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SURVIVAL AND FAILURE OF BRAZILIAN CREDIT UNIONS: AN ANALYSIS OF CORPORATE GOVERNANCE CHARACTERISTICS

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Bruno José Canassa
MSc. Student at University of São Paulo
Avenida dos Bandeirantes 3900, Ribeirão Preto/SP
bjcanassa@fearp.usp.br

Davi Rogério de Moura Costa
Professor at University of São Paulo
Avenida dos Bandeirantes 3900, Ribeirão Preto/SP
drmouracosta@gmail.com

Mateus de Carvalho Reis Neves
Professor at Federal University of Viçosa
Avenida Peter Henry Rolfs s/n, Viçosa/MG
mateus.neves@ufv.br

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1. Introduction

Credit unions are an important part of the Brazilian Financial System. They are financial institutions that acts intermediating financial banking services for their members, creating to them services in order to generate benefits in terms of loans and deposits (Smith, Cargill, & Meyer, 1981). As user-owned and user-controlled organizations is expected that credit unions act on behalf of their members' interest and have their position increasingly solidified. Actually, in some countries like Netherlands the credit unions composes one of the largest institutions of the financial system (Bos & Kool, 2006; The European Banks, 2017).

In last recent years, the assets of Brazilian credit unions grew up on a rate of 15.2%. This rate is around of three times the rate of the others financial institutions (5.4%) according to Brazilian Central Bank (2017). This growth has been based on a diminishing rate of 3.4% a year of the number of credit unions. Then, this growth might indicate a process of consolidation of the Brazilian credit unions (Bauer, Miles, & Nishikawa, 2009). It is corroborated by Soares & Costa (2018). They pointed out a range of the possibilities for discontinuity in cooperatives. Acquisition and merger were more frequent.

The study of this consolidation process in Brazilian credit unions offers a good field to understand discontinuity. For instance, find which factors lead a company to end its activities. This type research has been explored in several models of organizations. Josephy, Harrison, Sirmon and Carnes (2017) provide a framework to investigate the discontinuity of any organization. However, even this paper, does not explore why and how it occurs in cooperatives.

According to Cook (1995) and Cook and Burress (2009) any cooperative organization follows a life cycle theory. For them and Bauer et al. (2009), when the financial "health" of a company starts to decrease, in the fourth stage, a fifth stage starts. Then the board of directors acting on behalf of owners must choose a strategy in order to fix problems originated by ownership rights "vaguely defined". For instance, they need to decide on liquidate, continue, or shift characteristics of the rights of control. Any alternative chosen implies on changes into governance structure.

Carvalho, Diaz, Bialoskorski Neto and Kalatzis (2015) explore the discontinuity of Brazilian credit union. They figured out financial indicators that affect the longevity of cooperatives. Also, Canassa and Costa (2018) highlight the importance of the performance for discontinuity of credit unions. They find out that the performance of credit unions before of discontinuity is worse than those cooperatives that have survived.

Although both papers demonstrate a link between discontinuity and performance, they do not explore relations with ownership and governance structures. However, it is important. Josephy et al. (2017) demonstrate ownership as an important dimension to analyze discontinuity of organizations and Daily and Dalton (1994a) and Wang and Hsu (2013) inform that characteristics of governance structures such as board composition, size, independence, and CEO-duality, has significant impact on bankruptcies.

In this paper, we shed lights on the link between governance structure characteristics and discontinuity of Brazilian credit union. This topic has been neglected on the specialized literature. We use a sample of discontinued cooperatives to identify if characteristics of governance structure were determinant to them to choose the exit strategy of the market. For this, we proceed to make an exploratory analysis over the characteristics pointed as prominent in corporate governance for cooperatives. We expect with our analysis to start an agenda that help to understand the determinants of the mortality of credit unions.

The sequence of this paper includes a theoretical framework containing a brief state of art and the case of discontinuities of Brazilian credit unions, as well the theoretical

foundations for governance. Then, the data utilized and methods are explained. Finally, we will present the results and point out our conclusions and contributions.

2. Theoretical Framework

The impact of corporate governance characteristics on discontinued firms have been studied over the last decades. Early works in this theme found that the presence of some structures like CEO duality and the quality of board act as determinants for bankruptcy in IOFs (Daily & Dalton, 1994a, 1994b). The authors, posteriorly reinforced by works like Sundaramurthy and Lewis (2003), suggest a continuous cycle between corporate governance structures and performance. According to them, the performance is determinant to the discontinuity of activities. In other words, organization whose performance is poor continually cannot return the investment properly to its owners. It creates other problems and achieves the insolvency as apex. Then, the owners need to choose the discontinue the firm.

Moreover, prior research on determinants for credit unions discontinuance focus on its efficiency or financial performance (Bauer et al., 2009; Carvalho et al., 2015; Canassa & Costa, 2018), or socioeconomic reasons (Barron, West & Hannan, 1994).

Several researches point out the important role of ownership and corporate governance in the process that leads to the exit of activities. According to Darrat, Gray, Park, & Wu, (2016), Wilson, Wright & Scholes (2013) and Wang & Hsu (2013) board composition and CEO characteristics are determinants for discontinuity, or they at least imply on risk to discontinuity. These studies were developed to several types of organizations, such IOFs, family firms, and financial institutions.

However, although credit unions are in constant process of aggregation in all countries, that is in discontinuity, the role of corporate governance characteristics for this has not yet been investigated in this type of organization deeply. Theoretical works like Cook (1995) and Chaddad and Iliopoulos (2013) highlighted it as they mentioned the allocation of ownership rights as important factor to the existence of a cooperative.

The next sections present the fundamentals concepts for understand the situation of discontinuity of Brazilian credit unions. First, a definition of discontinuity, some numbers found in Brazil and a potential motive related to corporate governance that leads the members to opt for discontinue the cooperative. Then, we explore the corporate governance characteristics and its theoretical foundation.

2.1 Discontinuity and the case of Brazilian credit unions

Josephy et al. (2017) reviewed the empirical literature on firm discontinuity, pointing out several motives for discontinuance like stages of development, industrial organization, and corporate governance. In this paper we use a definition of discontinuity pointed out by Josephy et al. (2017), being the end of the current ownership of a firm. This definition is important because discontinuity could not be intrinsically associated with ceased operations or insolvency. For instance, in a fusion between two companies their operations might continue, but under new ownership and belonging to another new firm. Also, an insolvent firm would discontinue its operations by the end of its ownership, forced or by option of its owners, and not only by the insolvency itself.

The acquisitions are important in the analysis of discontinuance of Brazilian credit unions. In fact, in recent years, the Brazilian Central Bank (BCB) has been stimulating acquisitions among National Brazilian Credit Union System (SBCC). Apparently, it aims to promote gains derived by economies of scale and creates more competitiveness in the banking services sector (Banco Central do Brasil, 2017). According to Soares and Costa (2018) 228

operations of acquisition among credit union occurred in Brazil, considering the period 2008 to 2015.

However, although the acquisition process was the majority of the cases, it did not the only reason. Canassa and Costa (2018) and Soares and Costa (2018) found that, besides the acquisition operation, ending of activities, chosen by owners themselves, also was an important reason for discontinuity.

Cook (1995) points out that cooperatives follow a life cycle based on its financial "health". For him, the financial health concept considers the financial condition of members and of cooperative organizations. Each phase of the life cycle has its own characteristics, such as the growth of members' heterogeneity that stimulate adjustments on corporate governance mechanisms.

According to the author view, when financial "health" of a group (co-op and members) starts to decrease, the management and owners must choose a strategy in terms of better allocation of ownership rights. In this way, fusion and or acquisition are possible choices, for example. Therefore, the presumed low financial "health" might be a determinant factor to discontinuity of cooperatives, if we consider that it affects the current characteristics of ownership, operations and control.

Looking for determinants Carvalho et al. (2015) found financial indicators as critical points to the longevity of credit unions. Canassa and Costa (2018), in the same way, investigate financial health of discontinued credit unions. They also found that those co-ops, acquired by another co-op, were operating in a level below of the continued credit union.

Although theoretical studies point out reasons that lead to this decrease in financial "health" and potentially discontinuity, empirically there are few papers investigating the effect of governance characteristics on credit union failure. There are studies on other types of organizations; their results suggest that corporate governance factors has been affecting the longevity of organizations. Assuming it as hypothesis, and considering that governance and performance are endogenous, in this paper we explore the governance characteristics of discontinued credit cooperatives.

2.2 Governance in cooperative organizations

Cooperative organizations are companies whose owners also are users of its products and services. The members' ownership rights become vaguely defined as cooperatives start to growth, and the relevant information to make decisions is located in many individuals within the organization. According to Cook (1995) due to the characteristics of the property rights the life cycle of cooperatives presents five problems: horizon, portfolio, free-rider, control, and influence costs. They are challenges to the management of these companies.

Chaddad and Cook (2004) pointed out different models of cooperatives, considering the characteristics of residual rights. Additionally, Chaddad and Iliopoulos (2013) using a set of peculiarities of rights of control propose a range of governance structures to co-ops. Iliopoulos (2015) made a link between these two papers. In his investigation, the author has used two terms: ownership and governance model. The former separates the models according to the capitalization of the cooperative, and the latter classifies the model as function of allocation of authority.

In this paper, we agree with Iliopoulos (2015). We also consider that capitalization mechanisms and allocation of authority are important to study governance of cooperative organizations.

The regulator of Brazilian Credit Union forbids investor capital in their ownership structure. That is, they cannot receive capital from investors, even if they are members. In this way, there are only traditional cooperatives, if we consider the mechanisms of capitalization

or ownership models in these organizations. It is good, because we can analyze, for a while, just characteristics of governance model or formal authority allocation and its effect on discontinuity of co-ops.

Considering the Agency problem in organizations as a baseline to study governance, the literature on this topic stresses the board of directors as apex to represent the owners' objective function. Becht, Bolton and Röell (2003), for instance, highlights its importance as an alternative to solve the collective action problem. Adams, Hermalin and Weisbach (2010) describe its roles and characteristics. A critical responsibility of this governance structure is to monitor the managers. So, its size becomes a strategic choice due to the effort expended by members. As size has increased, measured by member number, the marginal effort of the average member might be reduced given the free-rider problem or shirking. Therefore, in this paper, we check out the size of board of directors.

Alchian and Demsetz (1972), Aghion and Tirole (1997) and Aghion, Dewatripont and Rey (2004) points out other characteristic important to study governance: the allocation of control, that is, delegation as important strategy to solve problems from collective ownership. Then, we consider not only the board but also all decision bodies that compose an organizational architecture. As Chaddad and Iliopoulos (2013) and Costa et al. (2012), we investigate what bodies compose the governance structure of Brazilian Credit Union. This information is helpful to understand how delegation of formal authority occurs in co-ops.

According to Chaddad and Iliopoulos (2013) There are three different models in cooperative organizations: traditional, extended traditional, and managerial and corporate model. The difference between them is a function of presence or absence of the bodies into organizational architecture. In particular, to co-ops from South America the authors have reported only two models: traditional and extended traditional model. The first one encompasses three decisions bodies: General Assembly, Board of Directors, and Supervisory Board. It differs from the extended model because the latter has a group of executive directors hired or elected by members of the Board. Therefore, we shall verify the governance structure and presence of committees.

Fama and Jensen (1983) pointed out the separation of decision process as determinant of survivability of companies. It is recommended if company is complex and if its ownership structure is dispersed. The concentration of decision control and management is better if the firm has the opposite characteristics. Several researchers have to try to understand it. For example, Anderson and Anthony (1986), Baliga et al. (1996), Brickley et al. (1997), Goyal and Park (2002), and Bhagat and Bolton (2008). Using the concept of CEO duality some authors have highlighted the benefits of concentration; others have pointed out gains from separation. Therefore, this debate is no longer consolidated. Then, we use this variable in order to contribute with it for co-ops.

Independence of manager means that the board assumes its roles and delegates to CEO the formal rights of control of company. Adams et al. (2010) described its roles as disciplinary and advisory the management.

Becht et al. (2003) and Hermalin and Weisbach (1998) have shown manager independence as important factor to performance of firms. That is, firms performance is better if Board focus on its roles and managers on the conduction of the company.

3. Data and methods

In this paper, we have used data from first level Brazilian credit unions for the year 2016. We constructed a set of corporate governance variables using credit unions' current bylaws in 2016. The Brazilian Central Bank made those bylaws available for this analysis.

Moreover, other variables used in this study were constructed trough open data available on website of BCB and Brazilian Institute of Geography and Statistics (IBGE).

We construct a dummy to represent a continuity or discontinuity credit union; this information was available at monthly reports accessed on Brazilian Central Bank's website. Using the concept of discontinuity, we consider a credit union as discontinued if it lefts the register, without comeback in some months in the same year. This verification was important because a credit union may stop temporarily its activities, returning to the operations sometime after. It avoids the possibility we classify a co-op as discontinued even it only stopped its activity briefly. After to impose both conditions, that is presence of bylaw and discontinuity condition, we hit a sample of 44 discontinued co-ops.

Considering the exploratory nature of this study, we start to describe the interested characteristics of governance structure and other related to literature on failure of firms. This additional analysis helps us to figure out other possible explanations for discontinuity of co-ops. For example, the effects of size and age on credit union mortality as pointed out by Barron et al. (1994) and organizational and industrial organization characteristics mentioned by Josephy et al. (2017). We use the amount of equity as measure of size of the co-ops; the year of existence as proxy to age; competition on its geographic region, the type of association (common bond) and the type of operations allowed by the Brazilian Central Bank (more or less complex) as characteristics proxies for the organizational and industrial characteristics.

As in the paper we focus on the corporate governance characteristics, we describe these characteristics considering two groups: continued and discontinued credit unions. Although this first analysis does not aim to find determinants, it is important to situate the distribution of characteristics among groups in order to add more information in the further analysis.

For some characteristics, such as board size, presence of other committees, the process of identification this information on the bylaws was simple. The document is clear about it. However, we must to assume the amount of members like the maximum number that could be elected. Although this it is not necessarily the real number of directors elected, it is the potential quantity opted by the members.

Also, we consider two types of governance model, as pointed out by Chaddad and Iliopoulos (2013) for cooperatives in South America. We named “expanded model” when the credit union have a board of directors and a group of executive directors, and “traditional model” when the cooperative has just a board of directors or a group of executives.

The duality was identified when the bylaw makes clear that the president of the cooperative, elected in general assembly assumes the position of principal director. In cases where this is not clear, duality was not considered. Finally, we measure the independence of the board by the ratio of the number of board members that the bylaws point out to have no executive function on the number of board members potentially elected.

We conduct tests to verify possible differences in the corporate governance variables between two groups of discontinued and the continued credit unions. For variables characterized as quantitative, we performed mean and median tests among the groups. For the qualitative governance variables, ANOVA tests to detect statistical difference between the groups caused by the fixed effect of discontinuity.

4. Results

As pointed, from a population of 1,050 first level credit unions in Brazil in 2016, we generate a sample of 44 co-ops characterized as discontinued co-ops. It means that 4.2% of the credit unions end its activities in that year.

The Table 1 shows the frequency of continued and discontinued co-ops in the population (total), considering the size measured in terms of total equity (E). On the table, we highlight the frequencies of groups. For example, the 2.3% means the discontinuity rate of large cooperatives considering the total of cooperatives that closed its activity in 2016.

Table 1: Frequency of discontinuance by size.

	Larger Credit Unions ($E \geq 11.5$)*	**Average Credit Unions ($11.5 > E \geq 1.65$)***	**Smaller Credit Unions ($E < 1.65$)***	**Total**
Discontinued	1 (2.3%)	18 (40.9%)	25 (56.8%)	44 (4,2%)
Continued	261 (25.9%)	507 (50.4%)	238 (23.7%)	1,006 (95,8)
Total	262 (25.0%)	525 (50.0%)	263 (25.0%)	1,050

* Value in R$ millions.
Source: The authors.

The results indicate the size as important variable, as we can note the majority of credit unions that ceased its activities in 2016 were small organizations. Around of 56.8% discontinued co-ops had less than R$ 1.6mi in equity. This result is in accordance with Barron et al. (1994). In other words, small credit unions seem do not survive a local competition with banks or another credit union. Then, probably, the members choose to end the company activities. If his option consider the expected value of transaction with a credit union, so we can infer that members choose to discontinue their structure, expecting better benefits from contracts with other organization[1], which could be or not a co-op. In addition, if he continues as member in another credit union, it explains an acquisition or fusion; and it maybe is an explanation to a huge rate of growth of member number (an annual rate of 10.9% between 2010 and 2015 according to data from the Organization of Brazilian Cooperatives) in Brazilian credit unions in last decade.

An important information is about a process of consolidation of credit unions in Brazil. Although the table shows only 4,2% as proportion of co-ops that ended its activity in 2016, if we extend this analysis to 2008 – 2015 the total number is 513 credit unions. Therefore, the consolidation of credit union starts before of 2016, and it is diminishing a decreasing rate.

On the Table 2, next page, are disposable, by group (continued or discontinued), the age of credit unions. This information, according to Barron et al. (1994), is important because it contributes to understand the credit union mortality.

We found that young credit unions are more likely to end its activity compared to similar elderly. A candidate explanation is its size. In general, young credit unions are small. Then, probably these credit unions faces competition with consolidated financial institutions and fail to offer services to their members, which choose to end the credit union. Although we found a moderate correlation (0,27) between size and age, news researches must be explored.

Table 2: Frequency of discontinuance by age.

	Mature Co-ops (Age > 28)	**Intermediate Co-ops (28 > Age > 15)**	**Young Co-ops (15 > Age)**	**Total**
Discontinued	3 (6.8%)	11 (25.0%)	30 (68.2%)	44 (4,2%)
Continued	234 (23.3%)	513 (23.3%)	259 (25.7%)	1,006 (95,8)
Total	237 (22.6%)	524 (49.9%)	289 (27.5%)	1,050

Source: The authors.

[1] Important to consider a possibility of member maintain his condition of member and client in other banks. We do not consider a service or product of banks and credit unions as perfect substitute.

Along with Canassa & Costa (2018), we consider a possibility of these credit unions may have performing poorly before discontinuity. Then, its financial health inhibits these organizations to reach the stage where corporate governance gains importance, with increasing heterogeneity among members and the need to strengthen property rights.

Considering size and age together, the discontinuity process might be a dysfunction of the regulation process exercised by Brazilian Central Bank. The regulator has requiring specific structures for credit unions, and it can affect negatively its operating costs. If these organizations are not ready to assume new costs, then it can explains the choice of members and managers. That is, to end the activities.

Another potential explanation is the regulation from second level credit union. That is, a federate co-op, created by local credit unions to coordinate its activities as group. Together, these co-ops start to act as System[2]. Then, they also create rules for each co-p of the system. So, it is possible that these rules, viewed as internal system regulation, are increasing its regulatory costs. We suggest news researches on this topic.

As Josephy et al. (2017) we explore in this study the potential effect of geographic region on the likelihood of discontinuance of credit unions. Table 3 show us the distribution of co-ops, which finished its activity in each Brazilian region.

Before to analyze the numbers is important to recognize a concentration of credit union on the richest regions: southeast and south. Almost 80% have headquarter on these regions.

Table 3: Frequency of discontinuance by region.

Region	**Discontinued**	**Continued**	**Total**
North	5 (10.4%)	43 (89.6%)	48 (4.6%)
Northeast	6 (6.7%)	84 (93.3)	90 (8.6%)
Southeast	14 (2.8%)	484 (97.2%)	498 (47.4%)
South	15 (4.5%)	317 (95.5%)	332 (31.6%)
Central-West	4 (4.9%)	78 (95.1%)	82 (7.8%)
Brasil	44	1,006	1.050

Source: The authors.

Considering this concentration, the Southeast region has the lowest mortality rate of cooperatives in Brazil. In other words, the relation between total and discontinued of credit union is only 2.8%. Spite of great number of organizations, apparently the competition make these co-ops better than others in another state region.

In another side, is remarkable that the Northeast and North regions, with few cooperatives, have the highest discontinuity rates. The North region has, at least, twice times the rate of mortality compared to any other region. Maybe it is representing the developing economic system of region. That is, poor region implies on few cooperative organizations and less structured companies. If it makes sense, maybe they are more susceptive than another credit union, for instance those located on south, to finish its activity.

Another potential explanation consist on the action of Brazilian Central Bank, which has been encouraging acquisition or fusion among credit unions on south and southeast. According to the regulator, it is to stimulate a competition and consolidation of co-ops.

To understand a distribution of size and age in discontinued credit union for each region we create present a Table 4. The percentage number on the table represents a proportion of, for instance, small co-ops of the region in the group of smallest discontinued credit unions (Table 1). The same rationality is for young credit union.

[2] There are, at least, three Brazilian Systems Cooperatives: SICREDI, SICOOB, and CONFESOL. SICREDI and SICOOB are bank owners. That is, each of them has a Cooperative Bank.

Table 4: Frequency of discontinued credit unions by region, size and age.

	Smaller Credit Unions	**Young Credit Unions**
North	3 (12.0%)	5 (16.7%)
Northeast	4 (16.0%)	5 (16.7%)
Southeast	9 (36.0%)	7 (23.3%)
South	8 (32.0%)	12 (40.0%)
Central-West	1 (4.0%)	1 (3.3%)

Source: The authors.

The South and Southeast region have a higher frequency of credit unions (small and young) that finished its activity in 2016. This may be an evidence of a strategy adopted by co-ops, which aim is to become larger. It can be viewed as an answer to the regulators - Central Bank or System, that is recommending a fusion among co-ops in these regions.

In opposite side, on North and Northeast regions the proportion of young and small cooperatives that have ceased its activity is not high. A potential explanation might be related to the characteristics of these companies. As cooperatives are small and young, probably, they are unable to compete with public and private banks, especially with the public that has high capillarity in these regions. That is, maybe they still do not have a size enough to compete in the financial market. In this way, the incumbents do not treat them as an entrant in the market.

The Table 5 shows the results considering the category that represents the type of operations permitted by the Brazilian Central Bank: “plena”, “classica”, and “capital e empréstimo”. The “classica” credit union are those that are operating loans and investments in behalf to their members; “capital e empréstimo” are types of co-ops that only operate loans and savings to the owners; in general, the members must to capitalize continually their organization. A “plena” credit union differs from the “classica” because they carry out operations like cambial exchanges. So, this type is more similar to the commercial banks than other co-ops.

According to Central Bank this classification represents different levels of risk. In order, “plena” is riskier than “classica” that is riskier than “capital e empréstimo”.

Table 5: Frequency of discontinuance by type of operations.

	“Plena”	**“Classica”**	**“Capital e Empréstimo”**
Discontinued	0 (0.0%)	36 (81.8%)	8 (18.2%)
Continued	33 (3.3%)	784 (77.9%)	189 (18.8%)
Total	33 (3.1%)	820 (78.1%)	197 (18.8%)

Source: The authors.

Although the type “classica” is more frequent (81.8%) among of discontinued credit union, it represents only 4,.4% of total of “classica” existent in 2016. This rate is similar to the proportion of “capital e empréstimo”, which ended its activity (4%), in a total of “capital e empréstimo”. As risk is important factor to failure of organizations, and the results do not corroborate it, we strongly recommend new approaches to check if it is a determinant factor in co-ops. For while, apparently, it there is not any influence on discontinuity of co-ops.

New studies must to check if the types created by Central Bank really represents the level of risk of organizations. For instance, if the level of risk of “capital e empréstimo” is lower than “classica”, why do they represent similar rate of discontinuance? In other words, “capital e empréstimo” credit unions, which have low risk in their operations, should have a lower frequency of discontinuities also.

In order to stimulate an expansion of access to financial market, the Central Bank had created regulations to facilitate the entrance of new members on credit unions. In this way, the co-ops are separated in some groups: “free entry”, “rural credit” and “mutual”.

A "free entry" credit union differs from other groups because any person can become its members, since it is located on the geographic area of operation of co-op. A “rural credit union” is characterized as type of co-op where the members are exclusively farmers. “Mutual” are a large group, because it encompasses all other types of credit union. The main difference between “free entry” and “mutual” credit union consist on the fact that the first do not require common ties among their members. It is mandatory to mutual credit union.

The Table 6 shows the frequency of these type of associations between the groups of credit unions.

Table 6: Frequency of discontinuance by type of association (common bond).

	Free Entry	**Rural Credit**	**Mutual Credit and other types**
Discontinued	8 (18.2%)	17 (38.6%)	19 (43.2%)
Continued	299 (29.8%)	184 (18.3%)	522 (51.9%)
Total	307 (29.3%)	201 (19.2%)	541 (51.6%)

Source: The authors.

The principal result found is the frequency of discontinuities in the credit unions composed by farmers. Although it is the small group with 19.2% of the total credit unions, this type of cooperative represents 38.6% of total which ended its operation in 2016. According to Soares & Costa (2018) these co-ops were acquired by other cooperatives.

As members of Rural Credit Union are farmers, this organization must provide services related to rural credit to them. It is an important public policy in Brazil. In general, the government regulates this contract, specifically the interest rate. Maybe rural credit unions are not offering services in line of interest of their members, which find it in a commercial bank.

This situation might be affecting the rentability of co-ops and stimulating it to migrate to others group. For example, they are making agreements with free entry credit union and becoming just one company[3]. However, to the extent that the rural sector is one of the most economically important in Brazil, we suggest further analysis.

The Table 7 shows the results for the corporate governance characteristics of discontinued group of credit unions. It contains the results of size of the board.

We found that both type of cooperatives, in operation (continued) or failure (discontinued), have eight member (mean) on the board. The same size is to median cooperative. The tests confirm the similarity of this characteristics. That is, they do not differ; apparently it does not affect failure or operation of credit unions.

However, if we link this result with age and size of co-ops it gives us some insights. Maybe a discontinued credit cooperative (small and young) was affected by rules of governance created from Central Bank. For example, to attend a rule, even though their characteristics suggest other choice, they must to choose a high number of members and it affects its cost of collective decision making. In addition to that, there is a minimum size required by law, and it also can overload the governance costs.

Table 7: Descriptive analysis of board size by continuity.

[3] Data from Observatory of Brazilian Cooperatives points out 81 rural credit unions’ that opened their common bond between the years 2008 and 2017, becoming free entry cooperatives. Despite this, further analysis is needed to point out which have actually discontinued is this process.

	All	Discontinued	Continued
Mean	8	8	8
Median	7	7	7
Variance	9	10	9
Max	26	22	26
Min	2	2	2
Mean test (p-value)	0.873		
Median test (p-value)	0.459		

Source: The authors.

The Table 8 above shows the frequency of existence of other committees in the continued and the discontinued credit unions.

Table 8: Frequency of discontinuance by existence of other committees.

	Predict Commitee	Don't Predict
Discontinued	13 (29.5%)	31 (70.5%)
Continued	189 (18.8%)	817 (81.2%)
Total	202 (19.2%)	848 (80.8%)
ANOVA (p-value)	0.068	

Source: The authors.

Looking at bylaw of credit union, we tried to find if the society imposes a possibility of other committee besides of board of directors and supervisor committee. For instance, credit committee, election committee, etc. We consider this other committee like a good practice of governance, because it contributes with more monitoring, i.e., less information asymmetric between principal and agent.

We found the presence of other committees is more frequent in discontinued credit cooperatives. Also, this difference is statistical significant between two groups. Although this result disagrees with hypothesis linked to improvements in monitoring, there may be a relation with the size and age of co-ops and the cost linked to the process of governance. An additional committee might affect costs and undermine its operations.

A subsequent analysis could examine whether credit unions with other committees has great members heterogeneity. Maybe, even though they are small and young co-ops, their members are heterogeneous, and it affects their costs and its life cycle becomes shorter. If it is the case, so we have a result that can corroborate Cook (1995) [4].

We highlight on Table 9 the frequency of models of governance between the groups of credit unions. As described before, in Brazil there are only two types of models: expanded and traditional. Although the last one is more adopted, the Central Bank is enforcing, through regulation, the first for some credit unions.

These found show that cooperatives which stopped its operation have chosen the traditional model of governance more frequently. Maybe these co-ops are in the primary stages of life cycle. It met adherence with the theory. Credit unions with smaller governance models tend to have less monitoring over their agents, as well as lower degrees of professionalism in management. Nevertheless, we cannot affirm that it is the determinant factor to failure of co-op.

Table 9: Frequency of discontinuance by model of governance.

	Expanded	Traditional

[4] An early analysis made using the common bond points out that there are not significant differences for the presence of other committees in discontinued credit unions with free entry or some type of bond.

Discontinued	20 (45.5%)	24 (54.5%)
Continued	588 (58.4%)	418 (41.6%)
Total	608 (57.9%)	442 (42.1%)
ANOVA (p-value)	0.088	

Source: The authors.

Other possible explanation is related to the size of co-ops. Preliminary analysis made by the Observatory of Brazilian Cooperatives find a concentration of credit unions that choose the expanded model in the quartile of bigger credit union[5]. In another side, the smaller cooperatives have choosen the traditional model.

We present the results for CEO duality in Table 10. In this case, we consider a duality if CEO and Chairman is the same person. We look on bylaw if it is mandatory (*de jure*) or not. We recognize the is possible that more cooperatives have duality, although the bylaw does not point to this possibility (*de facto* duality).

Table 10: Frequency of discontinuance by duality.

	Duality CEO allowed	**Duality CEO missing**
Discontinued	19 (50.0%)	19 (50.0%)
Continued	483 (58.0%)	350 (42.0%)
Total	502 (57.6%)	369 (42.4%)
ANOVA (p-value)	0.892	

Source: The authors.

The frequency of duality is lower in discontinued cooperatives than in continued credit unions. This is an unexpected result, since the theory indicates that the survival of complex organizations and dispersed ownership, such the cooperatives, is related to the separation of ownership and management (Brickley, Coles & Jarrell, 1997). One possible explanation is the same as some of the previous items, with credit unions with structures larger than the need in their life stage.

Also, another important factor related to duality is the fact that the Central Bank of Brazil has imposed the separation between the manager and functions in monitoring bodies, such as the Board of Directors. In this case, the Central Bank of Brazil imposes this rule on large cooperatives, such as "plenas" and large "classicas". We may infer that the size of the cooperative influences more than the existence of duality or not in the continuity of the cooperative.

However, like the other results for corporate governance, they are still little accentuated for robust inferences. In fact, the ANOVA test not points to whether evidence of differences between the groups. This leads to the ambiguity of results found in the recent empirical literature on duality, who found positive and negative possible outcomes for this phenomenon in organizations[6].

Finally, Table 11 contains the results for the independence of the board. As pointed, values close to zero indicates more presence of members of the boards with executive functions.

Table 11: Descriptive analysis of independence of the board by continuity.

[5] It is related with regulation process by Central Bank.

[6] Krause, Semadeni, and Cannella Jr. (2014) synthesize the research in this area. The authors point to the importance of culture, environment and regulation in the research of duality. For credit unions, common bonds, the regulation of the Central Bank of Brazil and the competition with commercial banks appear as important aspects to be considered.

	All	Discontinued	Continued
Mean	0.607	0.561	0.609
Median	0.667	0.571	0.667
Variance	0.060	0.069	0.060
Max	0.950	0.950	0.909
Min	0.000	0.000	0.000
Mean test (p-value)	0.207		
Median test (p-value)	0.040		

Source: The authors.

The most noticeable result was found in the independence of the board. Apparently, independence is greater in continued cooperatives, corroborating what is expected by theory (Becht, Bolton & Röel, 2003; Hermalin and Weisbach, 1998). Unlike the other indicators, independence does not necessarily increase the costs associated in the governance structure of the cooperative. Therefore, the results may be pointing out that the independence of the main monitoring body over the agents effectively improves the chances of survival of the credit union. However, it is necessary to deepen the research for further conclusions on this point – the mean test do not reject the difference between the groups.

The independence of the board also points to the existence of professional executives in the continued credit unions. As pointed out by Carvalho et al. (2015), the absence of professionalism is a common factor found in Brazilian credit unions, and is a possible explanation for the process of discontinuance. However, professionalism is a complex variable, and more conclusions in this topic requires further analysis.

5. Conclusions

The main purpose of this study was to shed some light on the role of governance structures found in Brazilian credit cooperatives and their relation to their survival, a topic already discussed in other types of organization (Josephy et al., 2017), but not yet investigated in the crescent scenario of discontinuities found in Brazil.

According to the cooperative life cycle theory (Cook, 1995), cooperatives have their activities and survival dictated from their financial health. When the cooperative's financial health declines, the members may opt for a type of exit. Previously, internal aspects of the cooperative, such as the allocation of property rights and the assembly of governance structures, should be modified as problems such as membership heterogeneity increase. So, governance theoretically is important for the survival of cooperatives

We started with a sample of 1,050 Brazilian credit cooperatives, and, after identifying the cases of discontinuity, we tried to describe how the main characteristics of governance found in the literature were distributed among the groups. Our exploratory analysis still encompassed other general characteristics found in the literature for discontinuity, aiming to improve possible inferences in these early stages of the application of the topic to cooperatives.

However, the results still do not point to the importance of government in the continuity of credit unions in Brazil. Economic aspects such as age, size and competition presented more robust results in this analysis. Moreover, these other characteristics seem to exert influence on the governance structures investigated. For example, size and age on the model of governance, as well as the common bond on the heterogeneity of members' interests, which may require more robust governance structures. Also, the regulation by the Central Bank of Brazil exerts great influence over the governance of credit unions. All these characteristics must be adequately controlled in the next steps of this study.

Despite this, the exploratory aspect of the research still brings contributions to the area. For example, we have identified that discontinued cooperatives typically have committees in their structure beyond those required by regulation. Also, we can continue the discussion about the duality and independence of boards, which involve professionalism and monitoring in cooperative organizations. In this sense, the relationships between the stages of the life cycle and the structures required at each stage of the cycle can also be decisive for the survival of credit unions. Future research can be carried out from the exploration of existing data in this work.

Some questions arise from the results. Also linked to the life-cycle theory (Cook, 1995), one may question whether discontinued credit cooperatives in the early stages are not being forced to create governance structures larger than they support. In addition, the group of credit unions that require the bond as a rural producer is changing to free entry. This migration may enrich future research by helping to understand the role of member heterogeneity in the decision to discontinue the cooperative. By theory, heterogeneity must be accompanied by better corporate governance so that the organization can survive. Finally, the comparison between regions becomes interesting in showing how cooperatives in different stages of development and competition with other financial institutions opt for their continuity.

We intend to explore in future analyzes the relations and specificities found between the governance characteristics of cooperatives and other topics pointed out as determinants for the survival of organizations. In addition to deepening the exploratory analysis to expound the discussion, we intend to strengthen econometric models like a logit model to effectively test the relationship.

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