

Crisis, sectoral and geographical factors: financial dynamics of Italian cooperatives

Floriana Fusco and Guido Migliaccio
Università degli Studi del Sannio, Benevento, Italy

Abstract

Purpose – The purpose of this paper is to analyze the financial structure of Italian cooperatives in the period before and during the crisis (2004-2013), in relation to two discriminating factors. At this end, it focuses on two research questions: What financial dynamics the Italian cooperatives have involved before, during and after the 2008 crisis, that is, in the decade 2004/2013? Are there statistically differences between business sectors and geographic area?

Design/methodology/approach – Secondary data on AIDA database have been used. The financial structure is assessed using two ratios: the financial leverage ratio and quick ratio. The final sample consists of 1,446 cooperatives. The trend and exploratory analysis, analysis of variance and Tukey-Kramer post-hoc test have been used.

Findings – The financial structure of cooperatives has not been substantially affected by the crisis in any geographic area and business sector, by virtue of resilience of their business model. Moreover, these two factors produce statistically significant differences in the financial structure of cooperatives.

Research limitations/implications – The study takes into account only the cooperatives that survived the crisis, so, presumably, the strongest. Moreover, another and more ratios should be considered at the end to have a more complete view on the financial dynamics.

Originality/value – The literature on resilience of cooperatives is still not very rich. Moreover, this work analyses and integrates aspects and approaches that are not usually considered together.

Keywords: Cooperatives, Crisis, Financial structure, Leverage ratio, Quick ratio

1. INTRODUCTION

The study aims to carry out an overview on Italian cooperatives, specifically about whether and how their financial structure changes due to three external factors: a macroeconomic shock - that is the crisis - the geographical location and the business sectors. At this end, the financial structure is assessed using two ratios: the Financial Leverage Ratio (total assets /equity) and Quick Ratio (liquid assets/current liabilities); the period considered is the decade from 2004 to 2013; trend analysis, analysis of variance (ANOVA) and Tukey-Kramer post-hoc test have been used. Albeit with not always consistent findings, there has been an increasing interest in cooperatives' capital and financial structure, its determinant (i.e. size, sectors, ect) and its association with their competitiveness (Ananiadis et al., 2003; Lajara-Camilleri and Mateos-Ronco, 2012; Mateos-Ronco and Lajara-Camilleri, 2014). This is due to the fact that cooperatives are traditionally under-capitalized and make extensive use of debt. However, this renewed interest in the field must also be adduced to the recent financial crisis, that still affect many areas and, generally, whose effects are still evident. In fact, the crisis has also been an incentive to rethink of the current business models, their values and weaknesses and then, to focus the attention on alternative models. So, after a period of neglect, the literature has recently focused again on the cooperative model. Specifically, it has stressed the higher resilience of the cooperative business model rather than the 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). Therefore, studies that fit in this line of research have referred to financial and or economic performance - detected using financial statement ratios - to validate the resilience during the crisis period (for instance, Narvaiza et al., 2017; Costa and Carini, 2016). The topic is particularly interesting in Italy where the cooperatives give an important contribution to the national economy, both in terms of GDP and number of employed (Borzaga, 2009, 2014) and taking into account the historic spread patchy (greater concentration in the North and the Centre and lower in the South). Therefore, this article aims to contribute to the existing literature by supplying (i) a descriptive and trend analysis of the financial performance in the 2004-2013 decade of the Italian cooperatives, grouped by sector and regions, in order to verify their resilience; (ii) an analysis of the differences caused by sector and geographical area on financial performance. Moreover, as shown in the following literature review, most of prior studies focus on an specific business sector and/or a more limited period of time, while this article takes into account a large sample, all sectors and a ten-year time span.

It is organized as follows: in the next section the theoretical background is presented, with specific reference to studies on the social role of cooperatives, their resilience and characteristics of their financial structure. The research questions and hypothesises are presented in the section 3, thereafter the methodology, results and implications are discussed.

2. THEORETICAL BACKGROUND

The analysis of existing literature can be ideally split into two parts:

1. on one hand, there is a need for an extensive literature review on cooperatives, focusing on managerial and especially financial issues, which are more relevant to the topic dealt within the article;
2. on the other, however, it was considered appropriate, given the empirical investigation context, providing an overview on the Italian situation.

2.1 Literature review

2.1.1 The historical review and the economics and managerial studies

Interesting considerations are still apparent in publications published in the late 1800's and in the early 1900's (Warner, 1887; Bureau of Labor Statistics, U.S. Department of Labor, 1919). In the meantime, different views were also spread on the effectiveness of cooperative movement, mainly about the agricultural sector (App, 1926; Froker, 1933; Bond, 1933), and, specifically, on cooperation and profit sharing (Parker, 1920; Zelenko 1920). Only in the second half of 1900, the managerial literature became systematic. For instance, Nelson (1977) described the experience of a cooperative that initiated a system-wide program of load management. In addition, reflections on the value of human resource within cooperatives (Lorange, 1986) were emphasized and continued critical comparison between work in a competitive capitalist field and cooperative work proposals (Chiarella and Sertel, 1986). In 1990s, cooperative business model has also been considered as a useful tool to promote gender equality in the economy. The theme is well dealt by Premchander (1994), that emphasized that women's cooperatives are a valid way of providing support for women in development. The subject was recently taken up by Loureno and Loureno (2016) which investigated time management as a source of social sustainability. Moreover, a more careful analysis on the risks of cooperatives (Zeuli, 1999).

New millennium studies has been focused on two correlated strands of investigation: 1) the cooperative business model as an economic production tool that simultaneously promotes social growth better than the capitalist model and 2) the cooperation as a preferred tool to favour the growth of some backward Nations. Thompson (2015) highlights the current benefits of labour cooperatives that have shown greater employment stability and wage flexibility in worker cooperatives vis-à-vis the capitalist firm. On employer's opportunism and on wage rigidity in capitalist companies, Navarra and Tortia (2014) argued that the need to fix wages is crucially influenced by the asymmetric distribution of decision-making power and information in favour of the stronger contractual party (the employer) and against the weaker contractual party (employees). The capitalist entrepreneur can make decisions, whose negative consequences are borne by workers in terms of lower wages and more intense work pace. Moreover, cooperatives can encourage the adoption of sustainable consumption and citizen participation in the development of new products, services and systems can, among other things, increase the legitimization, market acceptance and sustainability impact (Purtik et al., 2016). The model of cooperative is also fully compatible with family business, particularly widespread in some countries such as Italy (Karhu, 2015). The current literature, however, does not hesitate on the typical problems that slow down the cooperative development. As people, values and times change, cooperatives also restructure themselves making the reappraisal of cooperative theory topical. Puusa et al. (2016) contribute to the cooperative theory by exploring the very core of its ideology, the dual nature: individuality and communality (not social and financial) are two rival forces. Authors suggest that finding a balance between the conflicting needs and expectations of an individual member and the cooperative reflects the 'new dual nature' of cooperatives. Battaglia et al. (2015) highlight that the measurement and communication of sustainability aspects may allow a dialogue to be mobilized with shareholders and stakeholders without losing the attention on competitive factors. Their analyse indicate a virtuous circle between the management and measurement of cooperative principles and the management and measurement of sustainability issues. In recent years, interesting studies on the comparison between the capitalist and cooperative models are also carried out within the field of Corporate Social Responsibility. Thus in Ruostesaari and Troberg (2016) that examines companies' responsibility for young: cooperatives engage more in youth collaboration than listed companies do. The main reasons for this are the cooperatives' local ownership and stakeholder structure and value-based operations. There are also investigations on comparative surveys related to specific territories. Abando et al. (2007), for instance, analyses and presents the main differences that exist in the quality of management as practised by Cooperative and Non-Cooperative companies in the Basque Country within the industrial and company services sectors: the quality level of cooperative

company management is higher than that shown in the non-cooperative sector for the social commitment. Monteiro and Stewart (2015) investigate the activities, internal characteristics and survival prospects of cooperatives and capitalist enterprises in Portugal: high levels of market concentration and low entry costs were shown to be conducive to cooperatives. Cooperatives were found to be, on average, older and to operate with a larger, more highly educated and more productive labour force than do their capitalist counterparts. Growth and development of mutualistic initiatives, especially in the form of cooperative societies, is now often hoped to favour the economically most backward nations, for instance, in Slovenia (Avsec and Štromajer, 2015), Columbia (Román-Calderón, Battistelli and Vargas-Saenz, 2014), Brazil (Pavão and Rossetto (2015).

2.1.2 On financial issue of cooperatives

The genesis of cooperatives as alternative capitalist companies has highlighted one of the main management problems of these companies: the lack of capital. For this reason it is necessary to know the developments of international literature on this issue, also because the subsequent analysis empirically shows this feature with reference to Italian cooperatives in the recent years. In this field, it is noted that studies focus on specific countries or homogeneous geographic areas; less common are the globally-range analyses (i.e. Bajo and Roelants, 2011). This is because the credit system is heavily affected by national discipline, which can provide special facilities for cooperative companies. Looking the Australian context, Limnios et al. (2016) describes financial instruments and equity structures for raising capital in cooperatives. Specifically, authors examine the potential of a special type of financial instrument called a Cooperative Capital Unit (CCU) introduced into the Australian legislation to facilitate external investment while maintaining member control. Worthington (2004) tries to identify the determinants of merger and acquisition (M&A) of the activity in Australian credit unions over the period 1992/1993 to 1994/1995. The results indicate that asset size and quality, management ability, earnings and liquidity are a significant influence on the level of M&A. Moreover, interesting are the studies of Sinnewe et al. (2016) on Cooperative Research Centres (CRCs) which, in Australia, are underpinned by funding from the Government and those of Blanck and Bahrs (2010) about the financial stability of dairy cooperatives in volatile markets. In Spain, Bastida and Amat (2014) attempts to analyse the impact on the cooperative share capital of the first application of the accounting standards for cooperatives (Ias 32) adapted to the PGC 2007 (Orden EHA/3360/2010). Similarly research questions in Pérez and Suárez (2015). As said, the investigations on developing countries have been increasing. Mathuva (2016) examines the

influence of revenue diversification on the financial performance of 212 deposit-taking savings and credit co-operatives (SACCOs) in Kenya. The findings show that increased dependence on non-interest income is associated with higher returns. The Chinese financial system restructuring, which has substantially altered the country's mutual and cooperative financial institutions, is the objective of Loubere and Xiaoquan (2015), which contribute to understanding of the process, practice and consequences of these developments. Focused on Czech Republic, Suchanek (2009) value financial efficiency of cooperatives by on financial (quantitative) data gained from financial statements. In Korea, Hong and Dong-Hyun (2012) carry out a study on business performance evaluation of regional NH cooperatives in Gyeonggi-do. The results of this research showed that evaluation methods of business performance of regional NH cooperatives should be changed in the direction in which both efficiency and profitability can be considered, and it could be seen that DEA evaluation method could be an alternative. Kolade and Harpham (2014) examine the effectiveness of social capital mobilised by rural farmers, through a descriptive statistics and regression analysis of data obtained from 325 farmers in southwest Nigeria. The results indicate farmers' cooperatives are able to generate more effective social capital for information sharing and linking up with important external organisations.

Within this wide literature, studies using financial statement and ratios analyses to assess performance and/or capital structure are more directly related to the present work. Many authors have been carried out this kind of analysis for credit cooperatives (for instance, Kavitha and Muthumeenakshi, 2017; Becchetti et al., 2016; Jones et al., 2016; Varghese, 2016; Zubiaurre et al., 2016; Cabo and Rebelo, 2012; Zurdo and Palacio, 2010; Cabo and Rebelo, 2005; Hackethal, 2005; Worthington, 1998.), which, however, have structure and content of the financial statement not comparable with other firms and so not deeply revised here. Beyond the banking one, the most investigated sector is the primary one, mainly in reference to those European countries where the economic importance of agriculture is still relevant, i.e. Portugal (Rebelo et al., 2017), Czechoslovakia (Steklá et al., 2015), Spain (Lajara-Camilleri and Mateos-Ronco, 2012), France (Amadiou and Viviani, 2010), Greece (Ananiadis et al., 2003; Aggelopoulos, S. et al., 2011). Consistent findings of these studies show that one of the main factors influencing economic efficiency is the ability of corporate capital structures. The Italian cooperatives are not immune to this imbalance. Interesting are the findings of an empirical study of 500 agricultural cooperatives carried out by Russo et al. (2000), according to which cooperatives characterized as having "powerful managers" have a capital structure that is significantly different from the "nonpowerful manager" cooperatives. Powerful manager cooperatives were less leveraged and had a long term

strategy that focused on minimizing financial risk by increasing their equity/asset ratio. The result of this strategy is an increased probability of long term international competitiveness.

Moreover, consistent findings with present study are also present in Costa et al. (2012) which on one hand showed relevance, efficiency and profitability of social cooperatives in Italian economy and on the highlighted the differences related to their longevity, geographical position and fields of activity.

2.1.3 The resilience of cooperative business model

As said before, a recent line of research focuses on the resilience of the cooperatives business model to the recent 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). For instance, 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 them to protect places and labour 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. Narvaiza et al. (2017), analysing in depth two Basque and two Breton small and medium cooperatives, argue that cooperatives maintain their competitiveness and social components simultaneously during crisis periods by virtue of a degeneration-regeneration process. They state that the institutional support and the competitive position are particularly relevant in the regeneration process. Costa and Carini (2016) assessed the differences in the economic performance and employment levels of social cooperatives in three main Italian geographical areas: North, Central and South Italy, between 2008 and 2011. The results showed that, despite the global economic and financial meltdown, the social cooperatives increased their overall turnover and total assets, albeit with a worse performance in the southern regions, where conjunctural factors exacerbated long-term structural deficiencies. The importance of context and institutional factors are also point out by Roelants et al. (2012), according to which cooperatives' resilience is stronger in countries that have the best legal framework protecting and promoting cooperative enterprises, such as the indivisible reserves, mutualized financial instruments, groups and consortia (e.g. Italy, Spain and France). Consistent findings are discussed in Vargas-Cetia (2011).

2.2 The cooperative sector in Italy: quantification and legal framework

Given that the objectives of the study, it is necessary to emphasize some contextual factors, that are the quantification of the cooperative sector in Italy, as well as the specific regulatory framework. In late 2011, in Italy, 61,398 cooperatives with 1,200,585 employees were registered (Istat, 2012). The third Euricse updates the data to 68,966 units (Borzaga, 2015). Quantify the contribution to GDP is not easy and often the data is underestimated because of the unavailability of information and financial statement. Anyway, the second Euricse report points out that the cooperative sector directly contributes to the creation of about 3.4% of national GDP and at least 3.5% employment, but the value triples when the effect induced is considered (Borzaga, 2014). At the territorial level, the higher concentration, both in terms of units, especially of the production value, is in northern and central Regions. About the diffusion and then the relevance of the cooperatives between sectors, the higher presence is in agriculture and in some service sectors, such as trade and transport, social assistance and healthcare. The brief summary of the main quantifications of the cooperative sector highlights its importance in economic terms, but also its historical and cultural roots in Italy. Moreover the foundation of cooperatives is encouraged by law. First of all, the Italian Constitution, art. 45 first paragraph, recognizes “the social function of cooperation of a mutuality nature and without purposes of private speculation” and states that “the law promotes and encourages them through the appropriate means and secures, through appropriate controls, the character and purposes”. The Civil Code and the Legislative Decree n. 6 of 01.17.2003 contain the main regulatory reference. The definition of cooperative society is such only if with variable capital and mutual purpose. Furthermore, there is a the distinction between “mutually prevalent cooperatives” and other cooperatives: only the first can enjoy all the facilities, while the others are excluded from tax advantages. The prevalent mutuality is characterized to operate mainly to members (consumers or users) and using mainly the work performance of members and / or their contributions of goods or services. Cooperatives must provide in the statutes prohibiting the distribution of dividends and remuneration of financial instruments offered to the co-operators beyond certain limits. It is also enshrined in prohibiting the distribution of reserves between the shareholders and the obligation to devolution, the dissolution, the assets to mutual benefit funds for the promotion and development of cooperation. The financial statements of the cooperatives is also governed. It quantifies the profit and measure the achievement of the typical mutual aims: the rigid framework is that of IV Directive EEC/1978. The distinctions between values obtained by customary exchanges and mutual is highlighted. Among the items characteristics: the rebates,

indivisible reserves and social loans. First, the rebates that assume different characteristics (Bagnoli, 2008) the consumer cooperatives is the repayment of part of the price paid; in the productive integration is the remuneration the conferment. The cooperative acquires the goods/services of the member liquidating a deposit, unless the price paid to integrate with an adjustment payment at year end. The rebate is an economic benefit to the members who deliver. It is proportional to the contribution and not the paid-up capital (Melis, 1983, 1990). It is paid only when there is distributable income.

3. RESEARCH QUESTIONS AND HYPOTHESES

The study wants to investigate the impact of three factors – specifically, crisis, geographical location and the business sectors - on the financial structure of cooperatives in Italian context. Therefore, it addresses two research questions:

- 1) What the financial dynamics have involved the Italian cooperatives before, during and after the 2008 crisis, that is in the decade 2004/2013?
- 2) Are there differences between business sectors and geographic area? If there are, are these differences statistically significant?

The hypotheses are that (H1) the financial crisis did not strongly affect the financial structure of cooperatives, by virtue of their resilience; (H2a) there are statistically significant differences between groups belonging to different business sectors; (H2b) there are statistically significant differences between groups belonging to different geographic areas.

4. RESEARCH METHODOLOGY

4.1 Data collection and sample characteristics

To answer research questions, secondary data on AIDA database has been used. Initially, the entire population of Italian cooperatives in the database AIDA (14,065 cooperative firms) was 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. The period which had been considered was the last decade, i.e. 2004-2013. Therefore, the subsequent analysis was restricted to cooperatives where both ratios over ten year period were available. The final sample was therefore made up of 1,446 cooperatives. Successively, two discriminating factors were taken into account, the geographic area and the business sector. 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: 69% in the North group, 18% in the Centre and 13% in the South one. To identify the belonging sector, first a specific section was assigned to each cooperative according to statistical classification of economic activities in the European Community (*NACE Rev. 2 codes*), successively they were grouped (see table 1) in four groups: primary sector, secondary sector, tertiary sector and advanced tertiary sector. According to the second discriminating factor, the sample consisted of 20% cooperatives of primary sector, 24% cooperatives belonging secondary sector, 42% tertiary and 14% Advanced Tertiary.

4.2 Method

As said, to assess the financial structure of cooperatives, financial leverage ratio (total assets /equity) and quick ratio (liquid assets/current liabilities), have been chosen. The ratio analysis could be defined as a technique of financial analysis in which meaningful relationship is shown between the components of financial statements, in order to appraise financial performance (Lucey, 1988; Needles, 1996). Use of this technique is not new. The researches - as well as business analysts, creditors, investors, and financial managers - commonly use ratio analysis to measure the performance of firms. Recently, Adedeji (2014) have confirmed that there is significant relationship between ratio analysis and organizational performances as well as financial ratios highlight the importance of effective management of an organization. In this sense also Delen et al. (2013), that employed a two-step analysis methodology (exploratory factor analysis and decision tree algorithms) in a Turkish context to discover the potential relationships between the firm performance and financial ratios. The findings showed that two profitability ratios (i.e., Earnings Before Tax-to-Equity Ratio and Net Profit Margin) impact company performance the most, followed by leverage and debt ratios. Over the decades, the rich literature on the subject differs by using different financial ratios and/or employing different statistical techniques (Worthington, 1998; Steklá et al., 2015; Mateos-Ronco, A., & Lajara-Camilleri, 2014; Rebelo et al., 2017). In addition to measuring past and present performance, financial ratios are also used for predicting future performance and specifically for predicting financial bankruptcy (Altman, 1968; Lee, Han, & Kwon, 1996; Kumar & Ravi, 2007; Alfaro et al., 2008; Holsapple & Wu, 2011; Martin-Oliver & Salas-Fumas, 2012; Olson, Delen, & Meng, 2012; Jan and Marimuthu, 2015). In their study,

Zainudin and Hashim (2016) suggest that financial ratios (financial leverage, asset composition, profitability, and capital turnover) are significant predictors of fraudulent financial reporting.

However, beyond the benefits above shown, the traditional financial statements analysis has some problems related to time approach and the subjective choice of the number and kind of ratios. In this case, the length of the period and the extent of the sample allow to prevent that specific and anomalous values invalidate the overall analysis. In reference to the type of ratios, the selection was carried out in order to check both the short-term and the medium-long term structure. The importance of liquidity and leverage ratios to highlight the financial performance was already mentioned before, however this choice also depends on three orders of reason. First of all, by virtue of its specificity, in the cooperative business model profit and its related ratios gain a different meaning from capitalist companies or, in other words, the limit on the distribution of profits makes the ROE or ROI less explanatory about the performance of the firms. Moreover, they were considered appropriate on the one hand to highlight some possible implications of the crisis, that greatly affected the debt load and liquidity, and on the other to highlight a critical situation of Italian cooperatives, traditionally affected by high level of debt and undercapitalization. Lastly, the choice also took into account the availability of data. Especially, the choice of the financial leverage has enabled a greater amplitude of the sample rather than other debt ratios. The financial leverage ratio (or equity multiplier) is a variation of the debt ratio and indicates how much of the activity is financed by equity and, therefore, how much through debt. The higher the equity multiplier, the higher is the financial leverage, which points out that the company relies more on debt to finance its assets. However, 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. Nevertheless, it was considered appropriate for the analysis, although the need for an extension of the ratios was considered in the limitations of study. As said, the second ratio patterned was the quick ratio or acid test 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 as liquidity indicator 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.

The data, firstly, was analysed using a descriptive and exploratory approach. Specifically, the annual means of each group for each ratio were considered and their trends in the period 2004/2013 were highlighted. The purpose was to check if the financial structure has visibly changed during the

crisis (for example, if there were strong debt increases or marked reductions in liquidity) and if there are evident differences in trends across sectors and geographic area.

Then the analysis of variance (ANOVA) were used to verify the significance of differences of means between the independent groups. In fact ANOVA tests hypothesis that the means of two or more populations are equal. ANOVAs assess the importance of one or more factors by comparing the response variable means at the different factor levels. The null hypothesis states that all population means (factor level means) are equal while the alternative hypothesis states that at least 2 group means that are significantly different from each other (Saunders et al., 2009; Agresti and Kateri, 2011; Siegel, 2016). In business, management, accounting and finance research field, analysis of variance (ANOVA) is an extremely important method in exploratory and confirmatory data and where the explanatory variable are qualitative. Specifically, it is often implemented - alone or in association with other techniques - in order to evaluate the financial performance of companies in association with financial ratios (for instance, recently, Gupta and Muralidharan, 2017; Adekola et al., 2017; Di Bella and Al-Fayoumi, 2016; Yazdanfar and Öhman, 2016; Wilson et al., 2013; Tarawneh, 2006). In the current study, the dependent variables were the ratios considered and factors or independent variables were the geographic localization and the business sector. The two factors were considered separately, so ANOVA one-way type was chosen. Successively, the Tukey-Kramer post-hoc test was used to provide specific information on which means are significantly different from each other.

5. RESULTS

5.1 Trend analysis and the crisis impact

As said above, the financial leverage ratio (or equity multiplier) is a variation of the debt ratio and indicates how much of the activity is financed by equity. Despite its limitations and the cautions to be used, one cannot fail highlighting the critical values that emerge from the descriptive analysis of data. Within the sample there were so many edge cases and peak values that eliminating them was not considered. Figures 1 and 2 show that the debt level deviates far from the one can be considered balanced. The result is not surprising given the widespread and genetic undercapitalization condition that characterizes the cooperative sector, with some differences between various geographical areas and various business sectors that successively will be verified through ANOVA. The ten-year mean ranges between 7.07 and 14.94, if the geographic localization as discriminating factor was considered, and between 7.07 and 22.71, if the belonging sector was considered. Disaggregated data point out that only about 15% of the cooperatives have a debt level considered acceptable. With the regard to geographic localization, figure 1 shows that there are major

fluctuations in the period before the crisis of 2008. Subsequently, the trend is more stable. During the decade, the financial leverage ratio has fallen by 32.72% in the North Group, 42.45% in the Centre group and it has increased by 9% in the South group. It is possible to observe a similar situation in the case of the clusters identified by business sector. The percentage change between 2004 and 2013 is of -37.65%, -20.93%, -23.20%, -47.33, respectively. The average decrease may be due access to credit and thus to lower investments and/or to an increase of equity, but a general improvement in the financial solidity and a better balance of the sources must be reported.

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. Considering groups discriminated by geographic area, trend analysis highlights a situation of good liquidity (fig. 3). In fact values, higher unit throughout the decade, testify as cooperatives have been able to deal with quietly short term commitments. Nevertheless, it must be noted that the variation in the ratio between 2004 and 2013 is negative in all three groups. Particularly there are a decrease of 7.05%; 11.83% and 2.62% respectively in north, centre and south group. Even if the classification by business sector was considered (fig. 4), the trend is overall negative, in fact the ratio have respectively decreased by 8.01%, 5.25%, 9.63% and 4.12% between 2004 and 2013. Moreover, the considerable gap between sectors is noted. Ratio values range between 0.87 and 1.03 in the primary and secondary sectors, testifying a financial balance in the short term sufficient or good. Values much higher are found in tertiary and especially in advanced tertiary sectors, with a peak of 1.67 in 2004. Therefore, although any critical value is not seen, the service sectors, particularly those that relate to ICT and professional consulting, turn out to have a far greater liquidity than traditional sectors. The analysis of trends shows that the crisis did not affect so consistently on the financial structure of cooperatives, given that some negative values of debt level are related to structured problem. The hypothesis H1 is considered validated.

5.2 Sectoral and geographical factors

The second research questions arise to check whether there are statistically significant differences between and business sectors (H_{2a}) and/or geographical areas (H_{2b}). That is, if the geographical location and/or the belonging business sectors affect in a statistically significant way the financial structure. ANOVA results show that both the geographic area and business sectors (Table 2) have a significant effect on financial leverage ratio at the $p < 0.05$ level. Specifically, ($F(2,27) = 10.84, p = 0.00035$) and ($F(3,36) = 10.78, p = 0,000034$). On the contrary, considering the quick ratio, the null hypothesis must be accepted if the geographic localization is assumed as independent variable, in fact ($F(2,27) = 0.24, p = 0,787875$). So, only, the business sector has a significant effect on the level

of liquidity at the $p < 0.05$ (Table 3), ($F(3,36) = 742.27, P = 2,07E-32$). Tukey-Kramer test shows which means are statistically significant compared to the other. The results are very interesting and not obvious (Table 4). Specifically, the factor “business sector” has always a significant impact on the level of liquidity, while a more mixed results was achieved on the leverage ratio. In this case, in fact, there are significant differences between North-South and Centre-South, but not between North-Centre. This could be supposed and can be explained by the greater similarity of the two macro-areas about their entrepreneurial culture and, generally, their social, economic and productive fabric. Unexpected results are seeing considering the factor “business sector” as independent variable, given that the only significant means are highlighted between Primary/Advanced Tertiary and Secondary/Tertiary. Further analysis is required on this.

In summary, the hypotheses H_{2a} and H_{2b} are only partially validated.

6. DISCUSSION AND CONCLUSION

The analysis of trends shows that the crisis did not affect so consistently on the financial structure of cooperatives. Specifically, the liquidity ratio, although with some differences, may be considered sufficient in each of the groups and years analysed. Its trend is quite stable, with a downward course and so a little decrease over the ten years, but it does not appear to be considerably affected by the crisis. The level of leverage is very high, that indicates a low level of capitalization and, conversely, a high level of debt. This is consistent with previous national and international literature, where the undercapitalization of cooperatives overall is highlighted, but at the same time, it is also emphasized how the crisis did not particularly affect the condition. Rather, the observed reduction in the financial leverage ratio shows an improvement in the level of capitalization, providing further evidence of the anti-cyclical nature of cooperative business model. Its resilience are shown, for instance, in Birchall and Ketilson (2009); Allen and Maghimbi (2009), Bajo and Roelants (2011); Roelants et al. (2012); Carini and Carpita (2014); Fontanari and Borzaga (2014), Fusco and Migliaccio (2015); Steklá et al. (2015), Costa and Carini (2016). Similar results rather than the present study are stressed by Steklá et al. (2015) in Czechoslovakia. The author argued that the financial and economic crisis lowered the debt to equity ratio and debt to assets ratio, as well as the disparity of the ratio values among regions at the end of the monitored period seemed not to be changed. In Italy, Fontanari and Borzaga (2014) proved that cooperatives had rates always positive and higher than limited companies, because they had a cyclical trend that had enabled them to protect places and labour income, while limited companies had limited losses by reducing staff costs. In summary, the high level of debt cannot be ascribable to crisis impacts but a pathological previous situation resulting from problems - before highlighted - deriving from problems inherent to

cooperatives business model and their principles. The decrease of quick ratio suggest that the reduction dynamics of financial leverage are caused by a less use to debt capital, but the persistence of a good level of liquidity is an additional element to affirm the resilience of cooperatives. About the different geographical groups, the worst situation are registered in southern regions, especially about leverage ratio. This is consistent in Costa and Carini's (2016) study where the increase of Italian cooperatives overall turnover and total assets between 2008 and 2011 are pointed out, but also they found that the prolonged crisis in 2010 and 2011 affected mainly the southern regions, where conjunctural factors exacerbated long-term structural deficiencies. Similarly, Costa et al. (2012) that stressed a difficulty, regardless of their longevity, of Southern Italy cooperatives (especially those operating in the field of employment) to reach sizes and the economic successes comparable to their counterparts in the North and Centre. The greatest fluctuations occurred, however, in the period before the crisis. Looking at sectors, it is interesting to note that, although the tertiary and the tertiary advanced have better financial performance during the decade considered, the agriculture sector, in crisis for some time due to the reduction of investment in agriculture and reduced demand for products agricultural, has resisted and showed shooting marks, as reported in Fontanari and Borzaga (2016), that stressed the anti-cyclical nature of 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 (see also Bronsema and Theuvsen, 2011; Fusco and Migliaccio, 2016).

The trend analysis has also pointed out the noticeable gap between the groups. In fact, The differences found between the groups are statistically significant, except the case where quick ratio is assumed as dependent variable and geographic localization as independent variable. So ANOVA confirms that the belonging business sector has an effect on financial structure, both in short and in long term; while the geographical localization impacts only on financial leverage. Tukey-Kramer test has given more and interesting information regarding which means are different from others. The results are quite predictable with regard to the sectors, on the other hand the similar structure and performance of Northern and Central Italian cooperatives is shown in literature (for example, Costa et al. 2012; Costa and Carini, 2016), while the results related to the sectors need of further analysis. Moreover, if there is a quite considerable literature on the importance of geographical and institutional context (e.g. Vargas-Cetia, 2011; Roelants et al., 2012), there is not a rich literature about the possibility that cooperatives business model could be more suitable for some business sectors than others and further studies must be carry out on.

This paper is not without limitations. First, it takes into account only cooperatives survived the crisis: the strongest companies! 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. Secondly, another and more ratios should be considered at the end to have a more complete view on the financial dynamics.

With regard to some future lines of research, the analysis of the trend of profitability ratios (Roe, Roi and Ros) and their relationship with financial ratios could be interesting. It could be, in fact, that the stabilization of the financial structure has affected the profitability: less profits to shareholders, while maintaining an adequate financial balance! This hypothesis, however, must be checked with an empirical study that will be difficult because cooperatives often put the profit with others benefiting members.

Furthermore, the comparison with a compatible sample of capitalist enterprises could serve to highlight for additional evidence of the resilience of the cooperative model. In future, carrying out similar researches in other countries will be useful to develop a comparative analysis.

7. IMPLICATIONS

Some practical implications for public policy can also arise from this study. The analysis, in reiterating the strength of the cooperative movement, especially in times of crisis, drives the authorities to re-evaluate the role of these organisations, that, more than others, have defended the occupation even in times of recession, providing them with a strong incentive to encourage further or better the flourishing of these forms of businesses. The subsidized credit to cooperatives, therefore, finds a further justification and also the option of cooperative members' funding may have additional legitimate impulse, freeing them from the frequent and sometimes unjustified limits, drawing while contributions substantially and formally different from those typical of equity. Moreover the results show on one hand the resilience of cooperatives, but on the other hand lead confirmations of an inherent low level of capitalization, as well as to differences between territories that just the appropriate public policies could reduce.

The analysis also provides useful and compelling arguments to promoters and managers of cooperatives, that can better play their role as trainers of cooperative members. The educational function of the members, to be developed in all sectors, with particular attention to the primary, is inherent in the genetic principles of cooperation, but must necessarily abandon the exclusive appeal to purely theoretical conceptions, only steeped in political ideology, to develop especially using convincing arguments arising from quantitative surveys.

Even the university courses, focused on mutuality and non-profit organizations, can benefit from this type of investigations, that integrate traditional manual used for the transfer of knowledge to new generations.

Finally, about the importance of financial analysis, it is necessary to take into account the typical nature of cooperatives: a possible mistake is the interpretation of the financial ratios with the conceptual parameters of capitalist companies which, have substantially different characteristics. Therefore, it should always correlate the economic performance with the social one and monitorate also meso-economic indicators.

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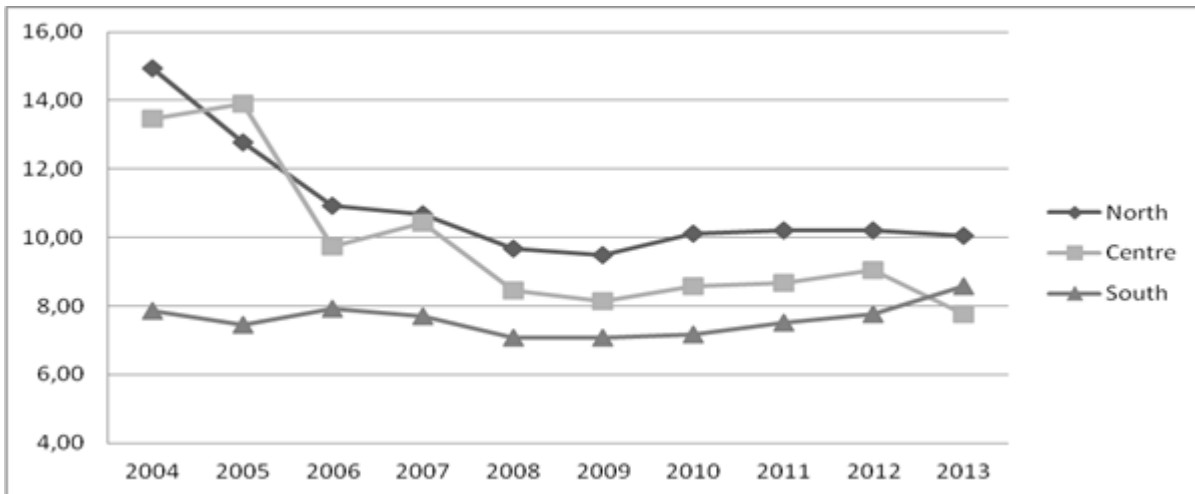
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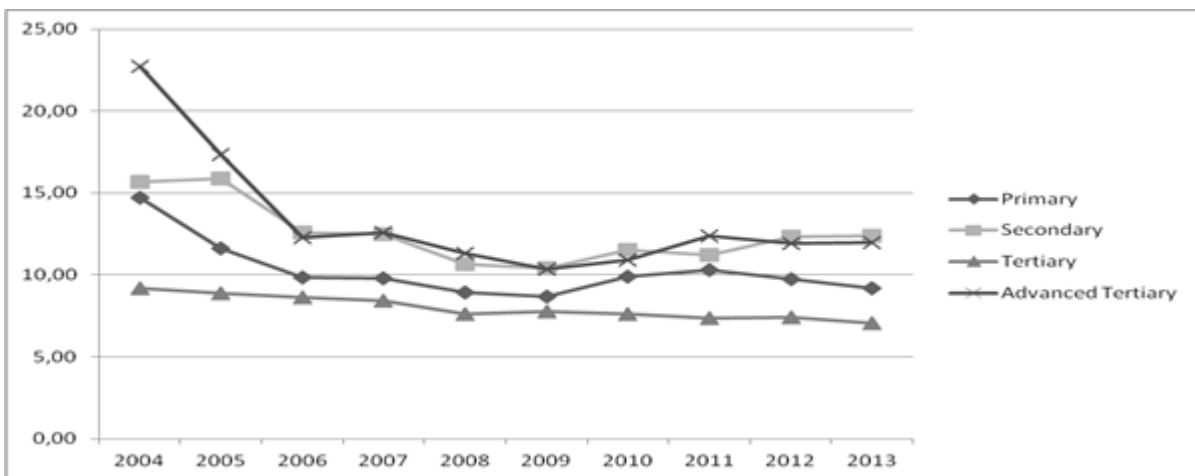
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Figure 1: Trend of *financial leverage ratio* according to geographic localization



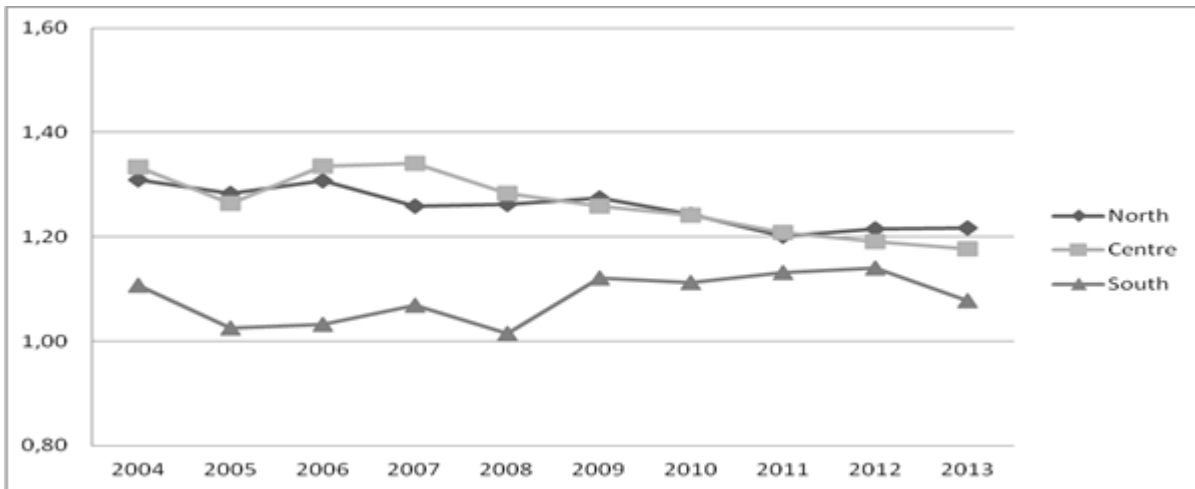
Source: our elaboration

Figure 2: Trend of *financial leverage ratio* according to sector



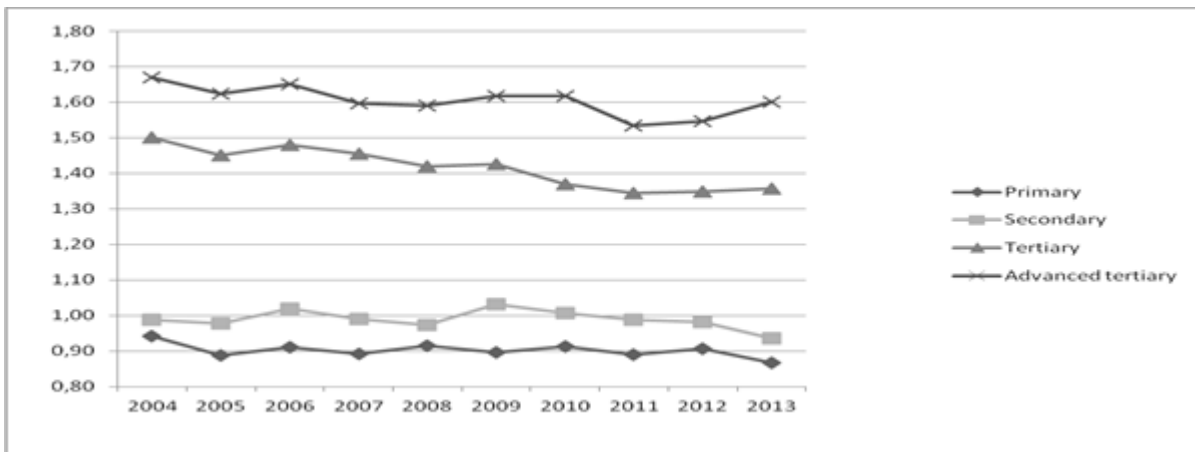
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Figure 3: Trend of *quick ratio* according to geographic localization



Source: our elaboration

Figure 4: Trend of *quick ratio* according to sector



Source: our elaboration

Table 1: Transition from NACE codes to groups

Group	NACE Classification	
	Section	Description
Primary	A; B	Agriculture, forestry and fishing; Mining and quarrying.
Secondary	C; F	Manufacturing; Construction.
Tertiary	D; E; G; H; P; Q; R; S	Electricity, gas, steam and air conditioning supply; Water supply, sewerage, waste management and remediation activities; Wholesale and retail trade; repair of motor vehicles and motorcycles; Accommodation and food service activities; Transportation and storage; Education; Human health and social work activities; Arts, entertainment and recreation; Other service activities.
Advanced Tertiary	J; K; L; M; N	Information and communication; Financial and insurance activities; Real estate activities; Professional, scientific and technical activities; Administrative and support service activities.

Table 2: Financial leverage ratio

	Source of variation	<i>SQ</i>	<i>gdl</i>	<i>MQ</i>	<i>F</i>	<i>Sig</i>	<i>F crit</i>
geographical localization	Between groups	174,5796293	3	58,19320976	10,78234584	0,00003367	2,866265557
	Within groups	194,2949691	36	5,397082475			
	Total	368,8745984	39				
Belonging sector	Between groups	56,47587179	2	28,23793589	10,84220263	0,000349661	3,354130829
	Within groups	70,32005349	27	2,604446425			
	Total	126,7959253	29				

Significant level at 0,05

Table 3: Quick ratio

	Source of variation	<i>SQ</i>	<i>gf</i>	<i>MQ</i>	<i>F</i>	<i>Sig</i>	<i>F crit</i>
Geographical localization	Between Groups	0,62348125	2	0,31174062	0,2405333	0,787875187	3,35413083
	Within Groups	34,9930623	27	1,29603935			
	Total	35,6165436	29				
Belonging sector	Between groups	3,40160543	3	1,13386848	742,270471	2,06753E-32	2,86626556
	Within groups	0,05499244	36	0,00152757			
	Total	3,45659788	39				

Significant level at 0,05

Table 4: Tukey-Kramer Multiple Comparisons results

Dependent Variable	Independent Variable	Comparisons	Absolute Difference	Critical Range
FINANCIAL LEVERAGE RATIO	Geographical Localization	North to Centre	1,092431783	1,801492339
		North to South*	3,298728447	1,801492339
		Centre to South*	2,206296664	1,801492339
	Business Sectors	Primary to Secondary	2,250283299	2,828396277
		Primary to Tertiary	2,264458531	2,828396277
		Primary to Adv Tertiary*	3,107933495	2,828396277
		Secondary to Tertiary*	4,51474183	2,828396277
		Secondary to Adv Tertiary	0,857650196	2,828396277
		Tertiary to Adv Tertiary*	5,372392026	2,828396277
	Business Sectors	Primary to Secondary*	0,087735454	0,047584003
		Primary to Tertiary*	0,513385546	0,047584003
		Primary to Adv Tertiary*	0,702830475	0,047584003
Secondary to Tertiary*		0,425650092	0,047584003	
Secondary to Adv Tertiary*		0,615095021	0,047584003	
Tertiary to Adv Tertiary*		0,189444929	0,047584003	
QUICK RATIO	Business Sectors	Primary to Adv Tertiary*	0,702830475	0,047584003
		Secondary to Tertiary*	0,425650092	0,047584003
		Secondary to Adv Tertiary*	0,615095021	0,047584003
		Tertiary to Adv Tertiary*	0,189444929	0,047584003

* The mean difference is significant at level 0.05