

*Essays on investment behavior in
agricultural producer cooperatives*

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ABSTRACT

In the wake of the modernization of agriculture and agricultural markets, the role of the farmer has increasingly moved towards that of an owner and investor in agricultural producer cooperatives. Competitive pressures, internationalization, and the growth of cooperatives call for an examination of new avenues for acquiring investment capital, as the traditional cooperative structure may fail to provide sufficient incentives to urge members to contribute to the long-term success of the cooperative. Despite an emerging multitude of new cooperative structures, the investment preferences of cooperative members are not sufficiently understood. Moreover, the preferences of potential non-member investors beyond cooperative boundaries remain practically unexplored. This dissertation consists of four essays around the theme of investment behavior in agricultural producer cooperatives. The analyses are based on questionnaire data from Finnish dairy farmers and financial market professionals. The farmer survey examined member preferences concerning the use of cooperative surplus for investments as well as their views on new cooperative investment instruments. The investor survey studied the willingness of non-members to invest in agricultural production and the behavioral motivations affecting their investment decisions. The study methods applied here are novel to the context of investment in cooperatives. The results offer insights into new possibilities to develop capital sourcing strategies for use by growth-seeking agricultural producer cooperatives. An understanding of investor preferences will facilitate the design of new financing mechanisms for cooperatives.

Keywords: producer cooperatives, investment decisions, behavioral effects, choice experiment, financial instruments

TIIVISTELMÄ

Maatalouden rakennemuutos sekä maatalousmarkkinoiden kansainvälistyminen ovat korostaneet viljelijöiden roolia tuottajaosuuskuntien omistajina ja niihin pääomaa sijoittaneina tahoina. Kiristynyt kilpailu, kansainvälistyminen ja osuuskuntien kasvu edellyttävät investointipääoman lähteiden ja saatavuuden tarkasteluun uutta näkökulmaa, koska perinteinen osuuskuntamuoto ei tarjoa riittäviä sijoittamisen kannustimia jäsenille osuuskunnan pitkäjänteiseen kehittämiseen sitoutumiseksi. Vaikka kansainvälisessä tutkimuskirjallisuudessa on esitetty havaintoja uudenlaisista tuottajaosuuskuntien rakenteista eri näkökulmista tarkastellen, osuuskunnan jäsenten näkemyksiä niistä ei tunneta. Tämän lisäksi jäsenkunnan ulkopuolisten sijoittajien näkemyksiä osuuskunnista potentiaalisina sijoituskohteina ei ole tutkittu aiemmin. Tämä väitöskirja koostuu neljästä esseestä, jotka käsittelevät sijoituskäyttäytymistä maatalouden tuottajaosuuskunnissa. Analyysi perustuu kahteen kyselyaineistoon, joista ensimmäisen otoksessa oli suomalaisia maidontuottajia ja toisen otoksessa rahoitusalan ammattilaisia edustaen potentiaalisia sijoittajia. Tuottajakyselyllä tutkittiin jäsenten preferenssejä koskien osuuskunnan ylimääräisen käyttöä investointeihin sekä jäsenten näkemyksiä uusista osuuskuntien rahoitusinstrumenteista. Sijoittajakyselyllä tutkittiin jäsenkunnan ulkopuolista kiinnostusta maataloustuotantoa kohtaan sijoituskohteena sekä sijoituspäätökseen vaikuttavia käyttäytymisen motiiveja. Väitöskirjassa käytetyt menetelmät edustavat uudenlaista lähestymistapaa osuuskuntiin sijoittamista käsittelevässä tutkimuskirjallisuudessa. Kasvua tavoittelevat maatalouden tuottajaosuuskunnat voivat hyödyntää väitöskirjan tuloksia ja johtopäätöksiä käytännössä pääomanhankinnan strategioita suunnitellessaan. Sijoittajien käyttäytymisen ja preferenssien ymmärtäminen – niin jäsenkuntaan kuuluvien kuin jäsenkunnan ulkopuolisten sijoittajien – luo edellytykset uudenlaisten rahoitusvälineiden kehittämiseksi osuuskuntien käyttöön.

Asiasanat: tuottajaosuuskunnat, sijoituspäätökset, käyttäytyminen, valintakoemenetelmä, rahoitusinstrumentit

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Helsingissä 2018,

Eeva Alho

LIST OF ESSAYS

This dissertation is based on the following essays. The articles are reprinted with the permission of the publishers.

1. Alho, E. Revealing loss aversion and horizon in farmer preferences: The case of Finnish dairy cooperatives. Unpublished manuscript.
2. Alho, E. 2019. Farmers' willingness to invest in new cooperative instruments: A choice experiment. *Annals of Public and Cooperative Economics*, 90(1), 161–186.
3. Alho, E. 2017. Assessing the willingness of non-members to invest in new financial products in agricultural producer cooperatives: A choice experiment. *Agricultural of Food Science*, 26(4), 207–222.
4. Alho, E. 2015. The effect of social bonding and identity on the decision to invest in food production. *Journal of Behavioral and Experimental Economics*, 59, 47–55.

SUMMARY

1 Introduction

This dissertation focuses on the investment behavior of cooperative members and of potential non-member investors in Finland, particularly with respect to their willingness to invest in agricultural producer cooperatives. The purpose was to increase the understanding of the factors influencing the decisions of farmers regarding whether to finance their cooperative's growth plans with retained earnings or with members' new equity contributions. If new equity capital is required, they are confronted, both at the theoretical and practical level, with the question: what incentives do they have to provide long-term capital voluntarily in a traditional form of cooperative. The member perspective in this study is that of Finnish dairy cooperative members. So far, these cooperatives have not adopted new, innovative financing instruments, in contrast to some of their foreign counterparts, which have adjusted their capital structure in various ways to overcome limitations for investment and growth. In case of limited possibilities to source growth capital from the members, the cooperative may consider modifying its ownership structure to allow external investors. Thus, the aim of the dissertation is to increase the current knowledge of the behavior and preferences of potential non-member investors, and pave the way for the introduction of new, versatile cooperative investment instruments in Finland.

The globalization of agricultural markets and consequent tightening of competition both in the consumer and input markets pose increasing challenges to producer cooperatives. It is also affecting the relation of farmers in their dual role as patrons and owners of the producer cooperative, and its success is critical to them. The cooperative's financial distress would most likely trickle down to the farm through its weakened ability to provide benefits to its members. Thus, the cooperative's long-term competitiveness is crucial to enable it to carry out its primary function of benefiting the members. An inescapable consequence of the structural change that has taken place in Finnish agriculture over the past few decades is that the membership of producer cooperatives is dwindling. Farmers who continue as producers are facing competing investment needs on their own farms. Such developments emphasize the role of these farmers as cooperative owners and highlight the question of incentives to motivate them to commit

long-term capital for the cooperative. As the title of this dissertation implies, the members of producer cooperatives are also considered as investors in financing cooperative growth.

Discussion on incentives to encourage Finnish farmers to provide capital for their cooperatives has been practically non-existent. Each farmer's ownership role in the cooperative has traditionally been determined in proportion to their patronage. The literature recognizes several property rights problems in this context. New ownership structures have been proposed as a solution and have already been adopted in some European countries. Prior empirical studies have concentrated on describing the new models as they emerge, but without considering the views of cooperative members. Farmers may find the idea of opening their cooperative to outside investors as controversial at first, fearing it might threaten their control over the cooperative. However, the evidence provided in this dissertation can help growth-seeking agricultural cooperatives to find a model which overcomes the capital constraints and also reconciles the preferences of members and investors alike.

The approach in this dissertation utilizes the choice experiment (CE) method, which enables to test the willingness of farmers and investors to provide financing for cooperatives. The CE method is a novel technique in the context of farmer cooperatives, particularly regarding investment in cooperatives. Further, this dissertation contributes to the behavioral economics literature by showing how rich data can be obtained to test investor behavior in the field of cooperatives. In general, stated preference and survey methods are not widely used in economics, despite their potential to increase the understanding of people's financial decisions. Even though the chosen analysis method has evident merits in studying the policy choices of individuals at the planning stage by revealing the relative importance of different attributes influencing their decisions, an obvious limitation is that their actual behavior may differ from the stated preferences depending on the current context. Thus, the purpose here is only to describe the relative preferences of cooperative members and non-members for various investment attributes and the factors affecting their investment behavior – not to take any stand on the investment capital of cooperatives in monetary terms.

This dissertation consists of four essays, each of which is interlinked to sourcing of investment capital for agricultural producer-owned cooperatives and to behavioral factors contributing to investor willingness to finance cooperative growth. The rest of this introductory chapter is organized as follows. Section 2 presents the theoretical perspectives on the topic of the dissertation, including a description of the position of cooperatives in European agriculture and a review of non-traditional cooperative forms. Section 3 discusses the empirical findings in the prior literature on the effect of behavioral aspects on people's investment decisions, with specific focus on two themes: social influences and loss aversion. Section 4 summarizes the results of each essay and discusses their practical implications for agricultural producer cooperatives and marketing of new financial instruments within the domestic food chain.

2 Literature on agricultural producer cooperatives

This section focuses on the theoretical and empirical literature dealing with agricultural producer cooperatives. The main theories and explanations concerning the organization of processing and marketing of agricultural production into cooperatives are first presented, helping to understand the prevalence of cooperatives in the European food chain. Thereafter, insights from the property rights theory are used to highlight the challenges faced by modern agricultural cooperatives in gathering equity capital for investments. The section ends with a review of current cooperatives structures in Finnish and in European agriculture, particularly in the dairy sector.

2.1 Organizing of agricultural cooperatives

As an organizational form, the cooperative is based on member participation both as customers and as providers of capital for the cooperative. Cooperatives are the predominant form of organizing the market access of agricultural production in Europe (Bijman et al. 2012a), and are characterized by member ownership, member use, and member benefits (LeVay 1983; Sexton and Iskow 1988). Farmers as the members of a cooperative are responsible for agricultural production, while cooperatives are involved in processing and marketing the products that farmers have produced. Various theories of organizational economics and transaction cost economics have pointed out the advantages of this organizational form. In the organizational economics literature, cooperatives are reported to benefit their members by creating countervailing market power, reducing information asymmetries, helping to economize on transaction costs, and reducing price risk (LeVay 1983; Staatz 1987; Hansmann 1988; Sexton and Iskow 1988). Indeed, cooperatives traditionally emerge to provide a mechanism to compensate for market failures or depressed prices (Cook 1995).

By organizing their market access through a cooperative, farmers benefit from the lower transaction costs compared to bargaining with buyers independently. Transaction costs are affected by the uncertainty and frequency of transactions, as well as their asset specificity (Williamson 1989; Ménard 2004). Cooperatives offer various advantages particularly in the agricultural sector, by safeguarding farmers against opportunistic

behavior on the part of their trading partners and by protecting their private investments (Sexton and Iskow 1988; Ollila and Nilsson 1997; Valentinov 2007).

These cooperative benefits continue to be valid, although modern agriculture differs considerably from the early days of farmer cooperatives. Their rationale is still the same: to enable producers to gain market entry, to strengthen their bargaining power, to bring information advantages, and to capture economies of scale (Hendrikse and Bijman 2002; Valentinov 2007). The main types of producer-owned agricultural cooperatives, based on their functions, include: marketing cooperatives, which market the members' farm produce; supply cooperatives, which provide farm inputs; and service cooperatives, which offer different farming-related services (Ortmann and King 2007; Valentinov 2007; Bijman et al. 2012a). The focus in this dissertation is on agricultural marketing cooperatives. These can be characterized as a form of vertical integration within the agri-food chain, with farmers owning assets in the product distribution channel through the cooperative (Hendrikse and Bijman 2002).

The traditional cooperative form relies on the principles of user benefit, user control, and user ownership (Barton 1989). Residual claims and control rights define the farmer's role as a member of the cooperative. Unlike shareholders in investor-oriented firms (IOFs), each cooperative member-owner has one vote irrespective of their capital contribution. Residual claim refers to the owner's right to the net income generated by the firm, after the deduction of claims of creditors, employees, taxes, etc. (Chaddad and Cook 2004; Chaddad and Iliopoulos 2013). In a cooperative, members receive a residual that is proportional to their patronage or use of the cooperative. Members of an agricultural producer cooperative are entitled to benefits in proportion to their transaction volume, determined as the amount of produce they sell to the cooperative. These benefits are typically referred to as a patronage refund, which is the residual claim of the member-owners to the cooperative's surplus and reflects their role as customers of the cooperative.

Apart from this customer role, members also have an investor's role in the cooperative. Upon joining the agricultural cooperative, members are obligated to contribute capital in order to gain voting and patronage rights. This contribution is called cooperative equity. In addition to patronage refunds, some refunds may be determined in proportion to the

members' capital contribution, reflecting their role as owners. Depending on the cooperative, the residual returns on capital are referred to as dividends or interest. However, there is a clear difference from the ownership rights and equity claims in an IOF. Ownership in traditional cooperatives is collective: they are formed as a coalition of members whose equity shares are not transferable, since their residual claims are tied to their patronage and, thus, are not marketable (Nilsson 2001).

Retained earnings, i.e., the surplus resulting from patronage that is not refunded to members, form the main source of long-term capital in the cooperative. This surplus is either allocated or unallocated retained capital (Nilsson et al. 2009; Barton et al. 2011; Chaddad 2012), and relates to the collective ownership nature of traditional cooperatives. Allocated equity refers to retained capital held in an individual member's name in proportion to the member's patronage, while unallocated equity is the portion of earnings retained in the cooperative for investments (Russell and Briggeman 2014). Unallocated equity serves as a buffer against business risks and will not be paid out to member-owners, should the cooperative dissolve.

The use of cooperative surplus has to strike a balance between short-run and long-run sustainability (Barton et al. 2011). Members may prefer to maximize the distribution of patronage income, if they wish to invest the refunds in their own farm operations rather than retaining them in the cooperative to strengthen its long-term ability to provide services to its members (Russell and Briggeman 2014). While the payment of patronage refunds may help to attract new members, retaining a sizeable proportion of unallocated equity will improve the financial health of the cooperative (Zhang et al. 2013). The differing interests towards patronage refunding give rise to the horizon problem discussed in the next section. However, retaining a large amount of unallocated equity to finance the cooperative may weaken the incentives of for members to participate in its governance and may lead them to refrain from investing in the cooperative (Österberg and Nilsson 2009). Even though the traditional view of cooperatives emphasizes that the financial performance of the cooperative should be reflected in the members' income statement instead of in the economic rent to its investors, the residual return on capital is justifiable as an incentive to encourage members to act as the cooperative's long-term owners.

2.2 Property rights problems in traditional cooperatives

The sources of financing in traditional cooperatives are restricted to internally generated funds and equity contributions from members, while sourcing of risk capital from non-member outside investors is not possible (Chaddad and Cook 2004; Chaddad et al. 2005). This is the key difference in funding between cooperatives and investor-owned firms. The restriction is argued to form a handicap for agricultural cooperatives in the competition against food industry firms operate as limited liability companies and can source external investment capital (Chaddad et al. 2005).

The organizational limitations of traditional cooperatives described above are theoretically explained by vaguely defined property rights, illiquid ownership rights, and conflicting residual rights between active and inactive cooperative members (Staatz 1987; Cook and Iliopoulos 1999). Inadequately defined property rights offer low incentives for participation in the control of the cooperative and for investing in it (Vitaliano 1983). A lack of incentives together with insufficient member capital may jeopardize the growth of the cooperative (Staatz 1989), and even result in its failure (Fulton and Hueth 2009).

The agricultural economics literature specifies a number of property rights problems which undermine investment incentives in producer-owned cooperatives: the free-rider problem, horizon problem, portfolio problem, control problem, and influence cost problem (Vitaliano 1983; Ollila 1989; Cook 1995; Cook and Iliopoulos 1999; Valentinov 2007). All of these problems originate from the ambiguously defined property rights in traditional cooperatives as well as from the characteristics of open membership, capital generation through patronage, and illiquid ownership rights, which are particularly relevant to agricultural cooperatives (Cook 1995; Cook and Iliopoulos 2000). A free-rider problem – also referred to as a common property problem – arises when gains accrue to individuals who have not participated in the efforts that produced the gains. This problem is particularly pronounced between current and new members, as the latter get a claim to assets generated by the old members. This creates potential for an intergenerational conflict in traditional cooperatives, where cooperative shares are non-tradable and residual rights are equal (Cook 1995).

Cook (1995) defines the horizon problem as a consequence of ill-defined property rights, which, in theory, create a disincentive for agricultural cooperative members to contribute to cooperative growth opportunities and to favor current payments instead of retained earnings (Cook and Iliopoulos 1999). Thus, a horizon problem occurs when the lifespan of an investment is longer than the members' horizon (Vitaliano 1983). In other words, a member's residual claim right terminates when the member exits and stops patronizing the cooperative, but the economic life of the investment is much longer than the expected membership period (Vitaliano 1983; Cook 1995; Sykuta and Cook 2001; Valentinov 2007). An equity structure without tradable shares that would have sufficient liquidity in secondary markets and without an appreciation mechanism exacerbates the horizon problem (Cook 1995; Cook and Iliopoulos 2000). This can result in a general tendency to favor short-term investments and hold back organizational growth.

The portfolio problem refers to the risk that members bear because their investments are tied to the cooperative's investment portfolio (Vitaliano 1983; Cook 1995; Sykuta and Cook 2001). Due to the nature of cooperative equity, the cooperative investment is determined by the members' patronage, which restricts their chances to make portfolio decisions according to subjective risk preferences (Cook 1995). Again, the portfolio problem also relates to the lack of transferability, liquidity, and appreciation mechanisms for residual claims in traditional cooperatives (Cook and Iliopoulos 2000).

The free-rider, horizon, and portfolio problems constitute the key investment problems that plague the acquisition of equity capital in cooperatives (Cook and Iliopoulos 2000). Two other property rights problems – those related to control and influence costs – are intertwined with governance aspects and agency costs. The control problem is relevant to any organization where ownership and control are separated, creating a potential for divergence of interests between residual claimants and the management. Cooperatives, in particular, lack the equity market mechanisms by which to discipline managers and alleviate agency costs (Sykuta and Cook 2001; Ortmann and King 2007). An influence cost problem arises when diverse views among members lead to attempts to influence cooperative decision making in a way that incurs costs and misallocation of resources (Cook 1995; Royer 1999).

Cook and Iliopoulos (2000) provide empirical evidence on the dependency of member-patrons' investment incentives on the cooperative's property rights structure. Studying the variation in property rights in a sample of US agricultural cooperatives, they demonstrated that transferable and appreciable equity shares enhanced the investment incentives for the membership. The attributes of transferability and appreciability offer solutions to the horizon and free-rider problems, as members are able to benefit from long-term payoffs of their cooperative investments. The portfolio problem is also ameliorated by the transferability of equity shares and the potential for capital appreciation, since members then have a better chance to choose their level of risk (Cook and Iliopoulos 2000).

2.3 *New cooperative forms in literature*

To overcome the above problems inherent in traditional cooperatives, a strand of the literature is dedicated to emerging new cooperative models. From the property rights perspective, these new innovative organizational forms reflect the need to improve the incentives for cooperative member-patrons. The theory of firm ownership argues that new organizational forms emerge for the purpose of economizing on transaction costs (Hansmann 1988). Thus, the emergence of new, non-traditional organizational models of farmer-owner cooperatives stems from a need to minimize the costs of ownership.

The emergence of new cooperative forms represents a response to competitive pressures from the market (Hendrikse and Bijman 2002; Cook and Chaddad 2004; Valentinov 2007; Barton et al. 2011). On the other hand, organizational innovations also arise as a consequence of diverging interests and heterogeneity among the members as well as patron drift (Cook 1995; Chaddad and Cook 2004; Hogeland 2006; Nilsson et al. 2009). The diminishing number of agricultural producers within the past few decades means that cooperatives have to refund the capital of leaving members at a faster rate than new capital flows in. Due to the capital intensity of farming, producers may prefer to invest in their own farm instead of in the market channel, i.e., the cooperative. In the face of such challenges, the options of traditional cooperatives are either to exit, to continue, or to transform into a new generation structure (Cook 1995). As markets evolve, reorganization may become inevitable (Royer 1999).

The new forms of cooperatives are increasingly resemblant of investor-oriented firms in their attempt to reconcile the trade-off between member control and the need for risk capital (Valentinov 2007; Iliopoulos 2014). Gaining access to growth capital from external investors has, in several cases, been the main reason to depart from the traditional cooperative organizational structure (Chaddad and Iliopoulos 2013). Indeed, many of the new structures relax some of the restrictions on residual claims in agricultural cooperatives (Chaddad and Cook 2004). Producer-owned organizations are typically looking for a model that retains the cooperative form and ideology, yet enables access to non-member equity capital (Hendrikse and Bijman 2002).

Chaddad and Cook (2004) place the new cooperative forms analytically on a continuum based on the degree of ownership rights assigned to members, patrons, and investors. The starting point for their typology is the traditional cooperative structure, which is characterized by: ownership rights restricted to member-patrons; non-transferable, non-appreciable, and redeemable residual rights; and benefit distribution in proportion to patronage. By relaxing these restrictions one by one – proportionality, benefit basis, redeemability, and transferability – and opening the cooperative to non-member investment, the typology arrives at five non-traditional innovative cooperative forms. These are: 1) proportional investment cooperatives; 2) member-investor cooperatives; 3) new generation cooperatives; 4) cooperatives with capital-seeking entities; and 5) investor-share cooperatives. The new cooperative models differ in terms of the residual rights of control and residual claims of their members. Ownership grows more individualized as we move from the traditional cooperative model towards the investor-oriented firm (IOF) in the cooperative typology. At the end of the continuum is the conversion to an IOF. (Chaddad and Cook 2004)

In first three non-traditional cooperative models, ownership rights are limited to member-patrons (Chaddad and Cook 2004). Proportional investment cooperatives resemble traditional cooperatives with their non-transferable, non-appreciable, and redeemable ownership rights, but their members are obligated to invest in the cooperative in proportion to their patronage. Member-investor cooperatives detach the benefit distribution from patronage and allow returns to members to be distributed in proportion to their investment. New generation cooperatives relax the restriction of transferability, and thus, equity shares are no longer redeemable. These features enable

members to benefit from the appreciation of their cooperative investment. Ownership rights, in turn, are defined as delivery rights that are restricted to member-patrons.

The two remaining non-traditional cooperative models allow also non-members to invest in the cooperative. Cooperatives with capital-seeking entities differ from investor-share cooperatives in terms of whether the outside risk capital is partitioned off to a separate entity or whether investors are able to hold shares directly in the cooperative. In an investor-share cooperative model, different classes of shares can be issued for different owner groups (Chaddad and Cook 2004).

The rationale for new cooperative models is to overcome the financial constraints of traditional cooperatives and to facilitate organizational growth by resolving the property rights problems. However, cooperative expansion, whether through horizontal or vertical integration, may have reverse effects on member commitment to the cooperative and their willingness to invest in it. Vertical integration has, in fact, been observed to reduce the members' investments (Nilsson et al. 2009). Another potential threat in the emergence of new structures is that agricultural producers may find themselves in large and complex cooperative chains without sufficiently understanding the operations, which can create dissatisfaction among them (Nilsson et al. 2009). This is likely to erode their involvement and their interest and incentives to invest in the cooperative (Nilsson and Ollila 2009).

Shrinking member involvement in large cooperatives leads to diminished investment capital from members, and this can be solved by inviting outside investors. The further a cooperative diverts from the traditional model, the larger becomes the risk of a divided membership (Ollila et al. 2014). Some members emphasize the expected return on capital over patronage-related benefits to the extent that the divergent interests among the members cannot be reconciled inside the cooperative. However, the heterogeneous preferences of the members do not necessarily mark the end of the cooperative; instead, new structures can be developed to cater for their differing interests regarding financing and governance (Kalogeras et al. 2009; Höhler and Kühl 2017). A positive avenue might be to split the cooperative into two or more organizations based on the distance of the members from the cooperative's business activities at different stages of the processing chain (Nilsson 2001).

2.4 Current forms of producer cooperatives in Europe

Agricultural cooperatives play an important role in present-day agribusiness within the food supply chains of all EU member states (Bijman et al. 2012a). A large-scale EU-wide project called Support for Farmers' Cooperatives (SFC), conducted in 2012, provided comprehensive data on the position of producer cooperatives in European agriculture, which continued to be relatively up-to-date. The project's final report (Bijman et al. 2012a) and several sectoral and other themed study reports serve as the main sources of industry information in this section. The focus here is on the dairy sector, which accounts for about 13 percent of the total turnover of the food and drink industry in Europe, with Germany and France as the largest producers (Hanisch et al. 2012). In Finland, the dairy sector is the most important agricultural sector in terms of the value of production (Pyykkönen et al. 2012). The majority of Finnish milk-producing farms are specialized dairy farms.

Farmer-owned cooperatives are an important distribution channel for European agricultural producers. They enable farmers to capture a higher portion of the value adding activities in the food chain and provide economies of scale benefits to their members (Bijman et al. 2012a). Finnish cooperatives are estimated to hold the highest market share among all the EU member states, when measured by farm gate sales in the eight agricultural sectors covered by the SFC study: dairy, cereals, sugar, pig meat, sheep meat, fruit and vegetables, olives, and wine (Bijman et al. 2012a). The average market share in the EU area is 40%, whereas in Finland it is as high as 75%. Finland also ranks first in member intensity, i.e., the total number of cooperative members divided by the number of agricultural holdings.

Of the eight major agricultural sectors examined in the SFC project, the market share of cooperatives was highest in the dairy sector (Bijman et al. 2012a): 57%, on average, of the total dairy sector turnover in the EU area (Hanisch et al. 2012). Cooperatives are strongly represented among the largest European dairies (Heyder et al. 2011). Dairy cooperatives are positioned throughout the food supply chain, from milk collection and processing to direct sales of branded or private label products to retailers (Kühl 2012). The organization of dairy production into cooperatives can be explained by sector-specific characteristics and by the transaction cost advantages mentioned earlier. In dairy farming, the high perishability of the product together with the high frequency of

transactions, also require highly asset-specific investments (Ollila 1989; Williamson 1989; Masten 2000; Bijman and Hanisch 2012). As members of a dairy cooperative, farmers are able to benefit from the economies of scale from collective investments by the cooperative, which cut back the costs of transportation, processing, and quality control of their products (Bijman et al. 2012a).

At the dawn of the new millennium, European dairy production was subjected to decontrolling measures aimed at higher market orientation and internationalization in the sector (Hanisch et al. 2012). In parallel with the imbalances experienced by individual dairy farmers in their bargaining power in the supply chain, the sector-wide structural changes accentuated the role of producer organizations in providing support to them (Hanisch et al. 2012). The increasingly internationalized product market has simultaneously given impetus for the internationalization of dairy farmers' producer organizations (Heyder et al. 2011). Mergers of producer cooperatives has also taken place in an effort to strengthen their position in the food supply chain. The largest dairy cooperatives in the EU include FrieslandCampina (Netherlands), Arla Foods (Sweden), DMK (Germany), Sodiaal (France), Glanbia (Ireland), Valio (Finland), Kerry Group (Ireland), and Hochwald (Germany) (Hanisch et al. 2012). Many of them have international operations, and some even emerged as a result of international mergers. Transnational cooperatives represent a special type of international cooperatives, having members in more than one country (Hanisch et al. 2012). Internationalization is reported to be associated with better agribusiness performance and positive returns (Heyder et al. 2011).

In connection with the SFC study, European cooperatives also underwent an extensive cluster analysis, which revealed four typical cooperative profiles in the dairy sector (Ton 2012). The most common of these was large agribusiness cooperatives which engage in primary processing but also produce final consumer goods: bulk and private labels as well as branded products. Two other important types of cooperatives included smaller dairy cooperatives that specialize in branded goods or focus on differentiated products and niche markets. The fourth important type of dairy cooperatives was one that serves mainly as a bargaining agent but is not as vertically integrated as the other profiled cooperatives. The typical membership in these cooperatives were highly specialized dairy producers.

The position of a dairy cooperative in the food chain is linked to its financial structure. The higher is the degree of vertical integration and the more the cooperative concentrates on processing and marketing of branded goods, the more the need for equity capital increases (Bijman and Hanisch 2012). Internationalization has also contributed to changing organizational structures and motivated the emergence of hybrid and holding cooperative models (Harte 1997; Heyder et al. 2011). In one form of hybrid listed cooperatives, external investors are invited to participate through a separate class of shares (investor-share cooperatives), but these have not been observed in the European dairy sector. A more common model in Europe involves participation through a separate capital-seeking entity, implying a holding structure. Larger cooperatives are likely to be organized into a holding company structure, which is more frequent in the dairy sector than in any other agricultural sector (Hanisch et al. 2012).

The dairy sector in the EU is characterized by cooperatives with a subsidiary organizational structure (Bijman and Hanisch 2012; Hanisch et al. 2012). A subsidiary structure enables the cooperative to invite outside investors to a separate legal entity, which can even be listed on a stock exchange as a public limited company (PLC). The cooperative usually remains as a holding company in the PLC, whereas the majority of the assets and business operations are transferred to the subsidiary (Bijman and Hanisch 2012). The rationale is to retain the cooperative core while raising capital from external sources (van Bekkum and Bijman 2006). Two distinct types of hybrid listed European cooperatives can be identified: the Finnish and the Irish. The Finnish model has two separate series of shares: one for outside investors with preferential return rights, and the other for farmers with higher control rights. In the Irish model, the income and control rights are symmetric for both investor groups (van Bekkum and Bijman 2006). The Irish model is in use in the dairy sector in Ireland, whereas in Finland, hybrid organizational models are only found in the meat and forestry sectors.

The foremost example of the Irish model is the Kerry Group. The cooperative was restructured from a traditional cooperative into a holding company in 1986, with the aim of designing a new funding mechanism (Harte 1997; Chaddad and Cook 2004). The cooperative received the majority of the shares of Kerry Group plc, which was listed to attract external equity capital. The proportion of ownership and shares held by the cooperative has diminished over the years as a consequence of new stock issues.

Gradually, the Kerry cooperative has become a minority shareholder in Kerry Group, holding about one-fifth of its shares (Hanisch et al. 2012). Cooperative members not only receive patronage-based dividends, but also their share of PLC dividends as well as bonus shares (O'Shaughnessy et al. 2012).

The Irish dairy company Glanbia is another example of the Irish hybrid model. However, the holding cooperative's ownership share in Glanbia plc is higher than respectively in the Kerry Group. In 2012, the cooperative held a 55% share of Glanbia plc (Bijman et al. 2012b), but by 2015, its ownership had eroded to 36.5% (Glanbia 2015). Some of the cooperative's holdings have been spun out to its members. Besides utilizing the subsidiary structure to collect external equity, Glanbia also set up a financing mechanism in the form of members' individualized capital contributions to the cooperative (van Bekkum and Bijman 2006). This scheme is called the Revolving Share Plan (RSP), and has been launched several times since (Glanbia 2015).

Dairygold is another Irish example of an innovative capital structure within the cooperative form. The cooperative split its business into two operations, and then listed the created value-added company and its appreciable internally tradable cooperative shares (van Bekkum and Bijman 2006; Nilsson and Ollila 2009). Dairygold also introduced a compulsory member-financing mechanism through a revolving fund, in which farmers' contributions are collected from their milk supply proceeds. As compensation, members receive a fixed interest accrued on an annual basis (Dairygold 2017).

The Dutch dairy cooperative FrieslandCampina was formed as a merger of two cooperatives, Friesland and Campina, both of which had prior experience of using individualized capital as a financing mechanism. In contrast to the Irish hybrids, which are more reminiscent of an IOF, FrieslandCampina represents a cooperative model that has made use of various innovative financial instruments. One method of collecting member financing in the former Campina were compulsory subordinate bonds, which were proportional to the members' milk delivery volume and transferable to non-members as well (Nilsson and Ollila 2009). Campina also tapped the use of non-voting participation units, which members could subscribe on a voluntary basis, but the value of these units was determined yearly in relation to company growth (Chaddad and Cook

2004). The appreciation value of the participation units was set by the cooperative board, depending on the amount of additions to the general reserves (van Bekkum 2003). The average annual return was 1.9% (van Bekkum and Bijman 2006). Participation unit holders could also enjoy a better price on their milk deliveries (van Bekkum 2003).

The former Friesland cooperative, in turn, had divided its equity into two series of shares. A-shares represented unallocated equity, whereas B-shares were available to members without patronage-based proportionality, but with no voting power attached to them (Nilsson and Ollila 2009). B-shares were tradable between members on a bimonthly market facilitated by a banking service, and provided an average annual return of 3.5% (van Bekkum 2003; van Bekkum and Bijman 2006). In the typology of Chaddad and Cook (2004), this structure is an example of a member-investor cooperative (Hanisch and Müller 2012).

In the merged FrieslandCampina, a portion of the member capital is individualized and appreciable (Zaalmink and Lakner 2012). The cooperative pays a part of the company's profit to its members by issuing subordinated bonds in proportion to the value of their milk supplies (FrieslandCampina 2017), thus increasing the members' capital holdings. Apart from these interest-bearing, non-tradable member bonds, members and former members can participate with free member bonds (FrieslandCampina 2018). The perpetual subordinated bonds are traded on an internal market on set trading days annually, with an external market maker providing the liquidity (FrieslandCampina 2018). Fixed member bonds are automatically converted to free member bonds upon the member's resignation as a capital retention mechanism. Both types of member bonds are recorded as equity in the company's balance sheet.

Externally tradable bonds are an alternative that makes it possible to source outside capital without loss of member control (van Bekkum and Bijman 2006; Nilsson and Ollila 2009). The Arla Foods cooperative has utilized these kinds of subordinated bonds in addition to individual, delivery-based member equity capital (Arla Foods 2017).

The review of capital structure innovations presented in this section is not intended to be all-inclusive, but to give an overall picture of some new models within the European

dairy sector, with a focus on departures from the traditional cooperative model. Further examples can be found outside the EU and in other agricultural sectors.

3 Behavioral aspects of economic decisions

There is an extensive body of literature on the role of behavioral factors in economic decisions. This section first concentrates on a few focal aspects that have been found to explain individual behavior in economic decisions. These are covered in the essays of this dissertation and include social influences such as social interaction and social capital, trust, and familiarity effects. There is wide evidence that such factors are positively related to the economic performance and financial market decisions of individuals. The second part of the section describes the phenomenon of loss aversion, which is analyzed in one of the essays.

3.1 Social influences

Cooperative organizations are characterized by a high level of social capital and trust. It has been argued that, because they are built on collective action for mutual benefit, they are dependent on this social capital, i.e., the members' commitment and loyalty (Hakelius 1996; Bhuyan 2007). Social capital can be defined as shared norms, affinity, reciprocity, and relations, formed in interaction between individuals and fostering cooperation between them (Bourdieu 1986; Coleman 1988; Putnam 1993; Fukuyama 1995). For the purposes of this dissertation, it is not meaningful to elaborate on the mechanisms of social capital and trust, although it is worth mentioning that there are different schools of thought with differing views on the mechanisms that create social capital. They also differ in their conception of social capital and trust either as an individual characteristic or at the level of groups, communities, or societies.

Trust is a core manifestation of social capital. It is formed in close social networks and interaction between individuals. In a cooperative organization, it facilitates transactions, breeds member commitment and loyalty, and motivates members to patronize the cooperative (Fulton and Adamowicz 1993; Fulton 1999; James and Sykuta 2006). The cooperative principles and ideology serve to strengthen the commitment of the members (Morfi et al. 2015), benefit them by reducing their transaction costs (Nilsson 2001). On the other hand, a growing body of evidence in the literature on agricultural producer cooperatives shows that members' trust, involvement, commitment, and social capital tend to erode in complex organizational structures (Fulton 1999; Svendsen and Svendsen 2000; Nilsson et al. 2009, 2012; Österberg and Nilsson 2009; Feng et al.

2015). At the same time as the cooperative ideology may be losing its importance as the glue that binds member commitment, farmers' relationship with their cooperative appears to be increasingly driven by business and economic considerations. Despite the fact that the economic literature abounds in studies on the role of social capital and other social influences in economic activity and performance, the prior literature has not investigated whether non-members also perceive the social capital of cooperatives as a trust-generating mechanism.

Micro- as well as macro-level analyses have shown that the effects of social capital on economic growth and financial development are robust (Knack and Keefer 1997; Guiso et al. 2004). Economic agents are more inclined to make long-term investments in a society with a higher degree of trust (Knack and Keefer 1997). The notion that higher trust frees individuals and firms from the need to seek protection against potential exploitation offers an explanation for the higher stock market participation and venture capital investment observed in more trusting contexts (Guiso et al. 2008; Bottazzi et al. 2016). Besides trust, social activity and interaction are also reported to promote stock ownership (Hong et al. 2004).

Physical proximity between individuals and their social interaction tend to generate trust and trustworthy behavior. The effects of social capital and trust on people's financial decisions are, thus, interwoven with the effects of familiarity. Individuals appear to rely on a heuristic in their decision making, and favor the known over new, unknown situations or things. The term familiarity can refer to practically whatever an individual has prior experience in – anything from, e.g., physical proximity to social influences. In the context of financial decision making, a familiarity bias occurs when people fail to diversify their investments, and instead, are likely to overweight assets that are domestic, proximate, local, or otherwise familiar. They may also prefer familiar investments over higher returns or over lower risks (Huberman 2001). Empirical studies show that investors tend to prefer familiar assets, whether in international stock markets, domestic portfolios, or personal savings (French and Poterba 1991; Kang and Stulz 1997; Coval and Moskowitz 1999; Huberman 2001; Duflo and Saez 2002; Portes and Rey 2005). An affective regional attachment, such as patriotism and loyalty to the community, can also determine the portfolio allocations of individual investors (Morse and Shive 2011).

The familiarity effect illustrates the mechanisms through which personal experiences and social identity affect people's economic outcomes. The environment in which they grew up is known to influence their preferences and beliefs later in life (Guiso et al. 2004; Malmendier and Nagel 2011). Past experiences shared by different individuals contribute to the creation of social capital and trusting behavior, and this, in turn, affects their financial behavior and facilitate the flow of capital for economic development (Guiso et al. 2004). There is rich real-world evidence in support of the social identity theory, which argues that belonging to the same group fosters bonding between people, as exemplified by the binding ties between members of a family, school, workplace, or community (Tajfel and Turner 1979; Akerlof and Kranton 2000; Akerlof and Kranton 2005). Social bonding is based on shared common characteristics. Prior evidence indicates, e.g., that farm-born individuals develop strong emotional ties to rural values, lasting throughout their lives (Cassidy and McGrath 2014). Moreover, it is argued that individuals derive economic utility by acting in adherence to an identity that matches certain specific values (Akerlof and Kranton, 2000). This finding is supported by observations of consumption decisions, which imply that people's identity affects their brand choices (Lam et al. 2010) and breeds customer loyalty (Homburg et al. 2009).

Hence, social preferences are obviously very closely attached to values. Several studies indicate that consumers' choices favoring local foods are driven by perceptions of local products as being of better quality, as well as by concerns over the carbon footprint and valuation of the local as such (La Trobe 2001; Darby et al. 2008; Dentoni et al. 2009; Grebitus et al. 2013). In the context of investments, the impact of subjective values can be seen in a growing interest in ethical and socially responsible investments. Such decisions may be guided by other preferences than merely by financial returns. Both empirical and experimental findings support the role of prosocial identity and ideology in ethical investments (Webley et al. 2001; Bauer and Smeets 2015). Some ethically minded investors are even prepared to take financial losses in their portfolio choices for the sake of complying with their morals (Lewis 2001). Furthermore, those who rely on values in their financial decisions may be more committed to ethical investing also in times of poor financial performance (Webley et al. 2001).

3.2 Loss aversion

Ample empirical evidence shows that many economic decisions made under uncertainty are characterized by behavior that is inconsistent with the theory of expected utility, which assumes that people behave rationally when the outcome is uncertain. The theory argues that people will make the decision that yields the highest utility on the expected terms, i.e., weighted by the probability of the outcome. Yet, an individual's personal risk preferences also influence the decision.

Loss aversion is one of the most widely documented behavioral concepts in economics. This is an inherent element of the prospect theory formulated by Kahneman and Tversky (1979). The theory relies on three pillars: 1) individuals have a cognitive tendency to evaluate uncertain outcomes against a certain reference point; 2) deviations from the reference point are coded as gains or losses (reference dependence); and 3) losses are felt as causing more pain than gains of the same size give joy (loss aversion), and the marginal utility of changes is diminishing, i.e., the utility of changes in wealth decreases the more they deviate from the reference point (diminishing sensitivity). Loss aversion entails that the perceived utility of changes around the reference point is perceived asymmetrically: losses are felt as larger than equivalent gains. Thus, the value function in the prospect theory is concave in the domain of gains and convex in losses, and steeper for losses than for gains. The S-shaped value function implies diminishing sensitivity. People weight their gains or losses in wealth in relation to the reference point, rather than the level of wealth as such. The current position, the status quo, is a natural point of reference, but the goals and aspirations of the individual are other possible reference points (Heath et al. 1999; Hoffmann et al. 2013).

Since the formulation of Kahneman and Tversky's (1979) prospect theory, a growing body of literature has tested it empirically in economic decision making in various contexts: e.g., in experimental and financial economics and consumer behavior studies. There is robust evidence outside of laboratory settings showing that people's behavioral tendency is to be more sensitive to losses than to gains. Empirical findings indicate that loss aversion can help to explain the observed stock market returns and actual trading behavior of individual investors (Shefrin and Statman 1985; Thaler and Johnson 1990; Benartzi and Thaler 1995; Odean 1998). Loss aversion can also affect people's decisions on household savings from their disposable income (Thaler and Benartzi

2004; Kőszegi and Rabin 2009). Apart from the economics context, applications of the prospect theory have emerged in the fields of health (Neuman and Neuman 2008) and transport (Stathopoulos and Hess 2012).

While there is growing interest in agricultural economics to draw from behavioral sciences in explaining farmers' choice behavior, yet corresponding studies incorporating the prospect theory are not as abundant as in the field of financial economics. The presence of loss aversion has, however, been established in a number of agricultural contexts. Bocquého et al. (2014) argue that agriculture is actually fertile ground for observing the type of preferences discussed in the prospect theory. This is largely attributable to the omnipresence of uncertainty in agriculture and the fact that farmers typically have various reference points. In their experiment (Bocquého et al. 2014), farmers were found to be twice as sensitive to losses as to gains. Moreover, their intentions regarding production in response to increases and decreases in payments under the reform of EU Common Agricultural Policy (CAP) exhibited loss aversion, implying cutbacks or even exits from farming, if payments were reduced (Barnes et al. 2016). This study is, to the best of my knowledge, the first to examine loss aversion in the context of agricultural cooperative members.

4 Summary of the essays

This section presents the objectives of the dissertation, briefly describes the data and methods used in the analyses and summarizes the main results of the four essays constituting the dissertation. The section concludes with a discussion on the implications of the results and proposes avenues towards the introduction of new cooperative investment instruments in Finland.

4.1 Objectives

The dissertation consists of four essays, all of which are intertwined with the theme of how to finance the growth of agricultural producer cooperatives. The essays examine potential sources of equity capital: e.g., retained earnings, voluntary member capital contributions, and equity from non-member investors. Figure 1 describes the perspective of each essay to the central theme of the dissertation. Essays 1 and 2 focus on the role of members in financing investments in cooperatives, whereas Essays 3 and 4 approach the question from the perspective of an outside, non-member investor.

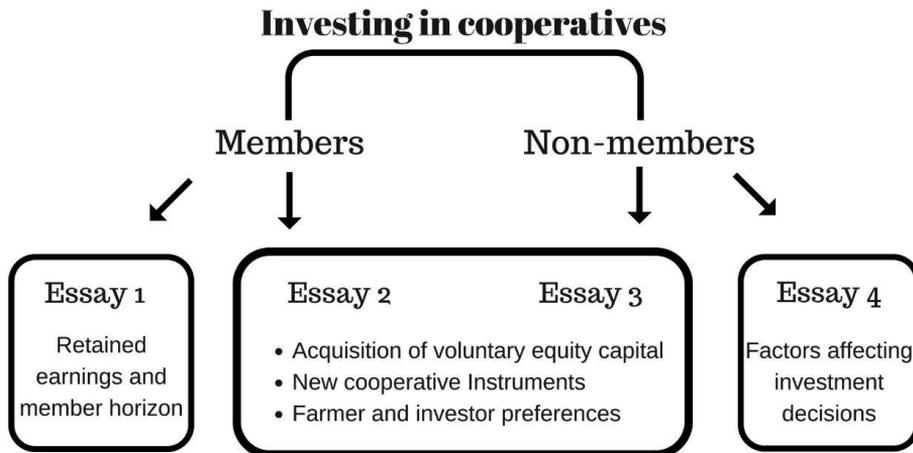


Figure 1. Structure of the dissertation and perspective of the essays to potential sources of financing.

The current organizational form of Finnish dairy cooperatives does not allow equity contributions from non-members. The purpose of this dissertation was to uncover the views and willingness of outside investors to invest in Finnish agricultural cooperatives, should the restrictions be relaxed to enable them to participate in financing cooperative growth with equity capital. This bundle of essays, thus, has a threefold significance: it contributes to the literature on agricultural and behavioral economics, with specific focus on investment in cooperatives. The essays provide useful information for growth-seeking producer cooperatives on new potential sources of member and non-member equity, to facilitate the design of new cooperative investment instruments in Finland.

The four essays of this dissertation are:

- *Essay 1: Revealing loss aversion and horizon in farmer preferences: The case of Finnish dairy cooperatives.*
- *Essay 2: Farmers' willingness to invest in new cooperative instruments: A choice experiment.*
- *Essay 3: Assessing the willingness of non-members to invest in new financial products in agricultural producer cooperatives: A choice experiment.*
- *Essay 4: The effect of social bonding and identity on the decision to invest in food production.*

Essay 1 examines the primary source of cooperative equity, i.e., retained earnings, with the aim of revealing the views of farmer members on retaining unallocated equity in their cooperative to finance its operational investments. The essay also tests whether the horizon problem plays a role in their investment preferences. The methodological approach is to elicit the valuations of cooperative members by contrasting cuts in their instant pecuniary benefits with improved long-term competitiveness and strengthened ability of the cooperative to deliver benefits to its members later. The attitudes of farmers towards the use of cooperative surplus are studied using a factor analysis method.

Essay 2 addresses the question of ownership right adjustment by investigating the preferences of farmers for new cooperative investment instruments. The aim is to reveal their opinions on non-traditional equity shares as well as their preferred modifications to the current control and residual rights, if new investment instruments were to be

implemented. Essay 3 approaches the same subject, but from the perspective of non-member investors. The objective is twofold: to shed light on the investor perspective towards cooperatives as potential investment targets, and to discover the terms on which investors with different motivations would be prepared to finance cooperative growth.

Essay 4 explores the individual characteristics that contribute to a positive disposition towards investing in domestic food production firms. The essay seeks to profile potential investors by identifying their characteristics and motivations, in order to facilitate the marketing of new investment opportunities to investors outside the farmer community.

A central theme running through the essays is the role that behavioral factors play in investment decisions. The behavioral focus in Essay 1 is loss aversion, a widely reported phenomenon influencing individual decision making and cognition in relation to gains and losses in cooperative benefits. Essay 2 makes its behavioral contribution by using modeling methodologies to discern potential differences between farmer segments in terms of their investment preferences, and to see which of them would be likely to behave differently, if the cooperative were to issue voluntary shares to its members. In a similar vein, Essay 3 identifies different investor types but shifts the focus to non-members, providing evidence on how their identity affects their investment choices. Finally, Essay 4 examines how various social factors influence the investment decisions of non-member investors. This last essay centers on the effects of familiarity and values on their attitudes regarding investment in cooperatives.

4.2 Data and methods

The data for this dissertation are derived from two questionnaires: one for members of farmer cooperatives (Essays 1 and 2) and one for non-member investors (Essays 3 and 4), with 406 and 845 respondents, respectively. The farmer data comprise the responses of members of five Finnish dairy cooperatives, two of which belong to the Valio Group, the largest dairy cooperative in Finland, while the other three are smaller independent marketing cooperatives. The investor sample consists of Finnish financial market professionals holding a certified financial advisor's diploma. This group of respondents represents a financially literate pool of potential investors, who can be expected to be

more capable of evaluating hypothetical new investment instruments than the average citizen with no attachment either to producer cooperatives or investing. The farmer survey was conducted in February 2014 and the investor survey in October 2014.

Dairy farming is the most important agricultural sector in Finland, both with respect to its share of agricultural income and prevalence throughout the whole country (Pyykkönen et al. 2012). The Finnish dairy market has a three-tier structure. Firstly, there is the leading processor Valio, a limited company owned by milk producers' cooperatives, and thus, organized in a holding structure. Valio was initially established to facilitate butter exports (Ollila and Pyykkönen 2012) by creating economies of scale in the processing and marketing activities of primary cooperatives (Bijman, Iliopoulos, et al. 2012). The second largest processor is Arla Foods, with a considerably smaller share of the Finnish dairy market when measured by the amount of milk received (Ollila and Pyykkönen 2012; Pyykkönen et al. 2012). Arla is an IOF, which transacts with local dairy cooperatives on supply contracts. Thirdly, there are a few regional marketing cooperatives, which can be characterized as independent, as they take care of the whole dairy chain from milk collection to wholesale of consumer products.

Beyond the federated structure of Valio, Finnish dairy cooperatives are very traditional as to their organizational form and ownership rights structure. Valio is fully controlled by its cooperative shareholders and has no outside owners. Member cooperatives are the only owners of Valio, and only dairy farmers are members of the cooperatives. The prevailing practice in Finnish dairy cooperative is that each member has one vote, and ownership is not individualized. The main mechanism of member remuneration is a patronage refund paid annually as a price correction based on the cooperative's performance. Upon joining the cooperative, members have the obligation to contribute equity capital, which is determined by the amount of milk delivered. Most dairy cooperatives pay a dividend – or interest, as it is called in Finland – on the member's equity share. The level of the annual dividend is not fixed but depends on the cooperative's performance. The rate of return on member equity has traditionally been very competitive, and thus, forms an incentive for members to pay the capital obligation in full. Besides this obligatory capital contribution, Finnish agricultural cooperatives can also issue voluntary shares for their members as investment instruments, although these have not been employed in dairy cooperatives. Pricing policies and adjustment of

surplus refund rates are currently the main mechanisms for accumulating equity capital for cooperative investments.

The approach used in both the farmer and investor surveys to analyze preferences on investment in cooperatives is the choice experiment (CE) method, which draws on the theories of consumer choice and random utility. According to Lancaster (1966), consumers derive utility from the attributes of goods rather than from the goods as such. Hence, CE questionnaires present a number of choice sets with several alternatives characterized by a set of attributes. In each choice task, respondents are requested to choose their most preferred alternative, which is assumed to give the greatest utility to them.

The CE method is a stated preference method, which is often used to test people's preferences in a hypothetical situation when empirical preference data are not available – e.g., their preferences on new products or policies. The method was initially introduced in the marketing and transportation literature, but is today used increasingly in non-market valuation to estimate prevailing attitudes towards policy changes in environmental and health economics (Louviere 2000). In agricultural economics, choice experiments are also frequently employed to study preferences for different production methods (Lusk et al. 2003; Michaud et al. 2013) and food attributes (Scarpa et al. 2005; Balcombe et al. 2014), as well as to evaluate agri-environmental policies (Scarpa et al. 2009; Schulz et al. 2014).

Given the primary objective of this dissertation – to examine preferences in hypothetical investment situations without available empirical market data – the CE method offers an ideal tool for that purpose. The choice experiment method is a novel approach in the context of farmer cooperatives. Grashuis and Magnier (2018) are among the few who have applied the CE method to study farmer cooperatives; yet, their aim was to elicit the preferences of consumers instead of farmers. Zemo and Termansen (2018) studied farmers' investment preferences outside the cooperative context, utilizing the CE method to reveal their willingness to invest in biogas. Qin et al. (2011) also used the method to assess the preferences of forest farmers for different property rights attributes in a forestland contract within the Chinese decentralization reform.

In the field of investment, however, the CE approach has so far been underutilized. Previous analyses of investor behavior have traditionally been based on market prices, transactions, or holdings, and more recently, also on field experiments. The use of surveys to study financial decision making has gradually gained ground (Nagy and Obenberger 1994; Kruse and Thompson 2003; Glaser et al. 2007), as their value in generating new datasets is being recognized more widely. The key challenge in choice experiments is that the studied options must be decomposed into attributes and levels of attributes. This simplifying of real-life investment situations may prove an almost insurmountable task. However, there are a few CE studies which have successfully applied the method to investment decisions and utilized latent class models to identify investor heterogeneity (Bateman et al. 2011; Anastassiadis and Musshoff 2013).

4.3 Results

This section presents an overview of the results of each essay.

Essay 1

In Essay 1, the question of cooperative financing is approached from within the cooperative: from the standpoint of internal financing and retaining of cooperative surplus as unallocated equity. This represents the first step in the accumulation of investment capital, before measures to acquire new equity contributions from cooperative members – or potentially, from outside investors. The surplus that the agricultural producer cooperative makes during the year may be distributed out as member benefits, but the rate at which the surplus is paid out or retained has to strike a balance between the investment needs of the cooperative and the members' satisfaction with the level of their benefits. A determining factor in the willingness of the members to retain surplus in the cooperative is how their horizon is aligned with that of the cooperative. Another influencing aspect has to do with the expected benefits of their investment over next few years.

The horizon problem is tested with a novel approach by means of a questionnaire survey using CE methodology. Farmers are asked to make tradeoffs between the current level of the patronage refund and interest (dividend), and the possibility to gain improved

benefits in the future, in the form of better producer price, increased amount of milk processed, or quality of production-related services. The farmers' relative preferences for the different benefits provided by the cooperative are then estimated from the choice data. Figure 2 illustrates the study frame of Essay 1.

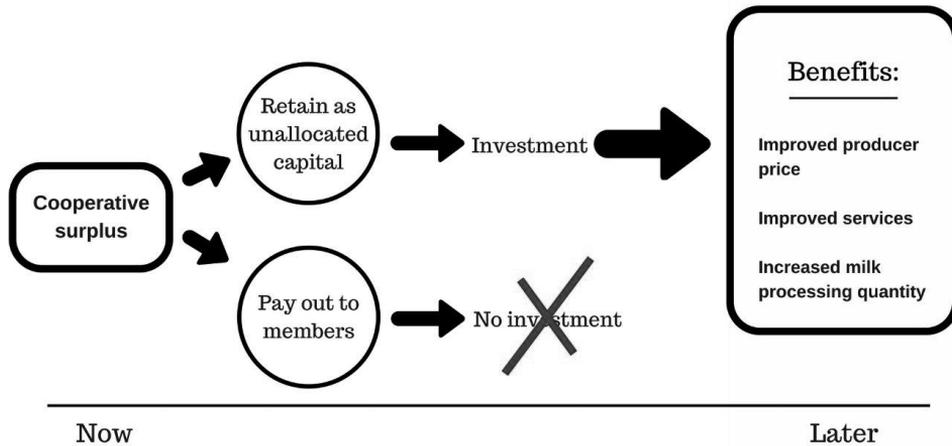


Figure 2. Financing cooperative investments with retained surplus.

The results reported in Essay 1 indicate that dairy farmers were, on average, willing to retain surplus in the cooperative, even if it means that their current refund levels would have to be cut. This finding is contradictory to the prediction of the horizon problem and signifies the high importance of the cooperative's long-term competitiveness to its members. However, there was some heterogeneity in the responses, since a group of farmers seemed to find the idea of forsaking instant benefits quite inconceivable. These farmers were more reluctant to give up their patronage refunds than their dividends. Although the refunds were not modelled in monetary terms in the CE design, the observed relative valuations actually reflect the much higher economic significance of patronage refunds over dividends at many dairy farms.

While respondents appeared to prefer policy alternatives where the cooperative's surplus refunds were reduced in order to restore its long-term competitiveness, there was strong opposition towards a situation where current refunds would be withheld altogether. The result implies that the residual distributions of the cooperative constitute an important source of income for dairy farms. Therefore, even if the cooperative

pursues a growth strategy and decides to finance it with retained earnings, it is necessary to maintain some level of remuneration to satisfy the membership.

As for accrued benefits, the results show a strong preference for competitive producer prices relative to the cooperative's production-related services and processed milk volumes. This finding underscores the importance of understanding the different expectations that members attach to the role of the cooperative in carrying out its purpose. The analysis revealed both asymmetry and loss aversion in farmers' preferences for benefits. Their relative valuations indicate that the potential gains of an investment were not valued as highly as potential losses were avoided. The result is consistent with the prospect theory and with a vast amount of empirical evidence on loss averse behavior in decisions under risk. However, this is a phenomenon that has not previously been documented in the context of farmer cooperatives. The tendency of cooperative members to avoid possible losses, even if they viewed the planned cooperative investment favorably, is a question that needs to be recognized by cooperative managements.

The factor analysis identified three farmer groups which differ in terms of their attitudes towards membership and the use of cooperative surplus: farmers who emphasized the cooperative ideology, farmers for whom the cooperative was mainly a means to gain market access, and farmers who appreciated the economic benefits of cooperative membership. Yet, residual returns were considered by all of the groups to strengthen the members' commitment to the cooperative. This can be understood as a need to consider setting a limit on the speed of cooperative growth, if financed with internal funds, so that the level of refunds satisfies the membership and the amount of retained funds is not too high.

Essay 2

Essay 2 broadens the question of member financing from internally generated funds to new investment instruments. The typology of cooperative models (Chaddad and Cook 2004) was used as a framework to test whether Finnish dairy farmers would support the relaxation of some of the restrictions inherent in the traditional cooperative model. The following attributes were tested: ownership rights limited to members only or allocated

also to non-members; redeemability and transferability of shares; residual returns based on patronage or investment; and expected level of risk and return. To lessen the cognitive burden on the respondents, the attributes were kept relatively simple. The current form of member equity was used as the baseline alternative in designing the CE tasks, and two other policy alternatives were offered based on varying levels of the investment attributes. All of these attribute levels, including the proposed new innovative cooperative investment instruments, are feasible to implement in practice, thanks to an enabling cooperative law which came into force in Finland in January 2014 (Pellervo-Seura ry 2013). However, should a producer cooperative intend to implement any novel investment options, its articles of association would probably have to be changed.

The choice data were analyzed by means of the random parameter latent class model. This method has the advantage of discerning preference heterogeneity in an easily interpretable way using a fixed number of respondent classes, while it also allows taste variation within classes. Figure 3 illustrates the study frame of Essay 2.

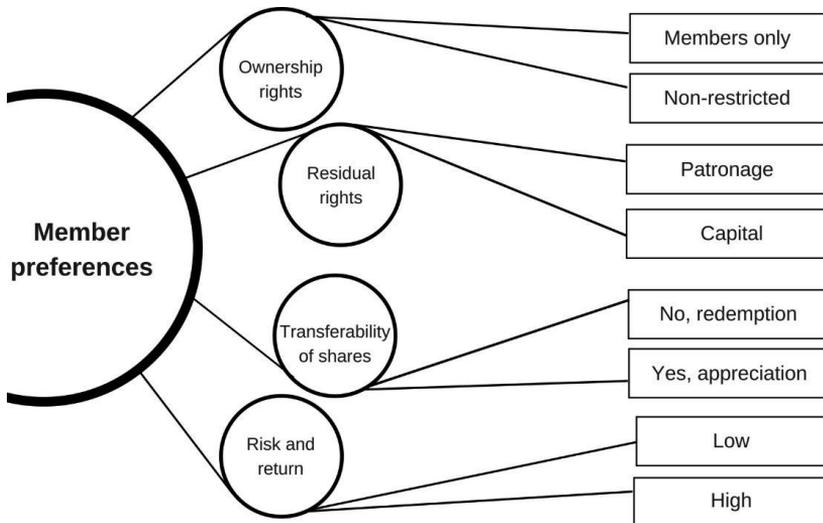


Figure 3. Alternative attributes regarding new cooperative investment instruments in the farmer survey.

The results of Essay 2 can be summarized in terms of three areas of interest: 1) respondents' willingness to choose new investment instruments over the basic form of cooperative capital; 2) their preferred attributes; and 3) detected latent investor classes.

Regarding the first point, farmers appeared positively disposed towards new cooperative investment instruments, as about 70% of respondents fell into classes where new policy alternatives were preferred over the status quo. This means that around 30% of the dairy farmers in the sample favored the current situation and rejected the proposed ownership structure innovations.

Some of the ownership structure adaptations gained wide support among the respondents, whereas their opinions on some investment attributes were sharply divided. A clear majority preferred restricting voting rights to members only. Of the offered new features, the transferability of equity shares, with a mechanism for appreciation based on firm value, was widely favored. The investor role of the members was seen in their preference for capital-based residual returns. They also supported the possibility to capitalize the returns, defined in the questionnaire as issuing of bonus shares from the cooperative's reserve funds. The capitalization of returns would, in effect, offer a mechanism for increasing the share of individualized cooperative equity. On the other hand, farmers unanimously shied away from high risk and return.

In light of the responses, the question of non-member ownership seems controversial. Farmers were clearly reluctant to give equal voting rights to outside investors, although some groups of respondents were indifferent between whether or not to invite non-members with preferential return, but without voting rights. The question of opening the cooperative to outsiders was, in fact, the key issue which set apart the three observed latent classes. The main finding was that while one class opposed the introduction of new financial instruments, the other two classes with fairly similar investment preferences were in favor of them. The status quo preferers stood out as a distinct preference class (class 1), but the two classes of respondents (classes 2 and 3) who preferred the policy alternatives were did not differ much from each other. Yet, the farmers in class 2 would not allow any ownership rights to non-members, whereas those in class 3 would welcome non-members with preferential return, although without voting rights.

Implementation of the new instruments characterized in Essay 2 would shift Finnish dairy cooperatives towards investor-share cooperatives or member-investor cooperatives, depending on the role of external investors, as described in Chaddad and

Cook's (2004) typology. A feasible model might be one where member-investors could benefit from residual returns in proportion to their shareholdings and appreciation of their cooperative shares, and there would be some kind of secondary market for voluntary cooperative shares. Such member investment instruments bear resemblance to the B-shares in the former Friesland cooperative, as described in Section 2.4. One of the policy implications of this essay is that, in an ideal case, cooperatives should not opt for just one new type of cooperative equity shares, but design at least two alternatives to acknowledge member heterogeneity.

An important conclusion regarding the survey methodology is that the perceived difficulty of respondents in making their choices has an effect also on the estimation results. The results reported here as the main findings were weighted by difficulty, since the standard errors of the estimated parameters were smaller if choices that were easier to make were weighted more in the estimation. An interpretation could be that respondents are likely to make more educated choices when they find the task easy, i.e., their preferences are more precise. Thus, the difficulty of the choice appears to be an important aspect to consider in designing future choice modelling studies.

Essay 3

Essay 3 examines the preferences of non-member investors for currently hypothetical investment instruments, which could be designed to attract growth capital for agricultural cooperatives. The essay represents a mirror image of Essay 2, as it provides new information on the willingness of non-members to contribute equity capital for cooperatives and the terms on which they would be willing to do so. The tested investment attributes were: voting rights; the form of return rights; capital appreciation; and expected risk and return. The first level of these choice attributes corresponded to the terms of an ordinary stock investment, and the two alternative levels represented shifts towards cooperatives as an investment option.

The levels of the voting rights attribute were designed to test the impact of the firm's ownership structure on investment preferences. More specifically, the controlling block of producer-owners might reduce the attractiveness of agricultural firms as an investment for outside shareholders, as suggested by the theory of the firm as well as by

prior empirical studies (Fama 1980; Bolton and von Thadden 1998; La Porta et al. 1999). The baseline level of the voting rights attribute was no voting right. The two other levels both gave external investors the right to vote, but one, described farmer members as holding a control block position, and in the other, the ownership structure was dispersed.

The choice experiment was so designed that respondents had to choose between three options: two policy alternatives and opting out. The risk of hypothetical bias was reduced by including the option of no interest in agricultural investment instruments, rather than forcing respondents to choose between given policy alternatives. Thus, their choices could be expected to better reflect their true preferences. This CE was part of a larger survey investigating the overall attitudes of investors towards investment opportunities in agriculture, the food production chain, and producer cooperatives. Some of the background variables elicited by the larger survey were used in this dissertation to explain the investment preferences of potential investors. Drawing on the prior literature on the effects of familiarity and identity on economic decisions, Essay 3 also explores whether a rural identity and rural living environment had any influence on the respondents' preferences for agricultural investments. Figure 4 illustrates the study frame of Essay 3.

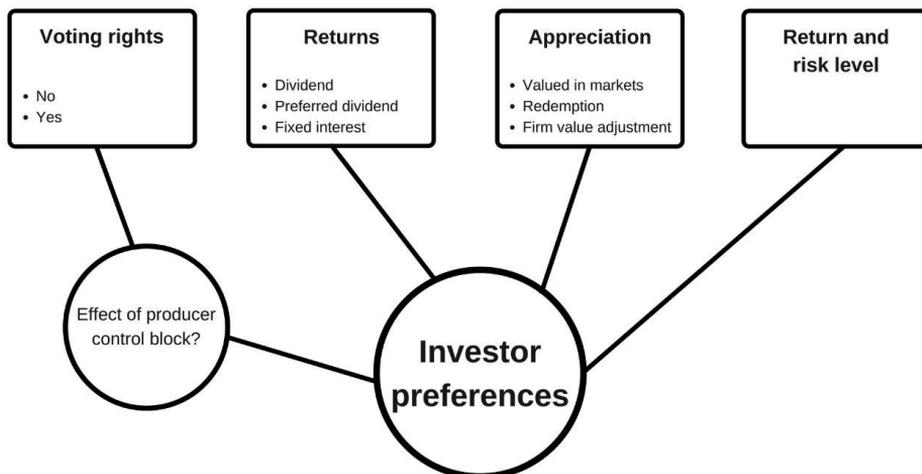


Figure 4. Alternative attributes regarding new financial products of agricultural producer cooperatives in the investor survey.

The objective in Essay 3 was to identify different types of investors based on their preferences. The responses were analyzed using a latent class model (LCM), which revealed three latent investor classes. These could be characterized as: return-seeking investors (class 1), ownership-oriented investors (class 2), and risk-averse investors (class 3). On the whole, investors falling into classes 1 and 2 were positively disposed to agricultural investment instruments, and together accounted for 89% of all responses. This suggests that the prospects for implementing new investment opportunities in agriculture look quite promising. In contrast to classes 1 and 2, the risk-averse class 3, representing the remaining 11% of respondents, preferred to refrain from agricultural investments and chose the opt-out.

The main differences between the investors in classes 1 and 2 were related to their preferences for voting rights and expected risk and return levels. The ownership-oriented investors in class 2 exhibited a strong preference for voting rights, rather than pursuing high returns and risk. By contrast, the dominant factor influencing the investment decisions in class 1 was the potential for high returns, defined on a par with the average long-term stock market return. These investors were prepared to accept riskier investment attributes, such as dividends and valuation in secondary markets. They did not require low-risk features, such as fixed interest return or security of capital with appreciation based on firm value, as did class 2 investors. However, both classes were in favor of the redemption of shares at their nominal value.

The block ownership by agricultural producers turned out to have no relevance for outside investors. They did not seem to perceive any risk that the producers would make decisions that might worsen their position as minority investors. Or, in the case of cooperatives, they saw no risk that the members would exercise their control to maximize producer prices in such a way that the residual returns to non-member investors would be jeopardized.

Interestingly, when the investor classes were analyzed further with respect to their characteristics, rural identity proved to be an explanatory factor for class 2 membership. Investors in class 1, in turn, were less likely to identify with a rural lifestyle. However, it is noteworthy that the investors' current domicile, whether urban or rural, had no influence on their investment preferences. Female respondents as well as those with

fairly long work experience in financial sector were more often categorized into the ownership-oriented investor class (class 2). The profiling of potential investors, which is described in more detail in Essay 3, has several practical implications. Investment capital would apparently also be available for agricultural producer cooperatives from investors who neither identified with a rural lifestyle nor with agriculture, but whose motivation to invest rested on the good return potential in the food production sector. Another group of investors were motivated by affective reasons and expected voting rights in return for their capital contribution. They seemed likely to sympathize with agricultural producers which would alleviate the risk of conflicting interests in cooperative decision making.

To conclude, the choice tasks analyzed in Essay 3 constitute a test of the invest-share cooperative model in Chaddad and Cook's (2004) typology. Allowing ownership rights to non-member investors could help to solve the financial constraints of agricultural cooperatives and facilitate their growth. However, for producers this would mean giving up at least a part of their control in the cooperative.

Essay 4

Essay 4 elaborates further on the behavioral and social aspects that may influence the investment decisions of non-member investors. The analysis approach was based on a broad set of attitudinal statements in the investor questionnaire. The theoretical framework was built on a large body of evidence on the role of values, social issues, and familiarity in economic decisions. The practical purpose of the study in the context of the growth of agricultural cooperatives was to increase the understanding of what motivates non-producers to participate in financing investment in cooperatives. The results can be utilized in marketing new financial instruments within the agricultural sector.

The variables of interest were constructed from a set of statements which respondents were asked to evaluate on a Likert scale. Respondents' self-reported rural identity was measured by the statement "Rural life forms an important part of my identity", and social bonding by "I feel bonding with the rural population". Their values regarding the consumption of domestic food and the vitality of the countryside were measured by two

statements: “I prefer food of domestic origin in grocery stores” and “Maintaining the vitality of rural areas is important to me”. Two measures for respondents’ investment attitudes were derived from the statements: “Food production firms provide an attractive investment opportunity”, and “Farmer-owned firms have social capital that is valuable to an investor”.

Unless explicitly specified as cooperatives, the investment targets in the questionnaire were described more generally as food production firms. This was done to prevent any bias in investors’ responses, in case some of them were unfamiliar with the cooperative form of organization or associated it strongly with a certain firm. Investors’ attitudes on the presence of social capital in farmer-owned firms were examined because these firms are usually organized as cooperatives. This question was relevant for the topic of this dissertation to see if non-members also viewed social capital as an inherent part of agricultural cooperatives with economic significance. The relation between the observed investment attitudes and the studied behavioral variables was analyzed using cross-tabulations and probit models. Figure 5 illustrates the study frame of Essay 4.

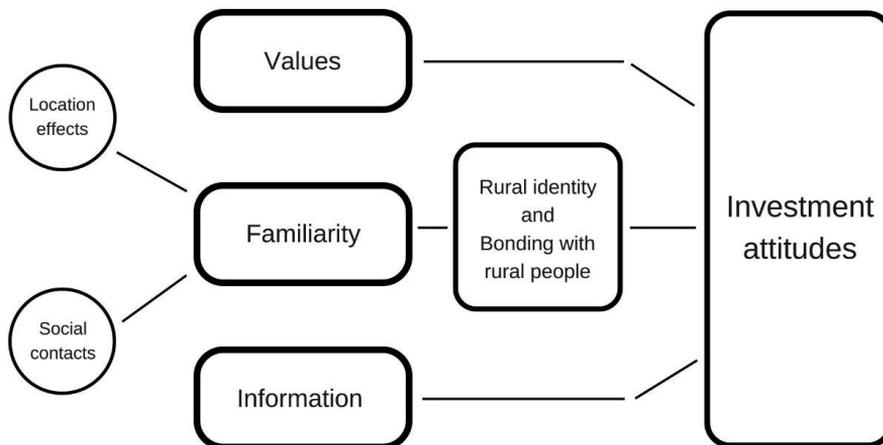


Figure 5. Formation of investor preferences for agricultural investments.

An analysis of the survey responses provided valuable new information on the formation of a rural identity and affective bonding with rural people. The probability of respondents reporting a rural identity could be seen to increase if they were born or were currently living in a countryside environment. The importance of agriculture for

local employment in their home region as well as having farmer relatives were also positively related to a rural identity. Familiarity with a rural environment, either in childhood or in adulthood, contributed to the creation of bonding ties, as did rural work contacts. In addition, personal leisure contacts also played a role in building a rural identity and rural bonding.

When the investment attitudes of rural-minded investors towards agriculture and food production firms were compared with those of non-rural-minded respondents, respondents with rural bonding ties or a rural identity were more likely than the others to view the sector as an attractive investment. A similar, but even stronger difference between rural-minded and other respondents was found for their appreciation of the social capital in producer-owned firms. The role of information on investment attitudes was studied by comparing respondents who were professionally involved in agricultural financing or had a relevant education to those who had no corresponding work experience or sector-specific training. Probit regression models confirmed that informational factors did not explain the differences observed in their investment attitudes, as opposed to the positive impact of familiarity and social influences on these attitudes.

Inclusion of the value variables, i.e., support for domestic food and the vitality of rural areas, into the probit regression model indicated their important effect for positive investment attitudes. This result implies that investors' food-shopping habits and their political stance on agriculture may show stronger predictive power for their agricultural investment attitudes compared to a rural identity as such. However, the probit estimation method did not consider any potential causality between these factors. The results further confirmed the significance of social bonding in the perceived social capital of producer-owned firms, in addition to the value variables. A general trust in people and self-reported risk aversion were also positively associated with an appreciation for social capital. This is consistent with prior evidence in the literature on the role of social capital as gluing individuals together and lubricating economic transactions. This finding suggests that farmer ownership can, in fact, decrease the perceived risk in agricultural investments.

The results imply that the provision of capital for agriculture and food production does not necessarily rest on rural-minded individuals alone. Despite the generally more positive investment attitudes of these respondents towards the sector, the attitudes of non-rural-minded respondents were also relatively favorable. Nonetheless, priming of rural ties and emphasizing the value of providing support to local farmers can promote investors' participation in new capital issues by domestic food production firms. According to the findings reported in Essay 4, familiarity and subjective values act as powerful drivers of financial decisions.

4.4 Conclusions

Various changes in agricultural policies, together with the internationalization of the food industry and retail markets, imply that competition in the market for dairy products is intensifying (Nilsson and Ollila 2009). The abolition of the EU milk quota system in 2015 has further accelerated this development, calling for strategic repositioning of agricultural producer cooperatives and implementation of new growth strategies (Hanisch et al. 2012). Yet, despite the growing investment needs of farmer cooperatives and the emergence of new cooperative models, the attitudes of potential investors have so far remained unexplored. This dissertation is, to my knowledge, the first effort to investigate the preferences of cooperative members and non-members regarding investments in agricultural producer cooperatives.

The four essays of this dissertation provide new knowledge on investment behavior in the context of Finnish agricultural producer cooperatives. The essays are based on an extensive questionnaire survey and analysis of the investment preferences of cooperative members and outside investors. The results offer useful information to practitioners, helping them to understand the factors that affect the willingness of farmers for long-term commitment to their cooperative through retained earnings, and to recognize the behavioral aspects that influence their investment decisions. The findings will facilitate the design of new equity instruments by which both members and non-members can make voluntary investments.

While the responses to the hypothetical survey questions should always be interpreted with caution, without making far-reaching interpretations about the actual demand in the

investment market, the results of this dissertation are quite reassuring for growth-seeking producer cooperatives in Finland. Cooperative members appeared willing to give up some of the surplus distributions to finance their cooperative's growth with retained funds and they also seemed positively disposed to new financing mechanisms. Implementation of such mechanisms would require modifications to the ownership rights structure and articles of association of the cooperative to offer sufficient incentives to potential investors. According to the results of this dissertation, these incentives could include, e.g., residual rights based on the amount of invested capital, the possibility to gain from increased firm value, and the transferability of cooperative equity shares. The establishment of a secondary market for voluntary cooperative shares would enable the cooperative to access long-term equity capital that would not have to be redeemed. A key question for the success of such financial instruments is related to securing sufficient liquidity in the secondary market and making the appreciation mechanism transparent.

The rationale for inviting outside investors centers on the need to diversify the sources of capital for producer cooperatives. If the cooperative decides to accept non-member investors instead of setting up a separate capital-seeking entity, a critical consideration relates to the allocation of control rights in the cooperative. The results of this dissertation suggest that a part of the farmer respondents would approve outside shareholders, but without endowing them with voting rights, and likewise, a part of the investor respondents would refrain from voting rights, provided that the expected return is attractive. However, the attitudes among the farmers and investors varied. A notable fraction of farmers would prefer not to open the cooperative to external investors. There was also a group of non-member investors who exhibited interest towards gaining control rights in the cooperative. Taking into account the heterogeneity of investment preferences among both farmers and investors, the obvious conclusion is that there are no ready-made solutions to the ownership rights question in agricultural producer cooperatives. New investment instruments need to be tailor-made to meet the specific objectives and requirements of the cooperative. The current Cooperative Act provides adequate flexibility – and opportunities that are bound only by innovativeness.

One way to reconcile the need for growth capital and member control of production-related decisions would be to invite outside investors to provide financing for the value

adding activities of cooperatives. The return potential is likely to be higher further downstream in processing, marketing, wholesales, and exports compared to primary production. On the other hand, there is a risk in issuing cooperative shares and setting up a secondary market. Even without voting rights, external investors may potentially exert significant influence on the decisions of the cooperative management, should the share value come under pressure and the management be inclined to take corrective measures to please investors (van Bekkum 2003). However, an ownership structure which allows the cooperative members themselves to benefit from actions that increase firm value would probably be more acceptable to members and would encourage them to open the cooperative to outside investors.

The observations of this dissertation regarding investment behavior can be summarized as follows. Firstly, farmer cooperative members may be averse to losses, even when their horizon is aligned with the cooperative's horizon and they would otherwise be willing to contribute to the cooperative's long-term sustainability. Secondly, because the cooperative can be viewed as an extension of the farm business, the economy of dairy farmers is tightly dependent on its success. Thus, any uncertainty regarding the farmers' cooperative investments understandably creates loss aversion when the stakes are high. Thirdly, the findings of this dissertation may inspire producer cooperatives to leverage on the notion of social capital in their efforts to attract external investors. The values and rural connections of potential investors may materialize as economic decisions to participate in supporting domestic agricultural production. Sourcing of local capital, not only from investors who are physically close to the cooperative but also from rural-minded investors, can mitigate potential conflicts of interest which opening to outside investors might bring about. And finally, this dissertation proves the usefulness of survey methods in profiling different investor types. A good understanding of the preferences and behavior of both cooperative members and non-members can pave the way for new investment opportunities for cooperatives in Finland.

References

- Akerlof, G. A. and Kranton, R. E. (2005), Identity and the Economics of Organizations, *Journal of Economic Perspectives* 19(1): 9–32.
- Akerlof, G. and Kranton, R. (2000), Economics and identity, *The Quarterly Journal of Economics* 115(3): 715–753.
- Anastassiadis, F. and Musshoff, O. (2013), Evaluating the role of financial flexibility in farmers' investment decisions using latent class analysis, Paper Prepared for Presentation at the 87th Annual Conference of the Agricultural Economics Society, University of Warwick, United Kingdom.
- Arla Foods (2017), Consolidated Annual Report 2017.
- Balcombe, K., Bitzios, M. and Fraser, I. (2014), Using attribute importance ratings within discrete choice experiments: An application to valuing bread attributes, *Journal of Agricultural Economics* 65(2): 446–462.
- Barnes, A., Sutherland, L.-A., Toma, L., Matthews, K. and Thomson, S. (2016), The effect of the Common Agricultural Policy reforms on intentions towards food production: Evidence from livestock farmers, *Land Use Policy* 50: 548–558.
- Barton, D. (1989), What is cooperative, in Cobia, D. (ed.), *Cooperatives in agriculture*: 1–20. Prentice Hall, Englewood Cliffs, NJ.
- Barton, D., Boland, M., Chaddad, F. R. and Eversull, E. (2011), Current challenges in financing agricultural cooperatives, *Choices, The Magazine of Food, Farm and Resource Issues* 26(3): 1–5.
- Bateman, H., Islam, T., Louviere, Jordan J., Satchell, S. and Thorp, S. (2011), Retirement investor risk tolerance in tranquil and crisis periods: Experimental survey evidence, *Journal of Behavioral Finance* 12: 201–218.
- Bauer, R. and Smeets, P. (2015), Social identification and investment decisions, *Journal of Economic Behavior & Organization* 117: 121–134.
- Bekku, O. F. van (2003), Incentifying the world's leading dairy cooperatives: distributing member benefits through low prices and high dividends, *Kungl. Skogs- Lantbruksakademiens Tidskrift* 142(15): 105–124.
- Bekku, O. F. van and Bijman, J. (2006), Innovations in cooperative ownership: Converted and hybrid listed cooperatives, Business paper presented at the 7th International Conference on Management in AgriFood Chains and Networks, Ede, The Netherlands, 31 May – 2 June, 2006: 1–15.
- Benartzi, S. and Thaler, R. H. (1995), Myopic loss aversion and the equity premium puzzle, *The Quarterly Journal of Economics* 110(1): 73–92.
- Bhuyan, S. (2007), The “people” factor in cooperatives: An analysis of members' attitudes and behavior, *Canadian Journal of Agricultural Economics/Revue Canadienne d'agroeconomie* 55(3): 275–298.
- Bijman, J. and Hanisch, M. (2012), Support for farmers' cooperatives: Developing a typology of cooperatives and producer organisations in the EU, Wageningen: Wageningen UR: 1–23.
- Bijman, J., Iliopoulos, C., Poppe, K. J., Gijssels, C., Hagedorn, K., Hanisch, M., Hendrikse, G. W. J., Kühl, R., Ollila, P. and Pyykkönen, P. (2012a), Support for farmers' cooperatives: Final report, Wageningen: Wageningen UR: 1–127.
- Bijman, J., Pyykkönen, P. and Ollila, P. (2012b), Support for Farmers' cooperatives: EU synthesis and comparative analysis report transnational cooperatives, Wageningen: Wageningen UR: 1–29.

- Bocquého, G., Jacquet, F. and Reynaud, A. (2014), Expected utility or prospect theory maximisers? Assessing farmers' risk behaviour from field-experiment data, *European Review of Agricultural Economics* 41(1): 135–172.
- Bolton, P. and Thadden, E.-L. von (1998), Blocks, liquidity, and corporate control, *The Journal of Finance* 53(1): 1–25.
- Bottazzi, L., Da Rin, M. and Hellmann, T. (2016), The importance of trust for investment: Evidence from venture capital, *The Review of Financial Studies* 29(9): 2283–2318.
- Bourdieu, P. (1986), The forms of capital, in Richardson, J. (ed.), *Handbook of theory and research for the sociology of education*: 241–258. Greenwood, New York.
- Cassidy, A. and McGrath, B. (2014), The relationship between 'non-successor' farm offspring and the continuity of the Irish family farm: 'Non-successor' farm offspring in Ireland, *Sociologia Ruralis* 54(4): 399–416.
- Chaddad, F. R. (2012), Advancing the theory of the cooperative organization: The cooperative as a true hybrid, *Annals of Public and Cooperative Economics* 83(4): 445–461.
- Chaddad, F. R. and Cook, M. L. (2004), Understanding new cooperative models: An ownership-control rights typology, *Review of Agricultural Economics* 26(3): 348–360.
- Chaddad, F. R., Cook, M. L. and Heckelei, T. (2005), Testing for the presence of financial constraints in US agricultural cooperatives: An investment behaviour approach, *Journal of Agricultural Economics* 56(3): 385–397.
- Chaddad, F. R. and Iliopoulos, C. (2013), Control rights, governance, and the costs of ownership in agricultural cooperatives, *Agribusiness* 29(1): 3–22.
- Coleman, J. (1988), Social capital in the creation of human capital, *The American Journal of Sociology Supplement* 94: S95–S120.
- Cook, M. L. (1995), The future of U.S. agricultural cooperatives: A neo-institutional approach, *American Journal of Agricultural Economics* 77(5): 1153–1159.
- Cook, M. L. and Chaddad, F. R. (2004), Redesigning cooperative boundaries: The emergence of new models, *American Journal of Agricultural Economics* 86(5): 1249–1253.
- Cook, M. L. and Iliopoulos, C. (1999), Beginning to inform the theory of the cooperative firm: Emergence of the new generation cooperative, *The Finnish Journal of Business Economics* 4: 525–535.
- Cook, M. L. and Iliopoulos, C. (2000), Ill-defined property rights in collective action: the case of US agricultural cooperatives, in Ménard, C. (ed.), *Institutions, contracts and organizations, perspectives from new institutional economics*: 335–348. Cheltenham UK Edward Elgar.
- Coval, J. and Moskowitz, T. (1999), Home bias at home: Local equity preference in domestic portfolios, *The Journal of Finance* 54(6): 2045–2073.
- Dairygold (2017), *Annual Report 2017*.
- Darby, K., Batte, M. T., Ernst, S. and Roe, B. (2008), Decomposing local: A conjoint analysis of locally produced foods, *American Journal of Agricultural Economics* 90(2): 476–486.
- Dentoni, D., Tonsor, G. T., Calantone, R. J. and Peterson, H. C. (2009), The direct and indirect effects of 'locally grown' on consumers' attitudes towards agri-food products, *Agricultural and Resource Economics Review* 38(3): 384–396.
- Duflo, E. and Saez, E. (2002), Participation and investment decisions in a retirement plan: the influence of colleagues' choices, *Journal of Public Economics* 85: 121–148.

- Fama, E. F. (1980), Agency problems and the theory of the firm, *Journal of Political Economy* 88(2): 288–307.
- Feng, L., Friis, A. and Nilsson, J. (2015), Social Capital among Members in Grain Marketing Cooperatives of Different Sizes, *Agribusiness* 32(1): 113–126.
- French, K. R. and Poterba, J. M. (1991), Investor diversification and international equity markets, *American Economic Review* 81(2): 222–226.
- FrieslandCampina (2017), FrieslandCampina Annual Report 2017.
- FrieslandCampina (2018), Participation in FrieslandCampina, <https://www.frieslandcampina.com/en/organisation/cooperative/participation-in-frieslandcampina/> (accessed 5/17/2018).
- Fukuyama, F. (1995), *Trust: the social virtues and the creation of prosperity*. New York: The Free Press.
- Fulton, M. (1999), Cooperatives and member commitment, *Finnish Journal of Business Economics* 48: 418–437.
- Fulton, M. and Adamowicz, W. (1993), Factors that influence the commitment of members to their cooperative organization, *Journal of Cooperatives* 8: 39–53.
- Fulton, M. and Hueth, B. (2009), Cooperative conversions, failures and restructurings: an overview, *Journal of Cooperatives* 23: 1–11.
- Glanbia (2015), Annual report 2015.
- Glaser, M., Langer, T., Reynders, J. and Weber, M. (2007), Framing effects in stock market forecasts: The difference between asking for prices and asking for returns, *Review of Finance* 11(2): 325–357.
- Grashuis, J. and Magnier, A. (2018), Product differentiation by marketing and processing cooperatives: A choice experiment with cheese and cereal products, *Agribusiness*: forthcoming.
- Grebitus, C., Lusk, J. L. and Nayga, R. M. (2013), Effect of distance of transportation on willingness to pay for food, *Ecological Economics* 88: 67–75.
- Guiso, L., Sapienza, P. and Zingales, L. (2004), The role of social capital in financial development, *The American Economic Review* 94(3): 526–556.
- Guiso, L., Sapienza, P. and Zingales, L. (2008), Trusting the stock market, *The Journal of Finance* 63(6): 2557–2600.
- Hakelius, K. (1996), *Cooperative values: Farmers' cooperatives in the minds of the farmers*. Swedish University of Agricultural Sciences, Department of Economics.
- Hanisch, M. and Müller, M. (2012), Support for farmers' cooperatives, case study report: Ownership and control rights transformations: The evolution of the Deutsches Milchkontor GmbH, Wageningen: Wageningen UR: 1–34.
- Hanisch, M., Müller, M. and Rommel, J. (2012), Support for farmers' cooperatives: Sector report dairy, Wageningen: Wageningen UR: 1–56.
- Hansmann, H. (1988), Ownership of the firm, *Journal of Law, Economics, and Organization* 4(2): 267–304.
- Harte, L. N. (1997), Creeping privatisation of Irish co-operatives: A transaction cost explanation, in Nilsson, J. and Dijk, G. van (eds.), *Strategies and structures in the agro-food industries*: 31–53. Van Gorcum, Assen.
- Heath, C., Larrick, R. P. and Wu, G. (1999), Goals as reference points, *Cognitive Psychology* 38(1): 79–109.
- Hendrikse, G. and Bijman, J. (2002), Ownership structure in agrifood chains: The marketing cooperative, *American Journal of Agricultural Economics* 84(1): 104–119.

- Heyder, M., Makus, C. and Theuvsen, L. (2011), Internationalization and firm performance in agribusiness: Empirical evidence from European cooperatives, *International Journal on Food System Dynamics* 2(1): 77–93.
- Hoffmann, A. O. I., Henry, S. F. and Kalogeras, N. (2013), Aspirations as reference points: an experimental investigation of risk behavior over time, *Theory and Decision* 75(2): 193–210.
- Hogeland, J. A. (2006), The economic culture of U.S. agricultural cooperatives, *Culture & Agriculture* 28(2): 67–79.
- Höhler, J. and Kühl, R. (2017), Dimensions of member heterogeneity in cooperatives and their impact on organization - a literature review, *Annals of Public and Cooperative Economics*.
- Homburg, C., Wieseke, J. and Hoyer, W. D. (2009), Social identity and the service–profit chain, *Journal of Marketing* 73(2): 38–54.
- Hong, Harrison, H., Kubik, J. and Stein, J. (2004), Social interaction and stock-market participation, *The Journal of Finance* 60(1): 137–163.
- Huberman, G. (2001), Familiarity breeds investment, *The Review of Financial Studies* 14(3): 629–680.
- Iliopoulos, C. (2014), Ownership, governance and related trade-offs in agricultural cooperatives, *The Dovenschmidt Quarterly* 2(4): 159–167.
- James, H. and Sykuta, M. (2006), Farmer trust in producer- and investor-owned firms: Evidence from Missouri corn and soybean producers, *Agribusiness* 22: 135–153.
- Kahneman, D. and Tversky, A. (1979), Prospect theory: An analysis of decision under risk, *Econometrica: Journal of the Econometric Society*: 263–291.
- Kalogeras, N., Pennings, J. M. E., Lans, I. A. van der, Garcia, P. and Dijk, G. van (2009), Understanding heterogeneous preferences of cooperative members, *Agribusiness* 25(1): 90–111.
- Kang, J.-K. and Stulz, R. M. (1997), Why is there a home bias? An analysis of foreign portfolio equity ownership in Japan, *Journal of Financial Economics* 46: 3–28.
- Knack, S. and Keefer, P. (1997), Does social capital have an economic payoff? A cross-country investigation, *The Quarterly Journal of Economics* 112(4): 1251–1288.
- Kőszegi, B. and Rabin, M. (2009), Reference-dependent consumption plans, *The American Economic Review* 99(3): 909–936.
- Kruse, J. and Thompson, M. (2003), Valuing low probability risk: survey and experimental evidence, *Journal of Economic Behavior & Organization* 50: 495–505.
- Kühl, R. (2012), Support for farmers’ cooperatives: EU synthesis and comparative analysis report - Food Chain, Wageningen: Wageningen UR: 1–38.
- La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (1999), Corporate ownership around the world, *The Journal of Finance* 54(2): 471–517.
- La Trobe, H. (2001), Farmers’ markets: consuming local rural produce, *International Journal of Consumer Studies* 25(3): 181–192.
- Lam, S. K., Ahearne, M., Hu, Y. and Schillewaert, N. (2010), Resistance to brand switching when a radically new brand is introduced: A social identity theory perspective, *Journal of Marketing* 74(6): 128–146.
- Lancaster, K. J. (1966), A new approach to consumer theory, *Journal of Political Economy* 74(2): 132–157.
- LeVay, C. (1983), Agricultural cooperative theory: A review, *Journal of Agricultural Economics* 34(1): 1–44.
- Lewis, A. (2001), A focus group study of the motivation to invest: ‘ethical/green’ and ‘ordinary’ investors compared, *The Journal of Socio-Economics* 30(4): 331–341.

- Louviere, Jordan J., Hensher, D. A. and Swait, J. D. (2000), *Stated choice methods: Analysis and applications*. Cambridge University Press, Cambridge.
- Lusk, J. L., Roosen, J. and Fox, J. A. (2003), Demand for beef from cattle administered growth hormones or fed genetically modified corn: A comparison of consumers in France, Germany, the United Kingdom, and the United States, *American Journal of Agricultural Economics* 85(1): 16–29.
- Malmendier, U. and Nagel, S. (2011), Depression babies: Do macroeconomic experiences affect risk taking?, *The Quarterly Journal of Economics* 126(1): 373–416.
- Masten, S. (2000), Transaction-cost economics and the organization of agricultural transactions, in Baye, M. R. (ed.), *Advances in Applied Microeconomics, Industrial Organization, Volume 9*: 173–195. Emerald Group Publishing Limited.
- Ménard, C. (2004), The economics of hybrid organizations, *Journal of Institutional and Theoretical Economics* 160(3): 345–376.
- Michaud, C., Llerena, D. and Joly, I. (2013), Willingness to pay for environmental attributes of non-food agricultural products: a real choice experiment, *European Review of Agricultural Economics* 40(2): 313–329.
- Morfi, C., Ollila, P., Nilsson, J., Feng, L. and Karantininis, K. (2015), *Motivation Behind Members' Loyalty to Agricultural Cooperatives*: 173–190. Springer, Cham.
- Morse, A. and Shive, S. (2011), Patriotism in your portfolio, *Journal of Financial Markets* 14(2): 411–440.
- Nagy, R. and Obenberger, R. (1994), Factors influencing individual investor behavior, *Financial Analysts Journal* 50(4): 63–68.
- Neuman, E. and Neuman, S. (2008), Reference-dependent preferences and loss aversion: A discrete choice experiment in the health-care sector, *Judgment and Decision Making* 3(2): 12.
- Nilsson, J. (2001), Organisational principles for co-operative firms, *Scandinavian Journal of Management* 17(3): 329–356.
- Nilsson, J., Kihlén, A. and Norell, L. (2009), Are traditional cooperatives an endangered species? About shrinking satisfaction, involvement and trust, *International Food and Agribusiness Management Review* 101–122(4): 22.
- Nilsson, J. and Ollila, P. (2009), Strategies and structures in the European dairy co-operative industry, *Journal of Co-Operative Studies* 42(2): 14–23.
- Nilsson, J., Svendsen, G. L. H. and Svendsen, G. T. (2012), Are large and complex agricultural cooperatives losing their social capital?, *Agribusiness* 28(2): 187–204.
- Odean, T. (1998), Are investors reluctant to realize their losses?, *The Journal of Finance* 53(5): 24.
- Ollila, P. (1989), Coordination of supply and demand in dairy marketing system, *Journal of Agricultural Science in Finland* 61(3): 135–321.
- Ollila, P. and Nilsson, J. (1997), The position of agricultural cooperatives in the changing food industry in Europe, in Nilsson, J. and Dijk, G. van (eds.), *Strategies and structures in the agro-food industries*: 131–150. Van Gorcum, Assen.
- Ollila, P., Nilsson, J. and Hess, S. (2014), Farmers' reactions to the internationalisation of cooperatives, *Agricultural and Food Science* 23: 291–306.
- Ollila, P. and Pyykkönen, P. (2012), *Support for farmers' cooperatives, case study report: Cooperative dairy processor Valio – structural development to its present stage*, Wageningen: Wageningen UR: 1–37.

- Ortmann, G. F. and King, R. P. (2007), *Agricultural cooperatives I: History, theory and problems*, *Agrekon* 46(1): 18–46.
- O’Shaughnessy, M., O’Connor, H. and Smiddy, C. (2012), *Support for farmers’ cooperatives: Country report Ireland*, Wageningen: Wageningen UR: 1–51.
- Österberg, P. and Nilsson, J. (2009), *Members’ perception of their participation in the governance of cooperatives: the key to trust and commitment in agricultural cooperatives*, *Agribusiness* 25(2): 181–197.
- Pellervo-Seura ry (2013), *Osuuskuntalaki 2014*. Kirjapaino Oy Fram Ab, Vaasa.
- Portes, R. and Rey, H. (2005), *The determinants of cross-border equity flows*, *Journal of International Economics* 65(2): 269–296.
- Putnam, R. D. (1993), *Making democracy work: Civic traditions in modern Italy*. Princeton University Press, Princeton.
- Pyykkönen, P., Bäckman, S., Kauriinoja, H. and Ollila, P. (2012), *Support for farmers’ cooperatives: Country report Finland.*, Wageningen: Wageningen UR: 1–39.
- Qin, P., Carlsson, F. and Xu, J. (2011), *Forest Tenure Reform in China: A Choice Experiment on Farmers’ Property Rights Preferences*, *Land Economics* 87(3): 473–487.
- Royer, J. S. (1999), *Cooperative organizational strategies: A neo-institutional digest*, *Journal of Cooperatives* 14: 44–67.
- Russell, L. and Briggeman, B. C. (2014), *Distributing patronage income under differing tax rates and member risk preferences*, *Journal of Cooperatives* 29: 27–49.
- Scarpa, R., Gilbride, T. J., Campbell, D. and Hensher, D. A. (2009), *Modelling attribute non-attendance in choice experiments for rural landscape valuation*, *European Review of Agricultural Economics* 36(2): 151–174.
- Scarpa, R., Philippidis, G. and Spalatro, F. (2005), *Product-country images and preference heterogeneity for Mediterranean food products: A discrete choice framework*, *Agribusiness* 21(3): 329–349.
- Schulz, N., Breustedt, G. and Latacz-Lohmann, U. (2014), *Assessing farmers’ willingness to accept “greening”: Insights from a discrete choice experiment in Germany*, *Journal of Agricultural Economics* 65(1): 26–48.
- Sexton, R. and Iskow, J. (1988), *Factors critical to the success or failure of emerging agricultural cooperatives*, USDA Report.
- Shefrin, H. and Statman, M. (1985), *The disposition to sell winners too early and ride losers too long: Theory and evidence*, *The Journal of Finance* 40(3): 777–790.
- Staatz, J. (1987), *The structural characteristics of farmer cooperatives and their behavioral consequences*, in Royer, J. S. (ed.), *Cooperative theory: new approaches*: 33–60. Washington DC, USDA Agricultural Cooperative Services.
- Staatz, J. (1989), *Farmer cooperative theory: Recent developments*, ACS Research Report 84.
- Stathopoulos, A. and Hess, S. (2012), *Revisiting reference point formation, gains-losses asymmetry and non-linear sensitivities with an emphasis on attribute specific treatment*, *Transportation Research Part A: Policy and Practice* 46(10): 1673–1689.
- Svendsen, G. L. H. and Svendsen, G. T. (2000), *Measuring social capital: The Danish co-operative dairy movement*, *Sociologia Ruralis* 40(1): 72–86.
- Sykuta, M. and Cook, M. L. (2001), *A new institutional economics approach to contracts and cooperatives*, *American Journal of Agricultural Economics* 83(5): 1273–1279.
- Tajfel, H. and Turner, J. (1979), *An integrative theory of intergroup conflict*, in Austin, W. and Worchel, S. (eds.), *The social psychology of intergroup relations*. Brooks/Cole, Monterey, California.

- Thaler, R. H. and Benartzi, S. (2004), Save more tomorrow: Using behavioral economics to increase employee saving, *Journal of Political Economy* 112(S1): S164–S187.
- Thaler, R. H. and Johnson, E. J. (1990), Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice, *Management Science* 36(6): 643–660.
- Ton, G. (2012), Support for farmers' cooperatives: Clustering European cooperatives: Towards a useful typology of cooperative profiles, Wageningen: Wageningen UR: 1–22.
- Valentinov, V. (2007), Why are cooperatives important in agriculture? An organizational economics perspective, *Journal of Institutional Economics* 3(1): 55.
- Vitaliano, P. (1983), Cooperative enterprise: An alternative conceptual basis for analyzing a complex institution, *American Journal of Agricultural Economics* 65: 1078–1083.
- Webley, P., Lewis, A. and Mackenzie, C. (2001), Commitment among ethical investors: An experimental approach, *Journal of Economic Psychology* 22(1): 27–42.
- Williamson, O. (1989), Transaction cost economics.: 136–159.
- Zaalmink, W. and Lakner, D. (2012), Support for farmers' cooperatives, case study report: The role of Dutch transnational cooperatives in cooperative development, Wageningen: Wageningen UR: 1–37.
- Zemo, K. and Termansen, M. (2018), Farmers' willingness to participate in collective biogas investment: A discrete choice experiment study, *Resource and Energy Economics* 52: 81–101.
- Zhang, T., Mallory, M. and Barry, P. (2013), Determinants of the patronage refund decision of Farm Credit System associations, *Agricultural Finance Review* 73(1): 102–118.