

Restructuring the agri-food value chains in post- socialistic Balkans: The dairy value chain in FYR Macedonia

Emelj Tuna

Faculty of Natural Resources and Agricultural Sciences

Department of Economics

Uppsala

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Abstract

Like most of the Western-Balkan countries, the Former Yugoslav Republic (FYR) of Macedonia experienced significant difficulties in adapting and modernizing its agricultural production in accordance to the highly competitive regional and EU markets. By examining the dairy value chain of the FYR Macedonia, this thesis presents the challenges and changes in the organizational and institutional setting of the agri-food value chains in post-socialist Balkan countries. Various theoretical approaches are applied to assess the competitiveness levels on each segment in the industry, as well as to characterize the institutional environment, the governance and the organizational structure, and the overall level of development and competitive prospects. A general conclusion of this thesis is that the dairy industry in FYR Macedonia is still under its competitive potentials. The institutional setting and governance, as well the organization of the chain, and the market structure and level of modernization, indicate that the dairy industry in the country requires further modernization and consolidation in order to reach its competitiveness potentials on both domestic and international markets.

The findings of this study are valuable for the actors in the dairy supply chain, since they provide information of each actor's position in the supply chain, the market structure, and the development of the chain in general. Two main contributions of this study are the analysis of contracts and the social network, both based on primary data collected from farmers in the FYR Macedonia. The analysis of contractual arrangements with dairies shows that transaction costs are main determinants of the choice of contracts. The analysis of the Social Network, in which the patterns of activation of social capital can contribute to finding a solution to the problems with the functioning of the farm associations and cooperatives in countries with similar socialistic background. The conclusions of these studies can be extended to other countries wedged in a long transition, and could easily transfer to the experiences in the countries from the Western Balkan region.

Keywords: dairy, competitiveness, institutional, social capital, contracts, FYR Macedonia, Western Balkan.

Author's address: EmeljTuna, SLU, Department of Economics,
P.O. Box 7013, SE 750 07 Uppsala, Sweden
E-mail: Emelj.Tuna@slu.se

Dedication

To my son Levent and my husband Shener for all the sacrifice, patience and support.

To my father, my role-model, for the inspiration and encouragement to follow my dreams.

Thank you for believing in me. Hope that I finally made all of you proud.

To accomplish great things we must not only act, but also dream; not only plan, but also believe.

Francerner von Heidenstam

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List of Publications

This thesis is based on the work contained in the following papers, referred to by Roman numerals in the text:

- I Tuna E. (2014). Competitiveness as a driver of change - the restructuring and consolidation of the dairy industry in the FYR Macedonia. Accepted for publication in the proceedings of the IXth AAEM Conference: *“The role of agricultural economic sciences in agriculture and rural development in the Balkan countries”*.
- II Tuna E., Karantitninis K. and Surry Y. (2014). To contract or not in the food sector of transition economies? To be submitted in *Agribusiness: An International Journal*.
- III Tuna E., Karantitninis K. and Hajdellari L. (2014). Social networks in post-socialist countries. Informal networking among dairy farmers in FYR Macedonia. Presented at the 14th EAAE Congress *“Agri-food and Rural Innovation for Healthier Society”*. 26-29 August 2014, Ljubljana-Slovenia
- IV Tuna E. and Nilsson J. (2013). Institutional mismatch in a transition economy. The collapse of Swedmilk Macedonia. *Journal of Agribusiness in developing and Emerging Economies* 3, 84-100.

Paper IV is reproduced with the permission of the publishers.

Abbreviations

AT	Agency Theory
FDI	Foreign Direct Investment
FYR	Former Yugoslav Republic
NIE	New Institutional Economics
SNA	Social Network Analyses
TCE	Transaction Cost Economics
WB	Western Balkan

1 Introduction

1.1 Background

In the process of transition, post-socialist, Western Balkan¹ countries faced many difficulties in adapting and modernizing their agricultural production to the highly competitive regional and EU markets (Murray, 2006; Lampiet *et al.*, 2009). The disruption of the existing system caused malfunctions on institutional and organizational level, significantly impeding the progress of their economies, thus the transition processes were gradual and slow. As part of the Western Balkan (WB), the Former Yugoslav Republic of Macedonia² (FYR Macedonia) experienced significant institutional changes from its independency in 1991, as well as adjustments to EU regulation, as a candidate country for the EU from 2005. However, with the transitional processes lasting for over two decades, there is still much uncertainty regarding the institutional and legal framework in the country. With the collapse of the socialist system, the existent relations that regulated transactions in the agricultural value chains were dismantled. The large agricultural companies (agro-kombinats³) were privatized, causing further segmentation on all levels of the value chains, and restraining the agro-food processing capacities (Lampietti *et al.*, 2009). Nevertheless, small-scale farms characterized farming during the whole period of communist collectivization which was also the case in one other post-socialist country, Poland (Dries and Swinnen, 2004).

¹ The Western Balkan region includes most of the countries from the Ex-Yugoslavian Federation (FYR Macedonia, Croatia, Montenegro, Bosnia & Herzegovina, Serbia and Kosovo) and Albania (Volk *et al.*, 2012).

² The country's reference within the United Nations system is "Former Yugoslav Republic of Macedonia" (FYROM) (UNSC Resolution 817/1993). The constitutional name is the Republic of Macedonia.

³ Large vertically integrated agricultural companies from the former socialist system.

The agricultural sector in FYR Macedonia is no different to the experience in most WB countries. On one hand it provides opportunities in terms of factor endowments such as favourable climate and natural resources for agricultural production, cheap labour force, and proximity to EU. But on the other it encounters excess of labour force, highly dependent on agriculture and small-scale farms on the edge of their subsistence (Lampietti *et al.*, 2009). In terms of its importance for the economy, the agricultural sector in WB countries contributes significantly, with a gross domestic product (GDP) from around 10% in FYR Macedonia and Serbia, to 21% in Albania for the period from 2005 to 2012 (FAO, 2014). The share of agricultural employment in these countries is also noticeable. FYR Macedonia has a share of 19% of the total employed population in agriculture, which is amongst the highest in the region⁴ (FAO, 2014). The largest problem of the agricultural production in the region is the farm structure, which in these countries is small scaled and fragmented. In FYR Macedonia, the average farm-size is 1.85 ha per household, however, 58% of the total farms belonging to the category of farms with less than 1 ha of agricultural land (FAO, 2014). Similar farm sizes are seen in Albania with 1.2 ha per farm, around 3 ha per farm in Bosnia & Herzegovina and less than 4 ha per farm in Serbia (Volk *et al.*, 2012). The small scaled farming often implies to primitive technology, limited access to resources as well as higher costs for transacting and market failures manifested in many of the WB countries (Kostov and Lingard, 2004). Additionally because of farmers' past experience with state-induced, non-voluntary cooperation, social capital among the rural population was damaged, leaving farmers with general distrust towards any type of formal type cooperation, and a tendency of distrust in the state (Chloupkova, *et al.*, 2003). This is reflected in the fact that there are only few farmers' organizations in the country and no dairy cooperative at the period that this research was conducted in (MAFWE, 2012).

In the case of dairy farming, besides the small farm size of 1-5 cows per farm, dairy farms in FYR Macedonia still use primitive farming techniques and instruments, considerably limiting their productivity and competitive/bargaining position, as well as their possibilities for growth (MAFWE, 2013). Milk is the most important animal product, participating with 46.7% of the value of animal output, and around 11% of the total agricultural output in 2012 (SSO, 2014). However, the milk yields of 3,099 kg/cow in 2013 are close to the WB countries average⁵ (which are the

⁴ The highest share of the employment in the agriculture is seen in Albania - around 55% of the total employment in the country (FAO, 2014).

⁵ Lower yields are seen only in Bosnia & Herzegovina and Albania.

country's major trading partner for milk and dairy products), but much lower than the EU-27 average (close to 6,700 kg/cow in 2011) (Eurostat, 2013).

Similar to the segmentation at the farm level, there is also segmentation in the down-stream in the value chain. The privatization of the agro-kombinats, lead to splitting up in the processing and retailing and disintegration of the relations and governance structures of the transactions along the dairy value chain. However, unlike dairy farming, and besides the fact that there are 77 registered dairies in 2013 (MAFWE, 2012) and food shops in the retail sector, the level of concentration is relatively high both in the dairy processing and retailing segment of the value chains. The situation in this segment of the dairy value chain varies in the WB and especially in FYR Macedonia's major importing partners. In Slovenia, an ex-Yugoslav and present EU country of similar size and number of inhabitants, there are only seven milk processing companies (Van Berkum, 2007). Croatia, with twice the number of inhabitants/consumers⁶, has 40 dairies. Serbia provides 8 million consumers through 200 dairies (Muminovic and Pavlovic, 2012). For all these countries, the most important role in the restructuring processes of their dairy industries was played by Foreign Direct Investments (FDI). For example, in FYR Macedonia, two of the three largest dairy processors are acquired and are part of large food groups such as the Danube Food Group and Lactalis. Four of the largest dairies in Bosnia & Herzegovina have foreign capital in their ownership structure. The same is the case in Croatia and Serbia (Danube Food Group), in which the largest dairy processing companies are also owned by the same foreign investors (Van Berkum, 2009). The recent trends in the dairy industries on regional level point to an increased tendency of investments and consolidation. From FYR Macedonia's perspective, the effect of FDI on regional level can not only be seen in the market concentration, but also through the constantly increasing trend of imports of UHT (Ultra-heat treatment) milk from these countries. Bosnia & Herzegovina has the largest share of 53% followed by Croatia with 18% of the total UHT milk imports in the country.

However, FDI in fragile political and business environments can sometimes transmit negative effects to the sectors and the economy. An example of such effect is reflected by the case of the Swedmilk dairy. This was the only green-field investment in the dairy industry in FYR Macedonia. The Swedmilk dairy bankrupted after only one year of operation, mostly because of opportunistic behavior by the investing partners, enabled by the institutional deficiencies in

⁶ FYR Macedonia – 2.11 million inhabitants; Slovenia – 2.06 million inhabitants

the sector and the country. The event caused a chain reaction, with long-term negative consequences for the dairy value chain in the country.

The economy of the FYR Macedonia is undergoing intensive restructuring. Similarly, the country's dairy value chain is in the process of transition. A systematic representation of the institutional environment, the governance structures, and the organization of the dairy value chain, can provide valuable insights to both the actors of the chain, and policy makers. It is timely to study and to enhance our understanding of the reasons behind the chain's inability to reach its competitive potential, and to investigate directions for the future development and adaptation.

1.2 Aim of the thesis

The overall aim of this thesis is to examine the organization and institutional constraints of the dairy value chain in FYR Macedonia, which obstructed the restructuring, the institutional development as well as its competitive position and potential for growth.

Specifically, the objectives of this thesis are to:

- I Examine the market structure and patterns of restructuring of the dairy value chain in FYR Macedonia, in order to ascertain its level of development and competitive position.
- II Analyze the choice of contract arrangements in transition countries, faced with institutional underdevelopment and inefficiencies of the legal framework.
- III Investigate the importance of social capital on the structure of informal social networks of dairy farmers in FYR Macedonia.
- IV Assess the impact of the business and institutional environment on the FDI outcomes, using the bankruptcy case of the Swedmilk dairy in FYR Macedonia as a characteristic case.

In paper I the problems of the industry are approached by describing the business environment and competitiveness characteristics of the dairy industry, and certain features of the market structure. Value chain approach is used to capture the fact that the competitiveness of one stage inevitably influences the competitive potentials for the remaining actors in the chain, and also the competitiveness of the industry in general.

The aim of Paper II is to provide empirical evidence on the transaction cost dimensions which influence the contracting decisions in post-socialist countries. Or more specifically, the choice whether to have formal contracts governing the transaction between the dairy farmers and their transacting partners/dairy processors, or not.

In paper III, patterns of informal social structures i.e. the networks of dairy farmers in FYR Macedonia are studied in order to see if these structures can be used for more efficient informational flow as well as improvement of farmer's competitive position in the value chain.

The purpose of paper IV is to provide an illustration of the institutional setting and deficiencies, through the case of the bankrupt green-field FDI investment – the “Swedmilk” dairy.

In the next Sections the overall theoretical framework and methodology underpinning the research in this dissertation is provided.

2 Theoretical framework

In describing how the institutional setting influenced the development processes and the competitive position of the dairy value chain in FYR Macedonia, this thesis incorporates different institutional and organizational theories. The aim is to capture the problems that hold back the development and modernization of the dairy value chain, approaching it from theoretical perspectives. The theoretical framework is presented in Figure 1.

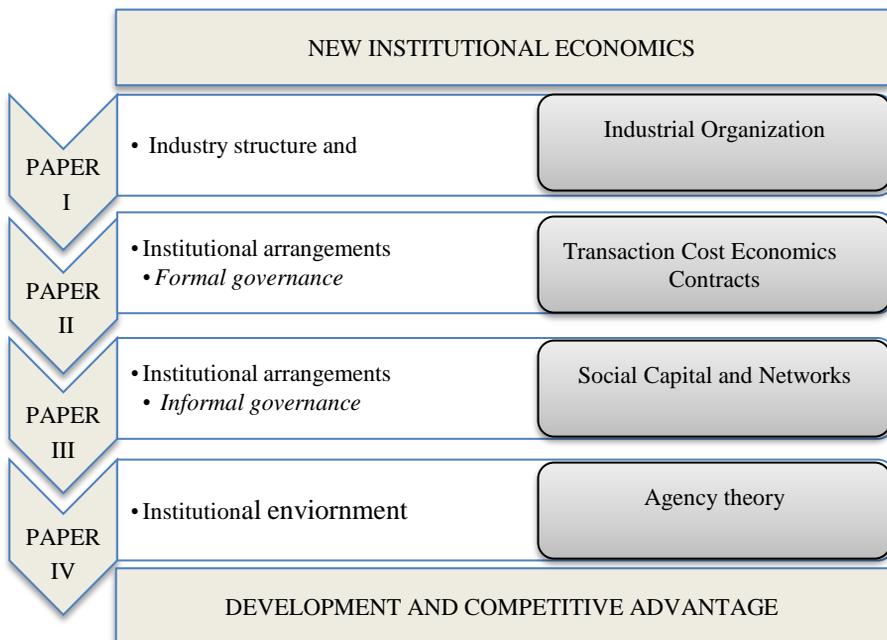


Figure 1. Theoretical framework

The theories which are used in each of the papers are presented in Figure 1, and further elaborated in sections 2.1, 2.2, 2.3 and 2.4 of the thesis. The literature is presented in the way thought to approach the aim of this thesis in the most logical manner. First, in order to give an overview on the *organizational constraints of the dairy value chain in FYR Macedonia*, a literature on industrial organization and competitiveness is presented, with major accent on the competitiveness features in transition countries. Then the *institutional constraints of the dairy value chain in FYR Macedonia*, are presented through two institutional analysing approaches: 1) The contracting patterns as formal institutional form of governance structure, or the restructuring of the vertical relations between dairy farmers and dairy processors, and 2) Social network analysis for the informal social structures that influence economic outcomes, mainly on horizontal level (informal networks of dairy farmers). The institutional setting is presented following the agency theory, and its implications in transition economies.

New Institutional Economics (NIE) is the main economic perspective on which the analyses of thesis are based on. It is the major theory which analyses the creation of institutions and institutional change, the economic activities and the organization of institutional structures which govern those (Hanisch *et al.*, 2007). NIE also introduces behavioural aspects in the economic analysis, identifying the importance of human behaviour in the economic activities and decisions. Most of the work in this thesis is positioned in the second and third level of Williamson's (2000) classification of social analysis. Certain specifics of the "Embeddedness" level are also included, since it is important to understand individual or group attitudes, and how they are shaped by their environment, and them their self, shape the economic environment.

1. Embeddedness (informal institutions, customs, traditions, norms and religion);
2. Institutional environment (formal rules of the game, especially property – polity, judiciary, bureaucracy);
3. Governance (play of the game, especially contracts, or aligning governance structures with transactions);
4. Resource allocation and employment (prices and quantities; incentive alignment).

The institutional environment, which is positioned on the second level of this model of social analysis, is central when portraying the economic instability that occurred because of the problems with unregulated institutional and legal framework in transition countries. Therefore, a practical example of how institutional deficiencies can be misused for extracting individual benefits is presented through the bankruptcy case of the "Swedmilk" dairy. The reasons

behind this dairy's failure are presented, using the Principal-Agent theory which considers the relations between the principal (often the owner of the business) and the agent (a manager or other person, firm etc., employed by the principal); and the agency costs which appear due to information asymmetries and possible opportunistic behaviour of the agent (Agency theory). On governance level (level 3), the problems with market failure in transition are investigated. "The transitional economy suffers from poor market development and little organizational experience" (Hanisch *et al.*, 2007 p.3). Therefore, the governance structures (contracting) between the dairy farmer-dairy processor are investigated, applying Transaction Cost theory, and the transaction cost determinants which influence the choice of establishing a contract, or not. Furthermore, in environments of institutional problems, describing governance structures on informal level is also important. Networks are often considered as a form of hybrid governance structures, based on relations and "spontaneous mechanism" to govern transactions (Williamson, 2005, p.16). They can also serve as a reflection on the level of development and role of informal institutions, norms and other types of societal embeddedness on the economic development of the society (level one in Williamson's model of social analysis).

2.1 Competitiveness of agricultural industries in Western Balkan countries

Agriculture is a sector which in the Western Balkans has comparative advantages primarily because of the favourable natural resources and climate, as well as the availability of cheap labour force and closeness to the EU (Lampiette *et al.*, 2009). However, the consolidation and modernization in the sector does not follow the patterns of restructuring of the agricultural sectors in Southern Europe (*ibid*). Therefore, in order to meet the changing consumer preferences, as well as the requirements of Foreign Direct Investments (FDI's) in the processing and retailing of agricultural products, the agriculture based industries are urgently necessitated to restructure their value chains and consolidate their production processes on every level (Dries *et al.*, 2009). The inefficiencies in the upstream part of the dairy value chain influence the competitiveness in the downstream parts of the chain. Furthermore, the previous socialist systems in many of the South Eastern European countries favoured investments in the industrial sector, resulting in large capacities with partial utilization, significantly increasing the costs of production and in this way lowering competitiveness (Brodman *et al.*, 2004)

This was also the case in FYR Macedonia, where the industry was tailored in accordance to the ex-Yugoslavian market. Loosing this market with the brake up of the Yugoslavian federation posed additional pressure to the intensive transitional reforms and restructurings.

The rate and level of restructuring of agri-food is country- or product-specific, and is mostly introduced by the restructuring and consolidation of the downstream segment, the entrance of FDI's, as well as the changes of attitudes of the dairy farmers (Reardon and Huang, 2005). Analysis of the FDI's role in the restructuring of the value chains and improvement of competitiveness contributes to the analysis too. In many cases in Central and Eastern Europe, FDI entry have significantly transformed the procurement practices and increased the efficiency of the chain by introducing centralized distribution and eliminating the numerous intermediaries in the chain (Dries *et al.*, 2004).

The World Economic Forum (WEF, 2012) defines competitiveness as: "The set of institutions, policies, and factors that determine the level of productivity of a country". Martin and Stifelmeyer (2001, p.3) define competitiveness on a sector or industry level as the "sustained ability to profitability gain or maintain market shares". The "Structure-Conduct-Performance" paradigm treats industry and market structure so to describe market structure and concentration, as well as the competitive advantage, and the measurements to quantify the competitiveness/rivalry on the markets/industry (ECD, 2003). In business strategy economics the competitiveness focus includes the factors such as: factor endowments, trade and FDI's influence on competitiveness (ECD, 2003). As a theoretical approach Industrial Organization is used to identify the characteristics of the industries', the connections among the actors in the value chain and the market structure and environment (Porter, 1980). The analysis of the value chain competitiveness, stresses that the main source of competitiveness is the structure of the value chain and relations among its segments (Simatupang and Sirdharan, 2002). The industrial competitiveness comes as a result of a complex set of relations between the state, the institutional structures and organizational capabilities of the society (Messner, 1997). Therefore, detailed information is required not only for the natural resources (factor endowments), but also specifics for the different levels of the value chain (Gorton *et al.*, 2013). A value chain approach to the competitiveness studies of agri-food industries is especially pertinent because of agricultural production features (seasonal and perishable nature of products), which requires tighter vertical coordination in order to establish efficient procurement practices. Porter's Five Forces model as an industry competitiveness approach includes both the horizontal (supply chain) and the

vertical, market structure perspective (Porter, 1998). Porter's determinants of the intensity of industry competition are presented in Figure 2.

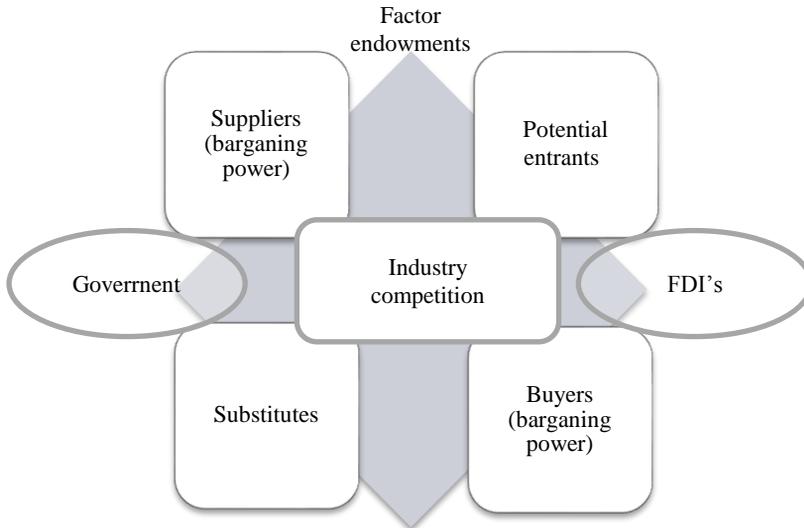


Figure 2. Key structural features of competitiveness on industry level (adapted from Porter, 1998).

As shown in the graphical presentation there are different determinants which shape the structure of competition on industry level and ultimately influence the competitive position of the industry (Porter, 2004). In the agri-food markets the suppliers and their bargaining power influence the profitability and competitiveness of the industry. However, suppliers are powerful only when the supply base is more concentrated than its industry partner, and when the suppliers are small and segmented they have limited access to capital and land (Gorton *et al.*, 2013). The entrance of the new subjects in the industry also contribute to the competitive scenery, but in many instances there are barriers to entry, such as: economies of scale, asset specific investments, access to distribution channels, product differentiation, and the substitute products which are present on the market (*ibid*). FDI's contribution is of importance since new entrants in an industry introduce investments in new institutional and technological capacities for modernization, as well as provide various types of assistance for their supplying partners. They are mostly present in the processing and the retail segment of the industries in Central and Eastern European Countries and can significantly contribute to the competitive environment in the industry, by motivating domestic firms to implement improved marketing and contracting practices (Gow and Swinnen, 1998).

Supermarkets and foreign retail chains, entering and taking over food retailing in these countries significantly impact the procurement practices and requirements in the dairy supply chains (Dries *et al.*, 2004).

Consumers' loyalty to certain brands that exist on the market is threat to new entrants too, especially in industries where certain domestic producers have products with tradition and quality which meets consumers' preferences (Porter, 2004). Government policies can act as both barriers to entry, through licencing requirements or bureaucracy procedures and as support of the competitiveness, especially on farm level, through government support/subsidies (Gorton *et al.*, 2013). However, there is little or even negative relation between government supports and the technical efficiency and competitiveness on the level of the food sector (Skuras *et al.*, 2006). The importance of government interventions is also recognized in the classification of the determinants that influence competitiveness in agriculture done by Gorton *et al.* (2013) (Table 1). In this classification, the determinants of competitiveness are organized as endogenous and exogenous. For the purpose of this thesis farm size and characteristics, factor endowments, government interventions and investments (in our case FDI) were of larger significance and were part of the competitiveness analysis of the dairy value chain in FYR Macedonia.

Table 1. Determinants of Competitiveness in Agriculture

Endogenous Determinants (controlled by the firms)	Exogenous Determinants (beyond the firm)
Size of the business	Factor endowments (natural resources, capital and land)
Legal status (ownership)	Consumer demand
Factor intensity	Government interventions in agriculture (e.g. subsidies, policies, regulations)
Product specialization vs. diversification	Investments in infrastructure
Production and marketing practices	Firm location
Structure of factors of production	
Characteristics of farm (labour)	

Source: Gorton *et al.*, 2013

2.2 Contracting through Transaction Cost Economics lens

New Institutional Economics centres the competitiveness concept on minimizing the transaction costs which occur in the form of information, negotiation, coordination and monitoring (Williamson, 1985). The basic assumption is that the organizational structure that the decision makers will adopt is going to be the one that minimizes total cost (Production Costs plus Transaction Costs) (Williamson, 1985, 2000; Menard and Valceschini, 2005).

Transaction Cost Economics (TCE) explains how certain governance structures emerge and function (Williamson, 1979, 1985). It is an interdisciplinary field suitable for combining economics and business with other areas such as agricultural economics and business, with the transaction as the elementary unit of analysis (Williamson, 1985).

Performing Transaction Cost analysis requires detailed knowledge of the studied industry, as well as developing deeper understanding of the various suppliers-buyer relationships at various stages in the value chain. The analyses of the economic aspects that characterize the organization of agriculture are determined by the basic features of the agricultural commodities. These features may influence the organization of the production and distribution (Masten, 2000). Agricultural inputs are posed to a great deal of risk in terms of yield and price, because of the seasonal and uncertain nature of agricultural production which is hard to predict in advance. Accordingly, the organizational form in the agro-food chain has to be designed in a way which will enable meeting each agricultural firm's objectives and farming constraints (Allen and Lueck, 2002; Menard and Klein, 2004). Exchange in agriculture is uncertain and complex primarily because of the nature of production and products specificities. These specificities require alternative organizational forms which would lower both production and transacting costs (Young and Hobbs, 2002). Governance structures can occur in different forms, from markets to vertical integration, with different hybrid forms between those two extremes (vertical coordination governed by contracts, network governance structures, or cooperatives) (Tadelis and Williamson, 2012). As a hybrid form of governance, the primary goal of contracts is to establish a set of predefined formal obligations between the transacting partners and their enforcement (Masten, 1999). Furthermore, they are, the mechanism for "risk transfer, incentives alignment and transaction cost economizing" (ibid, p.26). The production specificities along with the large differences in farmers' size (especially viable in the rural areas), characterizes contracting in agriculture as complex and variable (Eggertson, 1990). When the exchange becomes complex, more actors and stages are involved and transactions become uncertain, human behaviour and trust contribute to the level of transaction costs and contribute to the economic progress (Rao, 2003). This also means that the costs for conducting and monitoring of the transactions also increase (Powell, 1990). Lower trust increases the costs for monitoring of the exchange (Williamson, 1985). In order to buffer these complexities and uncertainties in agriculture, contracts are used as means for proper allocation of risks and incentives, as well as avoiding hold-up problems, and reducing bargaining costs for the transaction (Joskow, 2003).

Contracting in agriculture may take different forms. When their form is considered, agricultural contracts can be classified as formal and informal agreements which can occur in either verbal or written form. They can also be classified in accordance to the period of their duration as short-term (seasonal) or long-term contracts. In accordance to their structure and the level of specification of the transacting conditions, they can also be characterized as vaguely or specifically defined agricultural contracts (Will, 2013). Regardless, of their form, duration and structure, contracts are acknowledged as inevitably incomplete and costly to enforce. They are incomplete in the sense that it is impossible to foresee all the outcomes of the transaction in advance, and costly to enforce since in many instances third-party involvement is needed in order to determine if the obligations in the transactions were met. Even when contracts are detailed and clearly specified, the unanticipated future uncertainties leave room for opportunistic behaviour (Williamson, 1985; Masten 2000). Such opportunism is more pronounced in underdeveloped institutional settings and countries with high costs of contract enforcement. Such is the case of post-socialistic economies, where the legal framework is either underdeveloped or inoperative (North, 1990). Or as Wagner (2004) states, the reconstruction of the transitional societies would require not only economic reforms, but also reforms of the legal and political systems.

In developed market economies, contracts provide valuable safeguard to the transacting parties, and in transaction costs terms, the most influential threat that necessitates safeguarding is created by asset specific investments and uncertainty (North, 1990; Williamson, 1996). Along with the complexity of agricultural products, the uncertainty and the possibilities of information asymmetries, asset specificity has been traditionally the main focus of transaction cost economics. It refers to the alternative uses of an asset, which would not have the same productive value if applied for different purposes (Williamson, 1985). As the degree of investments in transaction specific asset increases, so does the need for complex, long-term contracting or even vertical integration for guarding of the transaction (Barry *et al.*, 1992). Other Transaction Cost dimensions which contribute to the choice of governance structure are the frequency of the transaction and the uncertainty under which it will take place. More frequent (repeated) transactions motivate the continuity in the seller-buyer relations, lowering the costs of the transaction. Therefore, frequent transactions are easier to observe and monitor, they also provide the partners with valuable information about the other party lowering the costs of contracting through the spot market. Accordingly, infrequent transactions give chances for opportunistic behaviour and taking advantage of the informational asymmetries that might be present. Thus transactions of this kind are better

managed when they are conducted in tighter forms of governance structures (Williamson, 1985; Menard, 1996).

Uncertainty is an exogenous variable of TCE pointing to the possible unforeseen variations of the conditions that the transaction will take place in. It can also occur as a result of certain behavioural properties of the transaction (Williamson, 1985). The level of uncertainty also rises when asset specific investments increase (Williamson, 1979 and 1985). Accordingly, in order to safe-guard the asset specific investment and lower uncertainty, stronger coordination or closer integration will be favoured (Menard, 1996). As the most important determinant of transaction costs, asset specificity can be of various types: site specificity, physical asset specificity, human asset, dedicated assets, brand name capital and temporary specificity. Transaction costs are also identified as information, negotiation and monitoring costs. Information costs are unavoidable and concern information about buyers, sellers, prices, products and are the first issue faced by every firm or individual participant in a transaction. Negotiating costs are associated mostly with the act of writing the contract itself, and specifying/negotiating the specific terms under which the contract will be executed. The costs of monitoring or contract enforcement include monitoring human behaviour in the transactions, or supplier/buyer interactions in meeting the terms of agreement, product quality measurement, law enforcement of contracts malfunctions and breach, etc. (Hobbs,1996).

The applied research in transaction cost economics can be based on different methodological approaches, such as case studies, historical qualitative and quantitative econometric models (Machner and Ricman, 2008). Many of these empirical studies provide evidence on the relation between transaction specifics and the contracting arrangements. The empirical assessment of contracting a specific industry, provide inside on the various contracting patterns in that industry (Machner and Ricman, 2008). The most recognized empirical studies which relate transaction costs or more specific asset specificity with the length of contracts are done by Joskow in the coal industry (1987). Masten and Crocker (1985) identify the same relation between the length of contracts and product specifics. Lyons (1994) related the asset specific investments in engineering and the decision to contract or not in the first place. However, “there has been little systematic statistical analysis of agriculture or the organization of agriculture transactions from a transaction cost perspective” (Machner and Ricman, 2008, p.36). More recent studies are dealing with the formation of institutions in the agri-food industry in regards to the quality signals send to the consumers (Hobbs, 2003). The relation among the producers and the processors is described in the case of the hog and pork industry in Quebec by Larue *et al.*'s (2004). In all these studies, the applied

research in TCE contributes not only for the understanding of the governance structures in agriculture, but also contributes to the development of the TCE theory itself (Machner and Ricman, 2008).

2.3 Social capital and social networks

In most cases, networks arise as informal mechanisms of coordination, based on individual interaction, and restricted to limited groups with related interests (Thompson, 2003). Similar to other governance structures, networks also contain behavioural aspects in the form of trust, and loyalty which is critical for social capital (Rao, 2003). Putnam (1993) integrates trust, norms of behaviour and reciprocity of the ties between individuals as measure of social capital. Trust reduces transaction costs and is a contributor to economic progress (Rao, 2003). Absence of trust could induce significant costs, as joint and coordinated activities reduce costs for information search, contracting and contract enforcement. Trust also decreases costs for monitoring of the exchange (Williamson, 1985; Paldam and Svendsen, 1999).

An exact definition for social capital does not exist, since its definition depends on the field it has been applied in. What is universal for all social capital definition is that it provides actors of certain networks with resources, which can be accessed only through these social relations (Kadushin, 2012). The social capital side of networks is described by Coleman (1988, p.17) as the “total amount of benefits that a person can draw (without collateral or high interest rates), on his network, if necessary”, or in network terms it is the “network person has built (network density)”. It is social capital that positively influences the transfer and quality of information by reward and punishment mechanisms (Arrow, 1999). It also contributes to social welfare through the general trust on a society level (Rothstein and Stole, 2002). Accordingly, one segment of social capital focuses on the “formal” forms of social capital, or more specifically the part of social capital which is institutionalized and accessible by everyone in the society (Putnam, 1993). Another part of social capital is considering the social capital held by individuals, which is especially significant for countries with inefficient institutions and institutionalized cooperation, although not necessarily in positive connotation (Coleman and Bordieu, 1993; Raiser *et al.*, 2002). A common agreement of both views is that regardless of the level, social capital is expected to assist economic development.

Granoveter (2005) views informal relations or the non-economic actions as an important shaper of social life and economic activities. This is what he calls “social embeddedness”, or the way economic actions connect and rely on informal (non-economic) institutional formations. Embeddedness is important,

as it provides: “economies of time, integrative agreements, Pareto improvements in allocative efficiency, and complex adaptation” (Uzzi, 1997, p.35). It affects the way the actors in the network are connected to the network and how the features of the network are influenced by the actors that constitute it (Granovetter 1973, 1985; Uzzi, 1997). Uzzi (1996) outlines the structural embeddedness approach, as an approach which stresses the structure and quality of ties importance in generating access to exclusive opportunities and resources. By identifying certain patterns of grouping, it can be identified how embeddedness contributes to the efficient transfer of information, and joint problem solving arrangements (Uzzi, 1996, 1997).

The levels and patterns of social capital are predetermined and rooted in the historical background of each society (Putnam, 1993). The importance of social capital in all the levels and forms it may take is seen in the social capital patterns of post-transition countries (Raiser *et al.*, 2002; Murray, 2006; Lissowska, 2013). It was the political background which had significant influence on the type of relations and views of society. It has been therefore argued that the general level of social capital in those countries is low, because of the State influence in the social organizations. In this respect there has been an accumulated distrust in public institutions, and the perception that individual social capital does not produce benefit on macro, societal level (Lissowska, 2013). At the same time, and especially in the case of the rural areas, extended trust in informal networks (kinship, friendship) remained undamaged even during the period of centrally-planned economy (Murray, 2006). However, evidence shows that these types of relations contribute to economic growth less than properly developed trust in formally institutionalized cooperation and involvement in civic organizations – which is the case for the fully evolved market economies (Raiser *et al.*, 2002). The connections among actors in rural areas are expected to reveal the cognitive side of informal networks in terms of trust, norms of behaviour; concepts which are relatively abstract and difficult to measure. It is also necessary to have knowledge of the general structure that influences collective actions and decision making (Groetaer and Van Bastelaer, 2001; OECD, 2001).

Social Network Analyses (SNA) is rooted in the fields of sociology and psychology. As an interdisciplinary field it is used to define social concepts and behavioural patterns in the social world in various fields of science (Coleman, 1988, 1966; Granovetter 1973; Borgatti and Xun, 2009). The connection between social capital and networks has been long recognized in the literature (Bourdieu, 1983; Coleman, 1988; Burt, 1992; Putnam 1995, 2000; Lin, 2005). From a social capital perspective, networks are considered to be the observable (definable) part of social capital, and the means for access to

the embedded resources in the network. (Lin, 2001, 2005). The quantity and quality of the embedded resources is closely related to the structure of the network. Therefore understanding the patterns of network formation reveals valuable information about the sources and levels of social capital (Lin, 2005). Social network analyses have been useful in studying economic performance (Uzzi, 1996; Powel, 2003). These analyses include description of the way social structures are formed, description of their assets as well as the trigger which activates their creation. The focus is often put on different aspects, one of them being the informal relationships which influence economic outcomes. Wasserman and Faust, (2009) classify relations based on the type and incentives for cooperation as: close relations (kinship, friendship, preference), relations based on material resources incentives (lending/borrowing, buying/selling), and transactions which include non-material resources and informational flow (communication, sending/receiving information). In methodological terms, networks are defined as bounded (finite) sets of actors (nodes or people, firms, countries), connected by diverse types of relations (kinship, friendship, exchange, cooperation, competition) (Hanneman and Riddle, 2005; Wasserman and Faust, 2009). Societies are built on these groups with structural differences (religious and ethnic groups, gender, education), accordingly their influence on the economic wellbeing and progress will differ (Crudel, 2005).

2.4 Agency theory

Inadequate or weak institutional structures involve different types of costs for the parties involved by an economic relation. When the economic relations are established between the seller and a buyer, between an employer and the employees, or between different investors in the same project the analysis of these relations are based on the principal-agency theory, which is one part of the theory called the agency theory (Eisenhardt, 1989). Agency theory is a branch of NIE focusing on the principal-agent relations, in whom the principals' role is to assigning tasks, and the role of agents is to execute these tasks. Another branch of this theory is the positivist branch which is based on the assumption of the existence of diverging interests in the principal-agent relations (Jensen and Meckling, 1976, Fama and Jensen, 1983). Regardless of the focus, the theory is appropriate when there are conditions for opportunism by the agents, and there are uncertainties of the transacting outcomes (Eisenhardt, 1989).

In many attributes, agency theory shows similarities with TC theory, but with different focus and several distinctive independent variables (Table 1).

Both theories contain the assumption of human behaviour (bounded rationality and opportunism or self-interest seeking with guile) as being crucial for the possible deceitful behaviour from one or more actors in a relation. They also emphasize the need of contract governance in order to mitigate the information-asymmetry problems that are the core of the principal-agent relations. The relations between principals and agents are often governed by contracts. However, in the previous section we discussed that the institutional uncertainties, accompanied by the human aspects of the actors, makes foreseeing all possible outcomes of the transaction impossible, thus a complete contract does not exist in the reality. In turn, this contract incompleteness creates opportunities for agents to act in their best interest instead (Eisenhardt, 1989). As in the case of transaction costs, the monitoring costs against opportunistic behaviour are the central part of the principal means to control and monitor agents (Jensen and Meckling, 1976; Jensen and Meckling, 1979).

Table 2. *Agency theory and its similarities and differences with Transaction cost analyses*

	Similarities	Differences
TCE and Agency Theory	Behaviour assumptions: bounded rationality opportunism	<u>Transaction Cost Economics:</u> 1) organizational boundaries 2) focus on asset spec. and small number bargaining
	Hierarchies = Behaviour based contracting	<u>Agency Theory:</u> 1) relations between contracting parties (agents and principals);
	Markets = Outcome based contracts	2) Focus on information asymmetries and risk attitudes.

Source: Eisenhardt, 1989

The literature classifies agency costs which emerge as a result of agents' opportunistic behavior as (Jensen and Meckling, 1976; Jensen and Meckling, 1979; Barney and Ouchi, 1986): i) Monitoring expenditures on the part of the principal refer to the costs related to regulating and monitoring the agent's behavior. In general this would involve a contract that defines the rights and obligations of the agent and would also ensure contract enforcement. Furthermore there are mechanisms which could stimulate agents to behave in principal's best interest in terms of bonuses, profit sharing etc. However, all of these mechanisms involve additional cost for the principal (Fama, 1980; Fama and Jensen, 1983; Shleifer and Vishny, 1996). ii) Bonding expenditures on the part of the agent – investments on the agent's behalf in order to obtain confidence and trust from principal's side. If the principal has trust in the agent, the latter may succeed in being deceitful and hence the agent may spend

large efforts in obtaining such trust. Residual loss considers the welfare losses for the principal. Here the risk that the agent is able to redirect some of the profits (surpluses) from his principal to himself is considered. Since the agent has the right to make independent decisions, there is a risk that he will not manage the organization in such a fashion that benefits the principal the best. In cases when there are possibilities for opportunism such as in the case of uncertain and weakly regulated institutional and legal settings, the agents would be able to redirect some of the rents to themselves.

As noted, human behavior is in the essence of the agency problems which may be reduced if trust again is present between the contracting partners, or if the partners have social capital invested in one another (Svendsen and Svendsen, 2009). The behavioural assumption originates from the organization theory literature, and occurs in TCE and in Agency Theory. It characterizes human nature through *bounded rationality* (limitation on the cognitive competence) and *opportunism* (self-interest) (Williamson, 1985). Bounded rationality means that risk of opportunism is often present and humans will tend to use the advantage of turning situations in their best interest so to extract benefits from it. It also presumes that not all humans (agents) articulate the same level of opportunism (Williamson 1989). Bounded rationality also indicates that even when human beings tend to act rationally and make rational decisions, their capacity limits them so they do not account all feasible decision alternatives (Hobbs, 1996). It is an important feature for the economic organization and combined with uncertainty and complexity disables agents to make completely rational decisions. In such instances trust is expected to act as a safe-guarding mechanism that reduces uncertainties and lowers the need for costly mechanisms to monitor relations. However, reliance on trust is justified only in cases of more developed markets where communication and transactions among partners is more frequent (Rao, 2003).

The developing and growing markets present potential for FDI, primarily because of cheap labour and resources. The domestic economies on the other hand benefit from these investments in terms of knowledge and technology transfer. However, implementing western business practices is often difficult in countries with underdeveloped institutional structure, such as the Western Balkan post-socialist countries (Ahrens, 2006). The problems of these societies are deeply rooted the political environment which is supposed to provide effective enforcement of economic bonds and agreements (North, 1986). Trust is therefore related to the institutional structure in society, and in countries with the weak legal framework, not even the judicial system may be trusted to protect its citizens in their varying roles - as labourers, suppliers, consumers, investors (Granovetter, 2005, p.361).

3 Methodology

Institutional malfunctioning is often related with difficulties to obtain official statistical data and information in countries facing transitional problems (Hanisch *et al.*, 2007). However, data about institutional development is difficult to obtain even in the Western countries (*ibid*). Therefore, in order to construct a more detailed presentation of the dairy industry in FYR Macedonia, as well as deal with the data quality and unavailability, both data and methodological triangulation was applied in this thesis. Data triangulation offers combination of different types of data from various sources, and methodological triangulation combines qualitative and quantitative approaches. Triangulation is a convenient way to increase the validity of the research and its results, which is especially valuable for the general conclusions of this thesis. On the other hand, the fact that each of the papers in this thesis uses separate method of data collection and methodological approach, it lowers the possibility for contradiction that can occur when data and methodological approaches are mixed (Robson, 2002).

Different data such as: data from two different surveys on national and regional level, official national statistical data, interviews as qualitative information, and different types of reports on the dairy industry and the country, media information were used in this thesis. The thesis connects three institutional theoretical approaches and an industrial organization theory for answering the general aim. Accordingly, matching methodological tools are employed also and they are summarized in Table 3.

Table 3. *Basic characteristics of the methodological approaches*

Stage	Level of analysis	Number of units	Data	Analyses
I	Value chain analysis	-	Desk research: various sources, Euromonitor data base	Competitiveness and market concentration measures
II	Vertical (Dairy farmer – dairy processor relations)	213	Face-to-face survey	Empirical model (probit): Transaction Costs determinants that influence contracting patterns
III	Horizontal (Dairy farmers' relations)	153	Face-to-face survey	Social Networks (network structures)
IV	“Swedmilk” dairy	1	Various sources	Case study

Secondary data: State Statistical Office, National reports on the sector, Data bases and related documents, Media reports.

Two separate surveys were conducted for the purposes of paper II and III. Both surveys were conducted through Face-to-face interviews, as one of the most costly and time consuming administration mode, however the only applicable data collection method in the case of this particular surveys. The first reason behind such decision is the nature of the surveys and the second is the data availability. The correspondents or interviewees in both surveys are farmers, generally living in rural areas without access to modern technology, sometimes not even a telephone-ruling out the options of telephone or webmail survey. Additionally, the time to communicate the questionnaire was more than 30 minutes, thus the telephone interviewing was considered as generally not applicable, and the mail-survey alternative was rejected due to the expectation for a very low response rate. Face-to-face was thought to be the most appropriate mode that provides personal contact, more detailed explanations and possibilities for obtaining data of better quality (Biemer and Lyberg, 2003).

3.1 Competitiveness analysis

In the descriptive part of the competitiveness analyses, or as a qualitative analytical tool, we combine Porter’s determinants of National advantage with more detailed explanation on the forces which drive competition on industrial level (value chain analysis). Additionally FDI’s contribution to the competitive environment as well as measures of competitiveness, or the market concentration indexes and development were also applied in order to quantify

competitiveness (Porter, 1990; Frohberg and Hartmann, 1997). In this way, two levels of competitiveness analysis were integrated: First is competitiveness as the ability to increase market shares and the second is competitiveness as the most effective way of employing resources (competition in factor markets) (Frohberg and Hartmann, 1997). For this purpose data from various sources were combined: journals, reports on the industry and the country development, national strategies, State statistical data, and other related documents on the competitiveness on national level (e.g. World Economic Forum-Global Competitiveness Index, Global Retailer Development Index). In order to illustrate the competitiveness levels of the market for milk and dairy products, one part of the competitiveness analyses measures market concentration, or measures which illustrate if the market is competitive or concentrated. This thesis includes the following concentration measures: Concentration Ratio (CR3), the Herfindahl-Hirschman index (HHI) and the Lorenz curve. The data for the market concentration measures are obtained from the Euromonitor data base (2012), which provides detailed data on the retail sales of the companies present on FYR Macedonia's dairy market. It should be noted that all these concentration measures carry within themselves the basic risk of overlooking important subjects (firms), since the choice and number of subjects in the calculation are based on each person's subjective reasoning.

Concentration ratios (CR3) represent the shares of retail sales for the three (sometimes five, seven etc.) of the most dominant competitors in the total sales:

$$CR_3 = S_1 + S_2 + S_3 \quad (1)$$

Concentration ratios take values from 0 to 1, with values closer to 0 indicating extremely competitive industry. Values less than 0.5 indicate very competitive industry (from perfect competition to oligopoly). Values from 0.5 to 0.8 direct to oligopoly and closer to 1 suggest higher concentration of the market or monopoly (Gould, 2010). The main deficiency of this measure is the fact that it does not include all the firms in the market, or the distribution of firm size (USDJ, 2010).

HHI is another market concentration measure which is calculated as the sum of squared shares (in %) of each of the largest companies on the market (USDJ, 2010):

$$HHI = \sum_{i=1}^n s_i^2 \quad (2)$$

Where, s_i represents the market shares of certain brand (in this case) and n is the number of firms. The different values of this index reveal the differences in market concentration. The index values of 100 express highly competitive

markets (perfect competition), between 100-1,500 un-concentrated market, moderate market concentration 1,501-2,500, and over 2,500 high market concentration. HHI is a more accurate measure than CR3, since it provides a more comprehensive representation of the changes in market shares among the larger companies on the market (Gould, 2010). HHI, provides a valuable overview of the competitiveness levels changes the over time (if markets are becoming less or more competitive), and important information for understanding which of the dominant market competitors are gaining or losing in a certain time frame. These features make HHI more complex and detailed measure than the CR3 measure (Gould, 2010).

Lorenz curve is included as a visual presentation of the income distribution (Lorenz, 1905), or the share of the total income that is allocated to certain percentage of the considered population (individuals, firms). The Lorenz curve is accompanied by the Gini index which is presented as an integral that shows the difference or departure from the line of perfect equality (Farris, 2010 p.852).

$$G = 2 \int_0^1 [p - L(p)] dp \quad (3)$$

The Gini index takes values from 0 to 1, where 0 is perfect equitability (all the dairy brands have equal share of the market); and 1 where single dairy brand holds all the market power (Faris, 2010). For our case, the calculation considers the ten largest dairy brands which are present on the market for milk and dairy products in the country. It takes values from 0 to 1, where 0 is perfect equitability (all the dairy brands have equal share of the market); and 1 where single dairy brand holds all the market power (Faris, 2010).

3.2 Contract choice

Transaction Cost analyses requires detailed knowledge and information on the organizational forms, product attributes, assets, and the environment in which the transaction takes place. However, direct measurement of dimensions such as specificity and uncertainty is difficult, and thus data in a suitable format is also difficult to find (Masten, 2000). Transaction costs are not easily measured, cannot be separated from the other costs, and there is no routine for collection of these kinds of data (Hobs, 1997). This data limitation, or lack of measurable variables and direct observation, makes it difficult to quantify these costs in financial terms.

In order to identify the contracting patterns among the dairy farmers and their processing partners, this part of the thesis is based on data provided by 213 farmers located in five milk producing regions of FYR Macedonia: Pelagonia (Bitola region-71; Prilep region-59); Gostivar and Tetovo region-36;

Skopje region-22; Krusevo region-20. A face-to-face survey was carried-out in the selected region in the period from August to December 2011. The sampling design choice was partly influenced by the survey administration mode (face-to-face interviews), and data availability. This usually indicates clustered samples, or non-random, *multistage-clustered sample design* (Biemer and Lyberg, 2003). Since data on farm level in countries in transition is either non-existent or of poor quality, the choice of dairy farmers both suitable and available for this survey was non-random, and in consultation with members of local agricultural extension services, which are in contact with the dairy farmers on regular basis. The multistage clustered sampling is also appropriate in cases such as this, when a complete list of all members of the population does not exist or is incomplete. In clustered sampling, the sampling units should be collected in groups, and should represent heterogeneity of the sample. It is suitable for this survey since the intentions were to include both big and small farms within different districts or parts of the country in order to capture a representative picture of the situation in the dairy sector.

The survey was based on a specialized questionnaire compiled for this purpose. The questionnaire contains 90 questions grouped in four general groups: general questions, transaction specific questions, questions on the cooperation specifics, and open questions (Table 4). Open-ended questions are used mostly in order initiating more informal interest in on-farm problems. These questions can be also a source of valuable information and ideas for further development of the research.

Table 4. *Transaction cost specifics survey-questionnaire outline*

Basic farms' data	Name, contact, location
Household characteristics	Age, gender, education
Farming income	Dairy farming, land, labor, fodder and other inputs
Herd size and output	Number, breed, produced and sold milk quantities, choice of dairy
Agreements	Contract types and duration, average price and ways of its determination, type of payment
Delivery and payment terms (TC structure)	Payment delays, time devoted to negotiation, site specifics, costs for searching for buyer, reasons for switching partners, milk quality measurements, milk collection etc.
Future investments plans	Farm capacity, flock increasing, credit terms etc.
Cooperation	Importance of cooperation, benefits, information sources, membership in cooperative
Open-ended optional question	Farmers' opinion, ideas, problems (e. g. Swedmilk)

The questionnaire was pre-tested with certain number of farmers and a manager of the procurement practices in the largest processing factory in the country. This procedure was undertaken in order to identify the design flaws, correct for the identified problems and in this way avoid errors of greater magnitudes in the main study (Biemer, Lyberg, 2003). The final survey was conducted in the period from August to December 2011. The data was analysed by an empirical model which includes the transaction costs dimensions as dependant variables Cf (asset specificity, uncertainty and frequency), as well as trust which represents the safe-guarding mechanisms that reduces uncertainties and transaction costs:

$$\pi_i = \beta X_i + e_i \quad (4)$$

where, π_i is the probability of the dairy producer i having a formal contract with a dairy to deliver and supply milk, X_i is a vector (set) of explanatory variables whose data are provided by the surveyed farmers, β is the vector of coefficients and e_i is the error term with a cumulative density function $F(e)$. To generate a heteroskedasticity-consistent variance-covariance matrix, the standard errors of the coefficients were derived using the Eicker-White procedure (Davidson and MacKinnon, 1993, p. 552-556).

Dairy farmers were asked a binary choice question, or whether they have a contract (assigned 1), or they do not have a formal contract with their dairy processing partner (assigned 0). The empirical model was estimated through a probit estimation procedure using maximum likelihood. The model assumes three base conditions: Bitola region (the milk producing region with highest milk production, and number of dairy cows in the country), the Holstein-Friesian breed (as a specific investment and breed with highest milk yields) and farmers which do not have frequent meetings with dairy representatives.

3.3 Social network data collection and analyses

Social network analysis is applied in this thesis as the methodological approach to present the informal networking patterns between dairy farmers. As a methodological tool it analyses the patterns of social structures or the “specific set of actors and the ties among them” (Wasserman and Faust, 1994 p.9). Since the focus of this type of analyses is on relations rather than transactions, gathering relational data is linked to specific collection and analysing techniques, as well as software tools for analysis (Scott, 2000). Therefore, in order to capture the specific data requirements, a separate survey was conducted. The survey was performed in a “bounded area” of eight villages (Table 6) selected from the most important milk producing region in the country (Pelagonia). All the

villages are within a close distance and are also close to the city of Bitola, where most of the important processors in the country are located or have some presence. The choice of the area was done so as to capture villages with mixed socio-economic and national structure, as well as diversity of farms by size and degree of modernization. There are 193 family dairy farming households in the selected area, producing milk for commercial purposes. Each of those dairy farmers was contacted, and 154 dairy farmers were available for the interview.

Table 5 *Graphical presentation of the villages' dispersion in the sample area and number of respondents in each village*



Village	Number of dairy farmers' households (responded/listed)
Greshnica	18 / 21
Zhabeni	16 / 20
Kravari	17 / 20
Lazhec	34 / 43
Opticari	19 / 21
Poeshevo	23 / 35
Medzitlija	16 / 20
Kremenica	11 / 13
Total	154 / 193

It should be noted that the standard statistical sampling procedures are not suitable for SNA, and are only applicable in the case of egocentric networks (Marsden, 1990). This makes sampling in SNA a difficult and risky practice, since there is a risk of omitting important relations by not including all actors in the network. Therefore in most instances, it is the researcher that decides on the boundaries of the sample, which would be most suitable for testing of the research hypothesis (Wasserman and Faust, 2009). The literature on sampling in SNA approves sampling in cases where complete enumeration of actors is available and was followed, attaining in this way full information on all the existent relations in the network of interest (Scott, 2000).

When the actors of the network are persons, the questionnaire is an appropriate mode for data collection (Wasserman and Faust, 1994). The face-to-face survey was conducted in mid-2012 using a questionnaire, which is one of the most commonly used means of data collection in Social Network Analysis (Marsden, 1990; Wasserman and Faust, 1994). Besides the basic characteristic (attributes) of the respondents, the dairy farmers or the family representative who reflects on the households' relations, the most important

part of the questionnaire is the “Name generating table”, which in fact ponders the relational data. The SNA questionnaire outline is presented in Table 6.

The “Name generating table” is the most important data collection part of SNA questionnaire. It is representing the relations and the structural variables, which are the essence of social network data. They provide information on the economically based incentives for dairy farmers to cooperate, as well as the available social resources of the nominated persons in the “name generating table” (quality and quantity) (Lin, 2005; Wasserman and Faust, 1994). In this section of the questionnaire there is a combination of “free” and “fixed choice” design of relational questions in which each dairy farmer was asked to name at least five other farmers they have relations with regard to agricultural (business) matters. The number of choices was not given as a constraint, since a constraint on the nomination process can lead to measurement errors, but as motive for receiving more nominations from each respondent (Lin, 2005; Wasserman and Faust, 1994). Face-to-face mode was selected primarily because of the survey specificity and need to explain the purpose of the research.

Table 6. *Social network analyses –questionnaire outline*

I) Basic farms' data	Name, contact, village, code number	
II) Household characteristics	Age, gender, education	Socio-economic attributes of dairy farmers
Farming income	Dairy farming, land, labor, fodder and other inputs	. Structure of dairy farms
Herd size and output	Number, breed, produced and sold milk quantities, choice of dairy	
Characteristic of the vertical relation with dairy processor	Dairy processing partner, Contract types and duration, average price and ways of its determination, type of payment	Information on the institutional setting which influences the occurrence of particular types of relations
Future investments plans	Farm capacity, flock increasing, credit terms etc.	
III) Networks	Importance of cooperation, benefits, information sources, membership in cooperative	Possible benefits from participation in these kinds of institutions Participation in the existing institutions (farm associations/organizations)
IV) Name Generating table (ego networks)	Each of the nominated person's: - relation to you. - main reason for cooperation - socio-economic and farm characteristics (as perceived by the respondent)	Listing farmers from their immediate (village) and within the research area) Main incentives for cooperation Main information sources

Our previous survey experience revealed farmers' generally distrustfulness and unwillingness to share personal information. Therefore it was necessary to explain and encourage them to nominate dairy farmers with whom they discuss important agricultural matters. This is a standard question suitable for building networks based on the ego-networks of each respondent (Kadushin, 2012). Once collected, relational data, need to be organized in adjacency matrices (square case-by-case) for the relations among actors only, and case-by-affiliation in the case of attributes (ethnicity attribute) (Scott, 2000). The level of social capital, the types of relations, and the modes through which they were analysed is presented in Table 7.

Table 7. *Selected network measures of social capital*

Level of social capital		Selected measures	
Social capital on institutional level		Trust in government through membership in organizations	
Bonding and binding relations			
<u>Type of relation</u>	Friendship Kinship	<i>Social capital on informal level</i>	Networks: size, density, diversity
Adjacency matrix 154 x 154 dairy farmers (1 = relation, 0 = no relation)	Same village Sale to the same dairy	<i>Social capital on generalized level</i>	Betweenness centrality, degree
<u>Incentives for cooperation</u>	Information sharing		
Adjacency matrix 154 x154 dairy farmers (1 = relation, 0 = no relation)	Production practices Joint transport/cooling of milk Joint use of equipment		Networks: size, density, diversity
Ethnicity – attribute (3x154)	Ethnic groups of each farmer		Network diversity

The Social capital measures are applied on two one-mode (all actors are treated as being equal) networks, the first representing the network of dairy farmers and their processing partner, and the second representing the networks of dairy farmers only. The aim was to see the differences of these networks both through visual presentation of the networks and through selected network measures. The analysis and visualizations were performed in specialized software tools for network analysis-UCINET (Borgatti *et al.*, 2002) and visualisation-NetDraw (Borgatti, 2002).

3.4 Case study methodology

Case study methodology is applied to the Swedmilk dairy case, first because it fits the format of the research questions (how and why the bankruptcy

occurred), which best explain contemporary or historical events followed over time. Second, because it provides in-depth description of cases where “the boundaries between the phenomenon and context are not clearly evident” (Yin, 2009 p.18; Stake, 1995). An important feature of case study methodology is data triangulation, or the use of various data sources in answering the research question. Following Yin’s (2009) propositions for constructing a case study, our case study includes multiple source of evidence (data source triangulation) in order to capture all aspects of this dairy’s failure. This also provides ground for more “convincing and accurate” conclusions (Yin, 2009 p.116) and higher construct validity.

The case of the “Swedmilk” dairy was a noteworthy case for our study from the beginning of our research. Being the first green-field investment in the sector, our primary aim was to analyse how this dairy will affect the overall dairy sector and its modernization. By introducing a typical, good example of FDI we aimed to present a successful story which was expected to introduce the long needed changes in the dairy sector. The case was additionally interesting since it was a Swedish company in FYR Macedonia, and it coincides with our project and cooperation between the two countries.

After the unexpected development, this typical and positive example turned into an “extreme (unique) case” and as such even more interesting for the research. However, the main risk in these type of situations is the major limitation of data availability and accessibility. Because of the specific nature of this case, sensitive detailed data was very difficult to obtain, and secondary data, data from reports and media were used as the main source of information. Published data included sources such as: news releases, Swedfund reports, Swedmilk plans and documents, contracts, government data, correspondence letters, archival data. Semi-structured interviews with managers of competitor dairies and experts (government and research representatives) contributed to the data triangulation. Reaching information from the actors directly involved in the case was a problem, and even when our interviewees agreed to share information, their anonymity was required.

4 Results and analysis

4.1 Paper I: “Competitiveness as a driver of change-the restructuring and consolidation of the dairy industry in the FYR Macedonia”

The patterns of restructuring and the level of modernization of the dairy industry in FYR Macedonia are presented in the first paper of this thesis. The aim is to identify the conditions that delayed the development and the competitiveness position of the dairy industry on the domestic, the regional and the EU markets.

This overview shows high fragmentation in the upstream segment of the dairy value chain in FYR Macedonia. Small-scaled dairy farmers (1-5 cows) constituting the major share of the supply base (74% of the total number of dairy farmers). Farmers are un-organized, and there are no dairy cooperatives. Farms are un-modernized, meaning that they apply primitive production techniques and instruments, such as milking and cooling equipment, old facilities for cow breeding, low specialization of milk breeds, etc. There is also a slight increase in the yield per cow (2005-2012), which can be due to improvements in the breeding structure of dairy cows in the country (MAFWE, 2012). Still, the yields per cow are much lower than the EU-27 average (6,700 kg/cow) and the milk yields in most of the Western Balkan countries, which are the country’s major trading partner for milk and dairy products.

The natural resources to practice grazing-based livestock breeding in the country are relatively favourable. Over 50% of the agricultural land belongs to the pastures category, but expensive fodder still accounts for 50% of the total costs of livestock breeding (MAFWE, 2012). This is mainly because of the improper use of the pastures as well as the unregulated land management affecting the costs of production as well as the quality of raw milk.

Government policies

The government introduced measures for revitalization of farms from 2008. Those measures mostly include direct payments for: assistance for the fodder production, for produced and sold cow milk aimed for industrial processing and for head of cattle owned by the farmers. The level of subsidies has constantly increased in the case of subsidies per hectare of used land for producing fodder (doubled from 2008 to 2012 amounting close to 200 Euro/ha⁷ in 2012). The subsidy per head of cattle owned was 45 Euro (2012), and for cow milk, the support ranged from 6.5 Euro/100 litters in 2008 to 5.7 Euro/100 litters of produced and sold cow milk for further industrial processing in 2012 (MAFWE, 2012).

Milk processing is characterized by high fragmentation. There are 77 registered milk processing facilities, with different size and production capacities (38% under 1,000 litters' daily capacity) dispersed across the country. Many of the dairy processing capacities are faced with problems of full capacity utilization, and this is reflected in the decrease of the industrial milk production from 14,934 tones 2008, to 10,830 tons in 2012 (SSO, 2007-2012).

Market structure

More than half of the raw cow milk, purchased from the dairy farmers in the country is processed by three dairy processors: IMB Mlekara Bitola, Zdravje Radovo and Ideal Shipka, which are the major domestic dairy processors on the market for cow milk and dairy products. Regarding the retail sale of milk and dairy products, the market concentration measures which refer to the largest domestic processors (CR3) varies from 0.5 in 2003 to 0.4 in 2012 for the retail sales of dairy products, and values from 0.6 in 2003 to 0.4 in 2012 for the market for milk. These ratios point to the fact that around 40% to 50% of the total retail sales of milk and dairy products is done by the three domestic dairies. The Herfindahl-Hirschman index is calculated for the same period (2003-2012), and in general it expresses moderate-to-low levels of concentration of the retail market for milk and dairy products. More specifically, its values have a decreasing trend for the retail shares of the 47 companies which compete in the market for dairy products. The value ranges from 1,957 in 2003 to 1,375 in 2012, indication of the gradual de-concentration of this segment of the dairy retail. On the market segment for cow milk, the Herfindahl-Hirschman index is calculated based on the retail sales of 12 dairy

⁷ 1Euro equals 61,5 MKD (National Bank of the Republic of Macedonia)

companies. These values range from 1,750 in 2003 to 2,009 in 2012 which can be considered as an indication of the gradual concentration of this segment of the dairy retail. The competitive environment on the dairy market is confirmed by the Lorenz curve (e.g. 20% of the retail sales are carried out by 50% of the processors, or 63% of the retail sales are carried out by 90% of the processors); and the Gini coefficient of inequality which in our population group (ten dairy brands with highest sales in EUR - 2012) confirmed that there is relatively equal distribution of retail sales (medium value of 0.5).

Retail structure

Most of the supermarkets in the country began operating in the early 1990's and more than 50% of their stores are located in the capital city, Skopje. However, the retail segment in the country is still in its early stages of development (Atkearney, 2013). There is moderate saturation of the retailing sector (56%), making this sector still appealing for companies mostly from the region. The small market capacity as well as the logistics cost and high dependence on local distribution does not attract large European retail chains. The structure of the supply in the country is still constituted by classical individual stores-around 85% (SSO census, 2008). The sale of milk and dairy products in FYR Macedonia is also dominantly carried out by small grocery retailers and supermarkets occupying much smaller shares of the retail sales and the discounters, hypermarkets and other non-grocery retailers hold minor shares (Euromonitor, 2012).

Foreign Direct Investments (FDI)

FYR Macedonia has devoted governmental resources and succeeded to improve the macroeconomic and business conditions in order to improve its competitive position and attract FDIs. However, the country was ranked 129, or in the lower segment of the ranking by the FDI Inward Attraction (among 181 economies) (WIR⁸ 2012, Macedonia), which is a noteworthy drop compared to the ranking in 2000, in which the country ranked 88 among 178 economies.

FDI's in agriculture participates with an average share of 0.8% in the total foreign investments, (2006-2012), with more of these investments concentrated in manufacturing of food products, beverages and tobacco products and wholesale and trade (WTO, 2013). There exists a general trend of FDI in the processing segment, reflected in the recent consolidation of the value chains in the entire Western Balkan Region. There have been series of acquisitions and

⁸ World Investment Report, UNCTAD (2012)

FDI entrance in the existing and leading dairies in every country from Ex-Yugoslavia. Two of the leading dairy processing companies in the country IMB Mlekara Bitola and Ideal Shipka were acquired by a regional processing partner Imlek Serbia and Ducat Croatia, and in this way they became part of larger food groups such as the Danube Food Group and Lactalis. The Turkish dairy company Sutash is the latest FDI investment in the dairy processing segment. It entered the market with the restarting of the only green-field investment in the industry; the bankrupt Swedmilk dairy in 2009. It expected that these investments will contribute for creating a more competitive environment on the market, and in the same time also increase the competitiveness of the industry by investments in modernization of the chain and transfer of novel knowledge and technology.

4.2 Paper II: “To contract or not in the food sector of transition economies? Evidence from the dairy sector in FYR Macedonia”

In paper II, the vertical contractual patterns between the dairy farmers and their processing partners were explored. The empirical model included the transaction cost determinants of the probability of formal contracts to exist or not. The results reveal several variables which contribute to this decision. On the dairy processor side, an important determinant is its size, or larger the dairy's capacity, the larger is the probability that it will be willing to safe-guard the asset specific investment and transaction with the dairy farmers by means of a formal contract. The same is the case with the milk yields which also shows a positive effect on the probability of a farmer having a contract with the dairy. A logical explanation would be that in order to deal with the problems of underutilization of capacities which is often a problem in cases of segmented supply base, dairy processor would be willing to formally oblige with dairy farmers that have higher yields. Related variable to this matter is the type of breeds that the dairy farmers own. High probability of formal contracting is present in the cases of dairy farmers which have specialized milking cows of the Holstein-Friesian breed which was one of the reference points of this model. Farmers with cross-breeds have even higher probability of contracting a written agreement with a dairy than those who have a dairy herd made up of Holstein-Friesian breed. Cross-breeds are the prevailing breeds in the country, and even though they are kept for dual purposes, the dairies which tend to assure constant intake of raw material have an incentive to have formal contract with this category of dairy farmers. In terms of site specificity, the dairy farmers from the Bitola and Krusevo region have the highest probability

of having formal contracts. These are regions in immediate or close proximity to two of the three largest dairy processing capacities, situated in Bitola (Pelagonia region-the milk producing region in the country).

Regarding the future investment plans, this variable showed high significance in the empirical model, however with the opposite sign, than expected. A plausible explanation is that the farmers which do not have contract are small-scale farmers with intentions to grow, therefore need contracts to support this growth. This can be also related to the fact that the dairy farmers which have contracts are satisfied from their relations with the dairy farmers and those who have not have therefore the incentives to reach this satisfaction from the transaction. It is expected that the on-farm investments would also increase milk yields and therefore increase the probability of formal contracting. The same applies when asset specific investments in cooling and milking equipment are undertaken. In the case of cooling equipment which is assigned by the dairy, it is the dairy instead of the dairy farmers which would want to safe-guard this investment and in this respect establish a contract. Accordingly the dummy variables which concerned the farmer who has simultaneously cooling and milking equipment and farmers who received cooling equipment from the dairy, have positive impact on the independent variable. However, this is only the case when the future investments are included in the model. The survey shows that along with on-farm mechanization investments, herd enlargement is the most common type of investment that farmers plan for the future (35% of the answers). The level of satisfaction of dairy farmers is also statistically significant with the expected, positive sign. The more satisfied farmers are with the dairy they cooperate with, the higher is the possibility that they will want to continue with the same transacting partner and renew their formal contracts with the dairy. An unexpected negative result was obtained in the case of farm ownership, captured by the number of years that the farmer has owned his farm. This can be justified with the fact that owning a farm reduces uncertainties in terms of investments, opposite to a dairy farmers that own a farm for a shorter period of time. Therefore, in order to initiate progress in the dairy value chain, establish a firm institutional setting is an imperative. In this respect tighter coordination, ought to be reached with long-term formal contracts, which will eliminate the present uncertainties and risks, and in this way stimulate investments in farm enlargement, specialized breeds, mechanization and equipment.

4.3 Paper III: How is social capital structuring social networks in post-communist countries?

In paper III, this thesis includes analysis of the social capital levels and its patterns of development in the agricultural settings of post-socialist countries. In order to do this, social network analysis (SNA), on micro (dairy farm) level was applied. The results from the general part of the study showed that dairy farmers in our surveyed region still express distrust and resilience towards the institutionalized forms of cooperation such as farm associations or cooperatives, and do not understand how this cooperation could be used for joint and individual benefits. Farmer's motives for cooperation are mostly for joint use of agricultural mechanization and equipment, and in much smaller rate for information. The explanatory results show that dairy processors are the main source of information for 69% of the dairy farmers. The social network measures also confirm the importance of the dairy processors in the network of dairy farmers. When the dairy processors are included in the network, the overall networks show better connectedness through their processing partners when compared to the networks in which dairy processors are not included. However, the overall density is very small which indicates to the low level of connections among dairy farmers. The largest dairies, which are also the largest dairies in the country, have the highest degree of connections, and betweenness centrality, meaning that actors (dairy farmers) are mostly connected through these dairies, which lay on the path on most of the ties between the farmers.

In order to see how the dairy farmers connect on horizontal level (excluding the dairy processors), the research disaggregate the informal networks, and analyses the information exchange network of dairy farmers relations. The structure of this network revealed close to a complete fragmentation of the dairy farmers' network. The fragmentation of the network is affecting its density, which is very small, and accordingly the geodesic distances are also small. The average distance (among reachable pairs) implies that although all actors are not "reachable" from all others, the distance between them is not that large, which implies to the possibility of faster transfer of information across this network. As an indicator of embeddedness, the low level of reciprocity which suggested that only 23% of the ties in the information exchange network are reciprocated, additionally confirming the low degree of mutual trust, and accordingly social capital among the dairy farmers. In addition to the fragmentation and localized characteristics of the farmer's relations, the network shows that the important agricultural decisions among the dairy farmers in the country are based largely on relations among dairy farmers which belong to the same ethnic group. This confirms the assumption that

extended trust in informal networks (kinship, friendship, belonging to same groups) remained undamaged even during the period of centrally-planned economy. However, economic growth and improvement of farmers' position in the value chain require trust in formally institutionalized cooperation and involvement in civic organizations which contribute to economic growth more than these informal, local networks (Raiser *et al.*, 2002).

4.4 Paper IV: Institutional mismatch in a transition economy. The collapse of Swedmilk Macedonia

Foreign investment is said to be the “engine of change” in restructuring processes in transition countries. By initiating a variety of more sophisticated models of vertical coordination, foreign investors not only introduce capital, but also know-how. As a case study, the aim of this part of the research was to present the reasons behind the failure of the only green-field FDI in the dairy processing industry in FYR Macedonia. The in-depth investigation revealed that there were many malfunctions in the institutional setting which enabled the dairy representatives to manipulate and use the information asymmetries in order to extract individual benefits. Poor institutions carried high-agency costs for most of the parties in the Swedmilk case. In a one year period, this investment managed to lose all its equity capital and accumulate enormous debt towards all its shareholders, with largest impact on the dairy farmers and the dairy industry in the country. The main points and problems in each phase of the Swedmilk dairy bankruptcy case are presented in Table 8.

Table 8. *Main events in the development of the Swedmilk dairy bankruptcy case*

Time	Event
November 29, 2007	Test of the production facilities, 10 metric tons milk per day are purchased from farmers
March 2008	70 metric tons of milk per day are purchased from farmers
May 2008	Beginning of the delayed payment for the purchased milk
August 2008	Escalation of the problems. Blockades and protests by farmers
May-October 2008	Stock of 2.5 million metric tons of unsold products
November 2008	Conflicts between the shareholders in the company
December 2008	Farmers demand state intervention to prevent collapse of the dairy sector
February 2009	Fenix Energy becomes the owner of Swedmilk
May 2009	Bankruptcy procedure starts with 25 million euros of equity capital lost and a debt of 37.5 million euros, of which 3.5 million euros to 2,500 farmers

The Managing Director of Swedmilk was a man of Swedish origin who was well acquainted with the dairy industry in the Balkan countries, because of the

previous working experience in the ex-Yugoslavian countries and Romania. Swedfund (Swedish Governmental fund with the task of creating economic development through investments in developing economies) was also one of Swedmilk's principals. However, the decision makers at Swedfund had no experience of the business conditions in FYR Macedonia or in the dairy industry. Hence their decision to support the project proposal was mainly based on trust in the businessmen's who wanted to establish Swedmilk. Swedfund's investment in Swedmilk may be seen from a resource-based point of view (Das and Teng, 2000). According to the resource-based approach, the value of a specific type of resource such as capital is dependent upon the other resources with which it is combined. The Swedmilk project combined Swedfund's capital with resources from private investors, which in uncertain environments and weakly regulated institutional and legal settings open possibilities for opportunism. The agents in such case would be able to redirect some of the rents to themselves, which was one of the primary problems for the Swedmilk investment partnership. Ultimately it was the private investors who exploited this investment.

The part-Swedish ownership raised the reputation and increased the trust in the success of this FDI. The "Swedish" image was successfully used by the owners to obtain credits from the local banks. Therefore the intentions to invest in a modern dairy processing plant that would satisfy EU standards and increase the competitive environment on the market appeared to be realistic. By making large investments in processing facilities, Swedmilk signalled its serious intentions for long-term presence in the FYR Macedonia's dairy industry. The attractive and partly unrealistic prices and favourable contracting conditions attracted dairy farmers to become partners of the dairy, and also motivated them to invest in their dairy operations and improve the breeding structure and increase herd size.

New Institutional Economic theories emphasize the importance of trust for the transactions. Trust in trustworthy people can reduce agency and transaction costs, while trust in untrustworthy people can increase these costs. However, in Swedmilk's case, Swedfund became aware of the acuteness of the situation only after it was too late and the financial problems became too large. The investment in the FYR Macedonian dairy industry by Swedfund was also risky in the sense that several of the major dairy processing firms in Europe operate in FYR Macedonia through partnering firms, with the important actors in the European dairy industry considering the institutional environment to be too risky, too small, or otherwise not an attractive country to invest in. It can be also concluded that the underdeveloped institutional and legal framework in the country made contract enforcement costly and inconsistent, and did not

protect farmers from being exploited by such endeavours. The mass media in FYR Macedonia accused a top politician of being involved in corruption (Government, 2009). Corruption is also linked to a country's judicial and executive governance malfunctioning, which in FYR Macedonia is weak, unclear, and often not implemented. This not only left space for financial failure of this magnitude to happen, but also failed to protect the farmers' other stakeholders' investments. The investments on farm level were acknowledged, but not officially supported, by Swedmilk, thus the farmers in the country faced problems repaying their loans to the banks, and their trust in the dairy processing industry was very much reduced. The Swedmilk dairy failure has possibly created a chain reaction and long-term problems for the dairy value chain in the country.

5 Discussion and conclusions

The aim of this thesis was to reveal the organization and institutional problems of the dairy industry/supply chain in FYR Macedonia, which obstructed the restructuring, the institutional development as well as its competitive position and potentials. The analyses followed New Institutional Economics and Institutional Organization theories to approach these problems from different angles and in this way obtain larger validity of the results. In general most of the problems in the dairy industry originate from the institutional underdevelopments, caused and inherited by the previous socialist system that the country was part of until 1991. The institutional deficiencies cause problem on every level of the dairy supply chain, and posed a serious treat for its competitiveness. Therefore addressing the question of the country's agriculture competitiveness from a value chain perspective is valuable, since the competitiveness of each stage will affect the prospects for the remaining stages in the chain (Gorton and White, 2006).

At farm level, the dairy farmers experienced great turbulences during the long transition that FYR Macedonia is going through, with most of the competitiveness problems of the dairy industry situated in this segment of the chain. Dairy farming in the country is small-scaled, extensive and traditional (Paper I), and in order for the dairy value chain to gain a competitive edge, the focus in the future will be on developing larger, commercial farms which will improve the productivity on farm level as well the productivity and competitiveness of the sector (Lampietti *et al.*, 2009). At the moment farm's small size and absence of cooperation (the dairy farmers do not take participation in any farm associations, nor are forming dairy cooperatives) limits their efficiency in terms of production and transacting costs. The main presumption in this respect is that in absence of institutionalized forms of cooperation as in this case, informal networks are utilized for information and technology exchange. The social network analyses in paper III confirm that

dairy farmers are still reluctant and distrustful towards any form of institutional cooperation; years after the beginning of the transition. Because of their small size as well as the recognized benefits from cooperation the dairy farmers will need to change their unconstructive attitudes towards cooperation in order to facilitate growth and competitiveness, and improve their position in the value chain. This situation also limits the motive of the dairy processors to provide closer vertical coordination which is also necessary in order to improve farmers' willingness to invest in modernized production of milk (Paper I).

Farmers' unwillingness to invest in asset specific/specialized breeds and equipment is based on the fact that in this way they are exposed on risk of opportunism from the dairies. This was confirmed in the empirical results in Paper II, which suggest that specialized breeds increase the possibility for dairy farmers to have contracts with the dairies. However, farmers which undertake asset specific investments such as recent investment in farm, enter a lock-in situation which gives dairy processors an advantage and possibility for opportunistic behaviour. On the other hand, because of the high asset specific investments the larger dairy processing capacities would prefer contracts in order to assure the required quantities of milk and reach optimal utilization of their capacities.

In order for dairy farming to provide quality supply base for the dairy of the supply chain, there is need for larger consolidation in this segment of the chain. At the moment, dairy farming provides employment for considerable number of farmers in the rural areas, but its small-scale results in higher costs for production and transaction. This is leading to higher prices of raw milk and lower quality for production of special value added dairy products (threat of substitution). Furthermore, the natural resources for dairy farming are favourable but insufficiently employed. From 2008, certain governmental policies are introduced, aimed to promote development, modernization and competitiveness (both in quality and quantity terms) of dairy farming. However government support acts only as a social measure so far, with no viewable contribution on the structural restructuring and modernization of the chain.

Regardless of their small size, dairy farmers do not trust institutional cooperation. Instead they utilize their close relations for information and technology exchange, however only localized within the village communities and few relations outside their immediate surrounding (high network fragmentation). Dairy farmers discuss important agricultural matters within their immediate surrounding and also within people that they share the same characteristics, such as belong to the same ethnic group.

The dairies may also serve as mediators in connecting dairy farmers, and in this way reducing their transacting and production costs. The surveyed farmers

perceive dairies as their major source of market information, and their position in the network gives them the possibility and the power to regulate the informational flow.

During the restructuring of the agri-food supply chains in transition countries, the processing and retailing segments begun with the concentration processes. This process might further distance farmers from the final consumers, and posed a potential danger of monopsonies (Gorton and White, 2006). The concentration measures which were used to demonstrate the market competition through the shares of retail sales of the companies present on the market indicate to a relatively competitive situation in the dairy industry in FYR Macedonia. The market for milk and dairy products is moderately concentrated, with higher levels of concentration in the market for liquid milk, and lower for the dairy products, which are mainly imported and not provided by the domestic dairy processors. Larger processors are more adoptive in terms of technological and institutional innovation, and offer wider range of products. They also have easier access to raw materials (from the perspective of a buyer of milk for further processing) and accordingly a better bargaining power, as well as an established distributive network. Ensuring stable milk supply in this way provides optimal capacity utilization is imperative for attaining market shares and competitiveness on the market. This necessitates the need to develop closer relation with the farmers as their supplying partners. At the moment, vertical coordination in the chain is achieved by contracts, which are expected to offer security and positive environment for investments and modernization along the value chain (Barrett *et al.*, 2001). The analyses of the market structure and size indicate that further consolidation of the processing capacities will contribute for decreased costs of production and increased competitiveness primarily in the domestic market. The largest dairies in the country have established certain brand loyalty in the domestic consumers, and brand loyalty is a way to increase and maintain market shares.

FDI is important source of investments and spill-over effects, introducing new competitiveness strategies and motivating domestic firms to modernize and upgrade in order to remain their competitive position on the market. Nevertheless, in cases of institutional uncertainties, FDI can also have an opposite effect and impede the development of the entire industry. The important improvements in the political and socio-economic conditions, lead to certain FDI attraction mainly in the downstream segment of the dairy value chain in FYR Macedonia, with two of the three largest processors in the country becoming part of well-known international food companies in the past two decades. The dairy retail structure is also fragmented and milk and dairy distribution is still largely performed by small grocery shops. In accordance to

the market size and fragmentation, there are only two regional retail chains present on the food market in the country. Therefore, there is still no willingness from the dairy processors or the large retailers to invest backward in the value chain in order to improve their supply base and in this way increase the competitiveness of the entire industry.

The institutional environment occurred as an important determinant for the structure and indicator for the level of development of the dairy industry in FYR Macedonia. The fact that institutional underdevelopment still allows for informal contracts to exist, proves that the institutional setting in the sector is still uncertain. Even when contracts are present to regulate the vertical relations (transactions) between dairy farmers and dairy processors, they are unable to safe-guard the necessary asset specific investment in the dairy sector and this substantially delays its anticipated progress (Paper II). This was confirmed with the Swedmilk dairy, which offered farmers notable contracts and contracting terms and encouraged them to invest in their farms and dairy breeds. With the Swedmilk dairy's bankruptcy, the contracts could not be enforced, leaving farmers with large debts and even larger mistrust in the value of contracts. The failure of Swedmilk seems to be the result mainly of the institutional settings in the country being inappropriate for foreign direct investments and the operations of a western-style firm. While this firm had several good elements, it failed due to inappropriate institutions both within its own organizational structure (ownership structure, management skills, network of collaboration partner, etc.) and in its business environment (dairy farmers, the country's legal system, government action, demands from creditors, behavior of Swedfund) (Paper IV). The Swedmilk failure has possibly created long-term problems for FYR Macedonia. There has been a chain reaction in the dairy industry. Many farmers experienced bankruptcy because of the investments they made, encouraged by Swedmilk. The investments on farm level were acknowledged, but not officially supported, by Swedmilk, thus farmers faced problems repaying their loans to the banks, and their trust in the dairy processing industry is low.

A general conclusion would be that due to the institutional and organizational deficiencies, the dairy industry in FYR Macedonia is still under its competitive potential, and its development lags behind the consolidation processes that occurred in the post-socialist countries during the 1990's. Regardless of the favourable factor endowments, small-scaled and fragmented farm structure is the primary problem for the dairy farmers' competitive position in the value chain, but also in terms of access to inputs (raw milk) for the actors in the downstream segment. There is a competitive environment in the processing segment of milk and dairy products. However, due to the slow

consolidation of the retail sector, as well as the small size of the market for cow milk and dairy products, the large number of small dairy processors will need to either merge or specialize in order to strengthen their position in the dairy industry. In general the market structure and rate of development indicate that the dairy industry in the country requires further modernization and consolidation in order to reach its competitiveness potentials on both domestic and international markets.

5.1 Contribution of the thesis

This thesis represents the first attempt to perform complete competitiveness analysis in the dairy supply chain in FYR Macedonia. All of the papers are using different theoretical approach to access the competitiveness levels on each segment in the industry, as well characterize the institutional environment which shapes the organizational structure, level of development and competitive prospects. The analysis of the transaction costs specifics that influence the governance of the transactions between the dairy farmers and their processing partners in FYR Macedonia can considerably add to the knowledge on the contracting patterns in countries wedged in a long transition, and could easily transfer to the experiences in the countries from the Western Balkan region. The findings are a valuable source of information for all the actors in the dairy supply chain, since it provides information of each actor's position in the supply chain, the market structure, and the development of the chain in general. Special contribution can be found in the Social Network analysis part of the thesis, which is one of the first attempts to identify the patterns of social capital in post-socialist, Balkan countries. Mapping of these relations serves as an initial point for further research and discussion on the topic of farmer's informal social structures and the way they can be activated or transformed into formalized cooperation or systems for information exchange on a wider level - outside the local communities and ethnic groups. The research can also serve as basic information for the real postulates on which agricultural cooperatives can be founded in countries with similar socialistic background, instead of the constant efforts to enforce western cooperative models which were proved to be inapplicable for countries with complex background and social capital relations.

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