of several industrialized countries have become the largest single intermediary controlling substantial portions of financial assets.

<sup>2</sup>For a recent survey of the exclusion –or credit rationing– hypothesis that covers a quick review of the theoretical foundations and an analysis of its empirical support for the United States see Chakravarty and Scott [7].

the financial intermediary of choice for countless millions of individuals of all social origins and levels of wealth that prefer to rely on their services over those of stock banks.

But the level of success of FC systems varies across countries and continents. In some, FC control a substantial portion of total financial assets and display considerable success in providing financial services, both in terms of the population covered and sophistication of services provided. In others, their presence in the economy is only marginal, to the impairment of the population excluded by the conventional banking system. Further, for reasons I present below, many developing countries seek to reform the regulation and supervision (R&S) environment under which their FC systems operate.<sup>3</sup> In doing so they face specific choices with respect to the R&S framework they build and the type of system-wide governance they promote.. It is pertinent for these regulators and for leaders of the FC movement to know that these models exist, their features, and the performance that can be expected in the long-run. The alternative to picking a well tested model –with pertinent adaptations to the local environment– is to experiment with innovations whose results will be known only many years later. This is the road often taken by Latin American regulators with very questionable results judging by the number of crisis that have shaken the continent’s FC systems in the last two decades.

To my knowledge, there is no research that compares the governance and R&S of FC worldwide. One strand of literature on R&S of FC, produced mostly by American researchers, ignores federated networks altogether since it is not the model chosen by the credit union (CU) system of the United States.<sup>4</sup> Another comes from the German school of research. This school focuses on the operation of FC in the context of the *FN* system that dominates in Europe.<sup>5</sup> Neither of these two schools attempts to compare performances, identify differences or explain the regulatory and historical factors that have contributed to the development of one or the other model. One notable exception is MacPherson [16] who describes the historical evolution of FC in various countries and notes subtle variations in development that explain some of the differences. However MacPherson does not attempt to categorize the different forms of organization in any systematic manner.

Worse, no attempt has been made to *explain* the considerable differences in performance of the FC systems in various countries. Why is it that in some the FC movement, taken as a network organization, is the largest single financial intermediary (e.g. Credit Agricole of France, Raiffeisen of Germany, Rabobank of the Netherlands<sup>6</sup>) controlling between 25-45% of the country’s financial assets, while in other the FC represent a small share of the market (e.g. about 8% in the United States)?<sup>7</sup> Some researchers attribute the difference to cultural and even political factors. This is, for example, the argument used by MacPherson to explain differences in performance of the English Canadian CU and the French Canadian *Caisses Populaires Desjardins* movements. While cultural, political or even religious factors may have influenced

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<sup>3</sup>This is true not only for developing countries. Several industrialized countries, notably Canada, are also revising the R&S framework under which operate their systems of FC (See MacKay Report, [11]).

<sup>4</sup>Examples are Walker [21], Wolken and Navratil [23], Smith [20], Black and Dugger,[2], Walker and Chandler [22]. Even those that do not have the United States CU system in mind like Branch and Baker; [5]; Poyo [18] and Westley and Shaffer (2001) do not address the issue of *FN*, either because they have the *AC* model in mind or because they research a FC in isolation.

<sup>5</sup>This is the literature of European origin like Bonus, Greve, Kring and Polster [4]; Brazda und Schediwy [6] , MUELLER AND ..... among others, that view the FC as an integral part of the system of *FN*. A very tangential literature is that covering the creation of Apex Institutions (e.g. Ledgerwood [14], pp. 106-109), however nowhere does this literature enter into an in-depth analysis of *FN* structures of FC.

<sup>6</sup>The complete name of Rabobank, that reveals its true nature of central of a cooperative federation, is Coöperatieve Centrale Raiffeisen-Boerenleen bank BA.

<sup>7</sup>The relative importance of these institutions in the financial system is accentuated if instead of assets one considers demography. Given the small coverage size of assets in these institutions, the proportion of consumers and enterprises that obtain financial services through FC is much larger than the ration of assets would suggest.

the development of systems of FC, I will associate differences in performance with governance factors which are constant across varied cultural landscapes.

One further argument that supports the relevance of this research. Recent works (e.g. Christen and Rosenberg, [9]) on R&S of microfinance intermediaries (MFI), including FC, conclude that: i) there is little or no historical experience in the R&S of MFI; ii) it is not possible to propose standards of R&S that are uniform and applicable to a large set of situations or countries. While these statements, particularly the first one, may be valid for MFIs other than FC, they are most likely *false* for FC. For these, *a long-established tradition and praxis*, in terms of appropriate framework for their R&S, exists. In fact, in a large set of industrialized and developing countries the practices of governance, R&S of FC has reached a considerable degree of uniformity. Perhaps the worst "sin" of this tradition is that it is not practiced in most of North America, the geographical center for much of the work on R&S of MFIs for developing countries. Designing a R&S framework for FC (like for any other financial market participant) is a complex exercise in which many errors can be and are committed. These errors can result in the collapse of entire system of mutual financial intermediaries, built sometimes over decades, destroying an enormous social capital. Brushing aside established and successful practices of R&S, simply wastes the accumulated knowledge about the functioning of these institutions and the R&S environment that makes them flourish to the benefit of their target population.

At this stage of the research I will not attribute credit for the superior or inferior performance to any of the particular features present in the two models. Investigating the causes of why one or the other system may or may not be a superior arrangement will take us into an in depth analysis of the main conflicts of interests that occur within the FC or the uncertainties FC face in the market, and in which way each of these two models of governance help to control them. This, I have left for later research.

## 2 Historical considerations

The historical evolutions of systems of FC around the world described by MacPherson [16] produced a limited number of "models" of cooperative organizations. They range from loosely cooperating groups of FC with low-level pooling of resources and services in one extreme, to tightly arranged networks of hundreds or thousands of FC in the other. In the second category, in addition to a considerable pooling of resources and services, standardization of operating procedures and consolidation of image around a "brand" name, the second and higher tier integration structures produce services and inputs for the first-tier organization and carry out monitoring functions, including auditing, "prudential" and "business practice" type of monitoring, deposit insurance and other highly complex functions. The differences in the degree of integration is not just a result of different evolution time. Some systems are very young but have developed from the start a sophisticated network structure (e.g. the East African Community, Korea). Others, could be considered "old" and still remain, relatively speaking, structured in a loose fashion (e.g. English Canada). Thus, "maturity" of the system does not explain the differences. Rather, the set of historical and institutional factors that have led to the development of the respective systems seem to play a determinant role.

Among the Continental-Europe countries, one model of organization appears to dominate. In Europe, FC systems of several countries have adopted a particular model at some time in their evolution. This is for example the case of the Raiffeisen/Volksbank model, initiated in Germany and adapted later in Austria, Netherlands and Switzerland. We classify these sorts of structures under the group of FC systems that we call the *centrally governed federated networks*, or simply *federated networks (FN)*.<sup>8</sup> I will present

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<sup>8</sup>I choose this expression in part to reflect established practices in the international FC movement. The German expression used regularly for *federated-network* is "föderatives Verbundsystem" (see e.g. Brazda and Schediwy [6], Bonus *et al.* [4]).

a more structured description of the FN model later in the paper. Partly under the influence of the success of the German experience, other networks with an independent development have also evolved, including the French Credit Agricole and Credit Mutuel, the Scandinavian and the Belgian FC systems (since, de-mutualized) among others. Some systems, based on a common model have evolved as a result of some significant event in the life of the movement that led to a differentiation away from their common root.<sup>9</sup> Looking from outside, these structures sometimes appear to display considerable differences. For example Credit Agricole and Rabobank present themselves to the eyes of the public as consolidated banks. On the other hand the group of FC movements modeled after the Raiffeisen experience tend to present themselves to the public as federated structure of locally owner FC (which they are) with a high level of integration in resources, services and internal monitoring. Despite differing degrees of centralization, they are both tightly knit web of independently owned FC, with a substantial delegation of power to the federation, a pooling of resources and services and a complex system of internal monitoring carried out by the federation. The FC movement of Switzerland, although modeled after Raiffeisen, presents some structural differences. Although this configuration is dominant in Europe, it is not limited to the continent. The French Canadian *caisses populaires* Desjardins and the Australian *credit union* systems –the latter established with the reform of 1992– are just two examples of federated networks of FC with high levels of integration of resources, services and monitoring. This same model was, at the beginning of the 20th century, exported to far-away countries such as Argentina and Brazil introduced by the rather substantial German (the Raiffeisen model) and Italian (the Luzzatti model) migrations to these countries.<sup>10</sup> Mexico organized a *FN*-like system under the influence of Canadian clerics that transported the Desjardins Model to this country.<sup>11</sup> Elsewhere, in some french African countries the influence of the French FC movement has led to the creation of *FN*-like structures.

But federated networks are not the only model of FC organization with a major representation world-wide. The American, English Canadian, United Kingdom and Australian –before the 1992 reform– Credit Union (CU) systems are structures with much looser arrangements. These are, of course, the group of countries that are the backbone of the WOCCU movement.<sup>12</sup> In these structures there may exist some pooling of resources and services and some federated organizations. However, the latter are essentially professional representation organizations (syndicates) and the internal monitoring function is either absent or trivially small. In the particular case of the United States, membership to the CU are limited by law to only individuals that meet the "bond" requirement and, inversely, CU are prevented from seeking clients among individuals that do not meet this bond condition. Among the categories of bonds admissible, the geographical bond –a common bond form in the cooperative philosophy– has been explicitly excluded. But

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Thus, it is in part to maintain the rather well established use of the term in the German literature that we have adopted the English equivalent name *federated network*. Despite this name (both in English and German) suggesting a rather loose network of FC, in practice it consists of, as we will have the opportunity to see later, a rather tight web of individual cooperatives with a fairly centralized governance and system of provision of services.

<sup>9</sup>E.g. Rabobank of Holland that resulted from the merger of two FC networks: Cooperative Central Raiffeisen Bank and Cooperative Central Boerenleenbank.

<sup>10</sup>In the Argentina case, changes in the regulatory environment forced later the abandonment of the model and the creation of large "cooperative commercial banks." The eventual failure of everyone of these banks with the exception of one, Credicoop, resulted in a dramatic reduction of relevance of the sector in the economy. The federated system, but limited by severe state-imposed restrictions on individuals eligible to be members of FC, subsists in Brazil.

<sup>11</sup>In the Mexican case the system, with a strong component of auto-R&S (much as the original federated systems of Central Europe), worked for nearly 50 years free of a legally established regulatory framework and a State with a definitively hostile attitude toward the movement. A law passed in 1990 that attempted to finally bring the movement under the regulatory custody of the State lead to its near dismemberment and considerable contraction. See Hübenthal and Gattelet [12] for more details about the evolution of the FC systems in Latin America.

<sup>12</sup>See MacPherson [16] for an historical analysis of the evolution of the American CU system, its philosophy and its influence on financial cooperative movements elsewhere.

this model of organization is not limited to the countries listed above. The dominant and quite successful role played by WOCCU (and before it the Credit Union National Administration, CUNA) in promoting financial cooperatives in the developing world has resulted in a multiplication of systems of FC that resemble rather the organization of the United States CU system than the *FN* model dominant in Europe. Latin America is a case in point. Starting around the early 1960's with the launching of President Kennedy's Alliance for Progress, the United States, with support of the CUNA, promoted with considerable success the development of FC in the continent, modeled after the credit union concept, except where the movement had already reached a significant development: Argentina, Brazil, Mexico and Uruguay. However, either by original design or by posterior evolution these systems have typically not adopted the restrictive bond requirements that characterize the American system. This has resulted in a certain proliferation of different sorts of FC including a large number of institutions based on a regional bond, some large regional or national institutions with hundreds of thousands of members, and many other variants. In most of these experiences some amount of association or even pooling of resources and services has typically developed.

Occasional attempts to introduce *FN*-like features in LA has led to the appearance of some hybrid structures. One example is the effort in the late 1970's led by the Confederation of LA Credit Unions (COLAC) with the support of Desjardins to encourage the conversion of federations and confederations into second-level FC. However the resulting systems cannot generally be considered federated networks in the sense we will define below and that is characteristic of the European experience. Thus, individual FC operate largely as units with own separate identity, absence of a common brand name, limited services provided by second level organizations and no or very limited monitoring of individual units by the federated bodies. Another important feature in these movements is that, with the relaxation of the bond restriction, there are no commonly accepted rules that limit the competition between FC for specific market segments. For these reasons we could call this the *atomized* model. However, to do justice to the American experience of restricted bonding –and thus competition–we could add the qualifier *non-competitive* or with non-regional bond restriction, to make reference to the United States CU system, and *competitive* or with no bond restriction to those in which no restrictions on admissible bonds exist.<sup>13</sup> For simplicity we will not dwell on this distinction here and will simply call the model *atomized competitive* in consideration to the fact that in the majority of cases the USA-styled bond restriction is absent. However, it will be useful to remember the difference later on.<sup>14</sup>

### 3 Research methodology

We seek to respond to two different questions. The first one is whether there are clearly identifiable models of FC governance, R&S. The second is whether it is possible to develop a methodology to evaluate the level of system wide performance of these models. The steps followed to accomplish these objectives are the following:

1. Institutional analysis and classification of systems:
2. Measure of performance of the systems

I now explain each of these steps in details.

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<sup>13</sup>Of course, this is about to change with the reform of 1998 that allows CU to open up their membership structure. Further, the WOCCU, in its "model credit union" methodology developed at the beginning of the 1990's, propose as a key element of a modern credit union the integration into networks. However, the proposal appear shy and poorly defined about what is meant with "networks" when compared with the existing *FN*.

<sup>14</sup>To my knowledge there is no standard expression used in the German language to refer to what we call here the *atomized-competitive* model. This is understandable since German researchers did not attempt to systematically analyze the FC governance and organization outside of Germany.

### 3.1 Institutional analysis and classification of systems

Thus far in the presentation we have spoken of two systems as a given fact. This categorization is one of the results of this research that was achieved by focusing on a limited number of cases and identifying the common features and differences in the way the various systems operate. Although in the previous section we mentioned a variety of FC systems and countries, in the remaining of the paper we limit our attention to "mature" systems. I qualify a FC system as mature if it has evolved over at least half a century into its current state with all the major institutional developments essential to its functioning accomplished.<sup>15</sup> This general definition of a mature system excludes as candidates for our sample "young" systems or systems that have been subject to some catastrophic regulatory event that has modified fundamentally its constitution and functioning rules. By using these mature systems we insure that the organizations have eliminated most of the "teething problems" and have reached a reasonable degree of development in the set of rules that guide their functioning. As we will see, despite this restriction the systems we include in the sample are present in a wide range of cultural and legal environments.

The careful analysis of the commonalities and differences among the 16 cases chosen for the study allowed me to rapidly classify them into two groups. The cases that fell under one group presented remarkably common features that were present in almost all of them, but were absent altogether in the other group. The identification of the commonalities were facilitated by a review of some of the works produced by the German school of research (e.g. Bonus *et al.* [4], Locklair [15], Jäger [13]). These researchers emphasized certain key principles in the functioning of the German "föderative Verbundsystem:" the two key principles of *subsidiarity* and *decentralization*. These two principles, as well as other key features such as the existence of a common *brand name*, the use of *delegated monitoring* among other, appeared in identical form in several other cases. The presence of these features were then considered to be idiosyncratic of the *FN*-systems. For this group it was also possible to discern historical factors that suggested a common origin. This comparative analysis was based on a relatively large number of documents, annual reports and descriptive studies of different origins and in particular on the *Profile* (Côté *et al.* [10]).

To be included in our starting sample I required the following conditions:

1. To be a "mature" system (as defined in section 3);
2. To have sufficient information about the institutional and governance structure for an unambiguous classification in one of the two categories;
3. To have the data necessary to compute the ratios used in the analysis;

This exercise of research of common features lead me to propose the following. I classified as a *federated-network* a FC system that presents simultaneously *all* of the following characteristics:<sup>16</sup>

1. Presents to the public a *unified image* or a *national brand*.
2. The second tier structures operates under the *principle of subsidiarity* (i.e. they provide services that cannot be provided by the first tier cooperatives and that require economies of scale).
3. *Limits in branching* to well defined local conditions (geographical or professional).

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<sup>15</sup>I do not imply with this that the mature systems are immutable. Indeed the systems included in the sample are subject to continuous changes in response to market and regulatory factors. Examples of changes of quite dramatic nature are the demutualization of the Belgian FC system, the merger of the Raiffeisen and Volksbanken systems in Germany and the deep-reaching structural changes in the network structure of Desjardins in Quebec.

<sup>16</sup>Bonus, *et al.* [4] present a detailed analysis of the functioning of a federated network. Although the analysis is conceived as a study of the German *Verbund* it is to a large extent applicable to *FN* operating in the other countries of the sample.



4. Assumes a *three-function structure* (representation, operational and delegated monitoring) with the monitoring functions delegated from the R&S authority.

By exclusion, i.e. those that do not satisfy simultaneously these four characteristics were classified as *AC*. This classification by exclusion can be justified from the simple fact that the absence of the four characteristics in a FC system implies that FC operate on an atomized (absence of integration) and competitive (absence of bond restrictions that limit expansion) fashion. As noted, the US-based CU system is an exception in the sense that the restriction (largely relaxed since 1998) of membership to well defined non-regional bond exists. Let us look at each of these four features in more detail.

1. *Unified image/National Brand.* In most *FN* models, the system of FC presents itself to the public as a unified or quasi-unified corporate entity. Whether the image is that of a consolidated financial intermediary (Credit Mutuel, Rabobank, etc.) or a network of individual entities (Desjardins, Raiffeisen, etc.), legally, each "branch" is an individual and legally separated entity with separate operating licence (banking or otherwise). This is not the case of *AC* models where first tier cooperatives tend to present themselves to the public as individual and distinct entities with no attempt to consolidate and unify image and services or to belong to a network of entities. Although some kind of Federation/Confederation may exist, it will have a purely or mostly representative function. Also, some common bodies (second-tier Cooperative Centrals and Banks, CUSOs, etc.) may have been created but they are given a separate identity.<sup>17</sup>
2. *Principle of subsidiarity.* The second tier structures operates under the principle of subsidiarity. This implies that the second (and higher) tier bodies have the function of assisting or functioning in a supplementary capacity only. Under no circumstances are higher tier organizations to carry out activities that may compete with the lower tier organizations. For example, they provide services that cannot be provided by the first tier cooperatives and that require economies of scale. Often, this principle is accompanied by the *principle of decentralizations* –that complements the one of subsidiarity– according to which the maximum amount possible of task are organized around the first tier organizations.<sup>18</sup>
3. *Membership and branching arrangements.* In *FNs* members belong to first-tier FC with local governing bodies that have limited branching possibilities (to a few local branches) under well defined geographical, professional or other bond restrictions. No large FC with regional or national branching arrangements exist with the exception of professional-bond type of FC where a national organization is a logical structure. Second-tier institutions have no real person members nor retail operations of any kind.<sup>19</sup>
4. *Three function structure.* The introduction of the monitoring function results usually in a three-function structure: i) the Representation structure; ii) the Corporate business structure; and iii) the Monitoring structure. Some components of this three-function structure may be merged, as in the case of Desjardins, where the representation and corporate business functions are carried out by the same bodies.

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<sup>17</sup>However, in a *FN* regime it is possible that more than one network exists with each of these structures presenting all of the essential characteristics associated with the model (e.g. France with Credit Agricole, Credit Mutuel et Credit Maritime).

<sup>18</sup>The respect of this principle that may appear as relatively unessential is, in effect, crucial. The collapse of some movements, like the one organized around UCONAL in Colombia, may in part be attributed to the abandonment of this principle.

<sup>19</sup>This restriction has been partially relaxed in some of the *FN* systems as second tier organizations acquired operating stock banks. These banks, although strictly speaking a second-tier organizations offer detail services to individuals and sometimes compete with first-tier local cooperatives. This is the case of Credit Agricole that acquired the Banque Indosuez and of Desjardins that acquired the Groupe La Laurentienne, group that included a regional bank.

- (a) The representation structure consists of all second tier organizations or association of first-tier FC united to negotiate and represent the business interests of the movement.
- (b) The business structure consist in a network of second-tier corporate bodies that have the function to generate products, services and other inputs that are used, distributed and delivered to members through the first-tier FC.
- (c) The monitoring structure. This refers to the function of regulation and supervision function *delegated by the government's R&S body to the system of FC itself.*

The monitoring function requires some additional comments. I call the delegation of the monitoring function from the R&S authority to the FC system, "delegated monitoring". The expression embodies the idea that the banking authority can "delegate" to a separate body some of the tasks associated with the function of obtaining and evaluating the information required for prudential, conduct of business and systemic risk supervision. In *FN* models the delegated monitoring function can be organized in various fashions including auditing federations (Raiffeisen model), a federation monitoring bureau (Desjardins model) or other similar arrangements. For each FC system studied I attempted to assess the set of rules under which they are organized and performed functions such as: prudential supervision, supervision of business practices, intervention of deviant institutions; safety network and deposit insurance. For most *FN* models the structure covered all forms of supervision including system risk (with assistance of the Central Bank), prudential and business practices. In most cases the network also had established intervention procedures as well as deposit insurance (possibly with additional coverage by a government body: Germany and Quebec). These arrangements are absent in the *AC* cases.<sup>20</sup> Further, in the introduction we have made reference to the fact that hierachies may play a useful role, as a substitute or as a complement to discipline agents there where market mechanisms are either absent or insufficiently developed. It is a well known fact that the absence of markets in the residual claims and ownership certificates isolates managers of FC from the disciplining effects to which are subject their counterpart in publicly owned stock enterprises. In FC hierarchies appear to play a central role as a substitute disciplining instrument, and the presence or absence of it, or their degree of efficiency may have an impact on the performance of systems of FC. The alternative institutional arrangements present in *FN* and *AC* represent alternative solutions to the problem of developing substitute hierarchical mechanisms to discipline agents.

I can illustrate the classification procedure with an example. The United States CU system does not satisfy conditions 1 and 4. However, the bonding regulation limits *de-facto* branching possibilities in many (but not all) situations. In the English Canadian case none of the conditions 1, 3 or 4 are met (although condition 2 is met).

As a result of this categorization exercise the two groups identified are:

<b>Federated-network</b>	<b>Atomized-competitive</b>
Austria	Australia
Belgium	English Canada
Finland	Italy
France	Spain
French Canada	Switzerland
Germany	United Kingdom
Luxembourg	United States
Korea (South)	
Netherlands	

<sup>20</sup>Delegated monitoring is a delicate issue to which we cannot do justice in this document. For more details see Arzbach [1] and Blanco and Fischer [3]. For an analysis of the German model see Pabst [17] and Jäger [13].

Two cases require further explanations. The Australia FC movement is completing a far reaching reform as a result of which it would fall rather under the *FN* category. However, this reform is recent and thus its level of development reflects its longer tradition as an *AC* system. Switzerland is a Raiffeisen system and as such presents most of the features of a *FN* system. Despite this common origin with the other Raiffeisen based systems it does not exercise the delegated monitoring function and in that sense it does not satisfy condition 4 required to be classified as a *FN*.

Finally, mention should be made to an alternative that is becoming increasingly popular among credit unions in the United States. Although the credit union movement in this country would fall under what I have described as *AC*, numerous credit unions have started to adopt some of the practices common in *FN* systems, by means of strategic alliances that have come to be known as "credit union service organizations" (CUSOs). Through these CUSOs credit unions pool services such as call centers, ATMs, lending centers, branch networks, service center networks, etc. The main benefit assigned to these CUSOs, and are standard to all *FN* models, is that they "allow credit unions to work together and provide services not feasible on their own while maintaining their individual identity" (Rick, [19]). These arrangements are seen as attractive alternatives to the merger pressure to which is exposed the credit union movement in that country.

### 3.2 Measuring performance: the R&S regime evaluation procedure

How can we evaluate entire regulatory and country wide network of financial institutions such as the FC? Can we articulate a cost-benefit analysis methodology that allows us to measure relative performance? It is clear that we attempt to compare performances. But performance measures implies the existence of specific goals and means to achieve them.<sup>21</sup> In a very general sense, the set of goals that have been established for FC systems in different countries should not be too different, since all of them were built under the principles of the cooperative movement. However, in the specific implementation of these goals, designers may have attributed different levels of significance to the different goals. Thus, one of the problem one has to face when attempting to compare performances of different models of governance, R&S of systems of FC is that each of these systems may have been designed attributing various goals a different level of importance. It would be inappropriate for us to judge now the relative importance of the goals established by those cooperative movements. This abstention of judgement should, if possible, be taken into consideration when formulating the research and performance comparison methodology.

One further problem that presents itself is the observability of these goals and the weight assigned by its designers in the articulation of the system. At any moment in time the only thing observable is a particular structure and a set of functioning rules and mechanisms that were put in place to achieve the goal. Possibly this structure is the result of some kind of compromise with different interests and legal frameworks in an exercise or *realpolitik* carried out by the leaders of the moment. These, taking into consideration restriction and possibilities, articulated the institutional structure giving some objectives a higher priority than others. Nowhere, or only exceptionally, will be able to find an explicit articulation of goals and weights assigned. Thus we have no choice but to infer from the data itself the weights assigned by the leaders of the hour to different objectives.

Take objective  $j$  for FC movement  $i$ ,  $y_{ij}$ . It could be for example the objective of reaching a large proportion of society (market penetration in terms of population). Alternatively, it could be insuring that

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<sup>21</sup>Some measures of performance may however not be associated to goals but that may instead be important to some stakeholders of the movement. Stability of the system might be one criteria dear to members. In this formulation we can include these stakeholder interest and in this case the measures of performance will reflect the extent to which leaders have succeeded in creating a system that takes into consideration this interest by stakeholders. I thank Roger Spear for this comment.

credits are made accessible to humbler social sectors, or small families, or small production units (smaller average credits) or to keep the institution as close as possible to its members (a strong bond). Yet another may be that members receive modern and sophisticated financial services (access to credit cards, brokerage services, insurance, etc.).

In a very general sense the desired measures of *performance* (*output*) will most likely be either maximized or minimized. This can be simplified by maximizing all objectives where higher values are desirable and the inverse of all objectives where smaller values are desirable. Taken together, the set of output objectives for movement  $i$  can be represented by the following expression:

$$O_i = \sum_j \lambda_{ij} y_{ij}$$

where  $\lambda_{ij}$  represents the weight assigned by FC system  $i$  for objective  $j$ . Of course, not all systems may have had in mind all the same objectives. This is equivalent to stating that in some movement  $i_k$  the objective  $j_l$  may have been assigned a weight  $\lambda_{kl} = 0$ . This choice may also be respected.

These outputs will be built upon a *supporting* (*input*) economic and social environment on which the FC must build. The most obvious resources required to perform the intermediation function are operating costs, fiscal resources for the supervision of the system, etc. However, much more subtle "inputs," such as the habits of the population to rely on the financial system's services for their transactions and income smoothing activities, may also be important. This could be measured by the per capita level of different forms of money or per capita level of credit. Other inputs may be relevant. To attain a certain output objective, the inputs to be used can be represented by

$$I_i = \sum_l \kappa_{il} x_{il}$$

where  $\lambda_{ij} = \lambda_{il} \forall j, l$ .

Naturally, the leaders of a system will, given certain supporting economic and social environment, attempt to achieve the highest possible value of certain objectives. In other words, the leader will attempt to

$$Max \omega_i = \frac{O_i}{I_i} = \frac{\sum_j \lambda_{ij} y_{ij}}{\sum_l \kappa_{il} x_{il}}$$

generally subject to restrictions such as

$$\begin{aligned} \frac{\sum_j \lambda_{ij} y_{ij}}{\sum_l \kappa_{il} x_{il}} &\leq b \text{ for any system } i = 1, 2, \dots, n \\ \lambda_{ij}, \kappa_{il} &\geq \varepsilon \end{aligned}$$

where  $b$  is some constant.<sup>22</sup>

The resulting formulation is, of course, the *Data Envelopment Analysis* pioneered by Charnes, Cooper and Rhodes,[8]. This non-linear model has been adapted in several different ways to generate alternative formulation of linear programming where the parameters can be estimated. One particularly popular formulation is the one where, for *each* system whose performance we are evaluating or trying to determine its efficiency, we estimate

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<sup>22</sup>In standard DEA models of profit making business enterprises the restriction takes the form:  $\frac{\sum_j \lambda_{ij} y_{ij}}{\sum_l \kappa_{il} x_{il}} \leq 1.0$ .

$$\begin{array}{ll}
& \text{Min} \quad \theta \\
\text{s.t.} & \sum \lambda_{ij} x_{ij} \leq \theta x_0 \\
& \sum \lambda_i y_i \geq y_0
\end{array}$$

This particular formulation has come to be known as the output-oriented fractional DEA linear program.<sup>23</sup> According to this formulation the maximal value possible for  $\theta$  is 1.0. The LP assigns a score of 1.0 to a system when comparison with the other systems under study do not provide evidence of inefficiency in the use of inputs and the production of outputs. For less efficient systems the program will assign a score  $\theta \leq 1.0$ . In this case, a linear combination of other systems could produce a higher level of outputs given the level of inputs available. In a graphical sense,  $1.0 - \theta$  represents the radial distance from the output frontier (the set of points that characterize the maximum possible output for every possible combination of inputs) to the system under consideration.

### 3.3 Measures of performance

I obtained quantitative measure of level of performance of the systems within both models (*FN* and *AC*). Ideally, these measures of performance should include measures of: market penetration in terms of population and financial assets, stability of the system and level of services provided to the members on the output side. On the input side, cost of regulation and supervision both for taxpayers and members of the system, level of services provided to members. From a more practical point of view, obtaining system wide data for sixteen countries is an enormous task. In contrast to the stock banking sector, for which data is readily available year after year in commercial sources such as the IMF's *International Financial Statistics*, no equivalent exists for the FC sector. These statistics are typically buried in more aggregated measures of the financial system as a whole. Thus, for this work I used data that were generated by a study carried out in the Centre de gestion des coopératives of the École des Hautes Études Commerciales, Montreal (Côté *et al.* [10])(C). This volume presents summary statistics and institutional data for FC movements in 125 countries. The data for the sample of 16 countries/systems presented here was obtained from this study. I also used data obtained from the International Monetary Fund's *International Financial Statistics* (IFS) and an issue of *Euromoney* (June 1998)(E) with a survey of "The world's largest banks" including statistics of the largest banks in all countries in our sample. In brackets I have noted an acronym for the source.

I chose to compute ratios that, while providing a measure of performance, were computable with the limited set of variables available in Côté *et al.* [10]. Specifically, from the data available I chose the following set of ratios or variables, and indicated the acronym for the source in brackets after the first mention (C,IFS,E):

- **Inputs:** Domestic credit (IFS)/Population(IFS); GDP(IFS)/Population; Population.<sup>24</sup>
- **Outputs:**FC Assets(C)/Population; FC Assets/Assets of Largest Bank(E); Number of Members(C); Solvency ratio (SR) of banking system(IFS)/SR of FC(C); Number of Units(C)/Number of Members(C); FC Credit(C)/Claims on private sector by the banking system (IFS).

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<sup>23</sup>Other formulations of the same DEA problem are possible.

<sup>24</sup>Domestic credit (line 32 in the IFS under "Banking Survey") includes claims by the banking sector on government and on the private sector. As such it is a measure of credit creation in the economy.

These variables can be considered "inputs" and "outputs" in the following sense. The FC movement has as its base of operation an economy that is dimensioned by its domestic product (GDP), the level of overall development of the financial system (of which the FC is part) and the size of the population. The level of development of the financial system is measure here by the creation of credit in the economy (domestic credit). Societies with a less-developed financial system will, *ceteris paribus* display a low level of per capita domestic credit. These "inputs" are the base on which to build the system of FC (the "output"). These "outputs" are:

1. *Market penetration and stability:* More successful FC systems will have a higher level of participation in the financial systems in terms of financial assets and number of members. The ratio of FC Assets/Population, FC Assets/Assets of Largest Bank and FC Credit/Claims on private sector by the banking system, can be viewed as measure of both, penetration in the economy of the FC system, and as a proxy of stability of the system. Unstable systems will tend to suffer periodic crisis (at individual or system level) resulting in large contraction of asset, leading to a relatively small ratio.
2. *Use of resources/capitalization:* Well managed systems will make a more efficient use of scarce resources such as equity capital. A more efficiently managed system should yield solvency ratio (the ratio of equity to assets) inferior to a less efficiently managed system.
3. *Services:* The facility of access of members to a FC is given by the ratio of Number of Units/Number of Members. It could be argued also, that *ceteris paribus*, the size of the membership should also be a measure of the level of services provided by the system, although it obviously is also a measure of market penetration.

No doubt, I would have liked to use additional ratios that could measure a wider range of outputs and inputs, but this data was simply not available at the time of the writing of this paper.

## 4 Results

In Table 1 I present statistics for the "inputs" and "outputs" for both systems compared in the DEA. There we provide means, standard deviations of the respective variable for both systems and the results of three tests of difference: the Wilcoxon inversion test (U-test), the Wicoxon-Man Witney rank sum test, and the Kolmogorov-Smirnov two-sample test. We have also provided the results according to six levels of significance.

A quick perusal of the table shows little or no difference, in a statistical sense, in the inputs (the first three rows). The picture changes with the last six rows of "outputs", where most of them show statistically significant differences according to one or more test. The only two "outputs" that show no difference are Number of customers (not surprising considering that it is taken in absolute and not relative terms), and the Solvency Ratio of the banking system over SR of the FC system, although the difference is in the expected sense: the ratio is inferior for *FN* than for *AC* systems. If we take the ratio of customers to population we obtain the whooping difference of 35.4% to 20.1%. That is, in *FN* over a third of the active and not active population of the country chooses to join a FC, while in *AC* only one in five does! While both numbers are impressive, so is the difference.

It is remarkable that these results are so unambiguous and consistent for all ratios. It may perhaps be argued whether or not the ratios mean exactly what I proposed they mean. Yet it is a fact that these ratios, interpreted as I did or otherwise, are indicators of performance of the systems, and that by these measures the *FN* based systems show considerable more strength than those based on the *AC* model.

Variable	Federated-networks Atomized-competitive				Test		
	Mean	Stand. Dev.	Mean	Stand. Dev.	T1 (a)	T2 (b)	T3 (c)
Domestic Credit / Pop	24 345,0	11 170,3	28 853,0	19 492,7	no reject	no reject	no reject
GDP / Pop	22 240,2	7 479,1	22 751,7	7 755,9	no reject	no reject	no reject
Population	25,988	28,9	67,301	90,6	no reject	no reject	reject (1)
Assets Coop / Pop	8 500,6	3 509,7	2 121,6	2 391,6	reject (7)	reject (7)	reject (5)
Assets Coop / Assets LB	0,95	0,6	0,43	0,6	no reject	reject (2)	reject (2)
Nbre of customers Coop (millions)	9,214	11,4	14,091	25,5	no reject	no reject	no reject
Nbre of units / Nbre of members	1 473,6	2 563,5	433,7	548,9	reject (3)	reject (2)	reject (2)
SR of Banking Syst / SR of CF	0,38	0,4	0,49	0,4	no reject	no reject	no reject
Credit Coop/Customers)/(Claims PS/Pop)	0,80	0,5	0,33	0,3	reject (4)	reject (4)	no reject
Test					(1) 20.0%		
(a) The Wilcoxon inversion test (U-test)					(2) 10.0%		
(b) Wilcoxon-Mann-Whitney rank sum test of two populations					(4) 2.5%		
(c) The Kolmogorov-Smirnov two-sample test					(5) 2.0%		
					(6) 1.0%		
					(7) 0.5%		

Figure 1:

Further results are presented in two stages. First I present in a graphical fashion the variables that display the largest differences. This I do first in two dimensional graphs with one "input" and one "output" variable each time. These graphs could be understood as a DEA evaluating cases on the basis of a single criteria (the "input" and the "output" presented in the graph). Finally, I present the results of the DEA in which priority settings by each system implicit in the data are taken into consideration.

In Figures 2 and 3, I plot two measures that appear of particular interest. They display examples where the most evident difference of performance between the two groups is observable. The combinations of inputs/outputs plotted are:

- Domestic Credit/Population (input) against FC Assets/Population (output);
- Assets of Largest Bank/Population (input) against FC Assets/Population (output).

In these graphs I have plotted the "inputs" on the horizontal axe and the "outputs" on the vertical axe. As a results the graphs can be interpreted a scatterplot with an "efficient frontier" given by the line that joins the most Nord-West points. On the efficient frontier one finds the systems that have achieved the highest level of "outputs" given a certain level of "input". I have used different bullets to represent the *FN* (triangles) and the *AC* (squares) models cases.

In the two graphs the cases operating under the *FN* model present a considerable superior level of performance –measured here by dominance of cases on or near the efficient frontier– than the cases operating under the *AC* model. Not all combinations of inputs/outputs showed the same degree of differentiation, with all systems more or less plotted along a line with positive slope. In no combination of input/output did the *AC* model display a dominance on the efficient frontier over the *FN*. Note the unusual behavior of Switzerland.<sup>25</sup>

<sup>25</sup>One case requiring more explanation is the United States. There, FC are not the only "mutual" intermediary. Among the Savings and Loans Associations (S&L) we find both, stock owned and mutuals. To reflect this fact we have added to the data obtained for the FC system, those for the entire (mutual and not mutual) S&L system (source: IFS). Due to the fact

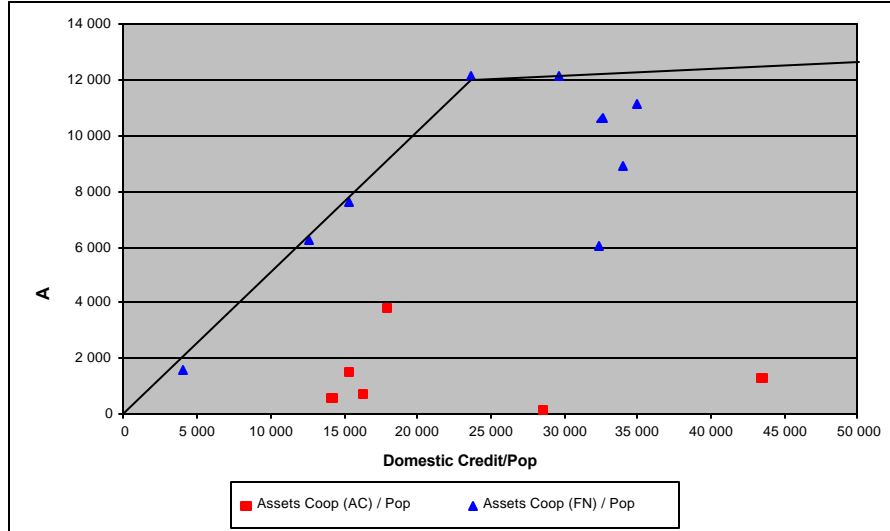


Figure 2:

#### 4.1 DEA results

The results of the DEA are presented in Table 2. There I present the scores obtained by members of both systems. I performed two different runs. One in which I estimate a "standard" DEA and one in which I estimate a "modified" DEA that has been adapted to allow differentiation between cases that yield  $\theta$  scores of 1.0 (on the efficient frontier). This modified DEA does not push the frontier further to the Nord-West, it simply consists of a mathematical trick that allows a ranking among cases that are on the frontier. The values of  $\theta \leq 1.0$  estimated in the standard DEA, should remain unchanged in the modified DEA.

If we look at the results of the standard DEA we see that practically all FC systems operating under the *AC* model display values of  $\theta \leq 1.0$  with the only exception of the United States. On the other hand, all (!) systems operating under the *FN* model yield values of  $\theta = 1.0$ . In other words, all *FN* based systems are on the efficient frontier, while only one of the *AC* based systems is placed there! Particularly low are the values for English Canada, UK and Australia. When we look at estimated  $\theta$ -values for the modified DEA, we observe the re-classification of the cases. The modified  $\theta$ -values vary from 1.03 (Germany) to 98.7 (Luxembourg), the latest being an extreme value associated with the particularities of the Luxembourg economy. The United States, an *AC*-country, obtains a score of 2.11, well above several of the *FN*-countries.

Finally, we attempted to group the sample of countries according to other criteria: religion (catholic vs. protestant), culture (Latin vs. Anglo-saxon). No other grouping criteria separates clearly the more and less performing groups. All of those alternative grouping generated mixtures of well-performing and less-performing cases. Only the governance, R&S regime distinguished clearly the two groups in terms of performance.

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that we do not know what proportion of the S&L are mutual and stock owned, we have used the total, thus biasing the data in favor of the United States based system. We obtain thus two observations: one representing purely the CU system and one representing the CU+S&L systems.



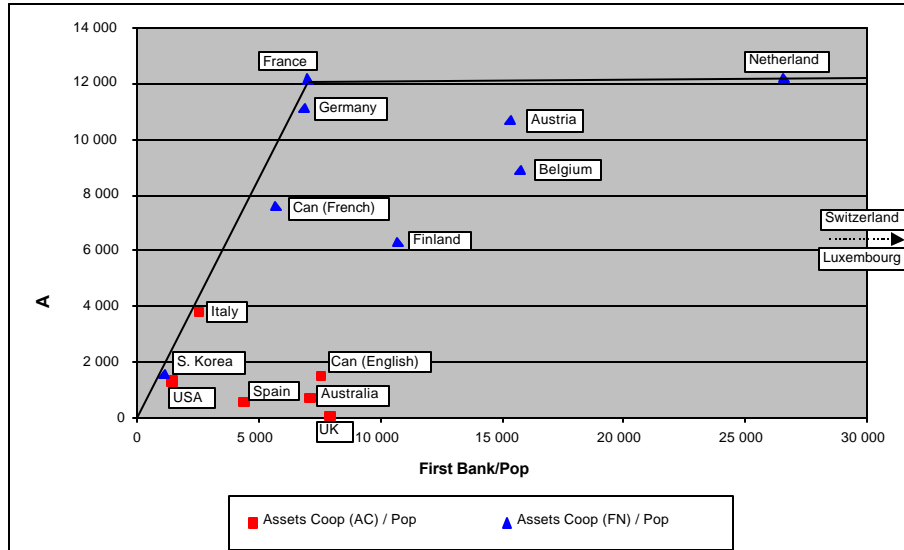


Figure 3:

## 5 A research agenda

The results presented pose a challenge to researchers in the way of explaining the differences in performance between one and other system. What can explain the underlying factors that leads to the fact that the *FN* styled organization and governance display a superior level of performance, taken by system-wide measures, as the systems operating under the *AC* model? Is it that the R&S environment that provides more favorable conditions for the operation of FC? Or, alternatively, is it that federated networks present a structure of business organization for FC that favors a more sustained development of the system? Is it a combination of both? To what extent are the features we have identified as common all essential to the superior performance of *FN* systems, or are some of them superfluous? Or perhaps is the differential performance due to some other hidden factor not identified in our list? What are the forces that are driving the United States credit union movement to adopt a *FN*-like structures such as the credit union service organizations (CUSOs). These are all important questions to understand the meaning of this result and to provide more precise guidance in policy making. Identifying the underlying factors that explain the relative success of the *FN* based systems will be of key importance to insure that, those systems that choose to adopt the model, will do so incorporating the elements that are essential to the success while ignoring those that may be superfluous.

Intuition suggests that strategic alliances of the form of *FN* or CUSOs are forms of business organizations that present numerous benefits to its members. They are an alternative to outright mergers and integration of numerous FC into consolidated organizations and the adoption of one or the other should

Country	Standard DEA		Modified DEA	
	Theta - AC	Tetha - FN	Theta - AC	Tetha - FN
Can (French)		1,00		2,17
Can (English)	0,59		0,59	
USA	1,00		2,11	
France		1,00		1,48
Germany		1,00		1,03
Switzerland	0,60		0,60	
Netherland		1,00		1,29
Austria		1,00		1,26
Spain	0,73		0,73	
Belgium		1,00		1,78
UK	0,27		0,27	
Italy	0,89		0,89	
Australia	0,71		0,71	
S. Korea		1,00		8,06
Finland		1,00		1,43
Luxembourg		1,00		98,69
<b>Mean</b>	<b>0,68</b>	<b>1,00</b>	<b>0,84</b>	<b>13,02</b>

Figure 4:

be based on strict economic criteria of costs and benefits. However, why is it that FC movements, when they decide to integrate, tend to adopt these bottom-up *FN* or *FN*-like business organizations rather than the fully top-down vertically integrated model? Or is perhaps the *FN* model just a stage toward full integration of FC into the consolidated model? Further, how important is the R&S component present in the *FN* model but absent in, say CUSOs or the Swiss version of limited networking.

## 6 Conclusion

The purpose of this paper is to present the results of a research on the governance, regulatory and supervisory (R&S) environment under which FC operate. Specifically I seek to respond to two different questions. The first, is whether there are clearly identifiable models of FC governance, regulation and supervision (R&S). The second is, assuming that such models are identifiable, whether it is possible to develop a methodology to evaluate the level of system wide performance of these models in a credible manner.

Based on an analysis of 16 cases of "mature" FC systems we obtain the following result. There appear to be two dominant models of governance, regulation and supervisions (R&S) of FC, one that we will call the *federated-network (FN)* model, and one that we will call the *atomized-competitive (AC)* model. These two systems present certain constant characteristics in terms of governance, R&S across groups of countries and seem to be related to historical factors. In terms of performance, we reject the hypothesis of equal performance between FC systems operating under both environment. FC operating under one of those models, the *FN*, appear to display either equal or superior (but not inferior) performance that those operating under the other.<sup>26</sup> As measures of performance we used market penetration in terms of

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<sup>26</sup>Roger Spear of the Open University, UK, noted rightly that "federations are not stable and rely on a degree of homogeneity (in size, business and power) amongst their members". One clear evidence of tensions produced by absence of homogeneity (size in this case) in the German Raiffeisen system is reported in Brazda and Schediwy [6]. Germany is not the only system with first-tier FC operating in large cities with correspondingly large memberships. The merger policies of small FC promoted

population and financial assets, stability of the system, level of services provided to members, etc. As could be expected, the *FN* model did not outperform the *AC* model in every measure but under no measure did we observe the inverse. Taken together, using a Data Envelopment Analysis (DEA) based measure of a distance to an efficient frontier, the *FN* model performed equally well or better than the *AC* model.

The difference of performance does not appear to be attributable to cultural religious or political factors, as has for example been argued by MacPherson [16] to explain differences in performance between the English Canadian credit union and the French Canadian *Caisses Populaires Desjardins* movements. Rather, the difference in performance appears to be related to governance and R&S of the system. This result is of crucial importance since it suggests that it might be possible to enhance the level of performance of a FC system by means that are considerably easier to control than cultural or political factors. It also suggests that in the design of a FC system with its R&S framework –as it is being done in many developing countries– it is possible to aim for a model that has shown historically to generate superior levels of performance.

Although the analysis was performed with a limited set of data, contextual evidences suggest that it is unlikely that a more complete database may invert these results. Nonetheless it is of interest to test this hypothesis with a wider sample of countries and systems of FC that include not only "mature" but also "new" systems with a methodology that controls for these differential levels of development.

These results question the assumption made by several researchers in the field of microfinance, according to whom there is little or no historical experience in the R&S of microfinance intermediaries. Thus, that it is not possible to propose standards of R&S that are uniform and applicable to a large set of situations or countries. While these statements may perhaps have some validity for some MFIs such as the NGOs they are certainly *false* for FC and (to a lesser extent) community banks. For these, a long-established tradition and praxis exists in terms of appropriate framework for their governance, R&S. In fact, there exist a large set of countries in which the practices of governance, R&S of MFI has reached a considerable degree of uniformity including (mostly) industrialized countries and some developing countries.

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in several networks can only accentuate the disparities in the future. The effect of the appearance of this large FC in the networks should rightfully be a point of concern and indeed a key issue that merits research. The data available did not allow us to consider this as an explanatory variable.

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