

# OWNERSHIP DISPERSION AND PERFORMANCE IN COOPERATIVE BANKING

Federica Poli \*

\* Department of Economics and Business Administration, Faculty of Economics, Università Cattolica del Sacro Cuore, Milan, Italy  
Contact details: Università Cattolica del Sacro Cuore, Largo A. Gemelli 1, 20123 Milan, Italy



## Abstract

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Different methodological approaches and hypotheses relative to the relationship between ownership structure and performances in cooperative banking generate contrasting findings, so motivating this innovative study which is grounded on an estimation approach allowing for the potential endogeneity of the membership base. Based on a sample of 241 Italian small cooperative banks over the 2013–2018 period, we find that bank profitability is positively affected by the membership as in the study conducted by Jones and Kalmi (2015) on Finnish cooperative banking and different from the comparable Austrian empirical research of Gorton and Schmid (1999). Unlike the latter we did not find an increasing exposure to agency costs as ownership dispersion grows and showed that greater membership raises individual bank financial stability, lowering the cost of credit risk.

**Keywords:** Ownership Structure, Cooperative Banking, Profitability, Financial Stability

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## 1. INTRODUCTION

The corporate finance literature has largely debated the effects of dispersed shareholders in public companies. One of the most valuable hypotheses under scrutiny is the lack of incentive for shareholders to monitor managers and prevent them from putting their interests above that of the company's shareholders. The separation between managers and shareholders can give rise to information asymmetry and ultimately diverging incentives (Jensen & Meckling, 1976). Cooperative banks are public companies with a widespread ownership structure that, however, lacks the forms of formal control typically enjoyed by shareholders of joint-stock companies.

The cooperative organizations follow the principle of "one-vote per capita", the shares are not negotiable, are repaid at nominal value, and the generated profits are mostly set aside in reserve accounts. If the separation between managers and shareholders has been interpreted as a source of information asymmetry and ultimately diverging

incentives in companies (Jensen & Meckling, 1976), in cooperatives this phenomenon seems to be amplified by their specific governance as they lack a control mechanism to foster organizational efficiency (Karpoff & Rice, 1989). For instance, monitoring may turn out to be costly for many unsophisticated members of cooperative banks (Hart & Moore, 1998; Cook & Iliopoulos, 1999). Additionally, along with Gorton and Schmid's (1999) view, cooperative banks are insulated from any threat of take-over and as a result, their ownership structure is retained essentially exogenous. However, these authors ignore to consider that when a strict operational link with the community of cooperative members is preserved, the exogeneity of the ownership structure of these banks is questionable, being unable to adjust because of voting and transferability frictions affecting the cooperative business model. In Italy, for instance, the small credit cooperative banks — *banche di credito cooperativo* (BCCs) — investigated in this study are required to allocate most of their business to members. From this last point, it follows

that to the extent that the performances and existence of these institutions are anchored to the member-customers served, their ownership structure might not be exogenous. For instance, the empirical studies of Demsetz and Lehn (1985), Himmelberg, Hubbard, and Palia (1999), and Gugler and Weigand (2003) show that ownership is endogenous because it is influenced by the firm's level of performance and risk. In a more recent empirical study, Jones and Kalmi (2015) examine the relationship between Finnish cooperative banks' performance and membership, treating the latter as endogenous within a difference generalized method of moments (GMM) estimation framework introduced by Holtz-Eakin, Newey, and Rosen (1988) and Arellano and Bond (1991). For cooperatives, profits are not the main goal but are undoubtedly functional to the pursuit of the institution's mutual aims in the long-run; therefore, changes in bank performances can motivate corresponding changes in the ownership structure. Nevertheless, the potential endogeneity of cooperative banks' ownership structure remains controversial since only one study (Jones & Kalmi, 2015), to the best of my knowledge, copes with this preliminary empirical issue. This represents one of the research stimuli of this empirical work even if not the main one.

According to Gorton and Schmid's (1999) findings, higher membership dispersion leads to a greater separation between ownership and control and an increase in the efficiency wages in line with the corresponding efficiency wage hypothesis (Katz, 1986; Stiglitz, 1986; Leggett & Strand, 2002). As a result, the channel through which the profitability of cooperative banks may be adversely hit is their organizational inefficiency due to agency problems. This finding and its related pessimistic interpretation of the viability of cooperative banking and more broadly of all kinds of financial cooperatives contrasts with the results of Jones and Kalmi (2015). Moving from a new theoretical framework that assumes that membership may improve customer loyalty and make members-customers more prone to use the services offered by their cooperative banks within a reciprocity setup, they show that membership is positively related to bank profitability, proxied by the natural logarithm of the return on assets (ROA) as in Gorton and Schmid (1999).

These contrasting findings vis-à-vis different estimation approaches used, and hypotheses expressed relative to the nature of membership (exogenous or endogenous concerning bank performances) motivate this new study. It aims to further verify the relationship between ownership dispersion and profitability in cooperative banking. The investigation of the channels through which the dispersion of cooperative membership can influence the performance of cooperative banks remains insufficiently investigated both in the reference work of Gorton and Schmid (1999) and in that of Jones and Kalmi (2015). In addition to offering a new test to the efficiency wage hypothesis, this research intends to shed light on the relationships with other income components that affect the annual profitability of cooperative banks and ultimately their financial stability. This applies to net interest income over total assets (*NI\_TA*), which typically represents the main income component of cooperative banks, and exposure to

credit risk proxies by loan loss provisions over total assets (*LLP\_TA*) which may absorb much of the originated bank profitability.

Similarly, the relationship between the dispersion of the ownership structure of cooperative banks and their financial stability, measured through the Z-score and some of its components is not investigated to the best of our knowledge in the empirical literature. Estimates performed in this study are run on a sample of 241 Italian small cooperative banks over the 2013–2018 period with hand-picked data on the year-end number of members as recorded in the BCCs' statistical yearbook (*Annuario del Credito Cooperativo*). The sample period is particularly worthy because during it Italian cooperative banks were still managerially autonomous and not part of a strong cohesive network, as required by the 2016 Reform highlighted in Section 3 and implemented in 2019. That is, instead, the case of Finnish cooperative banks investigated by Jones and Kalmi (2015) whose results could be somewhat biased by a relaxation of agency problems since in more cohesive networks the monitoring of bank management is not done only locally by members but is also conducted by the very influential network apex. The panel used in this study instead of that of Gorton and Schmid (1999), covers autonomous institutions. To address primarily the endogeneity concern relative to the variable proxying the ownership dispersion, a system GMM estimator approach is employed (Arellano & Bover, 1995; Blundell & Bond, 1998). Specifically, we rely on the two-step system GMM because it provides efficient estimators (Bond, Hoeffler, & Temple, 2001). Moreover, the two-step GMM results in a robust Hansen-test for over-identification that allows testing the instruments' validity, namely, the lack of correlation between the instrumental variables and the error term, as described in Section 4. Similarly, to Jones and Kalmi (2015) and different from what Gorton and Schmid (1999) found for Austrian cooperative banks, greater dispersion of the membership base of Italian cooperative banks does not lead to a decrease in their profitability, as measured by the ROA. Unlike the empirical findings of Gorton and Schmid (1999), the coefficient of the target variable proxying for the membership dispersion is statistically significant and inversely related to the proxy of efficiency wages (*Wage rent*). This latter finding does not support the view that cooperative members rely on efficiency wages as a device to discipline employees and ultimately the managerial effort or put it differently that agency costs, as measured by efficiency wages, are increasing in the degree of separation or dispersion of the ownership structure. Possible explanations of these latter results may stem from the fact that *ceteris paribus*, an increase in the membership can lead to a greater degree of members' participation, as well as monitoring of the evolution of negative income components, such as overheads and their components, which can hit the sustainability of these banks over time. Additionally, an increase in bank membership may improve bank productivity. Robustness tests conducted with alternative dependent variables of ROA and *Wage rent* confirm the main findings. The further estimates conducted to identify the channels through which dispersion in the

ownership structure can affect the performance of cooperative banks show a negative and significant relationship with the banks' net interest income and with the loan loss provisions, while a weakly significant and positive relationship with the Z-score is found.

From these results, it emerges that the dispersion of the members, towards whom these banks exercise their mutualistic function and their non-profit vocation, depresses an important income component, such as the net interest income, probably because the extraction of the benefits deriving from the acquisition of the status of the cooperative member, above all by easing the conditions of access to the credit intermediation carried out by these banks, is reflected in the net interest margin. It should be noted that in the Italian cooperative banking system, members do not receive rebates or bonuses but rather more favorable economic conditions in accessing the services offered by their banks. This can negatively affect the dynamics of the interest margin as the membership base grows, as well as the potential of members' opportunistic behaviors. Finally, we find that higher membership dispersion reduces the cost of credit risk, proxied by the loan loss provisioning, consistently with the positive effects of greater member diversification and higher orientation to relationship banking characterizing cooperative banks (Dewenter & Hess, 2003), and makes cooperative banks more financially stable, as proxied by the Z-score. This latter result seems to stem both from the positive effects of membership on profitability and the lower volatility of the latter. Interestingly, however, a negative relationship emerged with the bank's level of capitalization. Although these banks are typically endowed with a level of regulatory capitalization higher than that of non-cooperative commercial banks (Poli, 2019), the empirical result in question seems to highlight one of the unintended drawbacks of this banking business model, stemming from the implementation of the principle of democratic participation which typically results in thresholds for capital participation kept low enough to make membership affordable, as well as from the role exercised by compulsory reserves of undistributed profits as tools to foster bank equity and mitigate the economic burden on members should the co-operative experience losses (Poli, 2019).

The contributions of this study to the existing literature are manifold: 1) it is confirmed the existence of a positive relationship between ownership dispersion and profitability, above all in cooperative banking context-free of any potential influence of the apex on the monitoring of BCCs; 2) also shows that where the bank's operational link with the members is legally binding, the agency costs, as measured by efficiency wages, are decreasing in the degree of dispersion of the ownership structure.

This study is the first, as far as it is known, to examine the channels through which ownership dispersion can affect the profitability and financial stability of cooperative banks. Furthermore, it provides new support for the assumption of endogeneity of the ownership structure of cooperative banks.

The remainder of the paper is organized as follows. Section 2 examines the related literature and identifies testable hypotheses. Section 3 provides an overview of the Italian cooperative banking system, while Section 4 explains the empirical design and related methodological approach, and Section 5 illustrates results and robustness checks. The last two sections discuss respectively the implications of the findings and conclude the paper.

## 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The corporate finance literature has largely debated the effects of dispersed shareholders in public companies. One of the most valuable hypotheses under scrutiny is the lack of incentive for shareholders to monitor managers and prevent them from putting their interests above that of the company's shareholders. The separation between managers and shareholders can give rise to information asymmetry and ultimately diverging incentives (Jensen & Meckling, 1976). Such issues are of great significance in banks with extensive shareholding, among which we can also include those with mutualistic purposes, such as cooperative banks, widely spread in many European countries. Looking more generally at the effectiveness of the governance of stakeholder-oriented institutions, economists seem rather skeptical. For instance, Tirole (2001) argues that the implementation of the stakeholder ideal is difficult because of conflicting preferences among stakeholders and the consequent difficulty in designing adequate incentives for management to maximize stakeholders' welfare. Jensen (2001) believes that stakeholder-oriented firms will not outlive competitive pressures from profit-maximizing firms.

Cooperative banks originated in the mid-nineteenth century as member-owned organizational arrangements to overcome monopoly power faced by members with commercial banks (Hansmann, 1988), fostering their financial inclusion and that of related local communities (Poli, 2019). In general, cooperatives have been described as membership-based entrepreneurial organizations characterized by democratic and inclusive governance (Birchall, 2011) in which decision-making power is evenly distributed across members (Sabatini, Modena, & Tortia, 2014). Their conduct is characterized by the double quality principle (the cooperators are partners/members and beneficiaries at the same time); political democracy (with the "one-vote per capita principle" principle); by a-capitalism (with the limitation of capital remuneration and investment, and the compulsory constitution of reserves) (Jardat, Gianfaldoni, & Hiez, 2012).

In their original legal form, members were strongly incentivized to monitor the performance of their cooperative because their unlimited liability pushed to mutual monitoring. The local dimension of the operations of cooperative banks facilitated this task, making it less costly. The true mutual nature of these organizations, whose operations were exclusively dedicated to the members, represented a further potential incentive for monitoring, as well as the identification of those in charge of direction/management among members. Cooperative banks have evolved, however, into

limited liability firms which may deal with many customers who are not cooperative members, and which may be run by professional managers (Gorton & Schmid, 1999). As a result, some of the original monitoring incentive mechanisms weakened, being progressively substituted by the external control of supervisory authorities and financial markets on which these banks increasingly rely for funding/investment and ultimately driving to reinforce the tendency to technocratic centralism that naturally occurs with the increasing size of organizations. For instance, some scholars (Prowse, 1997; Macey & O'Hara, 2003; Levine, 2004) argue that principal-agent problems may be generally more severe in the banking sector and that the disciplinary power of the market for corporate control is limited (Prowse, 1995), as take-overs in many countries are discouraged, and aggregations are under the scrutiny and approval of supervisors. Additionally, agency problems in banking may be exacerbated by the deposit insurance design since it may provide incentives to managers and shareholders to engage in excessive risk-taking (Macey & O'Hara, 2003; Chiramonte, Girardone, Migliavacca, & Poli, 2020).

La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000) show that the extent to which monitoring activities can be pursued depends on the national legal and regulatory protection of shareholder rights. They suggest that concentrated ownership is a response to inadequate investor protection.

Focusing on cooperatives, Rasmusen (1988) comes to maintain that such organizations essentially have no shareholders because their managers are completely insulated from any monitoring. Board members and directors of these institutions are viewed within the literature as a "self-perpetuating autocracy" (Nicols, 1967; Spear, 2004) because replacement mechanisms are not as effective as in joint-stock banks (Stefancic, 2014). Other than this, whereas an increasing difference in technical competence between managers and members emerges, it can only give rise to a real power asymmetry that dispossesses the members of the leading power of the bank (Schmielewski & Wein, 2015). The effectiveness of monitoring activities seems to be weakened by the contextual high dispersion of the member base and the "one-vote per capita principle" which make members more prone to free ride than to spend resources to monitor and control managers (Hart & Moore, 1998; Borgen, 2004). Indeed, the incentive to monitor bank managers is seen as negatively related to the degree of dispersed shareholders because they cannot privately retain the benefits of their controlling activities (Schmielewski & Wein, 2015). Alchian and Demsetz (1972) state that with diffuse ownership, monitoring effort takes on aspects of a public good, and each residual claimant has an incentive to shirk monitoring. Shleifer and Vishny (1986) show that diffuse shareholdings are associated with decreases in firm value. Even the overlapping of the roles of member and customer would give rise to potential conflicts to the extent that opportunism, namely the personal interest of the member-client in obtaining, for example, financing at good terms may override that of controlling managers in the interest of the community of members.

As votes cannot be accrued into blocks in cooperative banks, there can be no monitoring by

block shareholders, since regardless of the number of shares owned each member receives one vote. After all, monitoring may turn out to be costly for many unsophisticated members of cooperative banks (Hart & Moore, 1998; Cook & Iliopoulos, 1999). These banks lack the transferability of shares as a control mechanism to foster organizational efficiency (Karpoff & Rice, 1989) as their shares can only be traded with the cooperative itself and at their face value. Thus, cooperative banks are insulated from any threat of take-over (Gorton & Schmid, 1999) and as a result, their ownership structure is retained as essentially exogenous.

This view lacks to consider that when a strict operational link with the community of cooperative members is preserved, the exogeneity of the ownership structure of these banks is questionable, being supposed unable to adjust (Gorton & Schmid, 1999) simply because of voting and transferability frictions. In Italy, for instance, the small BCCs, investigated in this study must allocate most of their business to members. From this last point, it follows that to the extent that the performances and existence of these institutions are anchored to the member-customers served, their ownership structure might be endogenous. This seems in line with Demsetz's (1983) view of the endogeneity of the ownership structure of the firm whose changes are motivated by making profits via the elimination of managerial inefficiency. Other studies (Demsetz & Lehn, 1985; Himmelberg et al., 1999; Gugler & Weigand, 2003) show that ownership is endogenous because it is influenced by the firm's level of performance and risk. Jaditz (1992) shows that optimal ownership structure is a dynamic phenomenon and, changes in an organization may be reversible acclimations to changes in variables such as the opportunities for alternate use of firm resources owner. In the case of cooperatives, for instance, profits are not the main goal but are functional to the pursuit of the institution's mutual aims in the long-run, and therefore changes in bank performances can motivate changes in the membership. It is therefore challenging to empirically verify first the possible endogeneity of the ownership structure in cooperative banks where the link between operations and ownership remains strong and second examine the effects of ownership dispersion on the performance and riskiness of these banks. To methodologically address the above aim, a system of GMM is employed as it allows simultaneously to deal with individual effects, and the endogeneity of variables using as instrumental variables the lags in differences and levels (Arellano & Bover, 1995; Roodman, 2009a). More details on the estimation methodology will be given in Section 4.

The effect of ownership structure on corporate performance remains mostly unsettled in the banking sector where a recent stream of empirical research has incorporated information on each bank's ownership structure, mostly joint-stock companies (Laeven & Levine, 2009; Beltratti & Stulz, 2012; Gropp & Köhler, 2010; Bian & Deng, 2017; Huang, 2020). Turning specifically to cooperative banks, only a few national empirical analyses are available. Gorton and Schmid (1999) use data on Austrian cooperative banks and suggest that consistently with Berle and Means (1932) the quality of corporate governance decreases when

membership increases. They find a negative and significant relationship between the log of the number of members and that of bank profitability, proxied by the ROA, and document that agency costs, as measured by efficiency wages, are increasing in the degree of separation or dispersion of the ownership structure. They maintain that the decline in firm performance as the number of cooperative members increases is due to the higher efficiency wages necessary because of the higher potential of free riding. Using data for U.S. credit unions, Leggett and Strand (2002) come to a similar conclusion and show that a growing number of members is associated with higher ratios of expenses to assets ratio, as well as labor costs to assets. Contrary to previous studies, Jones and Kalmi (2015) examine the relationship between membership and profitability of Finnish cooperative banks and find it positive. They use an alternative methodological approach that considers the potential of multicollinearity between membership and more general effects of economies of scale, like bank size, including bank fixed effects, and employ a difference GMM model. However, one key implication of the study of Jones and Kalmi (2015) is the strongly cohesive network structure adopted by Finnish cooperative banks whose monitoring is not performed only by local members, as assumed in Gorton and Schmid (1999), but is also done by the apex institution (Desrochers & Fischer, 2005; Poli, 2019). As such, however, monitoring incentives held by members might be weakened and obscured by the more pervasive monitoring exercised by the cooperative network apex, held by cooperative banks and acting as an indirectly delegated agent of banks' members. Interestingly, Jones and Kalmi (2015) propose what they characterize as "a new view of cooperatives", which relies on the offsetting benefits arising from a committed body of customer-members through reciprocity as emerging from the growing literature in behavioral economics and finance. In line with this view is the empirical attention dedicated to the viability of stakeholder-oriented firms as mechanisms to preserve the collective interest. Allen, Carletti, and Marquez (2015) maintain that stakeholder firms internalize the effects of their behavior on stakeholders other than shareholders. Since these firms are more concerned with the benefits that their stakeholders would lose should the firm default, their conduct may be more prudent to ensure their preservation. This is consistent with the genesis of cooperative banks which are borne to redistribute their surplus to member-customers and to favor social inclusion and local development over the long term (Poli, 2019). Additionally, career worries by bank management (Amihud & Lev, 1981) due to their limited ability to diversify their unemployment risk may lessen the incentives to adopt opportunistic behaviors as well as to engage in risky activities that could ultimately threaten the survival of cooperative banks. Consequently, the agency-related concerns that are imputed to cooperative banks are softened because the interests of members and managers turn out to be more aligned while alleviating the need for members' monitoring.

The basic hypotheses of this paper are grounded on the assumption that the performances of cooperative banks are related to their ownership structure but that the occurrence of principal-agent

problems may exert an unclear influence over bank managers' behavior and ultimately bank profitability. This issue is especially relevant when mutuality remains a strong operational driver in cooperative banking as in the case of small Italian BCCs. In line with Jones and Kalmi's (2015) view, even with dispersed ownership, members might be able to exercise better control over management to preserve their collective interests. If this reduces the ability of management to extract private benefits and be immune to members' discipline, we expect a positive effect on the relationship between ownership dispersion and proxies of bank performance. On the other side, as members are indeed minority shareholders who can wholly diversify firm-specific risk (Shleifer & Vishny, 1997), they may be less keen on management monitoring and/or more prone to adopt opportunistic behavior which in both cases can ultimately undermine bank economic performances.

The opportunism of members, also and above all as customers of the owned bank, could affect other channels or namely components of bank profitability, such as net interest income and the cost of credit risk, proxied by the loan loss provisioning. A possible misalignment of interests in cooperative banking originates from the ability of member-customers to capture private benefits (i.e., in terms of more favorable economic conditions on loans and/or deposits) that may not be aligned with the corresponding incentives to monitor bank performances and risks. There is an inherent challenge in the way democratic membership is still realized in many cooperative banking systems: traditionally and to date, co-operatives have set low levels of shareholdings to boost membership among the poorest, and/or to favor diffuse membership via established limitations to individual shareholdings. However, this can favor, for instance, a member-borrower's moral hazard as the asymmetry between the value of the shares held and the size of the loans obtained increases, thus ultimately undermining the net interest income and raising the cost of credit risk. On the contrary, in line with "a new view of cooperatives" proposed by Jones and Kalmi (2015), should customers-members be committed to preserving their financial provider, diffuse membership may likely have opposite effects. The above assumptions are also valid regarding the relationship between the dispersion of the ownership structure and the financial stability of the cooperative banks, measured through the Z-score. Indeed, the resilience of these banks depends primarily on their ability to generate enough profits to foster their capital buffer against potential future losses within an interpretative framework in which profits represent a mere survival condition of the cooperative business model.

### 3. THE ITALIAN COOPERATIVE BANKING SECTOR

The Italian banking system has undergone a profound restructuring phase since the 1990s which has seen the emergence of a few large commercial banking groups with an international dimension alongside which a decreasing number of small and medium-sized banks persist, with operations for the more territorially circumscribed. Among the latter there are precisely the small BCCs which since 2019 are for the most part amalgamated

within two cooperative banking groups, whose apex is a joint-stock bank with strong powers of control over the member cooperative banks; most of the capital of the apex bank is held by the cooperative banks. The few cooperatives that did not join the cooperative banking groups introduced by the 2016 Reform have joined an Institutional Protection Scheme (IPS) (Poli, 2019). In the analysis period covered by this study, the cooperative banks were fully independent in their actions, being members of a national cooperative network while enjoying large degrees of strategic and operational autonomy, and also using the network resources.

Together with BCCs, popular banks operate in the banking system, having the legal status of a cooperative bank but with limited mutuality. Most of the banks operating in Italy adopt the status of cooperative with limited liability for members: about 60% of Italian banks, the remainder being joint-stock companies (Bank of Italy, 2018).

The establishment of BCCs is regulated by Italian banking law. To ease the access to co-operative member status, Italian legislation sets the minimum and maximum value of co-operative shares at between €25 and €500. In addition, individual shareholding is capped to a value of €100,000. One vote is attributed to each member, regardless of the number of shares they hold. Banks' statutes may make the acquisition of member status conditional on the approval of the bank's board of directors and possible requests for the subscription of a given minimum number of shares. The BCCs must have a minimum capital of €5 million and at least 500 members. The banking law does not specify categories of persons who are permitted to acquire member status, but by keeping the banks' historical links with their original communities, it establishes that members must reside, be based, or operate on an ongoing basis within the territory of the bank itself. Members have the right to withdraw from the bank provided the withdrawal does not prejudice the stability of the bank under the provisions of Italian banking law. Within standard BCC's statute, the transfer of cooperative shares to non-members is not allowed without the approval of the board. In 2018, members of BCCs are 1,290,000, representing about one-fifth of the customers served European Association of Cooperative Banks (EACB). While representing approximately 17% of the total bank branches in Italy in 2018, their deposit market share is 7.2% and 7.8% for loans (EACB, 2018). Compared to 2013, the year in which this study began, market shares remained mostly stable.

In terms of activity, as in other European countries, the Italian regulation bounds the activity of BCCs within a well-defined geographical area but does not restrict bank funding, allowing banks to pursue different types of contracts (e.g., deposits, certificates of deposit (CDs), bonds, etc.) and counterparties (members and non-members). However, the law states that the lending activity must be mainly to the benefit of the members, in deference to the banks' original remit of enabling strands of the population to access credit, thereby enabling them to participate in and promote economic development. The Italian supervisory authority, the Bank of Italy, may authorize individual BCC to undertake operations for specified periods in

favor of customers other than its members, but only for stability reasons, i.e., to reap the potential benefits of a higher diversification of the customer base. Finally, there are restrictions in place on the distribution of BCCs' profits: at least seventy percent of the annual net profits must be allocated to the legal reserve. A portion of the annual net profits must be paid into a fund for the promotion and development of co-operative activity while the remaining portion of profits may be used for the revaluation of shares, assigned to other reserves, distributed to members as dividends or rebates, allocated for charitable purposes or to promote the principles of mutuality.

#### 4. RESEARCH METHODOLOGY

The empirical analysis is based on a sample of Italian small BCCs over the 2013–2018 period. Data are collected from different databases. Data on the year-end number of members are hand-picked from their statistical yearbook (*Annuario del Credito Cooperativo*). Furthermore, we collected bank balance sheet data from the BankFocus database. We found 242 Italian banks that operated in the 2013–2018 period during which the cooperative banks were still managerially autonomous and not part of a cohesive network, as required by the 2016 Reform highlighted in Section 3 and implemented in 2019. The results are therefore not subject to possible biases due to the belonging of the cooperative banks to a network whose apex company has strategic and operational coordination functions and can intervene in the conduct of individual banks and their management. Data gathering resulted in a strongly balanced panel of 1,402 observations.

To empirically document the channels through which governance dispersion in cooperative banks influences their profitability and stability, we rely on several measures that are extensively employed in the empirical banking literature. Firstly, motivated by Gorton and Schmid (1999), we explore and test the relationship between the percentage  $ROA^1$  and membership and the efficiency wage hypothesis by using and replicating the variable Wage rent which is calculated as the natural logarithm of the ratio between the individual bank's annual average staff expense and the related sample's annual average value. As in Gorton and Schmid (1999), we assume that bank employees are geographically mobile and may compare their wages with the wage of their bank colleagues in other provinces. As robustness checks, two alternative dependent variables are employed: the return of equity ( $ROE$ ) as a proxy of bank profitability, and the natural logarithm of the annual bank average cost of employees ( $Avg. cost of employees$ ). Further, we single out the impact of the target variable on two intermediate measures of profitability. The first, historically of extreme importance for cooperative banks, is represented by the profitability originating from credit intermediation, such as the net interest income ( $NI_{TA}$ ), calculated as a percentage of total assets. The importance of this profitability indicator for cooperative banks is highlighted by the fact that it represents on average about 64% of total operating

<sup>1</sup> Unlike Gorton and Schmid (1999) and Jones and Kalmi (2015), the profitability of cooperative banks is estimated using the percentage  $ROA$  and not expressed by its natural logarithm. This is to avoid losing as few observations as possible due to possible negative results.

income in the sample. The last intermediate measure proxies borrowers' credit quality, computed as the percentage of loan loss provisions to total assets (*LLP\_TA*) (Anandarajan, Hasan, & McCarthy, 2007).

Bank stability is proxied by the Z-index (De Nicoló, Boyd, & Jalal, 2006; Chiaramonte et al., 2015), which is calculated as the sum of the return on risk-weighted assets (*RRWA*) and the regulatory Tier1 ratio (*Tier1 ratio*) and on the *RRWA*'s standard deviation (Chiaramonte et al., 2016). The bank stability increases as the Z-score augments and vice versa. The Z-score employed in this study is an accounting risk-based measure of the distance of default since it identifies the number of standard deviations that the *RRWA* must decrease before the *Tier1 capital* is exhausted, thus driving bank insolvency. We calculate the Z-index as follows:

$$Z\ score_{i,t} = \frac{RRWA_{i,t} + Tier1\ ratio_{i,t}}{\sigma(RRWA)_{i,t}} \quad (1)$$

where  $RRWA_{i,t}$  and  $Tier1\ ratio_{i,t}$  are the return on risk-weighted assets and the Tier1 ratio, respectively, of bank  $i$  in the period  $t$ . *RRWA* is calculated as the ratio of net profits to total risk-weighted assets. To compute the  $\sigma(RRWA)_{i,t}$  of bank  $i$  in period  $t$  (*SDRRWA*), we used data from two periods ( $t, t-1$ ) to capture the short-term fluctuations of bank risk (Delis, Hasan, & Tsionas, 2014). Finally, its natural logarithm is taken to address the Z-index's skewness. As robustness checks, estimates are performed on two components of the Z-score, namely the *Tier1 ratio* and the standard deviation of the return on risk-weighted assets (*SDRRWA*).

To test the relationship between the several measures of bank performance employed and ownership dispersion a key independent variable proxying for the ownership dispersion is employed which is computed as the natural logarithm of the year-end number of cooperative members (*Members*) (Gorton & Schmid, 1999). Unfortunately, it was not possible to use a variable like that used by Jones and Kalmi (2015) as the number of customers with which it would have been possible to calculate the ratio of the number of cooperative members to the total of customers is not available. Despite this, the validity of this research results should not be severely biased. As in Gorton and Schmid (1999) and Jones and Kalmi (2015), bank-specific control variables account for customer loans over total assets (*Customer Loans\_TA*), and customer deposits over total assets (*Customer Deposits\_TA*). Unlike Jones and Kalmi (2015) and Gorton and Schmid (1999), total assets are not included as a proxy for the banking size. One of the shortcomings of these studies, of which the authors are however aware, is the high collinearity between the total bank assets and the target variable, *Members*, which makes its coefficient next to meaningless. A further additional bank-specific control variable is the share of net-interest income relative to total income (*Diversification*) which is an indirect measure of bank diversification of profits as its increases reduce diversification and should be negatively related to cooperative bank performances as maintained by Goddard, McKillop, and Wilson (2008). Through winsorizing, at 1% all bank-specific extreme values are excluded from the final sample. Analogously to Jones and Kalmi (2015), environmental effects are

captured with a measure of competition (*Competition*), which is computed as the natural logarithm of the provincial population per bank branch and is expected to be negatively correlated with the bank performance measures. Two additional and novel controls are employed. The first one aims to identify the society's endowment of human capital, namely, the amount of educated, trained, and healthy citizens which are better able to organize, evaluate conflicting information and express their views in constructive ways (Woolcock, 1998; Gennaioli, La Porta, Lopez-de-Silanes, & Shleifer, 2013). A growing endowment of human capital (Schultz, 1961; Becker, 1962; Coleman, 1988) may help to reduce the distance between members and bank decision-makers (Jardat et al., 2012) thus limiting the potential power of appropriation of the latter. The stock of *Human capital* locally available is computed as the percentage of individuals aged 15 or over with upper secondary education diplomas, bachelors, and post-graduate degrees.

Finally, to account for the business cycle effect over time, the annual GDP growth rate (*GDP Growth*) computed for each of the 20 Italian regions is included as an indicator of local economic conditions. All models are estimated with year-fixed effects to control for changes in macroeconomic conditions.

The description of the dependent, key independent, and control variables is reported in Table 1.

Estimates are performed with a system GMM linear estimator (Arellano & Bover, 1995; Blundell & Bond, 1998) as it appears better equipped to deal with independent variables that may be not strictly exogenous and heteroskedasticity and autocorrelation within panels. System GMM estimators may be preferred for other several reasons: compared to difference GMMs, they allow for more instruments that can dramatically improve efficiency. They build on a system of two equations, the original equation in level and the transformed one in difference, hence the name of the system GMM (Roodman, 2009a). Secondly, any gaps in a panel are magnified by the sole difference GMM when compared to system GMM (Roodman, 2009a). Unlike difference GMM, a system GMM does not expunge the fixed effects (Roodman, 2009a) and allows to tackle the endogeneity issues that arise when using the lagged explained variable, which may be correlated with the fixed effects in the error term (Nickell, 1981). Finally, this estimator, different from OLS, fixed effects (FE), and random effects (RE) estimation does not require distributional assumptions, like normality, and can allow for heteroscedasticity of the unknown form (Greene, 2008). The power of the assumptions made can be formally tested, namely that the instruments are valid, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. Autocorrelation in the idiosyncratic disturbance term may be also detected and tested. A more extensive discussion of these methods is beyond the scope of this section and may be found in the papers by Roodman (2009a, 2009b) whose *xtabond2* package for Stata is used in this empirical analysis.

**Table 1.** Description of the dependent, key independent, and control variables

<i>Variable</i>	<i>Description</i>	<i>Source</i>
<b>Dependent variables</b>		
<i>Profitability</i>		
<i>ROA</i>	After-tax return on assets (%)	Bank Focus
<i>Wage rent</i>	Natural logarithm of the ratio between the individual bank's annual average staff expense and the related sample's annual average value.	Own calculations on data reported by CCB's statistical yearbook and Bank Focus.
<i>LLP_TA</i>	The ratio of loan loss provisions over total assets (%)	Own calculations on data provided by Bank Focus
<b>Target independent variable</b>		
<i>Members</i>	Natural logarithm of the year-end number of cooperative bank members	Own calculations on data provided by the Italian cooperative banks' statistical yearbook
<b>Bank-specific control variables</b>		
<i>Customer Loans_TA</i>	The ratio of net customer loans over total customer assets (%)	Own calculations on data provided by Bank Focus
<i>Customer Deposits_TA</i>	The ratio of customer deposits over total assets (%)	Own calculations on data provided by Bank Focus
<i>Diversification</i>	The ratio of net interest income over total income (%)	Own calculations on data provided by Bank Focus
<b>Other non-bank specific control variables</b>		
<i>Competition</i>	The natural logarithm of the provincial population per bank branch	Own calculations on data provided by the Bank of Italy public database and the Italian National Institute of Statistics (Istat)
<i>Human capital</i>	Individuals are aged 15 or over with upper secondary education diplomas and bachelor, and post-graduate degrees (%).	Italian National Institute of Statistics (Istat)
<i>GDP Growth</i>	Annual growth of the regional gross domestic product (%).	Italian National Institute of Statistics (Istat)
<b>Other variables explained for robustness check</b>		
<i>NIL_TA</i>	Net interest income over total assets (%)	Own calculations on data provided by Bank Focus
<i>Avg. Cost of employees</i>	The natural logarithm of the annual average cost of employees	Own calculations on data provided by Bank Focus (total staff costs) and by the Italian cooperative banks' statistical yearbook (annual number of employees)
<i>Z-score</i>	The sum of the return on total risk-weighted assets (RRWA) and the Tier1 ratio ( <i>Tier1 ratio</i> ) on the RRWA's standard deviation	Own calculations on data provided by Bank Focus
<i>SDRRWA</i>	The standard deviation of the return on total risk-weighted assets (RRWA).	Own calculations on data provided by Bank Focus
<i>Tier1 ratio</i>	Core equity capital on total risk-weighted assets	Data provided by Bank Focus

The following baseline model is run, identifying individual banks with  $i$  and years with  $t$ :

$$Y_{i,t} = \alpha Y_{i,t-1} + \gamma' X_{i,t} + \delta' Z_{i,t} + \theta' M_{j,t} + \xi_t + \varepsilon_{i,t} \quad (2)$$

$$\varepsilon_{i,t} = \eta_{i,t} + v_{i,t}$$

with  $\eta_{i,t}$  being a bank effect, and  $v_{i,t}$  an idiosyncratic disturbance.

In equation (2),  $Y_{i,t}$  is the dependent variable for bank  $i$ -th in time  $t$ , as reported in Table 1.  $Y_{i,t-1}$  is the lagged dependent variable whose coefficient accounts for the dynamic nature of profitability and risk (Delis & Kouretas, 2011; D'Amato & Gallo, 2019).

The independent variables,  $X$ ,  $Z$ , and  $M$ , are respectively the target variable, the bank-specific control variables, and the non-bank-specific control variables reported in Table 1. Time dummies,  $\xi$ , are included to control for any macroeconomic and regulatory change that may have affected banks' performance (Claessens, Coleman, & Donnelly, 2018).

Estimates are performed with a two-step procedure with clustered standard error to account for cross-sectional heteroskedasticity and within-panel (serial) correlation (Windmeijer, 2005). The lagged dependent variable, the variables  $X$  and  $Z$  are treated as endogenous and are instrumented with their second lags and up, in levels and differences, while the set of variables  $M$  as exogenous and inserted into the instrument

variables' matrix. One advantage of the statistical package `xtabond2` is that it allows us to work separately on the endogeneity of the dependent or independent variables, limiting relative lags or collapsing instruments to avoid instrument proliferation (Roodman, 2009a). Additionally, time dummies are inserted as instruments too to make to hold the assumption of no correlation across individuals in the idiosyncratic disturbances (Roodman, 2009a). The soundness of the estimation approach relies on the usage of the Hansen test of over-identifying restrictions which tests the instruments' validity, specifically, the absence of correlation between the instrumental variables and the error term. Furthermore, first- and second-order serial correlation is tested with the absence of second-order serial correlation indicating that the model is properly specified and therefore that the estimates are not inconsistent.

## 5. RESEARCH RESULTS

Table 2 reports descriptive statistics for the full sample of Italian cooperative banks over the period 2013–2018. In particular, Panel A of Table 2 reports descriptive statistics for our dependent and independent variables, showing other than the mean and standard deviation, the values in correspondence of the median, the twenty-fifth, and seventy-fifth percentile. In Panel B, the annual

statistics for the absolute number of bank members are displayed. The average absolute number of members has been growing over time (at an average annual growth rate of 6.7%), demonstrating the ability of these banks to attract new members. Membership in cooperative banking is widely differentiated with banks having just around 500 members and banks with about 55,000 members. The sample of 241 BCCs covers 89.93% of active banks in 2018: 268 BCCs according to the data reported by the EACB (2018). In the same year, the sample covers 90.85% of the members reported in the EACB key statistics. Finally, Table 3 presents the correlation matrix which for the sake of

brevity is not commented on here but does not display any potential for concern. It is interesting to observe the presence of a negative correlation between *Members* and *Tier1 ratio* which seems to indicate an opportunistic recourse to the increase of the *Members'* base as the bank capital decreases, while on the contrary the growth of the capitalization of these banks, supported by the reserve provision constraint of profits, is accompanied by a decreasing interest in expanding the membership base. The collinearity test between the independent variables, not reported for reasons of brevity, does not exhibit any potential for concern in this regard.

**Table 2.** Descriptive statistics

<i>Panel A. Descriptive statistics for dependent/independent variables</i>					
<i>Variables</i>	<i>Mean</i>	<i>SD</i>	<i>P25</i>	<i>P50</i>	<i>P75</i>
<b><i>Dependent variables</i></b>					
<i>ROA</i>	0.2650	0.4680	0.1346	0.2757	0.4900
<i>Wage rent</i>	0.0047	0.1050	-0.0591	0.0009	0.0672
<i>ROE</i>	2.3743	5.0436	1.4311	2.7367	4.5177
<i>Avg. cost of employees</i>	11.1923	0.1050	11.1286	11.1887	11.2554
<i>NIITa</i>	1.8358	0.3727	1.5757	1.8217	2.0748
<i>LLP_Ta</i>	0.0067	0.0056	0.0027	0.0057	0.0095
<i>Z-score</i>	4.7497	1.5047	3.7565	4.7199	5.6137
<i>Tier1 ratio</i>	19.9070	6.9061	15.1178	17.9800	22.8826
<i>SDRRWA</i>	0.4059	0.6133	0.0743	0.1772	0.4809
<b><i>Independent variables</i></b>					
<i>Members</i>	7.8832	0.9008	7.1997	7.8214	8.5702
<i>Customer Loans_TA</i>	56.9571	12.5975	48.5503	57.3010	65.2491
<i>Customer Loans_TA</i>	60.4408	11.5184	52.1442	60.5965	69.3949
<i>Diversification</i>	63.3044	10.5962	56.3914	64.2959	70.8586
<i>Competition</i>	7.5205	0.5553	7.2045	7.3957	7.9631
<i>Human capital</i>	42.4831	4.2567	38.9203	42.1163	44.5261
<i>GDP Growth</i>	1.8876	1.2307	0.9771	2.0407	2.6264

  

<i>Panel B. Descriptive statistics for the absolute number of bank members</i>						
<i>Members (non in Ln)</i>	<i>Mean</i>	<i>SD</i>	<i>p25</i>	<i>p50</i>	<i>p75</i>	<i>Total</i>
2013	3402.7670	4436.0120	1211.0000	2048.0000	3896.0000	772428
2014	3560.4140	4671.4320	1229.0000	2028.0000	4038.0000	808214
2015	3992.4230	5147.2770	1315.0000	2267.0000	5022.0000	934227
2016	4259.3220	5455.7450	1360.0000	2488.5000	5542.0000	1030756
2017	4517.7240	6044.6510	1367.0000	2629.0000	6064.0000	1097807
2018	4822.9710	6370.3620	1422.0000	2709.0000	6631.0000	1171982

Note: The sample consists of 241 Italian cooperative banks. Unconsolidated and consolidated balance-sheet statements whenever available are selected. By means of winsorizing at 1%, all bank-specific extreme values are excluded from the final sample.

The results of the regressions that estimate the relationship between the main target variable, *Members*, and the dependent variable explaining the Italian cooperative banks' profitability (*ROA*), and that testing the efficiency wage hypothesis are reported in Table 4. The same table and the next ones also report for the individual models the Hansen's test statistic of over-identifying restrictions, the difference in the Hansen-test of exogeneity of instruments used for the regressions in level, and the second-order serial correlation test that does not reject the null hypothesis of the correct specification. The models are well-fitted, the instruments are exogenous, and estimates do not suffer from serial correlation problems which make results inconsistent if a significant second-order autocorrelation emerges (Blundell & Bond, 1998). As suggested by Roodman (2009b), the number of instruments used in the estimations is reported; since the number of instruments is lower than the number of panels (241), the Hansen statistic turns out to be more reliable (Roodman, 2009a).

In Model 1 (see Table 4), the relationship between the target variable and the dependent

variables proxying bank profitability (*ROA*) is positive and slightly significant, analogously to what Jones and Kalmi (2015) found for Finnish cooperative banks. Therefore, greater dispersion of the membership base of Italian BCCs does not lead to a decrease in their profitability. Differently from the results of Gorton and Schmid (1999) for Austrian cooperative banks, the empirical results for Italian and Finnish cooperative banks as well do not support the hypothesis that increasing cooperative membership weakens the quality of corporate governance because i.e., gains from management monitoring would be more diluted and increasing diversity in member preferences would raise the costs of decision-making. The empirical evidence, both in the Italian case and in other European contexts, demonstrates a constant increase in the membership of cooperative banks over time which, in contrast to the prediction of Gorton and Schmid (1999), is not associated with decreasing profitability or stability, even when compared with other business models (i.e., Mäkinen & Jones, 2015; Ferri, Kalmi, & Kerola, 2015).

Table 3. Correlation matrix

Variables	ROA	Wage rent	ROE	Avg. cost of employees	NIJ_TA	LLP_TA	Z-score	Tier1 ratio	SDRRWA	Members	Customer Loans_TA	Customer Loans_TA	Diversification	Competition	Human capital	GDP Growth
ROA	1															
Wage rent	0.1383*	1														
ROE	0.9343*	0.0737	1													
Avg. cost of employees	0.1378*	0.9999*	0.0727	1												
NIJ_TA	0.1906*	0.1157*	0.1313*	0.1160*	1											
LLP_TA	-0.5647*	-0.1954	-0.5139*	-0.1900*	0.0331	1										
Z-score	0.2702*	0.0859*	0.2703*	0.0860*	0.0500	-0.1530*	1									
Tier1 ratio	0.2905*	0.2835*	0.1353*	0.2839*	0.3113*	-0.2515*	0.1183*	1								
SDRRWA	-0.3896*	-0.0539	-0.4088*	-0.0536	-0.0173	0.2398*	-0.7364*	-0.0062	1							
Members	-0.2736	-0.2742*	-0.1609*	-0.2754*	-0.4522*	0.2577*	-0.0335	-0.5476*	0.0281	1						
Customer Loans_TA	-0.0824*	-0.0634	-0.0428	-0.0711	0.0195	-0.1196*	0.0348	-0.4029*	-0.1039*	0.2671*	1					
Customer Loans_TA	0.0974*	0.0976*	0.0713	0.0922*	0.1888*	-0.4249*	-0.0213	0.0404	-0.0066	-0.2959*	0.2785*	1				
Diversification	0.0774*	0.1309*	0.0134	0.1251*	0.4561*	-0.4711*	0.0498	0.1842*	-0.0551	-0.3377*	0.3025*	0.3540*	1			
Competition	0.0656	0.0302	0.0534	0.0299	0.2328*	-0.0375	-0.042	0.2624*	0.0578	-0.2884*	-0.3115*	0.1251*	0.0076	1		
Human capital	-0.1281*	-0.1574*	-0.0468	-0.1603*	0.0678	0.1180*	-0.0119	-0.0627	0.0755	0.2269*	0.1499*	-0.0623	-0.0432	-0.0211	1	
GDP Growth	-0.045	-0.0138	-0.0585	-0.0194	-0.2503*	-0.1924*	0.0557	-0.1003*	-0.0315	0.1438*	0.2443*	0.1438*	0.1302*	-0.0941*	0.0004	1

Note: This table reports the correlation matrixes for the full sample of Italian cooperative banks over the period 2013–2018. Variable definitions are provided in Table 1. The sample consists of 241 Italian cooperative banks. Unconsolidated and consolidated balance-sheet statements whenever available are selected. By means of winsorizing at 1%, all bank-specific extreme values are excluded from the final sample.

\* Correlation coefficients significant at the 1% level or better.

The pessimistic view of the relationship between cooperative bank profitability and ownership dispersion does not take into due account that cooperatives require the willingness to act for a common goal in the long run and that being a member and owner of the organization may lessen customer opportunism via the amplification of the benefits of reciprocity in line with the “new view” of cooperative membership stated by Jones and Kalmi (2015). Furthermore, these banks have

demonstrated to be able to adapt their organizations to changing environments (Poli, 2019) and growing competitive and regulatory pressures.

The coefficients of the *Customer Loans\_TA* and *Customer Deposits\_TA* variables are statistically significant and with a negative and positive sign respectively, as in Jones and Kalmi (2015), while they are both positive and significant in Gorton and Schmid (1999). The remaining control variables are not significant in this specification.

**Table 4.** Testing the efficiency wage hypothesis and cooperative bank profitability

Variables	Model 1	Model 2	Model 3	Model 4
	ROA	Wage rent	ROE	Avg. cost of employees
L.ROA	0.1830*** (0.0734)			
L.Wage rent		0.2380*** (0.0886)		
L.ROE			0.2130** (0.0909)	
L.Avg. cost of employees				0.2300** (0.0901)
Members	0.0931* (0.0544)	-0.0412*** (0.0135)	1.0860* (0.6070)	-0.0370*** (0.0134)
Customer Loans_TA	-0.0132*** (0.0040)	-0.0011 (0.0008)	-0.1220*** (0.0465)	-0.0013* (0.0008)
Customer Deposits_TA	0.0150*** (0.0037)	-0.0004 (0.0009)	0.1360*** (0.0345)	-0.0002 (0.0007)
Diversification	-0.0008 (0.0043)	0.0007 (0.0010)	-0.0240 (0.0482)	0.0016** (0.0008)
Competition	-0.0293 (0.0274)	-0.0142** (0.0072)	-0.3890 (0.2860)	-0.0144** (0.0070)
Human capital	-0.0069 (0.0063)	-0.0008 (0.0012)	-0.0110 (0.0643)	-0.0010 (0.0012)
GDP growth	0.0049 (0.0109)	0.0015 (0.0017)	0.0227 (0.111)	0.0011 (0.0016)
Year dummies	Yes	Yes	Yes	Yes
Constant	0.0653 (0.7760)	0.5290*** (0.1880)	-3.6640 (7.887)	9.055*** (1.050)
Arellano-Bond test for AR(2)	0.1510	0.8420	0.1100	0.8370
Hansen-test of overid. restrictions	0.2460	0.1140	0.2440	0.1280
Difference-in-Hansen tests of exogeneity of instrument subsets GMM instruments for levels	0.6540	0.2270	0.7150	0.6310
Number of instruments	60	63	60	73
Number of banks	241	241	241	241
Number of observations	1148	1148	1148	1148

Note: This table reports the estimation results of the system GMM for the full sample of Italian cooperative banks over the period 2013–2018 using the ROA, Wage rent, ROE, and Avg. cost of employees as dependent variables. The variable of interest is Members which is treated as endogenous. The bank-specific control variables Customer Loans\_TA, Customer Deposits\_TA, and Diversification are treated as endogenous too. The remaining control variables include Competition, Human capital, and GDP growth, and are treated as exogenous. Variable definitions are provided in Table 1. Unconsolidated and consolidated balance-sheet statements whenever available are selected. Standard errors are clustered at the bank level and are reported in parentheses. By means of winsorizing at 1%, all bank-specific extreme values are excluded from the final sample.

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , \*\*\*\*  $p < 0.001$ .

In Model 2 displayed in Table 4, the efficiency wage hypothesis is tested, replicating the analysis performed by Gorton and Schmid (1999) who document that agency costs, as measured by efficiency wages, turn out to be high in Austrian cooperative banking, negatively affecting their profitability. In this perspective, agency cost can be seen as one of the channels through which the effects of the dispersion of the ownership structure may influence the performances of cooperative banks. In Model 2, the target variable, *Members*, is regressed on the *Wage rent* measure introduced by Gorton and Schmid (1999). Unlike the empirical findings of Gorton and Schmid (1999), the coefficient of the target variable is statistically significant and inversely related to the dependent variable, *Wage rent*. The empirical results do not

support the view that cooperative members rely on efficiency wages as a device to discipline employees or put it differently that agency costs, as measured by efficiency wages, are increasing in the degree of separation or dispersion of the ownership structure. It, therefore, seems that the increase in the dispersion of members exerts a positive effect on the managerial efficiency of these banks, both because it most likely determines an increase in the membership can lead to a greater degree of members' participation, as well as monitoring of the evolution of negative income components, such as overheads, that can hit the sustainability of these banks over time. In this model specification, only the coefficient of the variable proxying for *Competition* is statistically significant and displays a negative sign. Since this latter control is calculated

as the natural logarithm of the number of inhabitants per bank branch at the provincial level, it follows that based on the estimates, the decrease in competitive pressures (due to the increase in population density per bank branch) implies a reduction of the explained variable *Wage rent* and *vice versa*. Therefore, the increase in the competitive pressures borne by the cooperative banks at the local level seems to give rise to an increase in the *Wage rent* that potentially higher agency costs. This evidence is also found in Model 4 reported in Table 4 where the dependent variable is represented by *Avg. cost of employees*, used as a robustness test. Also, in this case, the target variable, *Members*, is statistically significant and with a negative sign, in line with what emerged in Model 2. This, therefore, seems to confirm that the dispersion of the membership of cooperatives does not represent the channel that negatively impacts income results of these banks. In Model 3, in which the dependent variable is the *ROE*, results are found in line with those of Model 1. Reported tests for second-order serial correlation and Hansen-tests support the soundness of the estimation approach.

In this second set of estimates reported in Table 5, other channels through which the dispersion of the governance of cooperative banks can affect their income performance are examined. Model 1 tests the relationship between the target variable, *Members*, and the *NIL\_TA* which constitutes the main income component on which the sample banks and, more broadly, the European cooperative banking also depend (Poli, 2019). The relationship is found statistically significant and negative, implying that the increase in the membership base reduces the *NIL\_TA*. Although an increase in *Members* can be expected to lead to a parallel increase in profitability expressed by *NIL\_TA*, it can also be assumed that as the number of *Members* increases, the intensity of credit intermediation with them increases (via the lending activity and the collection of customer deposits) and therefore the extraction of the benefits that they derive from joining the cooperative project. The *Members* of Italian cooperative banks do not typically obtain dividends or rebates which are eventually paid on a residual basis after having satisfied the regulatory requirements for the mandatory provision of profits to the legal reserve and the contribution to the mutual aid funds. The payment of rebates is conditioned by the bank's profitability and is regulated by the individual bank's bylaws which make this refund mechanism somewhat vague for customer-members. Instead, members of Italian cooperative banks enjoy typically favorable conditions in accessing the financial intermediation carried out by their bank. This differentiates, Italian cooperative banking from Finnish one. Member-customers of the latter receive bonuses (or rebates) as a certain ex-ante known percentage of the amount of their deposits, loans, and investments in mutual funds, which is not dependent on bank profitability, and that contributes in a transparent way to lower the price of services for members (Jones & Kalmi, 2015). Indeed, members can independently calculate their bonuses through an automatic calculator.

Finally, it is to note that in Model 1 reported in Table 5, the lagged dependent variable is significant and has a higher magnitude than in previous estimates, indicating that this typical profitability

component is more persistent, having Model 1 a noticeable influence (0.4380) on current income variable (*NIL\_TA*). Mentioning Greene (2008) the lagged dependent variable represents the entire history of the model, i.e., the history of the process that generates current levels of *NIL\_TA*, and depending on the magnitude of its coefficient (which may range from 0 to 1) it may indicate the influence of the past versus contemporaneous circumstances. The remaining control variables, proxying for *Diversification*, *Competition*, and *Human capital* does exhibit positive and significant coefficients, thus implying that the cooperative bank profitability component under investigation benefits from less business diversification, lower competition at a local level, and the presence of a higher share of an educated population. The GDP growth rate (*GDP growth*) is significant in Model 1 with the *NIL\_TA* as a dependent variable and unexpectedly records a negative sign. In contrast with the empirical literature of Demirgüç-Kunt and Huizinga (1999) and like Bikker and Vervliet (2017), and Claessens et al. (2018), we do not find a pro-cyclical effect of the *NIL\_TA* as the coefficient of regional *GDP growth* is negative.

**Table 5.** Testing other channels affecting cooperative bank profitability

<i>Parameters</i>	<i>Model 1</i>	<i>Model 2</i>
	<i>NIL_TA</i>	<i>LLP_TA</i>
<i>L.NIL_TA</i>	0.4380**** (0.0585)	
<i>L.LLP_TA</i>		0.2190**** (0.0556)
<i>Members</i>	-0.0649** (0.0315)	-0.0015** (0.0006)
<i>Customer Loans_TA</i>	0.0031 (0.0019)	0.0001*** (0.00004)
<i>Customer Deposits_TA</i>	0.0032 (0.0020)	-0.0002**** (0.00005)
<i>Diversification</i>	0.0089**** (0.0021)	-0.0002*** (0.0001)
<i>Competition</i>	0.0453*** (0.0163)	0.0002 (0.0003)
<i>Human capital</i>	0.0104**** (0.0028)	0.0001* (0.0001)
<i>GDP growth</i>	-0.0214**** (0.0046)	-0.0002 (0.0002)
Year dummies	Yes	Yes
Constant	-0.206 (0.395)	0.0268*** (0.0084)
Arellano-Bond test for AR(2)	0.7920	0.1910
Hansen test of overid. restrictions	0.1320	0.2050
Difference-in-Hansen tests of exogeneity of instrument subsets GMM instruments for levels	0.2430	0.0600
Number of instruments	65	63
Number of banks	241	241
Number of observations	1148	1148

Note: This table reports the estimation results of the system GMM for the full sample of Italian cooperative banks over the period 2013-2018 using the *NIL\_TA* and *LLP\_TA* as dependent variables. The variable of interest is *Members* which is treated as endogenous. The bank-specific control variables *Customer Loans\_TA*, *Customer Deposits\_TA*, and *Diversification* are treated as endogenous too. The remaining control variables include *Competition*, *Human capital*, and *GDP growth*, which are treated as exogenous. Variable definitions are provided in Table 1. Unconsolidated and consolidated balance-sheet statements whenever available are selected. Standard errors are clustered at the bank level and are reported in parentheses. By means of winsorizing at 1%, all bank-specific extreme values are excluded from the final sample.

Standard errors in parentheses.  
\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , \*\*\*\*  $p < 0.001$ .

In the second model reported in Table 5, the relationship between the target variable and *LLP\_TA* is examined, which is negative and significant. This finding indicates that the increase in the membership structure, favoring the diversification of banking activity and therefore of idiosyncratic credit risks, seems to reduce the negative impact of loan loss provisions on the profitability of these banks. This may originate from a decline in exposure to phenomena of adverse selection and the moral hazard of the members-borrowers which are not exacerbated by the asymmetry between the financial commitment linked to the acquisition of the bank membership and the benefits obtained by *Members*, i.e., in the form of financing.

In principle, loan loss provisions (LLP) are aimed to cover expected losses and should be therefore interpreted as a fair representation of the expected evolution of a bank's loan losses; however, due to the discretion of bank managers, the provisioning policy can be used to pursue income smoothing and capital regulation strategies (Balla, Rose, & Romero, 2012). However, according to an empirical study by Alessi et al. (2014) on Italian BCCs, their provisioning policy seems to be driven principally by non-discretionary behavior, as the mix of the loan portfolio held, and mainly the share of collateralized loans carried. A further plausible explanation for the relationship between the target variable and the one explained, *LLP\_TA*, can be found in the contribution of Dewenter and Hess (2003) who show that loan loss provisioning is influenced by the transactional or relationship approach followed by banks with borrowers. Relationship banks tend to show a lower level of LLP may be because they have better information on customers than transactional banks and therefore less risky loans (or higher recovery rates). Since relationship banking is inherent in small cooperative banks, especially with members, it is possible that, even as the dispersion of corporate ownership increases, these banks can retain the related information advantages.

The signs of the control variables *Customer Loans\_TA* and *Customer Deposits\_TA* are respectively positive and negative. As can be expected, all other things being equal, the expansion of credit leads to an increase in exposure to credit losses, albeit to a modest extent, while, on the contrary, the increase in funding in the form of deposits reduces it. The latter phenomenon could arise from the interest of cooperative banks in reducing exposure to risks resulting from an excessive degree of maturity transformation. Finally, the coefficients of the proxying variables for *Diversification* and *Human capital* are statistically significant, with a negative and positive sign respectively. Also, in this case, the magnitude of the coefficients is very modest but indicative that a greater dependence on bank profits in terms of net interest income negatively impacts the dependent variable *LLP\_TA*, contrary to what happens for the *Human capital* variable. The significance of the latter variable in just the two Models reported in Table 5 seems to indicate, *ceteris paribus*, that higher levels of *Human capital* at the local level exert, as is logical to assume, a positive effect on

the profitability of these banks (i.e., by favoring business development processes or a broader degree of financial inclusion which magnify the intermediation activity of cooperative banks). However, the positive effect of this control variable on the proxy that measures the cost of credit for cooperative banks seems preliminary in line with the empirical literature on the direct relationship between bank risk-taking and managerial educational attainments (King, Srivastav, & Williams, 2016; D'Amato & Gallo, 2019), the literature on the nexus between education and individual risk-taking, consistently with the hypothesis that higher education makes individuals less risk-averse (Black, Devereux, Lundborg, & Majlesi, 2018) and with recent evidence suggesting that BCCs might play a relevant role in financing innovative and risky firms (Agostino, Errico, Rondinella, & Trivier, 2022).

So far, the empirical evidence shows that the impact of the dispersion of the governance of Italian cooperative banks does not negatively impact their income performance, approximated by the *ROA* or *ROE* in line with the evidence reported by Jones and Kalmi (2015). Banking profitability is a vital component for the stability and resilience of these banks, even if they are organizations with a strong non-profit orientation. However, this *conditio sine qua non* is also influenced by other components that make up the so-called *Z-score*, i.e., bank capitalization level, and the volatility of income results, respectively approximated by the *Tier1 ratio* and by the standard deviation of net profits to total risk-weighted assets (*SDRRWA*). Table 6 shows the estimates referring to these dependent variables in relation to the target variable under investigation.

In Model 1, the relationship between the variable *Members* and the *Z-score* is significant and positive, indicating that the enlargement of the membership contributes to increasing the stability of the individual banks, as well as the expansion of the dependence of these banks on the interest margin, as indicated by the *Diversification* variable. Surprisingly, the relationship between the target variable and the regulatory capitalization measure (*Tier1 ratio*) is weakly significant but negative which seems to indicate an opportunistic recourse to the increase of the *Members'* base as the bank capital decreases, while on the contrary the growth of the capitalization of these banks, supported by the reserve provision constraint of profits, is accompanied by a decreasing interest in expanding the membership base. It is worth noting that the coefficient of the lagged dependent variable is significant and indicative of high persistence of bank capitalization, while the Hansen test of overidentification allows rejecting the null hypothesis just at 5%. According to Labra and Torrecillas (2018) when the probability obtained is equal to or higher than 0.05, the used instruments in the estimation are valid, and therefore overidentification is not a concern. Finally, the relationship between *Members* and the standard deviation of the profitability of risk-weighted assets (*SDRRWA*) is negative and significant. The increase in the dispersion of governance contributes to decreasing the volatility of corporate results.

**Table 6.** Testing cooperative bank stability

Parameters	Model 1	Model 2	Model 3
	Z-score	Tier1 ratio	SDRRWA
L.Z-score	0.2910**** (0.0521)		
L.Tier1 ratio		0.641**** (0.115)	
L.SDRRWA			0.5660**** (0.0607)
Members	0.3630** (0.1820)	-1.0020* (0.5520)	-0.1180** (0.0532)
Customer Loans_TA	-0.0305** (0.0143)	-0.0803**** (0.0219)	0.0058 (0.00458)
Customer Deposits_TA	0.0273 (0.0190)	0.0083 (0.0322)	-0.0139** (0.0063)
Diversification	0.0322* (0.0180)	-0.0162 (0.0239)	-0.0029 (0.0073)
Competition	-0.0304 (0.116)	0.0048 (0.1600)	-0.0189 (0.0349)
Human capital	-0.0016 (0.0189)	0.0208 (0.0379)	0.0003 (0.0059)
GDP growth	0.0525 (0.0611)	0.0666 (0.0918)	-0.0093 (0.0225)
Year dummies	Yes	Yes	Yes
Constant	-1.2200 (2.8830)	1.8400*** (7.1380)	1.9380** (0.9510)
Arellano-Bond test for AR(2)	0.6440	0.2900	0.4770
Hansen test of overid. restrictions	0.3440	0.0500	0.1730
Difference-in-Hansen tests of exogeneity of instrument subsets GMM instruments for levels	0.0400	0.2770	0.1180
Number of instruments	68	72	64
Number of banks	240	241	241
Number of observations	902	1144	902

Note: This table reports the estimation results of the system GMM for the full sample of Italian cooperative banks over the period 2013–2018 using the Z-score, Tier1 ratio, and SDRRWA as dependent variables. The variable of interest is Members which is treated as endogenous. The bank-specific control variables Customer Loans\_TA, Customer Deposits\_TA, and Diversification are treated as endogenous too. The remaining control variables include Competition, Human capital, and GDP growth. Variable definitions are provided in Table 1. Unconsolidated and consolidated balance-sheet statements whenever available are selected. Standard errors are clustered at the bank level and are reported in parentheses. By means of winsorizing at 1%, all bank-specific extreme values are excluded from the final sample.

Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ , \*\*\*\*  $p < 0.001$ .

## 6. DISCUSSION

The relationship between ownership structure and performance in cooperative banking is still little explored, even though this business model represents, especially at the European level, a widespread way of organizing and offering banking services to small, local communities. Many of these institutions have undergone profound processes of hybridization with the government tasks exercised by their second and third-level structures growing more and more, such for example in France, Finland, and to a lesser extent Austria and Germany (Poli, 2019). While formally remaining legally independent banks, their governance and the effects of their ownership structure on performance are increasingly mediated by the governance powers delegated to the apexes of the national network of cooperative banks. The 2016 Reform of Italian BCCs also developed in this direction, which became operational in 2019 and promoted the formation of highly integrated cooperative networks. The analysis conducted on the sample of Italian small BCCs from 2013 to 2018 does not suffer from possible biases linked to the presence of strong coordination and strategic control mechanisms influencing the governance of the cooperative banks in the sample. Indeed, during the period considered Italian BCCs were fully

independent despite being part of a cooperative network, mostly aimed to improve their competitiveness via the centralization of the production of financial services. Such circumstance represents an optimal ground to disentangle the effect of ownership dispersion on cooperative bank performances. Replicating the two most important empirical works of Gorton and Schmid (1999) and Jones and Kalmi (2015), this study overcomes some of the methodological criticalities found in them and demonstrates that the ownership dispersion of cooperative banks brings results that are appreciable in terms of greater profitability and greater financial stability. In exploring the channels through which this is achieved, and the consequent effect exerted by the dispersion of membership, we do not find, as in Gorton and Schmid (1999), that dispersion determines an increase in efficiency wages as the degree of separation or dispersion of the ownership structure expands. The empirical results on the relationship between bank profitability and ownership dispersion for Italian cooperative banks are in line with those obtained by Jones and Kalmi (2015), the latter being, however, focused on the sole relationship with bank ROA. Contrary to Gorton and Schmid (1999), we find that the dispersion of the ownership structure seems to improve the monitoring activity on those components of bank profitability that can mostly

depress it, such as labor costs and loan loss provisioning. Therefore, the increase in the corporate base, to which the activity of the Italian cooperative credit banks is mainly aimed, does not seem to lead to a dilution of the interest in monitoring by the members, which, on the contrary, as the company structure grows, can be enriched by new skills (i.e., more competent members) and greater interest to preserve the owned financial intermediary and the cooperative values. Only concerning net interest income, a negative relationship with the target variable, *Members*, is found. Although an increase in *Members* should upsurge the profitability expressed by *NI\_TA*, it can also be assumed that as the number of *Members* grows, the intensity of credit intermediation with them increases as well, and therefore the incentive to extract the benefits that members may derive from joining the cooperative project. This seems mostly conceivable under the circumstances in which member-customers mostly enjoy favorable conditions in accessing the credit intermediation services provided by the owned bank. It is plausible that this prevailing members' remuneration mechanism may give rise to potential members' opportunistic behaviors which may impoverish the quality of governance as a result. However, this interpretation of the empirical results obtained opens the way to new possible areas of research on the relationship between the remuneration mechanisms of members and the performance of cooperative banks.

Expanding the existing scarce empirical literature and testing the relationship between ownership dispersion and financial stability, we find it positive but interestingly also an unexpected negative relationship between the target variable and bank capitalization is detected. We hypothesize the existence of an opportunistic recourse to the increase of the *Members'* base as the bank capital decreases, while on the contrary the growth of the capitalization of these banks, supported by the reserve provision constraint of profits, is accompanied by a decreasing interest in expanding the membership base. This could limit the ability of cooperative banks to cover future losses with their capital for various reasons. Their capitalization is, in fact, strongly dependent on the allocation of the profits to the legal reserves. Additionally, the ability of BCCs to raise capital is affected by the legal constraints of geographical competence that must be observed by them. According to the latter, members must be found exclusively in the areas of competence of the individual cooperative bank, typically small municipalities. Such a provision, combined with the principle of economic democracy that inspires the shareholdings in these banks, makes their capital growth more complex. To mitigate these limitations, the 2016 Reform of Italian the cooperative banking system introduced, among others, the figure of the financing members, alongside the traditional cooperative members, reserving to the former the essential role of supplier of equity and with proportionate governance rights out of any mutualistic relationship.

This study offers methodological support for the validity of the assumption of endogeneity of the target variable, *Members*, even if in a context in which the cooperative bank's operations are strongly

focused on its owners, as in the Italian case. This aspect can, however, constitute a further stimulus for the expansion of empirical research, considering the different models of operational commitment toward *Members* and their effects on cooperative banking performance.

One further important implication of this study resides in the value assigned to a widespread ownership structure in the cooperative banks, especially where the operational link with the members and with the territory served is very close. In line with what Allen and Carletti (2015) stated, as the ownership base of stakeholder-oriented companies increases, it might grow the need to ensure their preservation via sound conduct and effective monitoring by members. The latter strongly depends, however, on the quality of members' participation; a diffuse membership's low participation, inability to understand managerial proposals and decisions and their implications for the future of co-operative banking weaken the bank governance. Its improvement, in addition to requiring a higher degree of engagement from members (via different tools, such as training, events, and initiatives that can induce participation, as it is of interest to the members, *ad hoc* communication programs, etc.) rests also on the maintenance of the effectiveness of mechanisms that are aimed to realign the interest of the members and management, such as the threat of reimbursement of dissatisfied or dissenting members to the extent that the reduction of the member base undermines the very existence of such intermediaries according to the national rules in force and the prudential regulatory framework.

The post-global financial crisis regulations regarding capital adequacy and the resolution of banking crises have substantially influenced the widespread organizational changes in cooperative banking across Europe (Poli, 2019). In terms of governance, there has been a widespread consolidation of the ownership of central institutions by local banks along with a parallel transfer of their managerial autonomy in favor of their apexes to ensure the greater resilience of the entire sector. Nevertheless, in the long run, such reorganizations could involve a profound revision of the role of the cooperative members, especially should the strategic thinking be shortsighted in engaging and empowering the ownership base to safeguard and pass on the founding principles and values.

## 7. CONCLUSION

This empirical analysis of Italian small cooperative banks (BCCs), contributes to enriching the very limited literature on the relationship between ownership dispersion and profitability in cooperative banking. The key findings of this study may be appreciated on different levels. Methodologically, it aims to overcome some of the limitations identified in previous studies, specifically concerning the potential endogeneity of the membership base in cooperative banking. Relative to the results obtained, we find that a larger membership base does not lessen the quality of the governance of cooperative banks, as a positive relationship with bank ROA is detected. This result is of particular interest because it refers to a sample

of cooperative banks that, in the period considered, enjoy full decision-making and operational autonomy, unlike cooperative banks that belong to very cohesive networks, with the presence of a powerful apex. To the best of my knowledge, this research offers a new contribution to the channels through which the dispersion of cooperative membership can influence the performance of cooperative banks which remains insufficiently investigated both in the work of Gorton and Schmid (1999) and in that of Jones and Kalmi (2015). Therefore, the results shown encourage the growth of the membership base of cooperative banks, even if much remains to be investigated regarding the role of the institutional and social contexts in which these banks are active. Additionally, we originally show that membership dispersion does not negatively affect cooperative bank stability, proxied by the widely used Z-score.

The scarcity of empirical literature on the issues investigated, however, discounts the difficulty of having access to data, such as the annual number of members, their characteristics, and the number of customers served compared to members. The latter is one limitation affecting this research as well as the restricted ability to compare the empirical findings. Future suggested research developments could concern the carrying out of cross-country analyses, of which the empirical literature is lacking. In addition, it would certainly be of interest to consider other factors that may affect the performance of cooperative banking, such as, for instance, members' remuneration mechanisms, the composition and quality of the bank boards, and finally the organizational features of the networks to which cooperative banks belong.

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