IL GOVERNO AZIENDALE TRA TRADIZIONE E INNOVAZIONE

a cura di
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Società Italiana di Ragioneria
e di Economia Aziendale

La collana *Sistemi Informativi, Management e Controllo* accoglie monografie scientifiche che studiano i sistemi informativi nei diversi ambiti dell'economia d'azienda. L'attenzione è sulle interconnessioni tra l'information and communication technology, i processi informativi, la gestione, l'organizzazione e il controllo d'azienda. La collana intende essere un punto di riferimento per la comunità italiana di studiosi e ricercatori che indagano la modellizzazione, i comportamenti, le opportunità, le implicazioni e gli impatti nell'implementazione e nell'utilizzo della tecnologia per la gestione delle informazioni a supporto dei processi di pianificazione, di decisione, di gestione e di controllo nelle diverse aree aziendali (governo e strategia, amministrazione finanza e controllo, auditing e compliance, marketing e commerciale, produzione e approvvigionamenti, organizzazione, ricerca e sviluppo, logistica, ecc.), nei diversi settori economici, nei diversi sistemi (aziende private, pubbliche, di servizi, di produzione, non profit, ecc.), sottosistemi (commesse, progetti, business unit, rami d'azienda, ecc.) e aggregati aziendali (accordi e alleanze, reti d'aziende, gruppi, ecc.).

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I

BILANCIO E PRINCIPI CONTABILI

Società Italiana di Ragioneria e di Economia Aziendale

Sommario

COOPERATIVES AND CRISIS: FINANCIAL DYNAMICS ON THE ITALIAN PRIMARY SECTOR COOPERATIVES[1]

Floriana Fusco, Guido Migliaccio[2]

1. Introduction

Although there are significant and widespread signs of economic recovery, the long term consequences of global crisis still affects many geographical areas. However, it should be noted that the effects of the crisis has been different across countries and business sectors. Accordingly studies of business administration must necessarily orient themselves with analysis about individual geographical contexts, specific production sectors (see, for example, Iwasaki, 2014; Jim and Shinde, 2015; Apostol et al., 2015; Cimini, 2015; Yang and Jiang, 2015). Generally, the worst affected sectors have been construction, manufacturing and financial. Italy is not an exception: the sales of the manufacturing and services sector dropped significantly starting dal 2008; agriculture sector, in crisis for some time, has suffered severe blows due to the reduction of investment in agriculture and reduced demand for products agricultural, but resisted and increased exports; mining and quarrying sector has profoundly suffered the crisis of construction and the overall decline of investments. Furthermore, beyond the heavy financial and economic consequences, the crisis has also been an opportunity to think about the current economic models, as well as on the values on which they are based. Specifically, recent literature has stressed the higher resilience of cooperative business model rather than capitalist business model (Birchall and Ketilson, 2009; Allen and Maghimbi, 2009; Bajo and Roelants, 2011; Boone and Özcan, 2014; Roelants et al., 2012; Carini and Carpita, 2014, Fusco and Migliaccio, 2015). The present study fits into this research field and focuses on Italian cooperatives in primary sector before, during and after the 2008 crisis. The choice is due to the common anti-cyclical nature that have shown the primary sector (especially agriculture) and the cooperative business model, as well as the prominent role that the cooperative model could play a substantial relaunch of the sector. Moreover, it is important to

[1] The paper is the result of a collaborative work. However it is possible to attribute to Floriana Fusco: research methodology, results and discussion. The other sections are of Guido Migliaccio.

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emphasise the significant presence of cooperatives in the agricultural sector in Italy, both in terms of contribution to GDP that the work unit. On the contrary, the presence and number of mining cooperatives is much less significant, however, it was decided to consider the overall primary sector, believing highlight any interesting dissimilarities.

Specifically two research questions have been raised:

1) What the financial dynamics have been in the decade 2004/2013 in the Italian primary sector cooperatives?
2) Are there differences between geographic areas? If yes, are they statistically significant?

The hypothesises are that (H_1) the financial crisis did not significantly affect the financial structure of primary sector cooperatives, by virtue of their resilience; (H_{2a}) there are differences between groups belonging to geographic areas and (H_{2b}) they are statistically significant. In the following sections a theoretical background on cooperatives and a focus on the primary sector are presented. Thereafter the methodology, results and implications are discussed.

2. Theoretical background

Cooperative is a company tending to profit, albeit with 'social' objectives (Tessitore, 1968, 1973, 1998; Zan, 1990), that, according to some authors, make it preferable to the capitalist company (Matacena, 1990; Jossa, 2008). These "social objectives" are clear by looking at the current principles, set up by the International Cooperative Alliance in 1995 (Vella, 2012; Migliaccio, 2012; Fusco and Migliaccio, 2015), that are: free and voluntary membership, open to all individuals (principle of "open door"); democratic control of the members, who actively participate in decisions with equal rights, regardless of the capital injection and / or contribution (principle: one head, one vote) (Matacena, 1990; Jossa, 2008); member economic participation, contributing equally to the capital with a share that must be compensated with a limited interest (Pacciani, 1979 and 19821-2); autonomy and independence of the organization; cooperation among cooperatives, to strengthen the movement (Panati, 1984; Roncaccioli, 1984; Zan, 1990; Rosa, 1982); interest in the local community (localism) (Percoco, 2012). Moreover, it is useful to underline that the cooperative carries out an economic activity to satisfy the needs of his entrepreneur and it can be any stakeholder. The different nature of the entrepreneur changes the system cost-benefit: what is an "external" cost in the capitalist companies, in the cooperative is often the contribution of a member. These peculiarities mean that also the annual financial statement of cooperatives has unique characteristics, especially because it must clearly indicate the relationship between members and society (Melis, 1983 and 1990; Mari, 1994; Congiu, 2009; Giordano, 2011; Belbello and Dili, 2010; Benni et al., 2005). Hence, even the analysis of their financial statements must be conducted with specific criteria and derived ratios must be interpreted wisely (Matacena, 1991; Krasachat and Chimkul, 2009; Hong and Dong-Hyun, 2012; Chalomklang, 2010; Arimany, 2014; Kyriakopoulos et al., 2004).

Currently interesting studies on cooperatives have been done on their financial structure (Kyriakopoulos et al., 2004; Bahrs and Blanck, 2011; Bajo and Roelants, 2011); others relate solely to agriculture (Krasachat and Chimkul, 2009; Chalomklang, 2010; Bronsema and Theuvsen, 2011), especially the production of wine (Arimany et al., 2014; Amadieu and Viviani, 2010), fresh fruit (Aggelopoulos et al., 2011) and ethanol (Boone and Özcan, 2014), or relate to specific geographical areas (Hong and Dong-Hyun, 2012; Allen and Maghimbi 2009). Almost absent are studies on cooperatives in mining and quarrying sector (Ferry, 2002).

As said before, a recent line of research, still little explored, focuses on the resilience of cooperatives business model to the crisis (Birchall and Ketilson, 2009; Allen and Maghimbi, 2009; Accornero and Marini, 2011; Bajo and Roelants, 2011; Boone and Özcan, 2014; Roelants et al., 2012; Carini and Carpita, 2014). Specifically, in 2014, Fontanari and Borzaga compared the performance of 8,171 cooperatives and 19,466 capitalist enterprises (2006-2010), excluding banks and insurance companies. The growth rates of value added and employment income decreased for both. Cooperatives, however, had rates always positive and higher than limited companies, because they had a cyclical trend that had enabled us to protect places and labor income, while limited companies had limited losses by reducing staff costs. Similar findings in the study of Carini and Carpita (2014), concerning only the industrial sector. Furthermore, the exploratory survey sponsored by the National League cooperatives and mutuals (Accornero and Marini, 2011) show that cooperatives focused on their core business, streamlining costs to increase efficiency in the production chain. They were also constant in self-financing and resources accumulated safeguarded primarily human capital during the crisis.

3. Cooperation in the primary sector

According to Tessitore (1968), not all economic activities are suitable, to the same degree, to be carried out as a cooperative. The agricultural and agro-industrial sectors recorded a significant growth of these experiences, mainly (Stupazzoni, 1984):

• production; associated management of land, social stalls, forestry cooperatives, agricultural societies of improvement;
• processing and selling; social dairies, wineries and oil mills;
• services; common mechanization, transportation, agricultural credit and warranty etc.

Agricultural production is characterized by processes of transformation of natural resources into products that follow biological rhythms often with pre-established trend, despite modern techniques should increase yields and reduce time (De Benedictis and Cosentino, 1979; Di Meo, 1984; Giles and Stansfield, 1994; Bruni and Franco, 2003; Messori, 2007; Frascarelli, 2016). Moreover, it also suffers from considerable uncertainty for the unpredictable environmental and weather conditions and to the inability to "observe" the production while it is in progress, with difficulties of assessment. Cooperative business model shall encourage the primary sector doing similar associated processes of production to those of the member companies (eg. associated land owned cooperatives) or by supporting processing and marketing, acquiring the contributions of members, and ensuring preservation, processing and sales (Migliaccio, 2012). Moreover cooperation can be a solution to the growing need to concentrate supply to limit the power of mass retailers, exploit scale economies and maintain high product quality (Fontanari and Barzaga, 2015). The need to reduce uncertainties, create production units upstream and downstream of agricultural activity, as well as to operate a quality control throughout the supply chain means that the main development strategies are (Rosa, 1982; Pisoni, 2005):

- Production contract between an agricultural cooperative and a transformer. The latter undertakes to purchase the production of the first at a fixed price;
- Vertical integration in which the agricultural cooperative is part of a process where the manufacturer directly controls the successive stages of processing and sales;
- Producer groups for processing and marketing of agricultural products which may take legal forms, cooperatives or capitalist.

Therefore, the cooperative model allows co-operators to *i)* structure technologically advanced businesses and well-sized, with lower unit costs and recovering resources unusable by the individual; *ii)* gain greater bargaining power, with both suppliers/dealers, but also with the political and banking stakeholder. So: concentration of efforts, reduction of losses and increase and stabilization of the results.

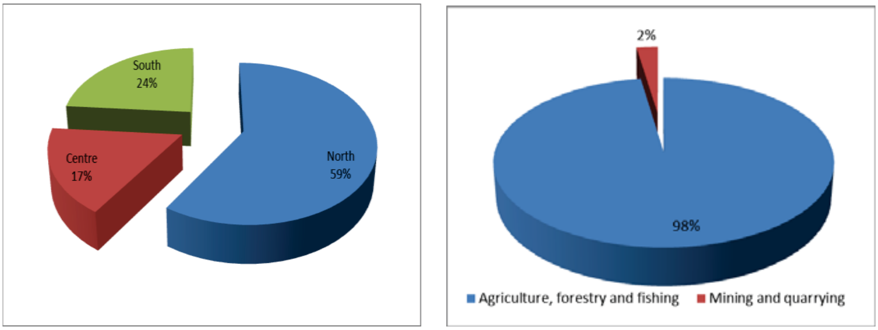
However, it is also necessary to underline some problems or disadvantages that may arise. The support cooperatives may have sizing problems generated by the same cooperative principles. The "open door", for example, could generate a non-programmable fluctuations in the cooperatives' members. Other principles may impose a ban on buying raw materials from non-members instead necessary to optimize the technical processes. The cooperative may also have the obligation to acquire the contributions, even if they exceed, the shareholders bound to surrender their entire production to the company which cannot prescribe their farming. Additional problems in the financial dynamic could result from the length of the production cycle, that sometimes has effects on the demand generated by a considerable initial investment and from annual outputs for operating factors. The receipts, instead, are sometimes recorded after years, when the product will sell itself. This justified subsidized credit schemes and / or funding grant. The support cooperatives also immediately compensate the contributions with "advances" often linked to market prices, pending the final settlement at year end, with possible rebates of profit generated: this implements the financial requirements.

4. Research methodology

4.1 Data collection and sample characteristics

To answer research questions, secondary data on AIDA database has been used. Initially, from the entire population of Italian cooperatives in the database AIDA (14,065 cooperative firms) only those that belonging to the primary business sector (sections A and B of statistical classification of economic activities in the European Community - NACE Rev. 2 codes – that are “Agriculture, forestry and fishing” and “Mining and quarrying”) were considered. As indicators of the financial situation, two ratios, financial leverage ratio (total assets /equity) and quick ratio (liquid assets/current liabilities), have been chosen, in order to have a complete overview of the financial dynamics, both in the short and in the medium-long period. Moreover, it is impossible not also take into account the fact that the crisis has affected negatively both on the liquidity of the companies that on the level of debt and financial solidity. The period which had been considered was the last decade, i.e. 2004-2013. Therefore, the subsequent analysis was restricted to the cooperatives where both ratios over ten year period were available. The final sample was therefore made up of 291 cooperatives, 284 of which are engaged in agricultural, forestry or fishing activities; 7 in mining and quarrying activities (Figure 1a).

Figures 1a and 1b: Sample characteristics



Successively, the geographic area as discriminating factor was introduced. To designate the various cooperatives into groups, the geographic site of their headquarters was considered. Three clusters were identified: north, centre and south. According to conventional classification, the northern Italian regions are Valle d'Aosta, Piemonte, Liguria, Emilia-Romagna, Lombardia, Trentino-Alto Adige, Veneto and Friuli-Venezia Giulia; the central ones Toscana, Umbria, Marche and Lazio; the southern ones Campania, Abruzzo, Molise, Puglia, Basilica and the islands Sicilia and Sardegna. The geographic distribution of the sample was the next: 59% in the North group, 17% in the Centre and 24% in the South ones (Figure 1b).

4.2. Method

First, the data was analysed according to descriptive and exploratory approach. The annual means of each group for each ratio have been considered to highlighting the trends in the period 2004/2013. Then the analysis of variance (ANOVA one-way) has been used to check if the geographic localization of primary sector cooperatives has affected their financial structure. Specifically, ANOVA verify the significance of differences of means between the independent groups, testing the hypothesis that the means of two or more populations are equal. The null hypothesis states that all population means (factor level means) are equal while the alternative hypothesis states that at least one is different. That means that it only indicates that at least two groups are different, but not which groups are significantly different from each other. In this work, the dependent variables were the ratios considered and factor or independent variable was the geographic localization.

5. Results and discussion

The *quick ratio* or *acid test ratio* is a liquidity ratio that measures the ability of a company to pay its current liabilities when they come due with only quick assets. The choice of this ratio is justified by its more conservative measure of liquidity than the current ratio as it removes inventory from the current assets used in the ratio's formula. By excluding inventory, the quick ratio focuses on the more-liquid assets of a company. Figure 2 shows that the general situation of short-term solvency is not dramatic, but still not enough. In fact, so that the short-term financial coverage can be considered adequate, it is necessary that the index value is equal to or greater than 1. Instead, the mean value within the primary sector oscillates around 0.90, whereas the mean of Italian cooperatives - without, therefore, take into account the specific sector - turns out to be, though fluctuating, always above the unit. Despite that, there has been a trend rather constant and consistent with the general one. Therefore, the crisis does not seem to have considerably impacted the level of liquidity of primary sector cooperatives. The fluctuations range from about -2 to + 2%, with the exception of the years 2005 and 2013, when the reduction is about 5%. The total loss for the decade was 8%. The situation by looking at leverage appears more complicated.

Figure 2: Quick Ratio trend of Primary Sector

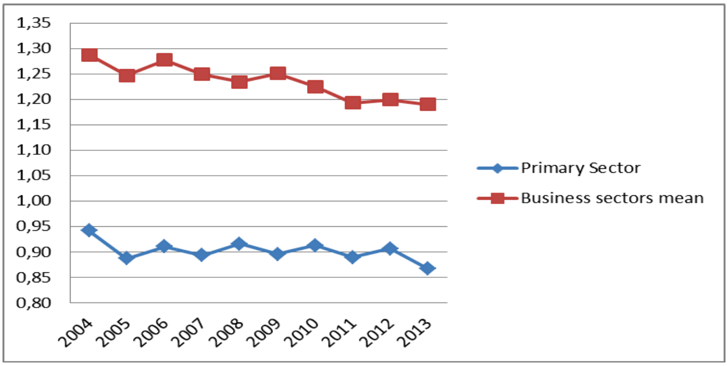
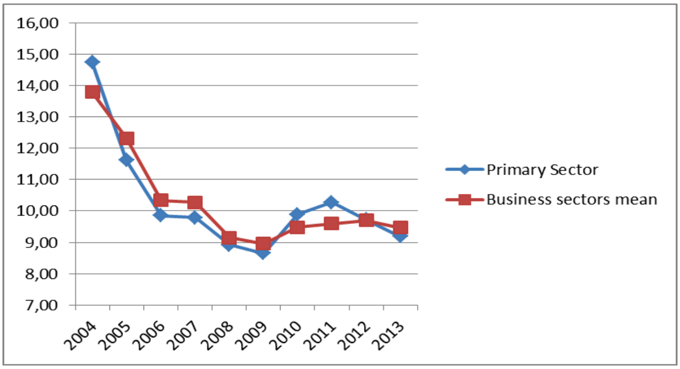


Figure 3: Financial leverage ratio trend of Primary Sector



The *financial leverage ratio* (or *equity multiplier*) is a variation of the debt ratio and indicates that a larger portion of asset financing is being done through debt. A financial leverage ratio is not necessarily better than a lower one.

In order to develop a better picture of a company's financial health, investors should take into account other financial ratios and metrics. If it is cheaper to borrow than issue new shares, financing asset purchases through debt may be more cost-effective than a secondary issue.

However, it is possible to state that its value would roughly be around 2. Figure 3 shows much higher levels of debt - that goes from 14.73% in 2004 to 9.19% in 2013 -, however, two dynamics must be emphasized.

The first is that, contrary to the quick ratio, the level of leverage in the primary sector is consistent (often better) than the business sectors mean[3].

The second is that there is a significant downward trend until 2009, with increases only in the following two years.

But the overall result is a decrease of 37% in the decade - despite the financial crisis - and thus a general improvement in financial solidity. Going even deeper in the primary sector, it is interesting to differentiate between "Agriculture, forestry and fishing" and "Mining and quarrying".

Compared to agricultural, cooperatives belonging to the mining sub-sector have optimal levels of both liquidity and leverage, however, they *i)* turn out to have a course much more rocking than the first about quick ratio; *ii)* maintain a constant level (with a small variation in increase) of leverage (Fig. 4 and 5).

[3] The mean was calculated taking into account all the cooperatives on AIDA, with all the data (the two ratios in the 10 years) available.

Figure 4: Quick ratio trend in the primary sector

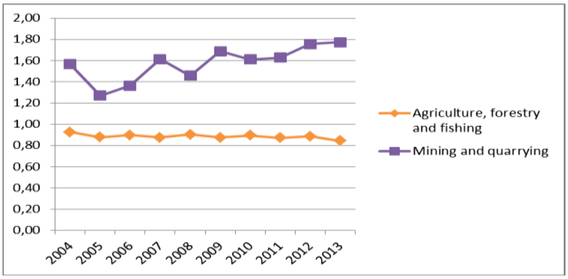
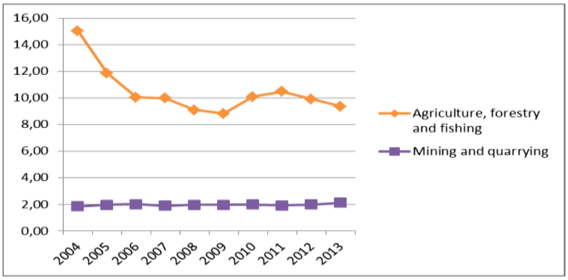


Figure 5: Financial leverage ratio trend in the primary sector

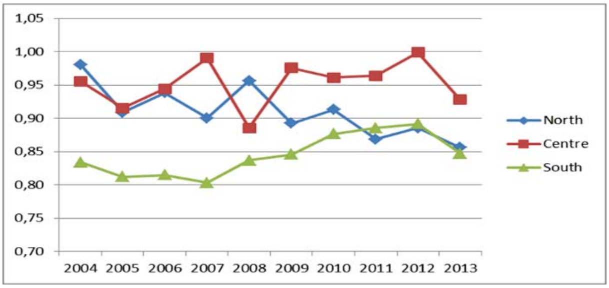


In summary, it can be argued that the crisis has not had a dramatic effect on the primary sector cooperatives. The high, typical of agricultural cooperatives, has much deeper causes and earlier. Therefore, despite some peaks in the values, the overall result shows a good ability to respond to the pressure of the economic crisis. The hypothesis H_1 is confirmed.

The second research question raises the query of the difference between geographical areas. The issue is particularly important in Italy considering that the cooperatives have always had a greater entrenchment in the areas of central and northern than in the south. Without investigating on why, here the dynamics of financial trends in different geographic areas want to be observed, in order to see if there are differences between the groups and if these differences are statistically significant. If, that is, the geographical variable entail any significant differences in the variable "financial structure", as measured by two ratios. As said, this last part will be asses with ANOVA.

About the level of liquidity, Figure 6 highlights differences not only in values, but also in trends. Specifically, the South keeps the liquidity levels below 1, but rather steady and, indeed, registered an increase (+1,5% in the decade), albeit minimal, starting from 2008. The Centre and the North have higher levels, though not always sufficient liquidity, but suffer from noticeable oscillations. In 2008, for example, the Centre presents a reduction of 10% of the value of the ratio, offset by an equal increase in the following year.

Figure 6: Trend of quick ratio according to geographic localization



The situation of the leverage level is not much different: the South has the largest gap and a worse debt situation. Rather than quick ratio, the fluctuations are most significant for all three groups. There are peaks rising in the North, but before the crisis, and in the South from 2009 but still remains at lower levels than at the beginning of the decade. Anyway, the trend is downward in all three groups, specifically -4,8 in North, -28,2 in Centre and -43,6 in South (Fig. 7).

Figures 6 and 7 point out that there are noteworthy differences among the three groups distinguished according to geographical location, so the hypothesis H_{2a} can be confirmed.

But are these differences statistically significant?

The geographical area affect the financial structure of cooperatives in primary sector?

Figure 7: Trend of financial leverage ratio according to geographic localization

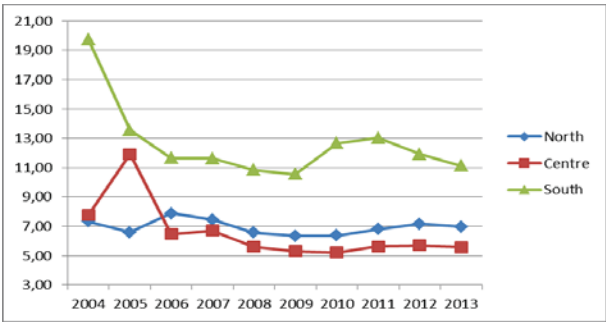


Table 1 shows the results of the analysis, assuming the geographic area as independent variable and quick ratio as dependent variable. There is a statistically significant difference between groups ($F(2,27) = 23.73$, $p = 0.00000113$), in fact F > F crit (p value < 0.05). The null hypothesis must be reject and the alternative ones must be accept also if the financial leverage ratio is considered as dependent variable. Even in this case, the results, set out in Table 2, indicate a statistically significant difference between groups ($F(2,27) = 30.58$, $p = 0.000000116$), F > F crit (p value < 0.05). So, the analysis of variance assess the H_{2b}**.** The gaps identified in the exploratory and trend analysis are significant. This means that the location of a primary sector cooperative in one region rather than another has an impact on the observed financial variables.

Table 1: Analysis of variance with quick ratio as dependent variable

Source of variation	SQ	gf	MQ	F	Sig	F crit
Between groups	0,058352	2	0,029176	23,7313	1,13E-06	3,354131
Whitin groups	0,033195	27	0,001229			
Total	0,091547	29				

Table 2: Analysis of variance with financial leverage ratio as dependent variable

Source of variation	SQ	gf	MQ	F	Sig	F crit
Between groups	233,36265	2	116,6813	30,57617	1,16E-07	3,354131
Whitin groups	103,03436	27	3,816088			
Total	336,39702	29				

6. Conclusion

The hypothesises, that the research was intended to verify, are mostly tested. The crisis has not substantially and adversely affected the financial structure of cooperatives in the primary sector. The general liquidity situation – and thus of short-term solvency - is not completely negative, even if not fully adequate. Moreover, as said, it does not seem to have been substantially affected by the crisis. Indeed, the fluctuations, that especially disaggregated data shows, concern the whole decade. The level of leverage is very high, but, not only it is basically consistent than other business sectors, but also it has a downward trend (albeit with exceptions). So, between the positive notes, a general improvement in the financial strength should be reported. To emphasize, also, the very good levels of liquidity and leverage in the mining sector.

The anti-cyclical nature of the cooperative business model on the one hand and the primary sector on the other was confirmed. These results are consistent with the recent literature, where the higher resilience of cooperatives than others enterprise is shown (Birchall and Ketilson, 2009; Allen and Maghimbi, 2009; Bajo and Roelants, 2011; Boone and Özcan, 2014; Roelants et al., 2012; Carini and Carpita, 2014; Fusco and Migliaccio, 2015). As expected, the cooperatives of the North and Centre of Italy have a financial situation better than those in the South. The differences found between the groups, discriminated according to geographical localization, are statistically significant: starting cooperative initiatives is therefore much more problematic and uncertain in the south as well as their ability to stay in the long run.

This paper is not without limitations.

First, it takes into account only cooperatives survived the crisis. In a further development of the study, this additional element should be considered. It is very likely that many cooperative societies, in Italy, as in other countries, were closed. It can therefore be concluded that the cooperatives with adequate and consistent financial structure resist the crisis thanks to the strength and balance sheet.

Another limitation is related to statistical analysis, in fact it should be deepened, first with post hoc analysis. Moreover it could be suitable to improve the study with other ratios, for having a more complete view of the financial dynamics.

In future, carrying out similar researches in other countries will be useful to develop a comparative analysis. They should also consider the diffusion of the cooperative business model that assumes a widespread culture different from that of the capitalist firm that operates in the free market.

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