Support for Farmers' Cooperatives

EU synthesis and comparative analysis report Internal Governance

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EU synthesis and comparative analysis report
Internal Governance

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Preface and acknowledgements

In order to foster the competitiveness of the food supply chain, the European Commission is committed to promote and facilitate the restructuring and consolidation of the agricultural sector by encouraging the creation of voluntary agricultural producer organisations. To support the policy making process DG Agriculture and Rural Development has launched a large study, "Support for Farmers' Cooperatives (SFC)", that will provide insights on successful cooperatives and producer organisations as well as on effective support measures for these organisations. These insights can be used by farmers themselves, in setting up and strengthening their collective organisation, and by the European Commission in its effort to encourage the creation of agricultural producer organisations in the EU.

Within the framework of the SFC project this "EU synthesis and comparative analysis report - Internal Governance" has been written.

Data collection for this report has been done in the summer of 2011.

In addition to this report, the SFC-project has delivered 27 country reports, a report on policies for cooperatives in non-EU OECD countries, 8 sector reports, 5 other EU synthesis and comparative analysis reports, 33 case studies, a report on cluster analysis, and a final report.

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1 Introduction

1.1 Objective of the report

This report has been written in the framework of the EU-funded research project "Support for Farmers' Cooperatives". This project was commissioned by the European Commission DG Agriculture and Rural Development, and carried out in 2011 and 2012 by a large consortium of researchers from various European universities and research institutes. The main objective of the EU wide research project is to provide insights on successful cooperatives and producer organisations as well as on effective support measures for these organisations. These insights can be used by farmers themselves, in setting up and strengthening their collective organisation, and by the Commission in its effort to encourage the creation of agricultural producer organisations in the EU.

In the context of this research project, data has been collected in all of the 27 Member States of the European Union, on the evolution and development of agricultural cooperatives and producer organisations, but also on the policy measure and legal aspects that affect the performance of these organisations. This data has been one of the main sources of information for this report. In addition, other literature on the topic has been used to assess the situation in one or more EU member states or in particular sectors of the European agrifood industry.

This report provides an EU level synthesis of the analysis of internal governance of the cooperatives/POs. Other sections of the synthesis report have covered topics like*:*

- Economic and fiscal incentives or disincentives and other public support measures at regional and national;
- Legal aspects, including those related to competition law and tax law;
- Historical, cultural and sociologically relevant aspects;
- The relationship between cooperatives/POs and the actors of the food chain;
- EU regulations and policy measures
- Transnational cooperatives

Within the limits of our study we will refer and link-up our own results to results of reports on other topics*.*

1.2 Analytical framework

For this EU wide research project we have developed an analytical framework about the determinants of the success of cooperatives and producer organisations in current food chains. These determinants relate to (a) position in the food supply chain, (b) internal governance, and (c) the institutional environment. The position of the cooperative in the food supply chain refers to the competitiveness of the cooperative vis-à-vis its customers, such as processors, wholesalers and retailers. The internal governance refers to its decision-making processes, the role of the different governing bodies, and the allocation of control rights to the management (and the agency problems that goes with delegation of decision rights). The institutional environment refers to the social, cultural, political and legal context in which the cooperative is operating, and which may have a supporting or constraining effect on the performance of the cooperative. Those three factors constitute the three building blocks of the analytical framework applied in this study (Figure 1).

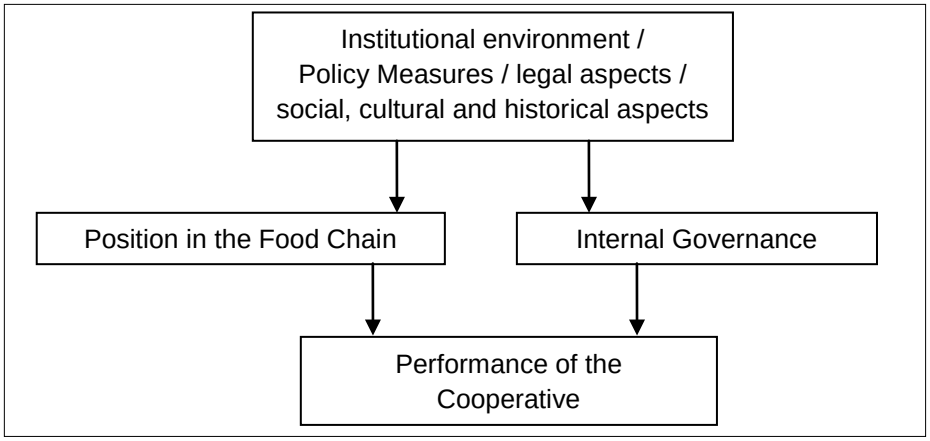

Figure 1. The core concepts of the study and their interrelatedness

1.3 Internal governance

Governance describes the system of authority direction and control within and outside of the firm which ensures that management works in the best interests of the owners and enables them to obtain the largest possible benefit from their contributions or "investments" (Zingales 1998, Shleifer and Vishny 1997). Preconditions for the necessity of a governance system are the existence of appropriable "quasi rents" and a less-than-perfect allocation of the benefits from an economic exchange relation - a situation in which what everyone gets from a deal is neither perfectly clear from an ex-ante point of view nor from an ex post perspective (Williamson 1985). In a cooperative firm the governance system is then the collection of internal and external mechanisms to protect the interests and investments of the (member-) patrons in ways which shape the ex-post outcomes of their relationship with the firm.

Like in any other type of firm the quality of decision making in a cooperative is a major ingredient for its success. Because the cooperative firm type lacks "outside-control" by the capital market, there is a relatively higher demand on internal, self-enforcing mechanisms of authority and control. In what follows, these mechanisms inside the cooperative firm are referred to as "internal governance".

1.4 Definition of the cooperative

In this study on cooperatives and policy measures we have used the following definition of cooperatives and Producer Organisations (POs). A cooperative/PO is an enterprise characterized by user-ownership, user-control and user-benefit:

- It is user-owned because the users of the services of the cooperative/PO also own the cooperative organisation; ownership means that the users are the main providers of the equity capital in the organisation;
- It is user-controlled because the users of the services of the cooperative/PO are also the ones that decide on the strategies and policies of the organisation;
- It is for user-benefit, because all the benefits of the cooperative are distributed to its users on the basis of their use; thus, individual benefit is in proportion to individual use.

This definition of cooperatives and POs (from now on shortened in the text as cooperatives) includes cooperatives and associations of producer organisation (often called federated or secondary cooperatives).

1.5 Period under study

This report covers the period from 2000 to 2010 and presents the most up-to-date information. This refers to both the factual data that has been collected and the literature that has been reviewed. For EU Member States that joined in 2004 and 2007 the focus is on the post-accession period.

1.6 Structure of the report

In the next sections we will analyse the literature on internal governance and statistical data on 27 member states of the EU. In section two we briefly review the main theoretical approaches and research findings on the study of internal governance. At the end of section two we extract a list of working hypotheses on internal governance in cooperatives. In section three we describe the data and statistical tools used in our analysis. Before we develop a simple OLS model on the relation between internal governance and performance we describe variables and procedures of statistical testing. In section four we present summary tables of our model´s continuous variables and of the binary variables and describe them. We then turn to testing our model on internal governance and its effect on cooperative performance and describe our results. In chapter five we line out limitations of our approach and data. In the last section we summarize and conclude. A large appendix of tables complements our study.

2 Literature review, approach and working hypotheses

The theoretical literature on corporate governance identifies a number of mechanisms of governance and a number of reasons why the internal governance system of a firm should matter for its overall performance and sustainability. Agency theory provides the starting point for this theoretical discussion (Jensen and Meckling 1976, Grossman and Hart 1983). Agency theory takes into account that the owners and the managers of the firm may have diverging interests. Given that the information between CEOs and cooperative members is often asymmetrically distributed, incentives for self-interested behavior of the management exist. The key role of internal governance mechanisms is then to ensure that self-interested managers act in the best interest of the owners. Another important function of a firm´s internal governance system is to make sure that declared objectives of the firm are aligned with day to day practice and action. Bureaucratic control, information systems, incentive aligning contracts, a particular business culture and trust and several reputation enhancing mechanisms are believed to reduce the respective cost of bringing this about (Tirole 2006, Hansmann 1996).

A prominent question is how board characteristics such as composition or size affect performance? Hermalin and Weisbach 2003 survey the literature on the respective hypotheses for publicly owned corporations and show that the theory building on the relation between governance indicators and performance indicators is still "relatively thin". They claim that in the empirical literature the hypothesis of a negative relation between firm value and board size is well accepted. A clear relationship between firm value and profitability and the composition of the board (e.g., proportion of outsiders) is not confirmed by the literature. However, with regard to board composition, Weisbach (1988), Hermalin and Weisbach (1988), as well as Denis and Sarin (1999) claim that firms, in which founders are still active and the CEO has a large ownership position, tend to have boards with a majority of insiders. Larger and older firms are more likely to have professional management with smaller ownership stakes, and outsider-dominated boards.

Another factor of internal governance more often researched is the role of the CEO in choosing directors. The thesis is that CEOs who actively chose directors may negatively influence the board's effectiveness but Hermalin and Weisbach (1998) and Yermack (1999) only find rather mixed results on that particular issue. Finally, the question on the role of venture capital on internal governance mechanisms has been dealt with. Baker and Gompers find that the presence of a venture capital investor is likely to decrease the CEO's bargaining power relative to the board (Baker and Gompers, 2000).

2.1 Cooperative internal governance-a multi-criteria perspective

The theoretical and empirical problems of the internal governance of the cooperative cannot be fully understood by applying one "grand theory". Not all of the problems identified by the governance literature on publicly owned firms do equally apply to cooperatives and other democratic membership organizations. Furthermore, because cooperatives lack most of the external mechanisms that help controlling corporations, cooperatives may even have to develop more complex and diverse mechanisms of internal control than their corporate counterparts do. For some problem contexts, the application of the agency approach is even counterproductive because the board of directors may fulfilfunctions that clearly diverge from the agency approach's postulates. The board may sometimes function as a political institution reducing the cost of conflicting interests among different groups of members. In other situations, the board may serve as expert advisor or resource network for the management.

Cornforth suggests applying "a paradox perspective" highlighting the main problems of internal governance and the main tensions that arise (2004: 13):

- The tension between member representation in interest groups and the need to recruit "expert knowledge' from outside.
- The tension between performance goals and conformance with accountability and prudence.
- The tension between the needs of controlling and supporting the management

Depending on the roles allocated to the board of directors (member representatives, experts, resource network), different assumptions about the underlying incentive problems apply (compatibility of interest between management and directors) and different qualities of board members are needed (expert knowledge, conflict management, political representation, resource-network hub). For the analysis of the quality and role of internal governance, Cornforth (2004) reminds us that the problems that cooperative internal governance mechanisms have to solve may not take one or the other form represented by one or the other theory. Assessing the quality and likely impacts of different mechanisms of internal governance may instead benefit from taking an empirical multi-criteria perspective, simultaneously taking into account several problem dimensions.

Apart from enterprise performance and the alignment of incentives between the board of directors and the management, member heterogeneity, size and ownership dispersion have been marked as impediments to effective internal governance: the wider dispersed is the equity ownership of the firm, the higher the incentives to free ride on each other's efforts to control the management. For example, in their study on 73 Austrian cooperative banks over the period 1987–1990 Gorton and Schmid concluded that agency costs, as measured by efficiency wages, are increasing with the degree of separation or dispersion of the ownership structure (Gorton and Schmid 1998: 120).

The dynamics of the diverse rights and duties of the member-owners are another important ingredient of internal governance. Several authors have hypothesized changes in the market environments and financial problems to be the main drivers behind changes in internal governance system like ownership composition and the rights of representation of members (Cook, 1995; Nilsson, 1999; Chaddad and Cook, 2004). In their study of the dynamics of board models of the thirty largest Dutch agricultural cooperatives Bijman et al. (2012) find that most of the observed cooperatives have indeed undergone changes in their corporate governance structures which affected the relationship between the board of directors and the management. However, no relationship between changes in corporate governance structure and the financial constraints the cooperatives faced was identified.

Some important dimensions of internal governance are more of informal character and difficult to assess because they afford context specific knowledge about historical details of firm development, the preferences and perceptions of members and managers and the ways in which they trust and appreciate each other. For example Österberg and Nilsson (2009) analyse members´ perception of their participation in the control of their cooperatives. Because the performance of the board of directors is hard to directly assess they focus on members´ commitment to supply to the cooperative and on members trust in the efficiency of the board as a proxy for this variable. They analyze how member commitment towards cooperatives and their trust in the board of directors is related to variables like their satisfaction with the profitability of their farm operations, the age of the members, and the member`s board work experience, as well as the members perception of their participation in the governance of cooperatives (Österberg and Nilsson 2009: 187). The hypothesis is: the more the members perceive that they participate in the governance of the cooperatives, the more committed to

supply to the cooperatives they are and the more trust they have in the cooperatives` board of directors. Österberg and Nilsson 2009: 194 conclude that: *"The members' perception of participating in the democratic control of cooperatives outweighs all other factors in explaining both the members' cooperative involvement and their confidence in the boards"*.

The more general literature on corporate governance and the more specific literature on the governance of the cooperative firm result in a list of working hypotheses for the analysis of internal governance in agricultural cooperatives. Not all of the hypotheses relate to performance. This list gives a first orientation for empirical analysis. Not all of these hypotheses were the subject of the quantitative analysis below. Some hypotheses were further refined in the research process. For some variables "proxy variables" could be defined. Some hypotheses may become the subjects of future research efforts in the form of qualitative case studies.

- The size of the cooperative may influence agency cost and performance of the cooperative.
- The relation between outsiders and insiders in the board of directors may influence the performance of the cooperative
- The size of the board of directors may be negatively related to performance of the cooperative
- The older and larger the coop the more outsiders dominate the board of directors and the more experts instead of regional representatives serve as directors
- Where CEOs play an active role in the choice of directors, the board`s effectiveness is low
- Outside investors reduce the power of the cooperative management vis a vis members
- The wider dispersed is the equity ownership of the firm, the higher/ the lower the incentives for members to control the cooperatives management
- Changes in the market environments and financial problems are the main drivers behind changes in internal governance system like ownership composition and the rights of representation
- The more the members perceive that they participate in the governance of the cooperatives, the more committed to supply to the cooperatives they are and the better the performance of the cooperative.
- Boards of experts provide better performance than regional or product representatives

3 Data and methods

3.1 Data collection

This EU level synthesis report is mainly based on data collected in the Spring of 2011 in 27 EU Member States (by an expert on cooperatives in each of the Member States). In addition, an inventory of policy measures at EU level was used. In collecting the data, multiple sources of information have been used, such as databases, interviews, corporate documents, academic and trade journal articles. The databases used are Amadeus, FADN, Eurostat and a database from DG Agri on the producer organisations in the fruit and vegetable sector. Also data provided by Copa-Cogeca has been used. In addition, information on individual cooperatives has been collected by studying annual reports, other corporate publications and websites. Interviews have been conducted with representatives of national associations of cooperatives, managers and board members of individual cooperatives, and academic or professional experts on cooperatives.

3.2 Data analysis

We have used descriptive statistics (mean, standard deviation, minimum, maximum, number of observations) describing country and sector differences of the continuous variables on internal governance variables.For the five largest sectors (cereals, dairy, fruit & vegetables, wine, and meat) we have also statistically tested differences in means.

In the descriptive part we, thus, focused on comparisons between sectors. For pair-wise statistical testing of sector differences, we have applied the non-parametric (distribution-free)Wilcoxon (Mann-Whitney-U) Test. For the binary variables, we have used proportion tests.

In the analytical part we have used the following simple regression model

$$y_k = \beta_o + \sum_{j=1}^{J} \beta_j \cdot x_{jk} + \varepsilon_k \qquad (1)$$

where the $y_k$are the k's cooperative's natural logs of turnover in the year 2010 per member, the x_{jk} are the observations for the J independent variables described in section 4.3 for cooperative k. The β are a parameter vector to be estimated and ε_k is a normally distributed error term with $\varepsilon_k \rightarrow N(0, \sigma^2)$. The focus lies on efforts to explain cooperatives' performance (roughly approximated as the natural logs of the turnover in the year 2010 per member) as a function of internal governance variables. To account for country-level differences we have clustered standard errors for countries in both models. The usual tests and robustness checks are applied (see section 4.3).

4 Results

4.1 Variable Description

The following tablelists the continuous variables expressing the cooperatives' internal governance.

Table 1: Description of continuous variables

Variable	Description
easymemb	How easy is it to become a member? (5-point scale: very easy=1, very restricted=5)
percentforeign	Per cent of members from other EU states
bodsize	Number of people on board of directors
maxyearsbod	Maximum years possible on board of directors
specialized	How specialized is the coop? (low=1, medium=2, high=3)
tradenonmemb	Trading volume with non-members in per cent
percentnonactive	Per cent of non-active members in coop
influencenonactive	Influence of non-active members on decision making (high=1, medium=2, low=3)

Table 2 lists the binary variables used. These will later be described as relative frequencies.

Table 2: Description of binary variables

Variable	Description
holding	=1 if coop is a holding as opposed to one legal organization
bodprofessionals	=1 if professional managers serve on the BoD
bodseperate	=1 if there is a separate supervisory board
expertise	=1 if board members are selected by expertise
regrepresent	=1 if board members are selected by representing a geographical region
prodrepresent	=1 if board members are selected by representing a product
operationprofessionals	=1 if operational business is run by professional managers
supervision	=1 if a supervisory board exists
outsiderssuperboard	=1 if also outsiders serve on the supervisory board
council	=1 if there is a member council in addition to the general assembly
votingomov	=1 if voting one-member-one-vote
votingproplimit	=1 if voting is proportional with limit
votingprop	=1 if voting is proportional without limit
proportion	=1 if proportional to patronage (as opposed to equity)
subsid	=1 if coop has subsidiary
tradenonmembbin	=1 if coop trades with non-members
exclusivetrade	=1 if farmers have to sell all produce to the coop
differenmkt	=1 if coop has different marketing pools
productgroup	=1 if coop uses product grouping
regiongroup	=1 if coop uses regional grouping
volpremium	=1 if coop pays premium for high volume trade
diffcost	=1 if coops applies differential cost policy

4.2 Descriptive Statistics on Internal Governance

Table 3 presents summary statistics on our model´s continuous variables on internal governance: Statements about how easy it is to become a member in the cooperative do pretty much center on the applied 5-point scale, indicating that it is neither particularly hard nor particularly easy for farmers to enter cooperatives. Membership of foreigners doesn´t seems to be very common in most cooperatives. High standard deviation indicates that some cooperatives have much fewer or no foreign members at all, while other cooperatives may even be dominated by foreigners. The average board of directors contains 8.81, members with a minimum of only one director and a maximum of 63 people on the board there is a relatively wide span of observed board sizes. Some cooperatives restrict the amount of years a director can hold office, but most do not. After transforming variables into binary variables (restriction yes or no) we found that in ~65 per cent of the cases no restrictions apply.

In general, cooperatives` main activities are rather specialized with an average ranking of 2.33 and a maximum of three (fully specialized). Most cooperatives trade predominately with members. The trade share with non-members does not exceed 16per cent. However, also here the standard deviation and the span indicate that there are rather strong differences within the group. While some cooperatives do not trade with outsiders at all, there is at least one cooperative for which trade with outsiders covers 90per cent of its trading volume. On average 87 per cent of the membership are active members. Again, the variability is very high – even higher than it is the case for trading volume. In at least one cooperative, every member is active, while the maximum indicates that cases where no active membership prevails existed. The average influence on decision-making of inactive members is considered low – with 2.73 very close to the lowest possible ranking option that was three.

Table 3: Summary Statistics of Continuous Variables

Variable	Mean	SD	Minimum	Maximum	N
easymemb	2.30	1.20	1.00	5.00	521
percentforeign	8.61	22.95	0.00	100.00	41
bodsize	8.81	7.46	1.00	63.00	470
maxyearsbod	1.64	2.70	0.00	15.00	456
specialized	2.33	0.64	1.00	3.00	521
tradenonmemb	15.86	16.36	0.00	90.00	185
percentnonactive	13.27	23.91	0.00	100.00	361
influencenonactive	2.73	0.65	1.00	3.00	333

*Source:*own calculations

We now turn to the descriptive statistics of the binary variables, presented here as relative frequencies. Roughly, a fifth of the cooperatives in the sample use a holding structure, all other cooperatives are a single legal entity. In only 14 per cent of the cooperatives, professionals serve on the board of directors, but almost half of the sampled cooperatives has separated boards for management and supervision – which most probably may in some countries also be a legal requirement, at least when a certain threshold level of members or turnover is reached. There is, however, only very moderate correlation (Pearson's r=0.0751) between separated boards and turnover and turnovers are not statistically different for cooperatives with and without separated boards (p=0.2664 for Wilcoxon rank sum test).

Decisions on who is eligible to serve on the board of directors are mostly based on expertise (more than 75 per cent), but also regional (~40 per cent) and product (~15 per cent) representation are relevant criteria. In more than 60 per cent of the cooperatives the operational

business is run by professionals. Here the correlation with turnover is much more pronounced (Pearson's r=0.1610) and differences between turnover are statistically significant (p=0.0000 for Wilcoxon rank sum test) with the average turnover of cooperatives with professional operative managers being almost four times higher when compared to cooperatives without professional managers for operational business. Apparently, causality is not easy to disentangle here. Whether a high turnover causes professionalization, professional management increases turnover, or causality runs bi-directional remains open. Because of this we have not included this variable into our analytical model. Cooperative supervisory boards contain outsiders (non-members) in about a quarter of the cases. Member councils in addition to the general assembly are not very common. About 15 per cent of the sampled cooperatives make use of member councils. Not all cooperatives rely on one-member-one-vote decision making. Roughly, 10 per cent of the sample use proportional voting and another 10per cent use proportional voting with an upper limit on voting powers.

In about 60 per cent of these cases the proportion is defined by patronage (e.g. trading volume), in the remaining 40 per cent by equity shares. These organizations move away from the ideal of the "democratically controlled member organizations." Around 12 per cent of the cooperatives have subsidiaries – especially those with many members (Pearson's r=0.1625). The number of members is more than four times higher for cooperatives with subsidiaries as compared to those without (p=0.0091for Wilcoxon rank sum test). More than half of the cooperatives do also engage in trade with non-members, while about 40 per cent of the cooperatives have a membership that exclusively deals with those cooperatives.

About two thirds of the cooperatives use different marketing pools and most of them (more than 90 per cent) use regional grouping, while product groupings are far less common (less than 5 per cent). A substantial share of the cooperatives differentiates among members in the prices paid and the costs charged. Roughly, one third pay a premium for large traded volumes and about 40 per cent apply a differentiated cost policies.

Table 4: Frequencies of Binary Variables

Variable	Relative Frequency in per cent	N
holding	18.07	548.00
bodprofessionals	14.20	528.00
bodseperate	46.15	507.00
expertise	76.69	489.00
regrepresent	39.61	507.00
prodrepresent	14.83	507.00
operationprofessionals	62.99	489.00
supervision	50.86	521.00
outsiderssuperboard	27.30	293.00
council	15.61	506.00
votingomov	80.46	476.00
votingproplimit	51.04	96.00
votingprop	17.52	331.00
proportion	59.09	132.00
subsid	12.20	508.00
tradenonmembbin	60.27	448.00
exclusivetrade	42.68	492.00
differentmkt	66.25	492.00
productgroup	4.85	165.00
regiongroup	95.93	492.00
volpremium	32.69	468.00
diffcost	43.18	403.00

*Source:*own calculations

4.3 Internal Governance and Performance

To test the effect of internal cooperative governance on performance we use a simple causal model. As a dependent variable measuring performance,we have included the natural logs of turnover in the year 2010 per member. Similarly, to increase estimation efficiency we have also transformed some of the highly skewed independent variables. Log-transformed coefficients are interpreted as percentage marginal effects. We used the turnover per member to make results comparable between smaller and larger cooperatives.

Table 5 presents three OLS regression models on performance. We added blocks of variables stepwise to test the robustness and see the relative increase of explanatory power related to certain thematic variables. In Model 1, the natural logs of the number of members, those of the age of the cooperative (calculated as 2011 minus the year of founding), a dummy capturing whether the cooperative is a holding or a single legal structure, a dummy for the operation of the cooperative by professional managers, and a dummy variable for separated board structures are considered.

In Model 2, we add natural logs of the number of members on board and a dummy for the composition of the board (whether there are outsiders as board members). In Model 3,election rules of the board and election rules of the general assembly are added. More specifically, we add dummy variables for the board elections rules (based on expertise, regional representation, and product representation), the maximum duration board members can serve, and the voting rule of the general assembly of the coop (a single dummy for indicating whether the one-member-one-vote rule is used).

Given the rather small sample size and the difficulty to obtain high quality data from organizations, the model results are satisfying. The F-statistics show that all three models have explanatory power and the adjusted R^2 increases with each step, indicating further increases in explanatory power. Overall, the results also seem to be robust:For the larger and statistically significant variables no sharp changes in coefficients occur. Board composition and board size are the only exceptions. Even though signs do not change, coefficients in both cases increase and p-Values increase from Model 2 to Model 3.

We suspect that this change may partly be attributable to the non-random change in the underlying sample (also see decrease in N in Table 5) due to the rather high number of item non-response for the variable block added in Model 3. The relatively stable coefficients of the other variables, however, let us believe that this problem should not be overstated. Multicollinearity diagnostics (not reported) show that no serious problems with multicollinearity exist in the models. The highest calculated variance inflation factor is as low as 2.24 (boardsize)in Model 3.

To test for sectoral effects we have also calculated various models with sector dummies (not reported). In no case the dummy variables jointly improved the explanatory power of the models and for reasons of simplicity and to keep the degrees of freedom reasonably low we have not included the sectoral dummies in the final models. In other words we do not find sector specific relations between internal governance and performance. To partly control for country effects (e.g., the idiosyncratic political and legal environment) we have used standard errors clustered for countries.

Table 5: OLS Regression Results on Performance and Internal Governance

	(1)	**(2)**	**(3)**
	LogTurnMember	**LogTurnMember**	**LogTurnMember**
LN_Members	-0.4812***	-0.5210***	-0.4745***
	(0.1276)	(0.1433)	(0.1579)
LNage	0.2002	0.1455	0.0698
	(0.2820)	(0.3153)	(0.3436)
holding	1.2311**	1.1738**	0.6086
	(0.4572)	(0.4471)	(0.5112)
bodprofessionals	1.2387***	0.9502**	0.8770***
	(0.4221)	(0.3668)	(0.2882)
bodseperate	-0.1881	0.0496	-0.1291
	(0.5143)	(0.4524)	(0.4914)
LN_Boardsize		0.2199	0.7298***
		(0.3944)	(0.2398)
outsiderssuperboard		0.6710	0.8786
		(0.4909)	(0.5288)
expertise			0.1717
			(0.6868)
regrepresent			-1.2669**
			(0.5458)
prodrepresent			0.1455
			(0.4232)
votingomov			-1.3243**
			(0.5609)
_cons	12.4639***	12.3584***	13.2838***
	(0.9777)	(1.1421)	(0.9736)
N	338	304	242
Adj. R^2	0.1721	0.1844	0.2854
F-Statistic	6.3973***	5.0990***	20.8717***
Clusters	23	23	22

Standard errors clustered for countries in parentheses
Own calculations
*p< 0.10, **p< 0.05, ***p< 0.01

We now turn to the interpretation of single variable coefficients. Our models suggest a very strong, statistically significant, and robust effect of size on performance. A one percent increase in size (in number of members) reduces turnover per member by roughly 0.5 percent. From a theoretical perspective, this finding may be interpreted as the negative consequences of mergers on the internal governance of the cooperative. Another interpretation is the "rationing" of members in the cooperative life cycle: Farmers for whom membership is most beneficial and who contribute more than others to the success and performance (turnover) of the cooperative, join the cooperative in earlier stages of firm growth. With the growing of the membership heterogeneous interest creates conflicting firm objectives. Larger cooperatives, thus, on average decrease their turnover per member as with increasing size they will most probably attract members for whom the pay-off of membership is smaller relative to the pay-offs for incumbent members. This may apply in particular where membership is limited to a certain regional heritage. Cooperatives operating as a holding – in contrast to a single legal structure – and cooperatives where operational business – not necessarily strategic decisions – are controlled by professional managers, also perform statistically significantly better. Less robust estimates for board size and outsiders serving on the supervisory board suggest a positive effect of both variables. A larger board increases performance. This may have to do with better membership representation and in turn higher satisfaction with the decisions of the management.

Our model does also support other theoretical insights from the corporate governance literature: outsiders on the supervisory board improve performance which may be due to impeding negative cohesion and interdependence between management and supervision.

The two other statistically significant variables in the third model are regional election procedures for the board and voting in the general assembly. We find a negative effect of regional representation as one out of three criteria for serving on the board of directors. This is much in line with our *a priori* assumption, that expertise not region of origin makes a good director. This finding is further pronounced by the positive signs of the coefficients of expertise and product representation, which are relatively more related to the management skill needed to lead a cooperative enterprise.

4.4 Differences between sectors

Cooperatives may be active in different sectors. Table 6 summarizes the main sectors of the surveyed cooperatives in a slightly aggregated manner. Sectors with absolute frequencies smaller than ten were collapsed into the other category. Also the different meat producers were collapsed into one category. Olive oil and olive cooperatives were aggregated in the oil category with other oil producing cooperatives.

Table 6: Sectors and Frequencies across sectors

Sector	Absolute frequency	Relative frequency
Cereals	79	13.84
Dairy	112	19.61
Fruit and vegetables	91	15.94
Sugar	10	1.75
Wine	43	7.53
Cattle trade	15	2.63
Meat	79	13.84
Oil	17	2.98
Others	125	21.89
Total	571	100.00

Source: own calculations

In the following, we compare the variables describing internal governance between the five largest sectors. Here we limit ourselves to the pairwise comparison of cooperatives primarily active in the largest sectors – namely cereals (1), dairy (2), fruit and vegetables (3), wine (4), and meat (5).Considering more sectors would rapidly increase the number of comparisons and therewith make a meaningful verbal discussion of these findings difficult. In

Table 7 we have disaggregated descriptive statistics for the continuous internal governance variables by sectors and statistically tested differences between means of sectors.

In all sectors, membership is relatively unrestricted with slight differences between sectors. Dairy is the most open sector where the average ranking of 1.22 indicates that more or less every farmer willing to join can do so. In the fruit and vegetables cooperatives and wine sector membership is relatively more restricted. Membership of foreigners is uncommon in almost all sectors with the meat sectors being an important exception. About one third of meat cooperatives members in our sample are from other member states. These results should be treated with care, however, as they are based on only three meat cooperatives who responded to this particular question. Dairy cooperatives have the largest boards of directors, while cooperatives in fruit and vegetables have substantially and statistically significant different smaller boards. We can partly explain this by the different average sizes of cooperatives in the two sectors. Compared to fruit and vegetables cooperatives, dairies have more than two times the turnover and almost four times as many members. Wine cooperatives and fruit and vegetables cooperatives are the most specialized, while cooperatives in cereals are the least specialized. Only about 10per cent of the total dairy trade can be attributedto trade with non-members, while the trading volume with non-members is more than double (20per cent) for the cereal cooperatives. In addition, the share of non-active members differs between sectors. In dairy cooperatives less than 7per cent are not active, while on average more than 15per cent of the cereal cooperative members are non-active. The influence of non-active members is generally low and more or less the same across sectors.

Table 7: Mean, SD, N for Continuous Variables by Sectors

Sector/Variable (Mean, SD, N)	**Cereals (C)**	**Dairy (D)**	**Fruit and Vegetables (FV)**	**Wine (W)**	**Meat (M)**
easymemb	2.00 D, FV, W, 1.14, 88	1.22C, FV, M, 2.66, 5	2.29C, D, 1.12, 100	2.47C, 1.32, 47	2.22 D, 1.11, 78
percentforeign	6.43, 14.88, 7	12.77, 29.42, 13	1.13, 1.73, 8	0, 0, 4	30, 51.96, 3
bodsize	9.13 D, 9.39, 82	9.99 C, FV, M, 7.08, 109	6.93D, W, 6.12, 88	9.74FV, 7.48, 43	7.48D, 5.47, 63
maxyearsbod	1.06 D, 2.20, 71	1.84 C, W, 2.75, 105	1.38, 2.78, 93	1.44, 2.15, 39	1.52 D, 2.48, 67
specialized	2.08D, FV, W, M, 0.66, 89	2.37 C, FV, W, 0.57, 115	2.59C, D, 0.57, 104	2.64 C, M, 0.53, 45	2.42C, D, W, 0.61, 77
tradenonmemb	20 D, 20.17, 33	9.63 C, W, 11.25, 35	15.89, 14.04, 37	14.63, 8.69, 16	17.19 D, 19.65, 37
percentnonactive	15.72 D, 23.49, 53	6.59 C, FV, W, 17.50, 83	13.10D, C, 22.38, 72	11.73, 26.57, 40	11.98D, 25.16, 59
influencenonactive	2.78, 0.61, 60	2.76, 0.59, 62	2.78, 0.57, 67	2.85, 0.50, 34	2.76, 0.63, 49

Source: own calculations

Note: Superscripts C, D, FV, W, and M denote pairwise statistical significant differences of means on the 5 per cent level for the sectors Cereals, Dairy, Fruit and Vegetables, Wine, and Meat, respectively.

We now turn to the differences in proportions between sectors. About 30per cent of the dairy cooperatives are organized in a holding structure. At the same time only about 10per cent of the meat cooperatives use a holding structure. There are even stronger differences with regard to professionals on the board of directors. More than 20per cent of the meat cooperatives have

professionals serving on the board, while less than 3per cent of the wine cooperatives have professional managers. All sectors are rather similar in the way they organize their board structure. Across all sectors about 40–50per cent of the cooperatives have separated boards of directors and supervision. Dairy cooperatives base their decision on who serves as a director less frequently on expertise. Wine and dairy cooperatives use product representation only very seldom (~5per cent)while in cereals or fruit and vegetables this practice is much more common (<20per cent). Operation by professionals is relatively similar across sectors, while supervision is less common in fruit and vegetable cooperatives. Member councils are less common in wine and fruit and vegetables. All three variables on voting rules are more or less similar across sectors. About a quarter of the dairy cooperatives has subsidiaries – much more than all other sectors. Dairies in the sample also have relatively more members and higher turnovers. Dairies less frequently trade with non-members. Cereal cooperatives trade much more with non-members and less frequently demand exclusive member patronage. Both, different marketing pools and differentiated cost policies exist less frequently in dairies while fruit and vegetables cooperatives pay less frequently volume premiums.

Table 8: Mean, SD, N for Binary Variables by Sectors

Sector/Variable (Relative Frequency in per cent, N)	**Cereals (C)**	**Dairy (D)**	**Fruit and Vegetables (FV)**	**Wine (W)**	**Meat (M)**
holding	17.20^{D}, 93	29.84^{C}, 124	15.89, 107	14.89, 47	10.98, 82
bodprofessionals	20.69, 87	16.66, 120	12.50, 104	2.13^{M}, 47	20.51^{W}, 78
bodseperate	52.87, 87	47.22, 108	37.25, 102	39.58, 48	49.35, 77
expertise	87.96, 83	64.91$^{FV, M}$, 114	81.00^{D}, 100	71.11^{M}, 45	83.78$^{D, W}$, 74
regrepresent	43.42, 76	42.34, 111	33.68, 95	29.27, 41	32.84, 67
prodrepresent	22.37^{D}, 76	5.41$^{C, FV, M}$, 111	27.08^{D}, 96	4.88, 41	14.71^{D}, 68
operationprofessionals	59.49, 79	61.21, 116	65.22, 92	59.52, 42	55.55, 81
supervision	51.72, 87	57.85, 121	37.25$^{W, M}$, 102	56.82^{FV}, 44	55.00^{FV}, 80
outsiderssuperboard	30.00, 50	33.82, 68	22.22, 45	19.23, 26	32.69, 52
council	17.44, 86	21.93, 114	7.07^{M}, 99	11.63, 43	19.74^{FV}, 76
votingomov	83.95, 81	78.70, 108	79.31, 87	86.49, 37	79.45, 73
votingproplimit	30.77, 13	52.63, 19	60.00, 20	50.00, 8	37.50, 8
votingprop	17.46, 63	20.27, 74	15.28, 72	12.00, 25	25.00, 52
proportion	40.00$^{FV, W}$, 20	51.52^{FV}, 33	73.08^{C,D}, 26	80.00 ^{C}, 10	47.62, 21
subsid	13.79^{D}, 87	24.56^{C}, 114	8.74, 26	6.52, 46	6.67, 75
tradenonmembbin	77.50, 80	42.11$^{FV, M}$, 95	64.13^{D}, 92	52.77, 36	57.53^{D}, 73
exclusivetrade	20.48$^{D, FV, W, M}$, 83	49.12 $^{C, W}$, 114	46.39$^{C, W}$, 97	67.44 $^{C, D, FV}$, 43	48.53 ^{C}, 68
differentmkt	72.29, 83	55.05$^{FV, W}$, 109	76.53^{D}, 98	80.00^{D}, 45	52.70, 74
productgroup	0, 22	20.59, 34	0, 35	0.00, 16	0.00, 28
regiongroup	1, 21	97.56, 41	92.31, 13	100.00, 10	100.00, 12
volpremium	52.24, 67	38.39, 112	18.82$^{W, M}$, 85	38.10^{FV}, 42	31.51^{FV}, 731
diffcost	50.79, 63	34.69$^{FV, W}$, 98	49.35^{D}, 77	52.50^{D}, 40	45.16, 62

*Source:*own calculations

Note: Superscripts C, D, FV, W, and M denote pairwise statistical significant differences of proportions on the 5per cent level for the sectors Cereals, Dairy, Fruit and Vegetables, Wine, and Meat, respectively.

5 Discussion

The log of turnover per member is a quite general approximation for a cooperative´s performance. A combination with more qualitative statements about member satisfaction, their capital contribution or their contracting behaviour and loyalty would perhaps allow us to better capture the nature of the cooperative firm when speaking about performance vis a vis other firm types.

Among sectors, we have statistically tested differences in means. For comparisons between countries, we refrained from such a practice. Such a procedure would have resulted in more than 200 pair-wise tests for more than 30 variables – amounts of data that cannot be meaningfully interpreted and discussed within the scope of this report. The same holds true for regional differences, as this would have resulted in more disaggregated data. In addition this would have resulted in only one or two cooperatives per region. Statistical tests with such a small number of observations will not yield useable results.

Furthermore, in some cases readers may have easily inferred from the presented data to a particular enterprise (as it might be the only one in that region) which would violate statistical ethics, e.g., EUROSTAT conventions that industry data can only be presented if it is aggregated in groups of six or more. In the descriptive part we, thus, focused on comparisons between sectors. This may sometimes appear misleading, as sectors are likely to be confounded with countries and regions. We keep this in mind when we present results and considered carefully that true sector differences also contain geographical and political elements.

6 Conclusions

6.1 A multi-criteria perspective on cooperatives

Our brief literature review on internal governanceshows how and why cooperatives differ in terms of governance. The general literature on corporate governance gives important insights on governance but cannot fully capture the specific nature of the cooperative firm. The application of a multi-criteria perspective on cooperative governance produces a number of research questions as well as a list of working hypotheses on the relation between internal governance variables and cooperative performance analysed in this study.

6.2 Characterizing the EU-27 sample of cooperatives

Statistical analysis allows characterising the contemporary cooperative system and its internal governance features in the EU-27: Cooperatives in the EU-27 are still serving a mainly regional membership. In general, their activities are rather specialized. Most of them trade predominately with members. About 90 per cent of the membership are "active members. Roughly a fifth of the cooperatives in the sample uses a holding structure. In only 14 per cent of the cooperatives, professionals serve on the board of directors. Decisions on who is eligible to serve on the board of directors are mostly based on expertise. In more than 60 per cent of all cooperatives the operational business is run by professionals. Cooperative supervisory boards contain outsiders (non-members) in about a quarter of the cases. About 80 per cent of all cooperatives in the sample still used the one member one vote principle. Only 10per cent of the sample use proportional voting and another 10 per cent use proportional voting with an upper limit on voting powers. Around 12 per cent of the cooperatives have subsidiaries. More than half of the cooperatives do engage in trade with non-members, while about 40per cent of the cooperatives have a membership that exclusively deals with those cooperatives.

6.3 Internal governance and performance

The regression analysis of the relation between internal governance and cooperative performance resulted in a few most interesting insights: Our models suggest a strong rather negative effect of size (measured in number of members) on turnover per member. Cooperatives operating as a holding – in contrast to a single legal structure – and cooperatives where operational business are controlled by professional managers, perform better. In contrast to the findings of the corporate governance literature on investor-owned firms in our cooperative sample a positive effect of board size can be observed. A larger board increases performance – despite the theoretically higher costs of coordination and decision-making. In line with the general literature is that outsiders serving on the supervisory board also have a positive effect. In addition, we find a negative effect of regional representation as one out of three criteria for serving on the board of directors, while positive signs of the coefficients of expertise and product representation prevail. These findings show that professional structures and policies regarding board composition and member incentives affect performance. At the same time by comparing with the literature we can show how cooperatives differ from other types of firms in important aspects. In our sample the typical attributes of "professionalizing cooperatives" like for example flexible voting rights, professional management, supervision by outsiders, and selection of directors based on expertise or product representation as opposed to regional origin, all have a positive effect on cooperative performance. We conclude that our results support the relevance of our general study concept in which the institutional environment together with the position in the value chain and internal governance determine crucial factors of success and therewith entry points for supportive policies. One question that emerges is how to judge the ongoing

concentration processes in the cooperative sectors. Our results indicate that further concentration may fail to produce economically healthy structures. In this area, we clearly see the need for further research.

6.4 Sector characteristics of internal governance

Looking at the differences in proportions between sectors also gives some interesting insights. Sectors widely differ in how they professionalize their board structures. For example, more than 20per cent of the meat cooperatives have professionals serving on the board, while less than 3per cent of the wine cooperatives have professional managers.

In many aspects the dairy sector significantly differs from other sectors. For example the highest amount of cooperatives organized in a holding structure can be found in the dairy sector. Structure-strategy considerations known from the theoretical literature may explain this (Nilsson 1999).An ever concentrating market, a history of intense mergers, competitive pressure and the need to realize scale economies may partly explain this sector specific phenomenon. Dairies also structurally differ from the other sectors. A quarter of the dairy cooperatives has subsidiaries. The increasing importance of internationalization for this sector can explain this difference (Harte and O´Connel 2007).Dairies in the sample also have relatively more members and higher turnovers and they do less frequently trade with non-members, while for example cereal cooperatives trade much more with non-members and less frequently demand exclusive member patronage. Different marketing pools and differentiated cost policies exist less frequently in dairies while for example the fruit and vegetables cooperatives pay less frequently volume premiums.

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