

Cooperatives' performance relative to investor-owned firms: a non-distorted approach for the wine sector

Cooperatives' performance in the wine sector

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Abstract

Purpose – This study aims to investigate whether significant performance differences between cooperatives and investor-owned firms (IOFs) may exist.

Design/methodology/approach – Based on data from a sample of Italian wine firms for the period from 2009 to 2018, an adjusted measure of performance called earnings before interests, taxes, depreciations and amortizations gross the raw materials cost was adopted to consider the different objectives of cooperatives relative to those of IOFs.

Findings – Empirical evidence shows that in the context under analysis, cooperatives have performed better than IOFs.

Originality/value – Despite the theoretical literature suggesting that the cooperative form of organizations suffers from many weaknesses, these results highlight that cooperatives operating in the wine sector are at least as economically efficient as other organizations, and more specifically, they perform better than for-profit firms. Consequent implications for theory and practice are discussed.

Keywords Cooperatives, Investor-owned firms, Performance indicators, Wine businesses, Wine industry, Italy

Paper type Research paper

1. Introduction

Cooperatives, which could be defined as “[. . .] people-centred enterprises owned, controlled and run by and for their members to realize their common economic, social, and cultural needs and aspirations” (International Cooperative Alliance – ICA, www.ica.coop), play a crucial role in the economy at the international scale. Over time, their presence has increased worldwide in both developed and developing countries, and their weight in terms of employees and turnover has reached high levels (World Cooperative Monitor, 2018).

Companies with cooperative forms in the world amount to approximately three million, and altogether, they provide work for approximately 280 million persons (10% of the



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employees in the world); more than 15% of European citizens are members of a cooperative (Karakas, 2019). More specifically, in Europe, approximately 180,000 cooperatives operate with almost five million employees and a total turnover of approximately one trillion euros, while in the European Union (EU), cooperatives amount to more than 130,000 with almost 4.5 million employees and a turnover of approximately 990 billion euros. Regarding economic activity, 33% of all cooperatives operate in the agri-food industry and 19% provide banking and financial services (World Cooperative Monitor, 2018).

Given the pivotal role that cooperatives play in economic development, the institutional and scientific literature has long pointed out their main strengths (Bonus, 1986; Valentinov, 2007). This form of economic organization can better realize scale economies, create new markets or give access to markets in favour of its members; increase market efficiency and reduce transaction costs; manage risk via risk pooling; promote innovation; and so forth.

Compared to investor-owned firms (IOFs), cooperatives are more resilient during economic crises and better able to effectively activate local economies and sustain social inclusion and members' participation (Birchall and Ketilson, 2009). At the same time, a debated line of research in the literature has focussed on the performance of cooperative organizations in comparison to that of IOFs (Grashuis and Su, 2019; Lerman and Parliament, 1990; Soboh et al., 2011), and the results are mixed. While a stream of research shows that cooperatives are inefficient and less profitable than IOFs, other studies suggest that cooperatives are not less efficient and/or profitable than IOFs.

To contribute to this debate, the present study aims to analyse the performance of cooperatives in comparison to that of IOFs to investigate whether and to what extent the cooperative form impacts business performance. To empirically investigate this issue, a focus on the Italian wine industry is deployed.

From a methodological point of view, cooperatives and IOFs differ per their objectives and ownership structures and based on rights granted to owners; in cooperative firms, members/owners are at the same time customers and/or suppliers of raw materials and/or employees. Profit maximization is not their objective, as is the case for IOFs, as they instead pursue the maximization of members' value by offering products and services at affordable prices or, as for cooperatives in the agricultural sector, they can buy raw materials from their members paying higher than market prices (Hart and Moore, 1996).

From these considerations, to avoid generating biased results, in this study, we deviate from the usual literature on cooperative performance, which focusses predominantly on classical measures of financial performance, by adopting an adjusted measure based on earnings before interests, taxes, depreciations and amortizations (EBITDA) gross the cost of raw materials. For a unique data set for a large sample of cooperatives and IOFs operating in the Italian wine industry over the period of 2009–2018, the results show that wine cooperatives have performed better globally than IOFs.

This research contributes to the literature on cooperative performance in several ways: First, we consider the different business goals of cooperatives relative to those of IOFs, allowing the construction of a more accurate measure of performance; second, we develop an empirical analysis focussed on the Italian wine industry, in which cooperatives play a crucial role in wine production and exports. Both contributions are novel to the scientific literature, improving our understanding of the differences between cooperatives and IOFs and having concrete implications for firms and policymakers.

The paper is structured as follows. In the next section, we present the theoretical background for our research. Next, we illustrate the characteristics of our sample and the related methodology of investigation. Then, we present and examine the results. Finally, we discuss the implications of the findings and our consequent conclusions.

2. Theoretical background and research hypothesis

Economic theory has justified the existence of cooperative organizations due to asymmetries that affect the relationships amongst economic operators in the market (Bijman and Hendrikse, 2003). Specifically, the cooperative movement began in the early 19th century, primarily in the United Kingdom and France, to bundle the purchasing power or productive abilities of many small members (Storchmann, 2018).

The role of this form of economic organization has been particularly significant in the agricultural industry, in which cooperatives aim to respond to market failures and to facilitate market access for individual producers, especially when small in size (Höhler and Kühl, 2014). The fragmentation and pulverization of production amongst thousands of small-scale enterprises make it difficult for individual producers to access the market.

Cooperatives allow us for the achievement economic advantages by aggregating small businesses or individual operators, hence overcoming the difficulties that they may encounter in the procurement of resources, production or the sale of goods and services. Moreover, since cooperatives allow dimensional economies to be achieved, they contribute to better managing information asymmetries amongst operators along the supply chain and therefore of imbalances of power in buyer–seller relations (Hendrikse and Veerman, 2001); for instance, agricultural cooperatives allow individual producers to achieve higher prices than those obtainable by selling their products individually on the market (Chiodo and Ammassari, 2008).

However, the benefits that cooperative members may enjoy from this form of organization are much broader, since cooperatives can also improve the quality of production through the provision of consultancy activities and training opportunities to their members, the pooling of innovations and the hiring of qualified personnel, helping individual members improve their products (Kalogeras *et al.*, 2009).

Notably, the benefits of cooperatives are strictly dependent on the ability of their members to behave in line with cooperative aims (Iliopoulos, 2003); thus, the market success of cooperatives depends on members' behaviours towards them, namely, on members' propensity to invest equity capital in the organizations, members' commitment in participating in corporate life and the quality and quantity of raw materials offered to cooperatives (Kalogeras *et al.*, 2009). In other words, the institutional setting of cooperatives, with the related weaknesses of proprietary rights dominated by the one-person-one-vote principle and the limits on profits distribution, increase the risk of opportunistic behaviours from members, such as the following:

- (1) The maximization of individual profit opportunities at the expense of the cooperative organization, such as, through arbitrage in selling raw materials on the market when conditions are favourable and conferring to the cooperative when this guarantees better conditions.
- (2) A lack of guaranteeing minimum quality levels of raw materials, especially when this requires considerable effort and commitment from members, considering the potentially automatic purchase of the cooperative.
- (3) An unwillingness to provide sufficient equity to finance the organization or to renounce the profits generated to self-finance the cooperative.
- (4) Issues arising from coalitions of members who can extract private benefits from the cooperative to the detriment of the organization and other members. This risk is the result of the fragmentation of ownership and the one-person-one-vote mechanism, which may feed free riding behaviours on behalf of cooperative members (Vitaliano, 1983; Hart and Moore, 1998; Borgen, 2004).

Based on the strengths and weaknesses of the cooperative model relative to IOFs, the scientific literature has long discussed differences in the performance of these two models.

The results, however, do not offer unambiguous responses, especially with reference to the agri-food sector and wine sectors more specifically, which is the focus of this study.

A line of research, for example, focusses on the analysis of the efficiency of cooperatives compared that of IOFs; in this respect, [Porter and Scully \(1987\)](#) analysed a sample of companies operating in the American dairy sector and highlighted how cooperatives are less efficient than other companies. In contrast, [Akridge and Hertel \(1992\)](#) analysed a sample of companies located in the Midwest of the USA operating in the cereal sector and in services offered to agricultural enterprises, finding that cooperatives are not less efficient than other types of companies; similarly, [Sexton and Iskow \(1993\)](#) find no significant evidence to suggest that cooperatives are less efficient.

Another stream of research has investigated the differences between cooperatives and joint-stock companies using financial ratios; again, the results are mixed. Some studies, for example, suggest that cooperatives have lower profitability than IOFs ([Notta and Vlachvei, 2007](#); [Soboh et al., 2011](#)); this difference is due to the institutional characteristics of the cooperative model and its objective, namely, the maximization of the benefits and well-being of members.

In the agricultural sector more specifically, the cost of the procurement of cooperatives is expected to be on average higher than that of IOFs, since suppliers should be members to be paid at higher prices ([Guzmán and Arcas, 2008](#); [Hernández-Espallardo et al., 2013](#); [Soboh et al., 2009, 2012](#)). Consequently, cooperatives should have lower profitability because some of their profits are somehow distributed to members with the payment of higher prices for supplied raw materials ([Soboh et al., 2009, 2012](#)).

However, other studies, such as those mentioned above, have shown that cooperatives are not less profitable than IOFs ([Gentzoglani, 1997](#); [Boyle, 2004](#); [Hardesty and Salgia, 2004](#); [Lerman and Parliament, 1990](#)). [Boyle \(2004\)](#), for example, analysed the behaviour of cooperatives in the dairy sector and pointed out that cooperatives, in setting the prices of raw materials, behave as if they are maximizing profits, therefore showing no differences from IOFs, whereas [Hardesty and Salgia \(2004\)](#) compared rates of profitability, liquidity, leverage and efficiency in the use of capital in four sectors of the American agri-food industry and found that while cooperatives are less indebted and less efficient, no difference exists relative to other companies in terms of profitability and liquidity.

[Lerman and Parliament \(1990\)](#) investigated a sample of companies operating in the agricultural and milk sectors in the period of 1976–1987 and highlighted that, contrary to expectations, cooperatives in both sectors perform the same as or better than IOFs in terms of profitability and financial and interest coverage. Accordingly, the authors suggest that cooperatives could pursue the same goals of those of IOFs, noting that the widespread standards of financial analysis in the business community may have forced cooperatives to adopt the same objectives as those of IOFs in practice.

Therefore, given this ambiguous evidence in the literature, which can represent an intriguing gap to explore, the extent to which cooperatives can perform better than IOFs is the scope of the current research; naturally, as the presence of cooperatives in all economies and especially in the agri-food sector is so vast, as mentioned above, it was necessary to detect a specific context of investigation to pursue this goal. In the agricultural sector, Italy has a large and well-developed system of cooperatives that play a relevant role, as they produce more than a third of the total agricultural production; approximately 5,000 cooperatives operate in Italy, with a total turnover of approximately 40 billion euros and more than 90,000 employees ([Italian Agricultural Cooperation Observatory, 2017](#); [Fusco and Migliaccio, 2019](#)).

More specifically, the Italian wine sector, our specific unit of investigation, includes approximately 500 cooperatives with more than 9,000 employees. These cooperatives are responsible for almost 60% of wine produced and for almost 45% of the entire turnover, contributing a third of wine exports.

More generally, in 2018, i.e. the last year of the period under investigation in the current research, Italy recovered high quantitative levels of wine production, which experienced considerable decline in 2017 due to various climatic difficulties, such as frost and droughts; the 2018 Italian harvest amounted to more than 50 million hectolitres, confirming the status of Italy as a leading country amongst wine producers. At the same time, Italy ranks second in the volume of wine exports (after Spain) and second in the value of wine exports (after France) (we draw these data from the International Organization of Vine and Wine [OIV], www.oiv.int, 2019 and 2020).

Therefore, we contend that the Italian wine sector represents a very interesting context as a sort of extreme case (Eisenhardt, 1989) for analysing the differences between cooperatives and IOFs. Moreover, recent empirical evidence shows that in the Italian wine sector, cooperatives are fundamental not only from an economic point of view in terms of wine production and turnover but also from the social perspective of protecting and safeguarding the territory (Italian Agricultural Cooperation Observatory, 2017); rather, a positive relationship has been highlighted between the presence of cooperatives and the growth of vineyard surfaces. In contrast, in territories where cooperatives are absent or where few small cooperatives operate, a decrease in the surface of vineyards has been observed.

Thus, focussing on the Italian wine sector and adopting a measure of performance not distorted by the objectives of cooperatives, the research hypothesis under analysis is as follows:

H1. Cooperatives in the Italian wine sector globally perform better than IOFs.

3. Research design: the sample

In this study, we adopted a panel approach to investigate a sample of firms operating in the Italian wine sector from 2009 to 2018 to provide evidence on whether and to what extent cooperatives differ in their results from those of IOFs, mainly in the forms of joint-stock and limited liability companies. The time interval was determined to examine a normal scenario without potential bias deriving from the COVID-19 pandemic (balance approval for 2019 would have occurred in 2020, with the pandemic already in progress).

The sample was selected from the Bureau van Dijk AIDA database, which contains demographic information and financial data on approximately 600,000 Italian firms; the selection of firms was done according to the EU-NACE (Nomenclature statistique des activités économiques) code ending to the production of wine. We excluded firms in liquidation and/or subject to bankruptcy procedures and therefore those with negative equity because they are insolvent; furthermore, we eliminated firms established as partnerships or sole proprietorships.

Such exclusion was necessary to guarantee the reliability and comparability of the accounting data of the sampled firms; in fact, partnerships as well as sole proprietorships could present exceptions or simplifications in the preparation of financial statements that could reduce the comparability of such data for other types of firms. Finally, companies without financial data for the period under analysis were eliminated, i.e. those established in 2017 or 2018 or without observations for at least two consecutive years.

As a result, the final sample includes 1,171 Italian wine firms operating during the 2009–2018 period. Data were collected from annual financial statements extracted from the AIDA database, returning a highly balanced panel of 11,502 observations. Our data set is likely one of the most comprehensive on Italian wine firms and likely one of the most specific for exploring differences in the performance of cooperatives and IOFs in the Italian wine industry.

4. Research design: dependent and independent variables

To investigate whether cooperatives perform better than IOFs, we assumed that these two types of companies differ in their objectives and ownership structures; in IOFs, ownership is

assigned to risk capital holders who act as residual claimants, while in cooperatives, ownership is assigned to the same subjects for whose interest the business is assigned, where these subjects are involved as customers or workers or as suppliers of raw materials (as in wine cooperatives) (Chaddad and Cook, 2004). Consequently, while the former aim at maximizing profits, the latter is committed to pursuing the interests of members as customers, workers or suppliers (Cook, 1995).

In the wine industry more specifically, cooperatives aim to purchase grapes from their members, usually small growers, under better conditions compared to those of the market; thus, the benefit for cooperative members is not represented by the as-it-were profit but by the higher prices achieved by selling grapes to the cooperative. Consequently, the cooperative's margin is distorted because the costs of raw materials are higher than those that any other similar company that purchases grapes on the market could incur.

Given these considerations and adopting the approach proposed by Borzaga and Fontanari (2014), in this study, we measured firm performance with an adjusted measure based on the EBITDA gross the cost of raw materials as follows:

$$\frac{\text{EBITDA}_{i,t} + \text{Cost of raw materials}_{i,t}}{\text{Revenue}_{i,t}}$$

where the i and t indices refer to the i -th company and t -th year, respectively. This measure, without distortion due to the cost of raw materials, could emerge as a useful indicator for comparing the different types of firms operating in the wine sector.

The independent variable used in the analysis is a dummy variable that assumes a value of 0 if firm i in year t is an IOF (a joint-stock or limited company) and 1 if the firm is a cooperative. To avoid spurious relationships, we controlled for some firm-level variables that could affect performance; more specifically, we controlled for the following parameters:

- (1) The size of the firm is a key variable affecting corporate competitiveness and the management of relationships with various stakeholders (Hall and Weiss, 1967; Lee, 2009). Size is expressed as the natural logarithm of total assets.
- (2) The age of the firm as a proxy of corporate experience and visibility in the market. Older firms have a more stable competitive position, and they create fewer information asymmetry problems for stakeholders (Stinchcombe, 2000; Coad *et al.*, 2013). This variable was measured as the natural logarithm of the difference between year t and the date of incorporation of the company.
- (3) Financial leverage is the natural logarithm of the debt/equity ratio. Some scientific literature has shown that debt influences corporate performance in different ways (Weill, 2008; González, 2013). From the agency theory perspective, debt stimulates managers to perform better; from the trade-off theory perspective, debt generates contrasting effects, since it is a source of benefits and increases bankruptcy costs.
- (4) The incidence of tangible fixed assets of total assets. The proportion of tangible fixed assets is a proxy of the firm's rigidity/flexibility and therefore of its operational risk (Deloof, 2003; Weill, 2008).
- (5) Growth of the firm as the change in total assets in period of $t - 1$ to t . This variable is a proxy of the growth opportunities of the firm (MacMillan and Day, 1987; Markman and Gartner, 2002).
- (6) The liquidity conditions of the firm are the proportion of liquid assets to total assets (Deloof, 2003; Ross *et al.*, 2000).

Furthermore, we considered the characteristics of wine production in the areas where the sampled firms are located; the performance of a given firm, especially in the case of a winery, could be affected by the reputation of the territory in which it is located (Vrontis *et al.*, 2016) and therefore by *terroir*, a concept that identifies the geological, climatic and social conditions of a defined geographic area. This variable was operationalized as the ratio for the year t of the produced amount of wine with a designation of origin (DO) (as the protected denomination of origin [PDO] or protected geographical indication [PGI]) to the total amount of wine produced in the region where the company is located.

Fixed effects at the geographic level were included to consider time-invariant differences at the macroeconomic and contextual levels between the different Italian geographic areas; in this respect, we added four dummies for the north-western, central, south and island macro-regions and set the north-eastern region as the reference category. Finally, time fixed effects were included to consider changes in economic and contextual conditions occurring over time.

5. Summary statistics

Regarding the composition of the sample and the descriptive statistics of the variables used in the analysis, Table 1 analyses the sample by firm type (IOF or cooperative) and geographic settlement, both with reference to the macro-region of reference in this study, as mentioned above (i.e. the north-eastern region), and to the region of location.

As expected, the regions that are most represented include Veneto, Apulia, Tuscany, Sicily and Piedmont and Emilia-Romagna in descending order, which globally speak are the main wine-producing regions in Italy. Regarding institutional settings, the most common are firms established as IOFs with an incidence of 73.6% (862/1,171), while cooperatives account for 26.4% (309/1,171).

Table 2 shows the main descriptive statistics for the variables under analysis. Regarding the potential wine-contextualized indicators (firm performance, tangible fixed assets and

Macro-region	Region	IOFs	Cooperatives	Total
North-western	Valle d'Aosta	3	–	3
	Piedmont	57	30	87
	Liguria	2	2	4
North-eastern	Lombardy	66	11	77
	Trentino-A.A.	25	27	52
	Veneto	151	33	184
Central	Friuli-V.G.	33	5	38
	Emilia-Romagna	53	29	82
	Tuscany	140	13	153
Southern	Umbria	10	6	16
	The Marche	24	9	33
	Lazio	27	6	33
Island	Abruzzi	28	30	58
	Molise	2	2	4
	Campania	29	4	33
Total	Apulia	121	38	159
	Basilicata	2	2	4
	Calabria	9	3	12
Total	Sicily	66	37	103
	Sardinia	17	19	36
Total		862	309	1,171

Source(s): Authors' calculations

Table 1.
Geographic distribution of the sample by firm type

wines with DOs/total wines), the observations show low levels of dispersion, and dispersion is higher for the other indicators concerning common business (except for the growth rate).

For each variable under analysis, Table 3 shows the results of the *t*-test for the difference in means between the group of firms established as IOFs and the group of cooperatives. The differences between the two types of institutional settings are highly significant, with cooperatives showing stronger performance in terms of the ratio between EBITDA gross the cost of raw materials and revenues; furthermore, cooperatives are on average older than IOFs ($t = -46.85, p < 0.1\%$) and larger in size ($t = -1.913, p < 5\%$), confirming that in the agricultural sector particularly and in the wine sector more specifically, they are a well-established phenomenon (Stiglitz, 2004; Zamagni, 2005).

On average, cooperatives belonging to the sample are 47 years old, while the IOFs are approximately 20 years old; cooperatives are less indebted ($t = 5.59, p < 0.1\%$) and have a smaller proportion of tangible fixed assets ($t = 9.98, p < 0.1\%$). The lower level of indebtedness found for cooperatives seems to be in line with the scientific literature, which suggests the existence of agency problems with lenders who are more severe than what is found in other types of companies; in cooperatives, the weaknesses of property rights increase members' incentives to free-ride and be less committed to their cooperatives (Schlicht and von Weizsäcker, 1977; Cook, 1995), creating higher cost of debt and greater credit rationing problems (Drèze, 1993; Putterman, 1993; Dow, 2003) and potentially discouraging to exploitation of financial leverage.

The lower debt exposure in cooperatives could also be explained by a time horizon problem related to the goals pursued by cooperative members, as they may not be willing to invest in their

Table 2.
Descriptive statistics of
the variables under
analysis

Variable	Mean	Std. dev.	Min.	Max.
Firm performance	0.850	0.177	0.398	1.481
Firm size (€/000)	15,035.420	30,571.260	0.428	655,066.400
Firm age	27.290	22.840	0.000	125.000
Financial leverage (D/E)	1.740	2.690	0.000	12.290
Tangible fixed assets (%)	0.370	0.260	0.000	0.999
Growth rate (%)	0.071	0.162	-0.185	0.710
Liquidity ratio	0.940	0.980	0.000	9.960
Wines with DOs/total wines (%)	0.450	0.250	0.030	0.950

Source(s): Authors' calculations

Table 3.
Univariate test for the
analysis of average
differences between
IOFs and cooperatives

Variable	IOFs	Cooperatives	<i>t</i> -stat
Firm performance	0.819	0.923	-26.05***
Firm size (<i>ln</i>)	8.928	8.941	-1.913*
Firm age (<i>ln</i>)	2.930	3.800	-46.85***
Financial leverage (<i>ln</i>)	0.756	0.653	5.59***
Tangible fixed assets (%)	0.385	0.334	9.98***
Growth rate (%)	0.074	0.048	7.23***
Liquidity ratio	1.006	0.792	9.20***
Wines with DOs/total wines	0.469	0.456	0.93
No. of obs.	8,424	3,078	
No. of firms	862	309	

Note(s): * and *** denote significance at 5 and 0.1%, respectively. If not specified, there is no statistical significance
Source(s): Authors' calculations

cooperatives for a long time in an aim to achieve short-term benefits. Therefore, cooperatives adopt conservative policies by assuming less risk and therefore using self-financing instead of debt as their main source of financial resources (Soboh *et al.*, 2011).

Regarding the lower level of fixed assets found, this evidence seems to be the result of the business model used by these organizations, given that they purchase almost all raw materials from their members with limited or even no investments in vineyards. Lower levels of debt and fixed assets suggest that cooperatives are subject to less financial and operational risk, confirming that cooperatives are in general less risky than IOFs.

On average, cooperatives show lower growth rates ($t = 7.23, p < 0.1\%$) in terms of total assets, whereas cooperatives have an average growth rate of revenues equal to 8.6% vs a value of 12.8% for IOFs. This could be the result of the constraints on growth that affect cooperatives given the characteristics of their institutional setting and their overall mission such as the production of specific goods and/or distribution to specific areas (Rhodes, 1983).

Finally, a lower level of liquidity characterizes cooperatives ($t = 9.20, p < 0.1\%$); this result is also reported in the scientific literature (Royer, 1991; Gentzoglanis, 1997; Fazzini and Russo, 2014) and could be explained by the fact that cooperative members exert pressure on their cooperatives to maximize their monetary benefits by, for example, increasing the price of raw materials conferred to their cooperatives and consequently absorbing the liquid assets of the cooperatives (Hardesty and Salgia, 2004). Other studies attribute this result to cooperatives excessively investing in their inventory, thus reducing their level of liquidity (Lerman and Parliament, 1990; Gentzoglanis, 1997).

Table 4 shows the correlation matrix (Pearson coefficients). The correlation coefficients are quite low, suggesting that multicollinearity problems in the proposed models are modest.

The correlation coefficients confirm previous results. More specifically, there is a positive correlation between the cooperative form and the adjusted measure of firm performance ($\rho = 0.257, p < 0.1\%$), size ($\rho = 0.019, p < 10\%$) and age ($\rho = 0.413, p < 0.1\%$). Thus, cooperatives are increasingly larger and older and perform better as per the adjusted EBITDA margin; furthermore, cooperatives are less indebted ($\rho = -0.061, p < 0.1\%$), have a lower incidence of tangible assets ($\rho = -0.023, p < 5\%$), lower growth rates ($\rho = -0.078, p < 0.1\%$) and lower levels of liquidity ($\rho = -0.093, p < 0.1\%$).

Figure 1 shows the average values of performance (as per the adjusted EBITDA) for IOFs and cooperatives for the period under investigation. From the above secondary data, although at only the descriptive level, cooperatives have performed better, providing initial evidence in support of H1; in the following section, the statistical robustness of this evidence is analysed.

6. Regression statistics and consequent results discussion

To investigate whether cooperatives achieve stronger performance than IOFs, the following model is estimated:

$$\text{Performance}_{i,t} = a_j + \lambda_t + \beta \text{Cooperative}_{i,t} + \gamma Z_{i,t} + \varepsilon_{i,t} \quad (1)$$

The dependent variable is measured as the ratio between EBITDA (adjusted for the cost of raw materials) and revenues; on the right side of the equation, a_j and λ_t are fixed effects at the regional and year levels, respectively; $Z_{i,t}$ is a vector of control variables; $\varepsilon_{i,t}$ is the error term; and β is the coefficient of interest. A random effects panel approach was used to estimate Model (1); the Breusch–Pagan Lagrange multiplier (LM) test excluded a pooled ordinary least squares (OLS) approach, and because the variable that defines the institutional setting of a firm (cooperative) is time-invariant, a fixed effects approach was used to estimate Model (1).

The model was engineered using robust clustered standard errors at the firm level. To mitigate the impact of outliers, all variables with extreme values are “winsorized” at the 1 and 99% levels.

Table 4.
Correlation matrix –
Pearson coefficients

Variable	1	2	3	4	5	6	7	8	9
1. Firm performance	1								
2. Firm size (<i>ln</i>)	-0.048***	1							
3. Firm age (<i>ln</i>)	-0.038***	0.402***	1						
4. Financial leverage (<i>ln</i>)	0.019†	-0.043***	-0.077**	1					
5. Tangible fixed assets (%)	-0.150***	0.247***	0.10**	-0.009	1				
6. Growth rate (%)	0.293***	-0.121***	-0.319***	0.048**	-0.178***	1			
7. Liquidity ratio	-0.035***	-0.045***	-0.089**	-0.259**	-0.065***	0.049***	1		
8. Wines with DOs/total wines	-0.107**	0.201***	0.204**	-0.039**	0.083**	-0.105***	0.017†	1	
9. Cooperatives	0.257***	0.019†	0.413***	-0.061***	-0.023*	-0.078***	-0.093***	-0.009	1

Note(s): †, *, **, and *** denote significance at 10%, 5%, 1%, and 0.1%, respectively. If not specified, there is no statistical significance

Source(s): Authors' calculations

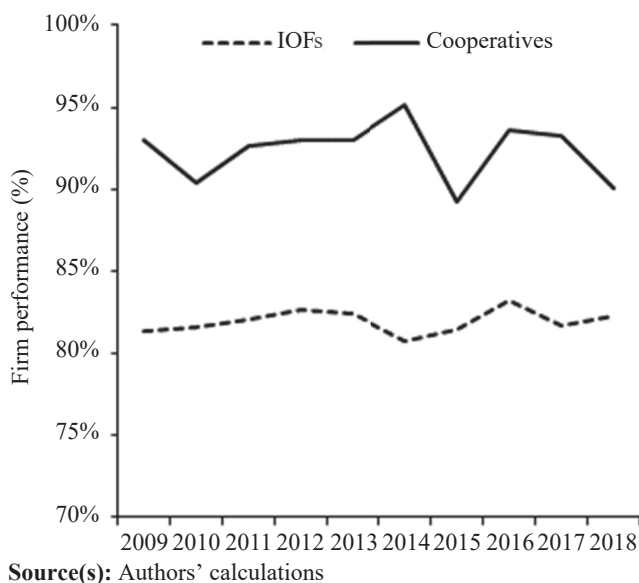


Figure 1. Annual mean performance (adjusted EBITDA) for IOFs and cooperatives from 2009 to 2018

Regarding endogeneity, which is a recurring problem in managerial and financial research concerning the link between firm performance and firm governance and/or ownership structure, in this setting, it is mitigated by the source and construction of the independent variable; more specifically, independent variable “cooperative” is treated as exogenous to performance (Gorton and Schmid, 1999). Although firms are free to use the optimal ownership structure for them or adapt it to their needs, the use of the cooperative model as an alternative to other institutional settings can be attributable to the specific objectives that members pursue and not to the level of firm performance; moreover, in the data set under analysis, the dummy variable for cooperative status is time invariant, and thus, there is no simultaneity bias between the institutional setting of a firm and its performance. However, to avoid problems of simultaneity between the dependent variable and the level of debt and liquidity of a company, the latter is included in the model lagged by one year.

Table 5 presents the results of regression Model (1), which appear to be statistically significant; more specifically, the control variables have the expected signs. For the variable of interest, the cooperative organization is positively and significantly associated with the level of economic performance ($\beta = 0.115, p < 0.1\%$), supporting H1; therefore, on average, cooperatives have stronger performance than IOFs, confirming that a cooperative is not a marginal organization of economic production doomed to inefficiency but can represent a model that can perform in line with or even better than other types of firm institutions.

More specifically, Column 1 of Table 5 shows that performance is positively associated with firm size ($\beta = 0.011, p < 0.1\%$); this result is overall coherent with the relevance, in the wine industry, of dimensional economies; a large firm size greatly affects firm performance and hence firm survival. Furthermore, the economic result is positively associated with the level of debt ($\beta = 0.015, p < 0.1\%$), growth opportunities ($\beta = 0.285, p < 0.1\%$) and the level of liquidity ($\beta = 0.009, p < 5\%$); in contrast, the economic result is negatively associated with the incidence of tangible assets ($\beta = -0.056, p < 0.1\%$), whereas the association with age ($\beta = -0.005$) is not statistically significant.

Variable	1	2	3
Firm size (<i>ln</i>)	0.011*** (3.77)	0.011*** (3.86)	0.011*** (3.77)
Firm age (<i>ln</i>)	-0.005 (-1.01)	-0.005 (-1.01)	-0.003 (-0.71)
Financial leverage _(<i>t</i>-1) (<i>ln</i>)	0.015*** (3.32)	0.015*** (3.36)	0.016*** (3.54)
Tangible fixed assets (%)	-0.056*** (-3.66)	-0.056*** (-3.73)	-0.057*** (-3.85)
Growth rate (%)	0.285*** (17.32)	0.284*** (17.31)	0.285*** (17.35)
Liquidity ratio _(<i>t</i>-1)	0.009* (2.54)	0.009* (2.55)	0.009** (2.58)
Wines with DOs/total wines	-0.025† (-1.72)	-0.042* (-2.46)	-0.020 (-1.38)
Cooperatives	0.115*** (15.38)	0.093*** (7.44)	0.134*** (11.08)
North-western	-0.026* (-2.51)	-0.026* (-2.46)	-0.030* (-2.38)
Central	-0.034*** (-3.75)	-0.032*** (-3.61)	-0.036*** (-3.43)
Southern	0.015 (1.15)	0.014 (1.04)	0.031* (2.04)
Island	-0.009 (-0.72)	-0.009 (-0.71)	0.038* (2.24)
Cooperatives × Wines with DOs/total wines (Northeast)		0.049* (2.38)	
Cooperatives × North-western			0.009 (0.43)
Cooperatives × Central			0.012 (0.73)
Cooperatives × Southern			-0.050* (-2.35)
Cooperatives × Island			-0.117*** (-5.38)
Intercept	0.731*** (24.60)	0.736*** (24.75)	0.720*** (24.22)
Year FE	Yes	Yes	Yes
No.	7,363	7,363	7,363
Wald χ^2	763.1	770.1	831.4
R^2	0.199	0.202	0.214
Breusch–Pagan (LM) test	3,606.48***	3,557.77***	3,394.93***

Table 5.
Results of the
regression model

Note(s): †, *, ** and *** denote significance at 10%, 5%, 1% and 0.1%, respectively. If not specified, there is no statistical significance
Source(s): Authors' calculations

To analyse this research outcomes in greater detail, further estimations were carried out to verify whether the positive association between cooperative form and performance is moderated by variables at the geographic level, i.e. whether this relationship behaves differently when geographic-level variables are considered. First, we tested (Column 2 of Table 5) whether this relationship depends on the reputation of the territory in which a firm operates (expressed by the proportion of wine with DOs of the amount of wine produced in the area where a company is located); the results listed in Column 2 ($\beta = 0.049$, $p < 5\%$) suggest the existence of a moderating effect of the reputation of the territory on the relationship between the cooperative form and economic performance, i.e. cooperatives operating in highly renowned territories show stronger performance than noncooperative firms operating in highly renowned territories.

Second, in Column 3 of Table 5, we also analysed the moderating effect of the geographic area where a firm is located on the relationship between the cooperative form and performance; the results indicate that while cooperatives operating in north-western and central Italy do not present significant differences from those operating in the north-eastern region (the reference category of the current analysis), those that operate in the southern ($\beta = -0.05$, $p < 5\%$) and island regions ($\beta = -0.117$, $p < 0.1\%$) show a lower level of performance than cooperatives in the north-eastern region. This evidence likely shows that cooperatives located in southern Italy and even more so in island region have less effective and efficient organizational characteristics than those in the north-eastern region, where cooperatives have longer traditions, are better established and are committed to developing an effective networking strategy amongst private and public actors for the promotion of the wine industry (Bresciani, 2017).

7. Theoretical and managerial implications

The results of the present research seem to contribute to the literature on cooperatives in several ways. First and most of all, based on the peculiar characteristics of the cooperative model and in line with a specific stream of the scientific literature, as aforementioned in the theoretical section of this study, we empirically demonstrate that cooperatives can perform (adopting the adjusted EBITDA as a measure of performance) similarly to, if not better than, firms established as IOFs.

Furthermore, compared to other research on cooperative performance, this research seems to be distinct from both a theoretical and methodological point of view, because while the main scientific literature on cooperatives extensively adopts classical financial performance measures as a proxy for the effectiveness of the cooperative model, we examine whether cooperatives differ from IOFs from the objectives they pursue, and therefore, we use a non-distorted measure of performance to explore whether profit maximization is not the main goal of cooperatives.

Despite the theoretical literature suggesting that the cooperative forms of organizations suffer many weaknesses due to their peculiar ownership structures and the rights granted to their members, in hypothesizing that they perform worse than IOFs, we demonstrate that cooperatives are at least as economically efficient as other forms of economic organizations, such as for-profit firms. Not only does our empirical evidence suggest that cooperatives perform better than IOFs, but we also highlight that cooperatives located in the southern and island regions of Italy perform worse than those located in northern Italy, where cooperatives have been well established for a longer time.

Regarding managerial implications, the present research highlights that the cooperative model is an effective form for organizing production in the wine sector; this result should encourage the use of this organizational form in a sector dominated by the fragmentation of grape production amongst many small farmers, especially in Italy. In line with relevant scientific literature in the field, to increase the likelihood of this model fully expressing its potential in terms of economic and social performance (also more generally for the food and wine sectors and not only for cooperatives: [Bresciani et al., 2016a](#); [Giacosa et al., 2017](#); [Cantino et al., 2019](#); [De Bernardi et al., 2020](#); [Nirino et al., 2020](#)), it seems necessary for cooperatives to be oriented towards the continuous improvement of some key issues as follows:

- (1) Governance profiles: The governance of cooperatives based in one-person-one-vote and self-government principles with management entrusted to members has advantages and limitations. Specific attention must be directed to strengthening the governance structure by adopting measures that, while preserving cooperative values and the benefits of member participation, can reduce the limits of the model ([Bijman et al., 2013](#); [Hakelius, 2018](#)).
- (2) Strategic approach: The vision of the future and therefore the search for the best development opportunities are fundamental to motivating cooperative members towards ambitious goals and attracting new resources to cooperatives ([Bretos and Marcuello, 2017](#)).
- (3) Quality management systems and production sustainability: Quality and sustainability are key factors that affect global competition; therefore, taking care of the producers of raw materials is imperative and implies the strengthening of relationships with members ([Bareille et al., 2017](#)).
- (4) Systems for involving cooperative members: This issue, which is related to the problem of governance, is aimed at managing the conflicts of interest between a cooperative and its members and preventing opportunistic behaviours. The involvement of members through discussions of community opportunities is essential to keep alive the

8. Research limitations and avenues for future research

The results of the current investigation seem relevant both for management theory and practice; however, they may lack straightforward generalizability, as our research hypothesis was tested on a sample of Italian wine firms for a 10-year period (2009–2018). Therefore, extending the present study to include additional firms from other countries and expanding the period of observation would enhance the generalizability and usefulness of the current findings.

Additionally, increasing the number of sources from which data are extracted (i.e. considering not only the Bureau van Dijk AIDA database) could reinforce the global validity and reliability of the present study. As every database is subject to several conditions of data entry, other sources could us provide data on other companies, increasing the variety and number of observations considered (as is shown, for example, in [Bresciani et al., 2016b](#)).

Beyond strict reference to the structural characteristics of the current investigation, the results of the present research were intentionally calculated without potential bias deriving from the COVID-19 pandemic. Instead, evidence emerging from 2020 and following years could and probably would delineate different situations, also with regard to new forms of wine consumption ([Acuti et al., 2020](#)), but quite likely the cooperatives should perform even better due to their limited relationship to hotel, restaurant, café/catering (Ho.Re.Ca.) distribution channel (which experienced broad closures during the pandemic), at least with respect to “standard” IOFs, thus creating a need to test the results of the current research in the new context of the COVID-19 pandemic and in continuous evolution with the associated vaccine campaign.

9. Conclusion

Although they have often been considered less efficient organizations with relative to IOFs, cooperatives represent a vital economic model, which from the current investigation has emerged even as more efficient. Naturally, this evidence remains contextualized in our realm of analysis, i.e. the Italian wine sector, with a specific focus on the north-eastern area.

This result also seems fruitful because it is the outcome of a procedure adopting an adjusted indicator, i.e. EBITDA plus the cost of raw materials on revenues. On the one hand, this seems a relevant innovation for evaluating the real economic efficiency of (wine) cooperatives, and on the other hand, the parameter at the end measures overall performance for members and not only for cooperatives, providing new insight into the subject and requiring further development through future analysis.

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