On the Nature of a Cooperative: A system of Attributes Perspetives

Feng L. and Hendrikse G.

Paper prepared for presentation at the 12th EAAE Congress
'People, Food and Environments: Global Trends and European Strategies',
Gent (Belgium), 26-29 August 2008

On the Nature of a Cooperative: A System of Attributes Perspective

Feng L. and Hendrikse G..

Rotterdam School of Management, Erasmus University, Rotterdam, the Netherlands

Abstract: In the 1950s and 1960s there was a debate about the nature of an agricultural cooperative: the cooperative as extension of the farm, the cooperative as vertical integration or the cooperative as a firm. We revisit this debate with various concepts from the theory of the firm that have been formulated since 1990. Two concepts shed light on this debate: the enterprise as a system of attributes and the delineation of a governance structure in terms of ownership rights, control rights and income rights. We argue that viewing the cooperative as a system of attributes integrates these three views. It emphasizes that a cooperative is a firm in itself, with many independent input suppliers as owners. The feature of many input suppliers as owners implies that the behavioral differences between a cooperative and an investor owned firm have to be addressed by highlighting the unique aspects of the stakeholder owning the enterprise.

I. INTRODUCTION

A widespread and important governance structure in many agricultural markets is the cooperative. For example, the European Union has 132,000 cooperatives with 83.5 million members and 2.3 million employees in 2001 (Commission of the European Communities 2001), the United States of America has 47.000 cooperatives with 100 million members in 2001 (USDA 2002) [1], and China has 94,771 cooperatives with 1,193 million members in 2002 (Hu 2005). In the EU, cooperative firms are responsible for over 60% of the harvest, handling and marketing of agricultural products, with a turnover of approximately 210,000 million euros (Galdeano et al 2005).

A cooperative is formed by many independent farmers who agree to set up a downstream enterprise and operate it jointly as an integral part of their individual farms. An agricultural producer cooperative, for instance, is a processor collectively owned by many independent farmers as input suppliers. Members grow produce and deliver them to the downstream stage. Then the downstream stage either grades, packages, handles, and stores the products together; or bargains, negotiates and contracts as a big unit with processors or retailers with respect to the processing, shipping or marketing of the output. Members, on the one hand, act as the patrons of the cooperative by providing inputs. They are entitled to priority access so that the processor is not allowed to reject their produce. On the other hand, they collectively possess residual rights over the cooperative and make vital decisions upon important issues regarding it.

An essential feature of the cooperative is the ownership by the members over the downstream assets. Members not only hold formal authority and take responsibilities over the cooperative, but also share its costs and revenues. Part of their assets and activities are combined and coordinated at the downstream enterprise. Meanwhile, they are independent in the sense that they do not necessarily collaborate with each other on other aspects of their individual farm enterprises. They maximize independently the profits of their own farm enterprises.

The nature of an agricultural cooperative has been debated ever since the 1950s and 1960s. There is a substantial literature on the issue and significant contributions have been published (Robotka 1947,

1 Among the 47.000 cooperatives, there is a considerable number of credit cooperatives.

Phillips 1953, Savage 1954, Trifon 1961 and Helmberger & Hoos 1962 among others). Three views can be distinguished. The extension of the farm view maintains that the cooperative is just an association of firms, not a new firm per se; it has no entrepreneurial unit (Phillips 1953). With this conception of the cooperative, all of the attention is centered on (the entrepreneurs of) the member firms. The interdependencies between the various activities in the portfolio of a farm enterprise and upstream externalities are thus highlighted. The firm view advocates that a cooperative is itself a business enterprise and an economic entity, and a new decision-making body is created by the formation of a cooperative (Robotka 1947, p103; Helmberger & Hoos 1962, p290). It looks upon a cooperative as a special type of firm capable of making entrepreneurial decisions just as any private corporation (Savage 1954). Both upstream and downstream externalities are involved in the operation of a cooperative. The vertical integration view advocates that member firms are integrated in the sense that several stages in the production process are brought under one entrepreneurial control (Phillips 1953, p79; Sexton 1986). Therefore the interaction and vertical relationship between two stages of production (e.g., upstream farm and downstream processor) becomes the focus of analysis. Table 1 summarizes these three views of the nature of a cooperative.

Table 1. Three views on the nature of a cooperative

	Extension of the farm view	Vertical integration view	Firm view
The nature of a cooperative	An association of firms, not a new firm	Several production stages brought under one entrepreneurial control	A business enterprise, a new decision making body
Focus of analysis	The member firms	The interaction between the members and the cooperative firm	The cooperative firm

The emergence in the late 1980s and the 1990s of new concepts in the theory of the firm may provide an opportunity to reconsider the nature of cooperative. Applying new concepts to cooperatives may result in new propositions about cooperatives. These propositions can be used descriptively, i.e. confront them with data, or they can be used prescriptively, i.e. formulate advice for either cooperatives or public policies. Cooperatives may benefit because these concepts may be helpful in addressing a variety of issues, like member commitment, transfer prices, sourcing, restructuring, and diversification. It may assist in formulating public policies, particularly competition policies that either grant cooperatives a special status, or classify them as anti-competitive in terms of a cartel or a vertical restraint. Recent discussions on the legal status of cooperatives in the European Union are an illustration (Menard 2007). Therefore, we revisit this debate with concepts that have been formulated since 1990.

Two concepts are highlighted: the enterprise as a system of attributes and the delineation of a governance structure in terms of ownership rights, control rights and income rights. The system of attributes view proposes that organizations are composed of attributes. Each attribute represents a certain aspect of the organization. The systematic effects are stressed because the payoff associated with the level of one attribute depends on the level of all the other attributes. Attributes are therefore interdependent. By characterizing the cooperative as a system of attributes we integrate the three positions taken in the debate. It emphasizes that a cooperative is an enterprise in itself with a specific group of stakeholders as owners. It is a governing body of its own. In other words, the processing stage of production of a producer cooperative should be at the center of the analysis in our view, with a special role assigned to the unique aspects characterizing the members, i.e. highlighting the transaction relationship as well as the investor relationship of the farmers with the cooperative.

In what follows, we confront the debate regarding the nature of the cooperative with the conceptual developments in the theory of the firm of the last 20 years. Section 2 briefly reviews the old debate. Section 3 formulates two conceptual developments in the theory of the firm. Section 4 readdresses the debate using these concepts. Section 5 concludes with formulating directions for further research regarding cooperatives.

II. THE DEBATE ON THE NATURE OF A AGRICULTRURAL COOPERATIVE

Three positions of contention are distinguished in the literature on the nature of an agricultural cooperative: the cooperative as extension of the farms (Trifon 1961; Staatz 1983, Sexton 1984, Menard 2007), as vertical integration (Sexton 1986), or as a firm (Robotka 1947, Savage 1954, Helmberger & Hoos 1962). The core of the contention is the analytical emphasis, should it be on the farms, on the processor, or on (the interaction of) both? Though some of the articles have features of various views to a different extent, we classify them according to their main positions.

Referring to a cooperative both as 'an extension of their entrepreneurial functioning' (p113) and as 'concerted integration' (p102), Robotka (1947) does not intentionally make a distinction between the cooperative's nature as 'vertical integration' or 'extension of the farm'. The non-profit feature of the cooperative provides support for the latter perspective, while the collective ownership of upstream farmers over downstream assets characterized in the article can be seen as an argument for the former position. What is more important is, however, his observation that 'a new economic entity emerges when a cooperative association is formed, because participants must agree to submit to group decisions questions relating to the activity being coordinated' (p113). This crucial last point leads us to classify this paper in support of the cooperative as a firm position.

Phillips (1953) is also equivocal on the distinction among the three positions. On the one hand, it mentions both 'concerted integration' (p85) and the analogy of a cooperative as a plant of a multi-plant firm (p75): 'The participating firms are ordinarily vertically integrated in the sense that the output of the joint plant is the raw product input of the individual plants of the participating firms – or alternatively, the output of the individual plants of the participating firms is the raw product input of the joint plant (p79)'; 'Such participating firms are integrated in the sense that several stages in the production process are brought under one entrepreneurial control (p79).' On the other hand, the article states that the cooperative is not a new firm (p75) based on the argument that a firm is not a firm unless it seeks profits for itself, which is an ex parte statement per se. Nevertheless, the arguments that 'The cooperative … has no entrepreneurial unit; its member units each have their entrepreneur' and 'the cooperative association consists of the sum of the multi-lateral agreements among the firms participating in the joint activity (p76)' emphasizes that the focus of analysis has to be on the farm enterprises. This is the extension of the farm position.

Phillips' focus on the farms was soon challenged by Savage (1954), a comment on Phillips' work, which considers a cooperative as a firm capable of making entrepreneurial decisions as any other private corporations. 'Though farmers own their cooperatives and control them in the broad sense of the word, they do not make all or most of the entrepreneurial decisions' (p531). 'The delegation of decision rights is the common practice of cooperative. The individual farmers pool certain of their entrepreneurial functions and in doing so they authorized a collective body to perform these functions for them. In the process the farmers create an agency and defer to it some of their individual prerogatives' (p532). Therefore it concludes that the cooperative should be seen as a 'going concern performing entrepreneurial functions delegated to them' (p532).

Helmberger & Hoos (1962) denies Phillips' analogy between a cooperative and a vertically integrated firm based on the argument 'when agricultural producers jointly undertake the creation of a cooperative association, they seek goods and services provided at cost' (p280), rather than a high return on their investments like investors in the usual type of business enterprise. Furthermore, the paper holds that the cooperative, in spite of its different intended objectives from an Investor owned firm (IOF), is a firm, a decision-making entity, given that the 'theory of the firm can be adapted to reflect the cooperative's peculiar economic nature' (p281).

While acknowledging that the cooperatives resemble to a certain extent the characteristics of a vertical integration, namely, their 'subjugation to external economic control' (p216) and the absence of a profit-seeking purpose, Trifon (1961) stresses that the plurality of interests of the members distinguishes the cooperatives from vertical integration, one with a single locus of profit maximization. It points out that the cooperative, as an aggregate of economic units, is 'functioning only as a branch or part of the associated economic units' (p215-216), which is clearly the extension of the farm view.

Staatz (1983) highlights also the members by addressing the issue of 'group choice in a cooperative when members have at least partially divergent goals and engage in strategic behavior' (p1084). Cooperative decision making in the context of heterogeneous membership is conceptualized as n-person cooperative game. This is again the extension of the farm view.

Sexton (1984) employs also the extension of the farm view and defines an agricultural producer cooperative as an association of independent members who jointly own a downstream processor. Sexton (1986), however, considers a cooperative as vertical integration in the marketing chain in light of their functional similarities. In his focus on the income rights aspects of cooperatives, he characterizes a cooperative as 'a horizontal club organized to accomplish vertical integration' (p215). The similarity with Staatz is that he adopts also the method of cooperative game theory.

In his article that investigate the role of management behavior in agricultural cooperative, Cook (1994) uses the definition of a cooperative by the U.S. Department of Agriculture's Agricultural Cooperative Service: 'A cooperative is a user-owned and controlled business from which benefits are derived and distributed equitably on the basis of use.' Implicitly it regards a cooperative as a firm.

The nature of a cooperative continues to receive attention nowadays. A recent work by Menard (2007) categorizes the cooperative as a hybrid. According to this paper, what distinguishes a hybrid from an integrated firm is that 'they maintain distinct and autonomous property and decision rights regarding most assets' (p5). Yet 'they simultaneously share some strategic resources, which require a tight coordination going far beyond what the price system can provide and thus makes them different from a pure market arrangement' (p5). Focusing all attention on the transactions and interactions between the cooperative firm and its members, the article can be viewed as supporting the extension of the farm view.

III. Conceptual Developments Regarding the Nature of the Firm

This section formulates two conceptual developments regarding the nature of the enterprise since the late 1980s. Subsection 3.1 addresses the enterprise as a system of attributes, while the delineation of a governance structure in terms of ownership rights, control rights and income rights is addressed in subsection 3.2.

A. System of attributes

The enterprise as a system of attributes is introduced by Milgrom and Roberts (1990). It proposes that an organization is composed of interdependent and interactive attributes and can therefore be perceived as a system. An organization consists of many attributes. An attribute represents a certain aspect of an organization, like an organizational department, an activity undertaken or a policy carried out by the organization. Examples of attributes are production technology, marketing, sourcing, logistics, communication, personnel, accounting, financing, and authority and reward scheme. An attribute can take multiple values such as "big" and "small", "weak" and "strong," or "rigid" and "flexible". Figure 1 provides an illustration of a system with three attributes. It can represent, for instance, a dairy cooperative characterized by three attributes, x1 as the production technology (geared towards 'bulk' or 'specialty' products), x2 as sourcing ('make' or 'buy'), and x3 as financing ('retained earnings' or 'certificates').

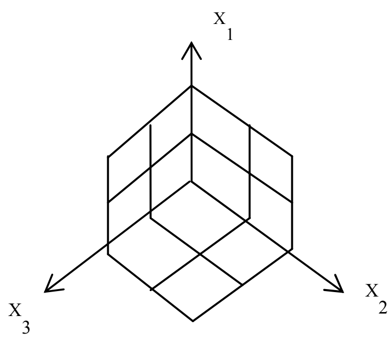

Fig.1 A System of Attributes

The attributes are related to each other and have therefore to be aligned. They form a system because the payoff associated with the level of one attribute depends on the level of all the other attributes. If the value of any attribute is changed, then the marginal return to increase in any or all of the remaining activities changes. The complementarity among group of activities is thus at the center of this perspective. Exploiting these complementarities requires coordinated action between the separate attributes.

B. *Governance*

Governance concerns the organization of transactions, whereas a governance structure consists of a collection of rules structuring the transactions between the various stakeholders. A standard way of delineating a governance structure is to distinguish income and decision rights (Hansmann 1996). 2 Income rights address the question 'How are benefits and costs allocated?'. Income rights specify the rights to receive benefits and obligations to pay costs associated with the use of an asset, thereby creating the incentive system faced by decision makers. They will be reflected in the composition of costs and payment schemes. Important themes regarding income rights are payment schemes, cost allocation schemes, the compensation package for the CEO and board of directors, and the effects of horizontal as well as vertical competition.

The analysis of income rights/incentives is in the realm of complete contracting theory in the form of agency relationships (Hendrikse 2003). The working hypothesis is that everything that is known, can and will be incorporated in the design of optimal remuneration contracts without costs (Holmstrom 1979 and 1982).

Decision rights in the form of authority and responsibility address the question 'Who has authority or control (regarding the use of assets)?'. The organizational chart describes roughly the formal structure, and can be represented by decision rights. Decision rights concern all rights and rules regarding the deployment and use of assets. They specify who direct the firm's activities, i.e. the allocation of authority. Important themes regarding authority are its allocation ('make-or-buy' decision), formal versus real authority, relational contracts, access, decision control (ratification, monitoring), decision management (initiation, implementation), task design, conflict resolution, and enforcement mechanisms. A recent development is that decision rights are distinguished into ownership rights and control rights (Baker et al. 2006).

Incomplete contracting theory addresses decision rights / authority (Grossman and Hart 1986 and Hart and Moore 1990). The starting point is that the design of contracts is costly and contracts are in general incomplete, due to the complexity of transactions or the vagueness of language. Incomplete contracts allocate decision power in situations left open by formal (incentive) contracts. The focus is on non-contractible actions. The incompleteness of contracts is completed by allocating authority to somebody to decide in circumstances not covered by the contract. Authority has no meaning in a complete contracting setting because everything is covered in the contract.

IV. REVISITING THE DEBATE

This section readdresses the debate about the nature of the cooperative by using the concepts of the This

[2] McAfee (2002) uses the terms incentives and authority.

section revisits the debate about the nature of the cooperative by using the concepts of the previous section. The articles in section 2 can be easily disqualified when the focus is entirely on the formal models presented. They are neo-classical, production function models. These models are valuable in a market context in order to determine demand and supply relationships, while the models by Staatz (1983) and Sexton (1986) are geared towards cost allocation issues. 3 These models, except for Menard (2007), are nowadays considered to be models about income rights.4 It is hard to distinguish the three perspectives regarding cooperatives (vertical integration, extension of the member farms, enterprise) when only an income rights perspective is taken. The focus will therefore be on the ideas and insights expressed in these papers.

The strong point of the extension of the farm view is that it gears attention towards the portfolio of farm activities and assets. The investment decisions by farmers will be guided by bringing the farm to value and will therefore have an impact on the decisions of the cooperative. However, the downstream stage of production is neglected. This view does not survive the Savage critique / requirement that a cooperative is much more than a formalization of cooperation. Rather, it is a special governance structure regarding 'a going concern'. The control rights concerning the cooperative are largely delegated to the downstream party, i.e., the professional management of the cooperative enterprise, even though the ownership rights are still in hands of the members.

The vertical integration view is also not without problems. The main problem is that it considers solely the (attribute covering the) exchange between the upstream farms and the downstream processor. It may therefore neglect the impact of the multiplicity of the upstream attributes on the exchange relationship with the cooperative. Member firms transfer only the decision rights regarding a subset of their attributes to the cooperative. Meanwhile they are autonomous economic units that maintain distinct property rights and their associated decision rights on other attributes. Robotka (1947, p105-106) recognizes this important feature of cooperatives when he writes 'Members form a cooperative by reaching mutual agreements involving certain activities that participants had previously performed individually. On those jointly activities members of a cooperative have to function cooperatively by voluntarily choosing their individual values of the related attributes in accordance with others. Instead of making their entrepreneurial decisions on their own, the members of a cooperative pool together part of their decision rights and surrender part of their sovereignties to group decisions regarding to the joint activities.'

Moreover, vertical integration is characterized in the literature generally by the concepts such as common governance and leadership, joint planning, centralized decision making, and transfer of decisions to a distinct entity in charge of coordinating their actions. The extent to which a cooperative is vertically integrated depends on the closeness between the allocation of ownership rights and the allocation of control rights (Menard 2007). As a matter of fact, the intensity of members' control over the activities of the cooperative is not as high as vertical integration would entail, because the decision rights are to a large extent delegated to the downstream processor by the members.

The separation of ownership and control in cooperatives is in line with Hansmann's observation (1988, p269) that 'often the persons who have the

---

[3] We like to express our appreciation for two models represented in the articles highlighted in section 2. First, the way Trifon solves his model is nowadays characterized as Nash equilibrium. In 1961 he states already that '… "equilibrium" … is marked by the fact that no individual would independently attempt further adjustments once the state has been reached.' (p222) and solves his model according to this recipe. Second, the well known model by Sexton uses, like the seminal model of Hart and Moore (1990) in the incomplete contracting literature, cooperative game theory in order to address vertical integration. However, there are at least three differences. First, the model of Sexton does not specify a downstream party. Second, Sexton uses one cooperative game to analyse various governance structures, while Hart and Moore specify a different cooperative game for each governance structure. Finally, the focus of Sexton is on different revenue and cost allocation schemes, i.e. income rights, while Hart and Moore use cooperative game theory to determine the bargaining strength of each party in each governance structure in order to determine the efficient allocation of authority, i.e. decision rights.

[4] There are three main economic approaches towards modelling cooperatives (Hendrikse 2003 and Menard 2007): the production function approach, the complete contracting / principal-agent approach and the incomplete contracting / transaction costs economics approach. The first two approaches address income rights, while the third approach deals with issues regarding the allocation of ownership and control rights.

formal right to control the firm- which typically takes the form of the right to elect the firm's board of directors- in fact exercise little effective authority by this mean over the firm's management'. He argues (on p275) that, where ownership of the firm is shared among a large class of patrons, like in the cooperative, 'highly participatory forms of decision making will not be efficient. Rather, in such situations, it is often more efficient, to assign only the formal right of control to persons who are not in a position to exercise that right very effectively.' 'A firm of any substantial size and complexity needs a hierarchical form of organization for decision making, which means that the firm must have a single locus of executive power with substantial discretion and authority.' This implies that letting members control and manage the cooperative is not efficient. In cooperative situations, decision rights will generally be exercised by the firm's owners indirectly through voting for the board of directors, who then select their own presiding officers and hire a manager or CEO to manage the cooperative. Members' direct participation in decision making will be confined to the approval of major structural changes, such as merger and dissolution. The hired management of the cooperative is in charge of the daily affairs most of the time (Hendrikse 2005).

Notice that these ideas are also in line with Barton (1989) and Baker et al. (2006). Barton (1989) distinguishes a cooperative from other businesses by three principles: user-owner principle, user-control principle, and user-benefits principle.[5] He views as fundamental to the governance of a cooperative that these rights are possessed simultaneously by the same party, i.e., the users (or patrons) of a cooperative. Members vote only on proposed policies regarding key issues, 'even though they delegate most management decisions to the board.' (Barton, 1989, p15). Baker et al. argue that firms can and do transfer control across fixed firm boundaries without changing asset ownership.

Our position is that the firm from a system of attributes perspective is able to integrate the three views discussed in the above debate by considering the cooperative as a system of attributes. Looking upon a cooperative as a system, as proposed by the firm view, allows to represent the features of the plurality of interests of the extension of the farm view and the transaction relationship between the member and the cooperative of the vertical integration view. A graphic illustration of a cooperative consisting of two members and one processor is provided in figure 2. The essence of the agreement members enter into involves a commitment on the part of each of them to submit certain issues to group decisions (Robotka 1947). Each of these member firms is an independent and autonomous organization in itself. A farmer is represented in figure 2 by a system of three attributes. For example, a dairy farmer may be characterized by the attributes x1 as his wheat production ('yes' or 'no'), x2 as his dairy transaction relationship with the dairy cooperative ('delivery requirement' or 'no delivery requirement'), and x3 as ownership of the dairy cooperative ('member' or 'no member'). The boundary of the cooperative is visualized by the rectangle. Within it lie the processor with all its attributes and two attributes of both farmers, i.e. the transaction and ownership attributes.

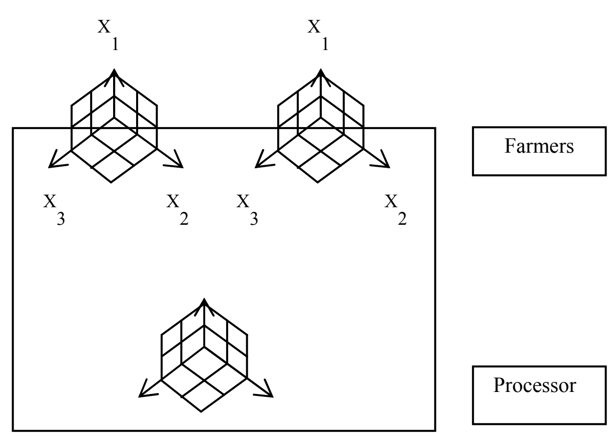

Fig. 2 A Cooperative

We further contrast the three positions of a cooperative in terms of the number of attributes involved in upstream and downstream stages in table 2. From the perspective of the extension of the farm view

[5] These principles seem to have been formulated independently from the incomplete contracting literature, while they are very similar to the distinction in terms of ownership rights, control rights, and income rights by Baker et al. (2006).

and the vertical integration view, the downstream stage of a cooperative consist of only one attribute, i.e., the processing of farm products. Their difference lies in their characterizations of the upstream attributes. The extension of farm view emphasizes more on the upstream attributes and their impact on the downstream stage of production. From the perspective of the firm view, the cooperative firm is a systems consisting of various attribute as shown in figure 2. The number of upstream attributes is determined by the number and heterogeneity of its members. A typical cooperative with at least two heterogeneous members involves at least two upstream attributes, while a simple cooperative with only one member, as depicted in figure 1, has one upstream attribute involved.

Table 2 Characterizing the three views in terms of the number of attributes

No. of upstream attributes / No. of downstream attributes	≥ 2	1
≥ 2	Firm view (Figure 2)	Firm view (Figure 1)
1	Extension of the farm view	Vertical integration view

These views regarding a cooperative can also be distinguished by the upstream and downstream externalities as in table 3. The vertical integration view neglects externalities at both upstream and downstream. The extension of farm view calls for attention to the externalities of farm enterprises, while the firm view entails the externalities at the downstream cooperative.

Table 3 Characterizing the three views in terms of externality

Upstream externality / Downstream externality	Yes	No
Yes	Firm view (Figure 2)	Firm view (Figure 1)
No	Extension of farm view	Vertical Integration view

The separation of ownership rights and decision rights, formal and real authority, which is prominent in a cooperative in fact also prevails in IOFs. A standard business corporation is normally owned by investors, persons who lend capital to the firm, and is in a sense nothing more than a special type of producer cooperative -- a lenders' cooperative, or capital cooperative (Hansmann 1988). A typical IOF assign its formal rights of control to its owners, capital providers, while the real authority is usually exerted by the hired management of the firm. The income rights allocation in cooperatives and IOFs are also essentially the same. Benefits or losses of the cooperative are distributed to its users on the basis of their use (Barton 1989). At regular intervals, profits or losses are distributed pro rata among the members according to the amount of their patronages. Similarly, an IOF's net earnings and losses are distributed as well pro rata among the investors according to the amount they have lent. From the perspective of decision rights and income rights allocation, a cooperative is comparable to a conventional firm, which is always analyzed as an autonomous entity, rather than the extension of the investors or investing firms.

Despite of the similarity, a cooperative is not a conventional firm. In order to highlight the difference between a cooperative and an IOF, we present in figure 3 an investor owned dairy enterprise. The difference with figure 2 is that the investors have only one attribute involved with the dairy enterprise. The delivery of milk is not a relevant attribute in the portfolio of activities or assets of the investors, i.e. x2 has to represent another aspect of the portfolio of activities or assets of the investor.

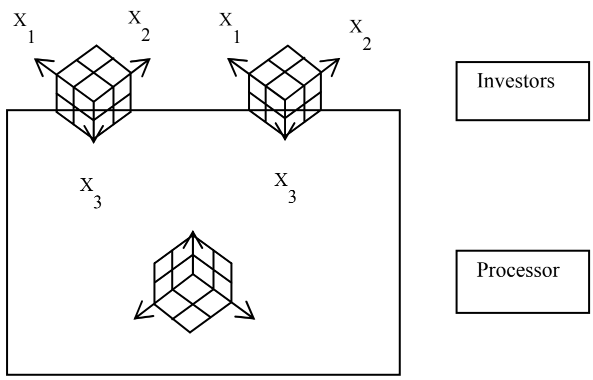

Fig. 3 Investor Owned Firm

Another way to clarify our position on the nature of a cooperative is to follow Bonus (1986) in comparing a franchise with a cooperative. Two dominating features of a franchise are its brand and business format, and they determine the activities of the franchisees. The relationship between members and the cooperative is much looser than the relationship between franchisees and the franchise. A farmer is usually a member of various cooperatives due to the various crops grown at the farm, while a franchisee does not operate in multiple franchise systems. 6 In figure 2 we have therefore presented the core of the farm as a system of attributes outside the box demarcating the cooperative, i.e. a farm is a sovereign economic unit.7 Applying the terminology of Williamson (1991), our position can be characterized as a cooperative being a hierarchy.8

Summarizing, we integrate the three positions in the debate on the nature of a cooperative by considering a cooperative as a system of attributes. The main feature is that a cooperative is a firm, conceptualized as a system. The system consists of attributes capturing on the one hand the processor as a system and on the other hand that many farmers collectively own the cooperative enterprise, i.e. the vertical integration aspect, and that usually multiple attributes of a farm enterprise are involved, i.e. the ownership of the cooperative assets and the transaction relationship with it.

V. CONCLUSIONS AND FURTHER RESEARCH

We reviewed a debate about the nature of a cooperative originating more than 50 years ago. The literature is classified in terms of three views: a cooperative as an extension of the farm, as vertical integration, or as a firm. This article readdress this debate by using modern concepts of the theory of the firm, like the firm as a system of attributes and the delineation of a governance structure in terms of ownership rights, control rights, and income rights. We define a cooperative as a firm collectively owned by many independent farmers as input suppliers or buyers. We emphasize that it is to be viewed as a firm, characterized by the owners being either input suppliers or buyers.

The core of an agricultural cooperative is member control over the infrastructure at the downstream stage of production. It provides members with market power and access to input/output markets. Furthermore, a cooperative has a member, rather than value added, orientation. It mainly serves member interests, rather than just Return On Investment at the downstream stage. Our view entails some preferences about future research regarding cooperatives. Three of these preferences are formulated. Firstly, future research may pay more explicit attention to what are the unique aspects of the members owning the cooperative, compared with investors as owners of an IOF. A cooperative is supposed both to serve member interests and to generate maximum value in processing. Nearly always being user oriented (Barton 1989), a cooperative is designed for the former task, and because the organizational structure required for the two tasks is different, it is expected to have an impact

[6] One of the terms included in many franchise contracts is ‘passive ownership’ (Brickley 1999). This contract provision restricts the franchisee from allocating effort to outside activities.

[7] The same applies of course to the investors owning an investor owned firm.

8 Williamson distinguishes the governance structures market, hybrid and hierarchy. Bonus (1986, p335) summarizes his position as ‘The cooperative association is a hybrid organizational mode …’, although he states later on the same page that ‘… a firm jointly owned by the holders of transaction-specific resources …’. Hendrikse and Veerman (2001) classify a cooperative as a hierarchy.

on the latter task.[9] An example of a unique aspect of members as owners of a cooperative having an impact on generating maximum value in processing is the single origin constraint, i.e. a cooperative will never abandon the inputs of its members. This may result in a different product portfolio of cooperatives compared to IOFs (Hendrikse and Smit 2007).

Secondly, other attributes of the upstream farms may have influences on the decisions of a cooperative. Farmers are usually a member of various cooperatives. These cooperatives may be one-product cooperatives, or multiple-product cooperatives. For example, sugar cooperative Royal Cosun processes sugar beets, but also other vegetables. Some of their members have a transaction and investor relationship with Royal Cosun regarding the sugar beets, while they only have a transaction relation with Royal Cosun, i.e. themselves, regarding the other vegetables. The desirability of this arrangement is not clear (Dixit 1997 and 2002). Another illustration is a feature of cooperatives known as the portfolio problem. An important consideration of members in the diversification decision of a cooperative may be spreading of risks of their individual farm portfolio, which may result in members '… will pressure cooperative decision makers to rearrange the cooperative's investment portfolio, even if the reduced risk portfolio means lower expected returns.' (Cook 1995, p1157). It implies that a cooperative diversifies most likely in a different way than an IOF. More information about the relationship between the farm portfolio of members and the product portfolio of a cooperative seems therefore desirable. Census data may shed light on this relationship.

Third, collective ownership among many growers requires a method for collective decision-making. Most commonly a democratic decision-making procedure of some sort is employed. Votes are usually weighted by volume of patronage, although some cooperatives adhere to a one-member-one-vote scheme. A problem with these collective decision-making procedures is that they may yield decisions that are (collectively) inefficient in the sense that they do not maximize aggregate member surplus (Hart and Moore 1996). It entails that decision power is to a certain extent allocated independently of quantity and / or quality. Collective ownership of the downstream cooperative by many upstream farmers seems to require therefore that a model specifying at least two members and a downstream party. This is a necessity to investigate the plurality of interests prevailing in cooperative decision making.

[9] We agree with Sexton (1984, p429) when he writes 'Labor-managed firms are closely analogous to agricultural marketing cooperatives. Cooperatively processing and marketing the raw labor input is conceptually very similar to processing and marketing a raw agricultural commodity such as milk or grain.' However, identifying important similarities may neglect important differences. Pencavel (2001) is an eloquent overview about the unique aspects of labor compared to other inputs.

REFERENCES

1. CEC-Commission of the European Communities (2001), Report from the Commission to the Council on the state of implementation of Regulation (EC) No 2200/96 on the common organization of the market in fruit and vegetables. Brussels, 24.01.2001 (COM(2001) 36 final)
2. U.S. Department of Agriculture, 2002, Agricultural Cooperatives in the 21st Century, Rural Business-Cooperative Service, Cooperative Information Report 60, Washington DC.
3. HU Y. (2007). "Essays on the Governance of Agricultural Products". PhD thesis, RSM Erasmus University
4. GALDEANO E., CESPEDES J., RODRIGUEZ M. (2005). "Productivity and Quality –Environmental Changes in Marketing Cooperatives: An Analysis of the Horticultural Sector". Paper presented at the XIth Congress of the European Association of Agricultural Economics, Copenhagen, 24-27 August 2005
5. ROBOTKA F. (1946). "A Theory of Cooperation". Journal of Farm Economics, 29(1): 94-114
6. PHILLIPS R. (1953). "Economic Nature of the Cooperative Association". Journal of Farm Economics, 35: 74-87
7. SAVAGE J.K. (1954). "Comment on Economic Nature of the Cooperative Association". Journal of Farm Economics, 36: 529-534

8. TRIFON R. (1961). “The Economics of Cooperative Ventures: Further Comments”. Journal of Farm Economics, 43: 215-235

9. HELMBERGER P., HOOS S. (1962). “Cooperative Enterprise and Organization Theory”. Journal of Farm Economics, 44: 275-290

10. SEXTON R.J. (1986). “The Formation of Cooperatives: A Game- Theoretic Approach with Implications for Cooperative Finance, Decision Making, and Stability”. American Journal of Agricultural Economics, 68: 214-25

11. MENARD C. (2007). “Cooperatives: Hierarchies or Hybrids?” In *Vertical Markets and Cooperative Hierarchies* K. Karantininis and J. Nilsson Ed. S

12. STAATZ J.M. (1983). “The Cooperative as a Coalition: A Game-Theoretic Approach”. American Journal of Agricultural Economics, 65: 1084-1089

13. SEXTON, R.J. (1984) Perspectives on the Development of the Economic Theory of Cooperatives. Canadian Journal of Agricultural Economics, 423-436.

14. COOK M.L. (1994) The Role of Management Behavior in Agricultural Cooperatives. Journal of Agricultural Cooperatives, 9: 42-58.

15. MILGROM P.A., ROBERTS J. (1990). “The Economics of Modern Manufacturing: Technology, Strategy, and Organization”. American Economic Review, 80(3): 511-528

16. HANSMANN, H. (1996). *The Ownership of Enterprise*. The Belknap Press of Harvard University Press, Cambridge, MA/London

17. MCAFEE R.P. (2002). *Competitive Solutions*. Princeton University Press

18. HENDRIKSE G.W.J. (2003). *Economics and Management of Organizations*. McGrawHill

19. HOLMSTROM B.R. (1979). “Moral Hazard and Observability”. Bell Journal of Economics, 10(1): 74-91.

20. HOLMSTROM B.R. (1982). “Moral Hazard in Teams”. Bell Journal of Economics, 13(2): 324-340

21. BAKER G., GIBBONS R, MURPHY K. (2006). “Contracting for Control”. Unpublished manuscript, University of Southern California

22. GROSSMAN S.J., HART O.D. (1986). “The Costs and Benefits of Ownership: a Theory of Vertical and Lateral Integration”. Journal of Political Economy, 94(4): 691-719

23. HART O.D., MOORE J. (1990). “Property Rights and the Nature of the Firm”. Journal of Political Economy, 98: 1119-1158

24. HANSMANN H. (1988). “Ownership of the Firm”. Journal of Law, Economics, and Organization, 4(2): 267-304.

25. HENDRIKSE G.W.J. (2005). “Contingent Control Rights in Agricultural Cooperatives”. In *Strategies for Cooperation* T. Theurl and E.C. Meijer Ed. Shaker Verlag, 385-394

26. BARTON D. (1989). “What is a Cooperative?” In *Cooperatives in Agriculture* D. Cobia Ed. Prentice Hall, 1-20

27. BONUS H. (1986). “The Co-operative Association as a Business Enterprise: A Study of the Economics of Transactions”. Journal of Institutional and Theoretical Economics, 142(2): 310-339

28. BRICKLEY J.A. (1999). “Incentive Conflicts and Contractual Restraints: Evidence from Franchising”. Journal of Law and economics (1999): 745-774

29. WILLIAMSON O.E. (1991). “Comparative Economic Organization: The Analysis of Discrete Structural Alternatives”. Administrative Science Quarterly, 36: 269-296

30. HENDRIKSE G.W.J., VEERMAN C.P. (2001). “Marketing Cooperatives and Financial Structure: a Transaction Costs Economics Analysis”. Agricultural Economics, 26: 205-216

31. PENCAVEL J. (2001). Worker Participation. Russell Sage Foundation

32. HENDRIKSE G.W.J., SMIT R. (2007). “On the Evolution of Product Portfolio Coherence of Cooperatives versus Corporations: An Agent-Based Analysis of the Single Origin Constraint”. Rotterdam School of Management

33. DIXIT A. (1997). “Power of Incentives in Public versus Private Organization”. American Economic Review (Papers and Proceedings), 87(2): 378-382

34. DIXIT A. (2002). “Incentives and Organizations in the Public Sector: An Interpretative Review”. Journal of Human Resources, 37: 696-727

35. COOK M.L. (1995). “The Future of U.S. Agricultural Cooperatives: A Neo-Institutional

Approach". American Journal of Agricultural Economics (77): 1153-1159

36. HART O.D., MOORE J. (1996). "The Governance of Exchanges: Members' Cooperatives versus Outside Ownership". Oxford Review of Economic Policy, 12(4): 53-69\

Author's address:

FENG Li

Rotterdam School of Management, Erasmus University,
Department of Organization and Personnel Management
Postbus 1738, Room T8-42
3000 DR Rotterdam, The Netherlands

lfeng@rsm.nl

George W.J. Hendrikse

Rotterdam School of Management, Erasmus University,
Department of Organization and Personnel Management
Postbus 1738, Room T8-56
3000 DR Rotterdam, The Netherlands

ghendrikse@rsm.nl