

## Agricultural cooperatives in netchains

C. Iliopoulos<sup>1\*</sup>, M.L. Cook<sup>2</sup> and F. Chaddad<sup>2,3</sup>

<sup>1</sup>Agricultural Economics Research Institute, Terma Alkmanos Street, 11528 Athens, Greece; <sup>2</sup>Department of Agricultural Economics, University of Missouri-Columbia, Columbia, MO 65211-6200, USA; <sup>3</sup>INSPER, Rua Quatá, 300, Vila Olímpia, São Paulo, SP, CEP 04546-042, Brazil; [iliopoulosc@agreri.gr](mailto:iliopoulosc@agreri.gr)

### EDITORIAL

#### Abstract

This special issue of the Journal on Chain and Network Science on 'Agricultural cooperatives in netchains' includes new research on three research themes: (1) explanation of why are cooperatives particularly important in certain food netchains; (2) willingness of farmers to invest in their cooperative's netchain; and (3) the role of ambidexterity in the emergence of multi-stakeholder cooperatives. The issue is organized into six papers; one editorial and five research papers. The findings reported in this issue inform scholarly work on agricultural cooperatives through multiple theoretical lenses and empirical approaches. They also have important managerial and public policy implications.

**Keywords:** netchains, organization, ownership, collective entrepreneurship

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### 1. Introduction

This issue of the Journal on Chain and Network Science is devoted to 'Agricultural cooperatives in netchains.' The motivation to publish a special issue on this topic emerged from the realization that agricultural cooperatives play a key role in the formation and coordination of food netchains. A recent extensive study concluded that there is no agriculturally advanced country where agricultural cooperatives do not play a major role in almost all aspects of food production and marketing (Bijman *et al.*, 2012). The same conclusion was reached by a seminal study commissioned in the mid-1980's by the United States Department of Agriculture (USDA, 1987). This study defined agricultural cooperatives as user-owned, user-controlled, and user-benefitted, farmer-owned business organizations, a definition that has gained considerable approval by scholars and practitioners throughout the world. Thus, understanding why and how agricultural cooperatives have become such important ownership and governance structures in food netchains is an intriguing scholarly endeavour. Research on this evolutionary process has been summarized elsewhere (Cook *et al.*, 2004; Staatz, 1989). However, scholarly work that attempts to understand intra-firm and inter-firm organizational challenges continues to intrigue interdisciplinary-minded scholars

(Lazzarini *et al.*, 2001). The following papers are examples of diverse conceptual and empirical challenges facing scholars attempting to understand the role producer-owned firms play in complex netchains. This special issue demonstrates the multitude of lenses utilized in the investigation of cooperative organizations. Research on cooperatives involves intra-, inter-firm coordination and sometimes both in the same market. This set of inter- and multi-disciplinary challenges fits more comfortably into a netchain framework than traditional methodological approaches. This will be addressed in the last section of this introduction.

Agricultural cooperatives' presence varies considerably by country, region, food netchain and commodity (World Co-operative Monitor, 2015). But why are cooperatives dominant in some food netchains while not in others? Is it because producers are unwilling to contribute time and money to offset the organizational costs? Or is it because cooperatives' life cycles are characterized by degeneration and dismay? Or maybe, institutional, capacity, transaction multiplicity, or other factors cause this variance. And what actions can policy makers and cooperative leaders take to facilitate the development of collective action initiatives? These and similar research issues are addressed in this special issue from a number of perspectives.

The field of intra-cooperative organization is a constantly emerging field, in the sense that as new theoretical lenses and tools become available, scholars have been able to shed additional light on the intra-workings of cooperative organizations. As a result, today we know considerably more than we knew thirty or twenty years ago.

## 2. Main themes: an overview

The papers published in this special issue centre around three main research themes.

### Theme 1

*Why are agricultural cooperatives particularly dominant in certain netchains?*

Höhler and Kühl (2016) study the role of cooperatives in the cattle breeding netchain in Germany and contrast it to the plant breeding netchain in the same country. The predominance of cooperatives in the former is explained by means of testing three propositions. The authors conclude that cooperatives represent the main ownership structure observed in the cattle breeding netchain because they combine key advantages of both centralization and decentralization, provide a risk minimization mechanism for farmers whose role in breeding is indispensable, and adopt incentive systems that stimulate innovation. The friendly institutional environment is also mentioned as a partial explanation of cooperative's dominance. However, given that breeding cooperatives are also dominant in many countries where they lack institutional support, this seems to be a rather limited explaining factor.

The findings of Höhler and Kühl with respect to the issue of quality are in sharp contrast with some recent academic literature, which questions agricultural cooperative's ability to compete with investor-oriented firms (IOFs) in terms of product quality (e.g. Pennerstorfer and Weiss, 2013). However, the results of Höhler and Kühl are in agreement with other recent research (e.g. Drivas and Giannakas, 2010). The authors connect breeding associations' success in providing high-quality cattle breeding with their ability to balance the positive consequences of a large membership with the associated high coordination costs. In the long run, however, breeding cooperatives may face a quality coordination problem due to the free riding behaviour of some members. Members that act as passive breeders that maintain their herds may constrain breeding cooperatives' ability to keep improving quality.

Cook and Iliopoulos (2016) address the same theme by focusing on the generic solutions implemented by agricultural cooperatives along their life cycle to address excessive ownership and organizational costs. The successful diagnosis of the vaguely defined property rights constraints facing the organization and the subsequent design and adoption of the appropriate combination of solutions explains the longevity of agricultural cooperatives. The authors identify four generic solutions: (1) user-alignment; (2) member retention; (3) supply-demand balancing; and (4) transparency.

External threats in various forms may place limits to the ability of a cooperative to adapt to a constantly changing external environment or the conflicting needs of an increasingly heterogeneous membership. Further, cooperative leaders may have a hard time to either identify the right mix of solutions or gain a systemically wise understanding of all the observable and latent relationships between constraints, incentives, solutions and outcomes. The Lifecycle Framework appears to have a significant potential as a diagnostic tool in the hands of knowledgeable scholars and practitioners. Yet, an identification of specific solutions stemming from the proposed generic solutions is needed in order the Lifecycle Framework to serve as an even more useful diagnostic tool.

Wouterse and Francesconi (2016) adopt the Lifecycle Framework to evaluate the factors contributing to the good health and financial performance of agricultural cooperatives. They apply recent data from 253 smallholder producer organisations (SPOs) in Ethiopia, Malawi and Senegal, in factor and regression analyses to define organisational health, understand its determinants and relate health to performance. They find that latent health evolves according to a life cycle and that start up incentives and design rules are important determinants of an organisation's progression through this life cycle. Cooperative health, in turn, is found to explain cooperative performance measured in terms of profits. Healthier and more profitable SPOs are those with an economic justification at establishment, those initially pursuing defensive objectives and those SPOs that have put in place a strategy for capital formation. More educated presidents contribute to the health of an SPO but it is also shown that when the president of the SPO is female, profits are lower while the organisation is not healthier.

## Theme 2

*Willingness of farmer-members to invest in their cooperative's netchain?*

This is a highly celebrated theme in research on agricultural cooperatives published during the last decades (Cook *et al.*, 2004). In this special issue, Alho (2016) surveys the members of two Finnish meat cooperatives in order to address this theme. The majority of these farmer-members are willing to invest in their cooperative while farm size affects positively this willingness. The author also focuses on the horizon investment constraint and concludes that members who intend to exit farming are less willing to invest in the cooperative or in a stock exchange-listed company. This result seems to question the effectiveness of a secondary market for members' investments in the cooperative as a solution to the horizon problem but does support the notion of the existence of investment horizon challenges in agricultural cooperatives.

Most of the surveyed members prefer the traditional model of cooperative ownership; only members with larger farms prefer the investment cooperative ownership model. These preferences are also accompanied by farmer-members' preference for retaining control of the cooperative. Members with larger farms have this preference to an even larger extent. The latter also view the adoption of a capital appreciation mechanism as an important organizational design feature. Overall, however, surveyed members exhibit risk aversion as revealed by the respondents' unwillingness to support what they perceive as highly risky cooperative investments.

## Theme 3

*Ambidexterity in the emergence of multi-stakeholder cooperatives?*

Perez *et al.* (2016) study the contribution of various stakeholders in fostering ambidexterity in netchains for tackling challenges faced by smallholder farmers in Sub-Saharan African countries. Their case study findings suggest that fostering ambidexterity, as a dynamic capability of innovation networks, for tackling challenges through collective action is a complex task. Both managers and other stakeholders of the netchain that aim to tackle challenges in Sub-Saharan Africa face this complexity. This is reflected in the time taken by innovation networks to become business networks, which varies significantly.

Interventions must be designed to provide proper facilitation and management. However, the timing of an innovation process is affected by the entrance and exit of development interventions.

Two major constraints to the development of multi-stakeholder cooperatives in sub-Saharan African countries are the limited availability of funds for facilitation and the lack of farmer ownership in the innovation process. The latter creates disincentives for more active involvement of farmers. The authors identify the involvement of all local stakeholders in the innovation process as very significant. In order to do so, facilitators need to start by identifying all key players in the innovation process.

Balancing exploration and exploitation with an ambidextrous capability of innovation networks requires collective roles to orchestrate change and innovation in developing countries.

## 3. Contributions of the papers

The contributions of the papers in this special issue fall into three areas: scholarly, managerial and governance, and public policy. They are summarized below.

### Scholarly

The papers in this special issue make significant contributions to scholarly inquiry on agricultural cooperatives.

- First, they advance our empirical knowledge of the role of agricultural cooperatives in food netchains. The last thirty years have seen a significant advance of the theoretical work on agricultural cooperatives (Cook *et al.*, 2004; Staatz, 1989; Valentinov and Iliopoulos, 2013).
- Yet, there still remains a considerable gap between theoretical and empirical approaches (Mazzarol, 2009). Over the years, modeling and conceptual approaches have generated numerous research hypotheses and propositions that remain largely unexplored and untested. In this sense, the papers in this special issue partially fill this knowledge gap.
- Additionally, certain hypotheses tested provide evidence contrary to the findings of recent empirical research published elsewhere. For example, Höhler and Kühl' evidence suggests that low product quality should not be associated directly or only with ownership structure since other intervening factors seem to play a key role. This finding is not in line with, e.g. Pennerstorfer and Weiss (2013). In this way they shed additional light on the examined issues while inviting future empirical research to provide a concluding touch.

- Another scholarly contribution of the research published in this special issue is the adoption of theoretical approaches that transcend the boundaries of neoclassical economics. New Institutional Economics, the Lifecycle Framework, and organizational theory approaches are adopted and, as a result, provide new insights into important intra cooperative issues. Such issues include: cooperatives as innovative enterprises, the evolution of cooperative institutions in agriculture, organizational and ownership costs and solutions to ameliorate them, facilitation of multi-stakeholder collective action in Sub-Saharan Africa, and members' investment incentives for alternative ownership models.

### Managerial and governance

The papers in this special issue also have numerous implications for cooperative managers and elected leaders:

- Designing solutions to vaguely defined property rights constraints, such as the free rider problem, may be a necessary condition for addressing, among others, quality coordination problems in the long run.
- Incentive systems are important in all types of business organizations. Yet, they play a greater role in agricultural cooperatives due to the vaguely defined property rights of these firms. Providing solutions to these problems creates conditions for stimulating organizational innovations of various forms. Cooperative leaders need to play special attention during the second phase of their life cycle when they put in place the basic parameters of their cooperative's organizational design. Using the Lifecycle Framework as a diagnostic tool may help them avoid future inefficiencies and high influence and transaction costs.
- Cooperatives serve as an efficient risk management tool when they attract as many loyal members as possible. In this respect, cooperative leaders need to design strategies and policies to attract and retain such members. Member-retaining generic solutions lend a helpful hand in designing such schemes.
- The horizon investment problem may discourage exiting farmer-members to invest in their cooperative or a cooperative-owned IOF. Designing solutions to this issue in phase two of the life cycle may save cooperative leaders from future friction and high influence costs.
- Cooperative leaders need to consider designing investment instruments based on the size of their members' farms. In this way, members with larger farms, who are more willing to invest in backward or forward vertical integration, will have a stronger incentive to do so. In addition, these instruments need to include payoffs that benefit members with smaller farms so that

heterogeneity of interests does not lead to future factions and frictions.

- The preference of some farmers to stick to the traditional cooperative model is an open issue. Cooperative leaders have to pay attention to the voices of their members and invest time and resources in understanding the reasons behind this preference. Maybe the identified need of the same group of farmers to retain control of their cooperative is associated with the predisposition towards traditional cooperatives. In any case, farmers' preference for the familiar needs to be understood when cooperatives decide to introduce new features in investment instruments offered to their members.
- Given the growing heterogeneity among members, it is important to maintain variety in capital participation mechanisms.
- Agricultural cooperatives whose leaders invest considerable resources in diagnosing possible interconnections and side effects stemming from high ownership costs have a significantly higher chance of avoiding degeneration and exit in the medium to long run.
- Jumping from symptoms to cooperative illness to solutions is doomed to fail; identifying the real cause of an organizational problem is a necessary step no efficient diagnostic approach can escape taking.
- The predominantly European two-tier structure, in which members invest directly in their cooperative, which owns a processing IOF, in which the members invest indirectly is attractive to some farmers particularly those characterized by risk aversion.
- Fostering ambidexterity as a dynamic capability for tackling collective action challenges is a complex task for managers, which needs to be better understood.

### Public policy

Public policy makers can also draw lessons from the results in this special issue, including:

- Agricultural cooperatives very often combine advantages of centralization and decentralization. Thus they are able to serve the needs of farmers at relatively low cost, at least when they manage to place constraints to the ownership costs they incur due to vaguely defined property rights. Policy makers need to pass legislation that facilitates the adoption of cooperative organizational designs, which minimize such costs. Legal institutions do matter in this case, too.
- Public policy also needs to create an enabling environment, in which cooperatives can experiment with alternative investment instruments in order to be able to meet the needs and preference of their diverse membership bases.

- Cooperatives represent a very important risk management tool for farmers. Presumably, the cost of facilitating the emergence of agricultural cooperatives in food netchains characterized by significant farmer risk is considerably lower than the cost associated with various forms of governmental intervention. Public policy needs to pay attention to this aspect of farmer-owned and -controlled collective entrepreneurship.
- Membership heterogeneity places extra constraints on cooperatives' ability to design and implement efficient ownership and governance structures. Policy makers interested in the positive impacts of agricultural cooperatives on netchain organization and coordination need to take this finding into account; providing a flexible institutional environment that promotes and facilitates experimentation with ownership and governance structures to address member interest heterogeneity issues is a good start.
- Ambidexterity in collective action serves as a means to addressing challenges in innovation networks. Public policy makers interested in facilitating the emergence of this dynamic capability need to provide an enabling environment. It is rather this facilitation than controlling the whole process that can result in long lasting positive impacts. By intervening in this way, public policies affect the timing of the innovation process. Further, securing funds for the facilitation process is a prerequisite for success, while allowing some form of farmer ownership in the process is an additional must.

#### 4. Agricultural cooperatives and netchains (cooperatives as noticeable netchain builders)

Each article in this special edition focuses on distinct types of inter- or intra- organizational collaboration. A number of these articles emphasize the vertical, or more sequential supply chain analysis, while several concentrate on a set of network interdependencies. Additionally, the authors demonstrate or conclude that the cooperative business model is more complex than traditional sole proprietorships or investor owned firms because of broader and more diffuse objective functions. Given the cooperative operating principle that residual claims are distributed to patrons in proportion to patronage, with the fiduciary responsibility of satisfying a population of heterogeneous member preferences, the governance challenge becomes obvious. Since supply chains generate economic value by optimizing production and operation costs and revenues, reducing transaction costs, and capturing value in weak appropriable regimes while networks emanate value through embedded social structures, learning processes, and through network

externalities, scholars have a dilemma in choosing between conceptual approaches when addressing complex member and firm interdependencies.

Our recommendation to cooperative scholars pursuing the study of intra- and interdependencies in patron-controlled entities, such as agricultural cooperatives, is to consider employing the netchain approach. The netchain as defined by Lazzarini *et al.* (2001, p. 7) is a set of networks comprised of horizontal ties between firms within a particular industry or group, such that these networks are sequentially arranged based on the vertical ties between firms in different vertical layers. Netchain analysis explicitly differentiates between horizontal and vertical transactions (within the same layer and between levels), mapping how agents in each layer are related to each other and to agents in other layers. The netchain approach integrates sources of value with particular types of interdependencies. By positing this association between the aforementioned sources of value and three types of interdependencies (pooled, sequential and reciprocal), the framework is able to demonstrate coordination mechanisms implied by the relationships hypothesizing a continuum from mutual adjustment to standardization to managerial discretion. By combining sequential and network-oriented approaches, scholars may better inform the unbundling of complexities embedded in the cooperative structure.

We hope that this special issue will become a stepping-stone for the further development of our knowledge of the cooperative institution, particularly in food netchains where it thrives and grows.

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