University of *Groningen*
Faculty of Economics and Business
MSc International Financial Management

Uppsala University
Faculty of Social Sciences
MSc International Economics and Business

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LARGER INSTITUTIONS NOT ALWAYS POSITIVELY INFLUENCE THE MARGINS: THE CASE OF HUMAN COORDINATION, PRICE RISK MANAGEMENT AND COOPERATIVES IN TANZANIA

Author: José de Bruin
Student number: 1682865
Supervisor: Dr. B.J.W. Pennink
Second supervisor: Dr. W. Westerman

Abstract:

In this study literature concerning cooperative- and risk management is combined with theories of local economic development. On the basis of five case studies in the Tanzanian coffee industry it is found that cooperatives are able to protect their members against price risks only if they possess certain characteristics developed from new visions on cooperatives. These characteristics include the alignment of control with benefits, a clear governance structure and sufficient funds. Besides that, cooperatives with high member empowerment and - participation had a larger contribution to the community development and were financially the most successful ones as they were more closely positioned to farmers and are better able to identify important development issues.

Key words: human coordination, cooperatives, coffee, risk management strategies, local economic development.

Contents

1. Introduction

Much financial aid from developed countries has not yet been able to make significant improvements to the development of lagging economies in Africa. Although development studies investigated different ways on how to stimulate actors and activities in the environment to lead the way for social and economic improvement, Africa continues to struggle with high poverty levels and underdeveloped industries (Joseph & Gillies, 2009). How to effectively stimulate growth and development remains unknown to many. A major problem is that due to globalization regional and national economies became inter-related with global markets and vice versa. Especially in developing communities the undesirable influence of international markets is increasingly felt, far most in the agricultural sector that, due to market liberalization, suffers from unequal power distribution and fluctuating international commodity prices (De Janvry & Sadoulet, 2010). Stimson, Stough and Salazar (2009) describe on regional level how institutions, entrepreneurship and leadership influence the endogenous growth of a region. But fail to integrate the different levels – macro, meso or micro- and show how they together influence the development of a region. To respond to the inter-relation of these issues multi-level answers are needed.

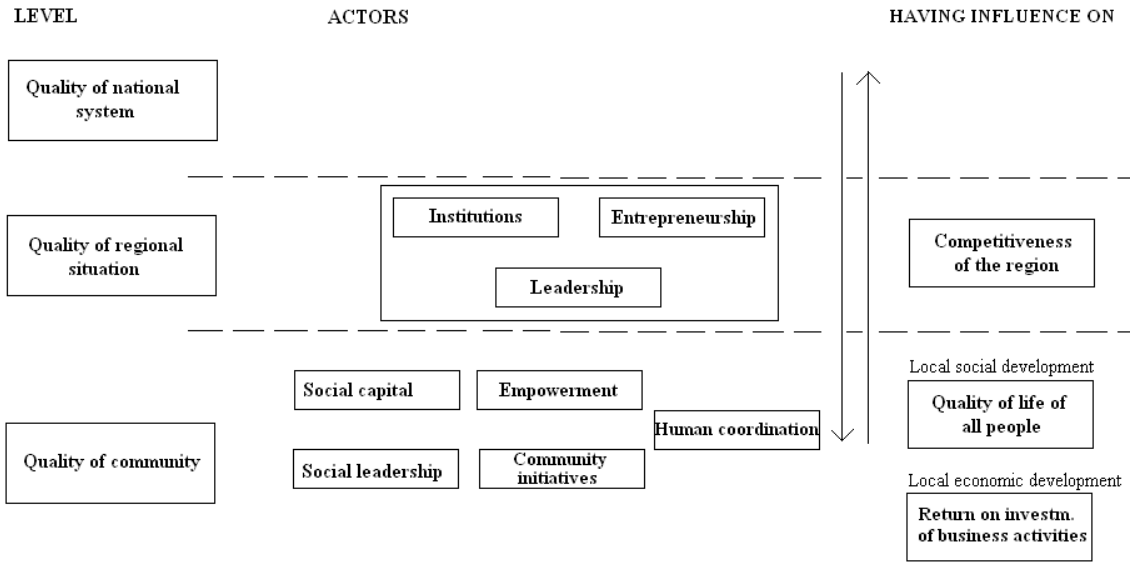

Figure 1: Contextual model (integrated model of Stimson, Stough & Salazar 2009; Dooijeweerd, 2012)

To improve the development of agriculture on community level, which will benefit regional and national development indirectly, it is often suggested that proper human coordination amongst farmers can lead to higher returns on agricultural investment and a higher quality of life, mainly because coordinated groups are better organized, higher leveraged and are better able to share information and power (Rosenfeld, 1997). Besides that, human coordination can defend against major forces in the environment and has

been underrated in economic development studies for a long time (Rosenfeld, 1997). As a result of underrating, but also lack of guidance in how this human coordination should be managed, farmers in developing countries are not mobilized enough to benefit from any protection against the international market. Solutions for protection can be found in strengthening coordinative initiatives, ranging from loosely-coupled farmer groups to traditional cooperatives and new visions on cooperatives emerged from Europe, the United States and Canada (Cook & Chaddad, 2004).
In developing markets agricultural producers are frequently victim of the position of the largest buyers from the developed world. This is also seen in the coffee sector, where farmers have small margins and weak economic position while the five biggest roasters attain high margins on retail coffee prices (Daviron & Ponte, 2005). As market liberalization and the in 1989 ending of the International Coffee Agreement led to a rise in the volatility of international coffee prices and an imbalanced distribution of income (Talbot, 1997), governments reacted with several measures to protect local farmers. Besides encouraging differentiation (e.g. fair trade coffee) and limiting supply to external markets, these measures included the stimulation of coffee marketing cooperatives to secure prices. If managed well, these cooperatives can contribute to the amounts of risk the group faces, especially regarding income- and production risk (Painter et al. 1994; Davis, 1996; Ellis 1998; Brock 1999; Roncoli, Ingram & Kirshen, 2001). Together farmers have stronger bargaining positions to make sure they get a fair price and they can build capital and share resources. In this dissertation I will study on community level how well-organized agricultural coordination influences the protection against price fluctuations and contribute to the economic development of a community by acquiring higher operating margins and by increasing investments. As cooperatives and other partnerships in the coffee sector have been of major importance to several African countries, like Tanzania, I come up with the following research question:

In which way do different kinds of human coordination influence price risk management for local coffee farmers in Tanzania and create sustainable economic development for the community?

To analyze this subject a study of five cases in Tanzania is made: three cases are from the coffee sector to describe and compare different forms of cooperation. The two remaining cases are from the milk and pyrethrum sector and function as a benchmark for the coffee sector in general. These cases are able to serve as a benchmark since they are examples of how slightly new visions on cooperation have the potential to lead to profitability and development. The coffee industry in Tanzania in particular has been very sensitive towards international declining prices, as coffee is the second biggest source of export earnings. Moreover, Tanzania has a very rich history regarding cooperatives in this perspective (Putterman, 1995; Fitter & Kaplinsky, 2001; Mohan & Love, 2004; Chambo,

2009) and its development is a result of the functioning of all three levels (macro, meso and micro) together, which urges for an integral solution. In this study human coordination initiatives, as cooperatives, are seen as institutions serving their members in order to achieve endogenous growth on community level.

This research will contribute to the professional and academic world in several ways. First, it will provide local financial institutions with more insights in the role of cooperatives in reducing risks so they become more trustworthy in paying back the borrowed capital. Improving farmers' financial trustworthiness can contribute significantly to their economic development as lack of funds has been one of the major problems (Ortmann & King, 2007). Secondly, this study will place concepts of development economics and cooperative management in a financial context by introducing risk management and operating margins. Thirdly, it will place theories on new forms of cooperatives in a different geographical context, namely Tanzania, and it will explore whether these new visions have the same risk reducing results as in the countries studied before. And finally, this research will highlight the importance of human coordination and cooperative action in the multi-level development of a region, thereby extending the model of Stimson, Stough and Salazar (2009).

The outline of this paper is as follows. In chapter two a description is given on the coffee sector; how it is organized and which difficulties farmers in Tanzania face. Then I discuss the main theories on cooperatives, risk management and how new visions on cooperatives could add value to risk management and to the development of coffee producers. The third chapter deals with the methodology that is required to conduct the case studies and describes the methods, gives an overview of the respondents, the choice of geographical area and the validity of the study. Chapter four describes the five case studies of Tanzania by presenting, explaining and comparing the main findings of the collected data. Chapter five elaborates on the results by analyzing, connecting and comparing the cases to the literature. Finally, this paper will end with the main conclusions and implications and some recommendations for further research.

2. Literature Review

2.1 Coffee

2.1.1 Background

Coffee is the most important globally traded agricultural product and plays a crucial role in the employment of nearly 25 million people in 50 developing countries (May, Mascarenhas & Potts, 2004). Since 90% of all coffee is produced in developing countries the importance of coffee production is high and the development of the sector can have major influence on growth and poverty reduction of the region if the benefits are equally distributed (Ponte, 2002; Daviron & Ponte, 2005). Unfortunately the coffee sector is a volatile market and farmers face a very high risk exposure (Mohan & Love, 2004). This

volatility can for example be seen by the recent coffee price slump in the international markets in 2000-2004 and 2008-2010, represented by *Figure 2* below.

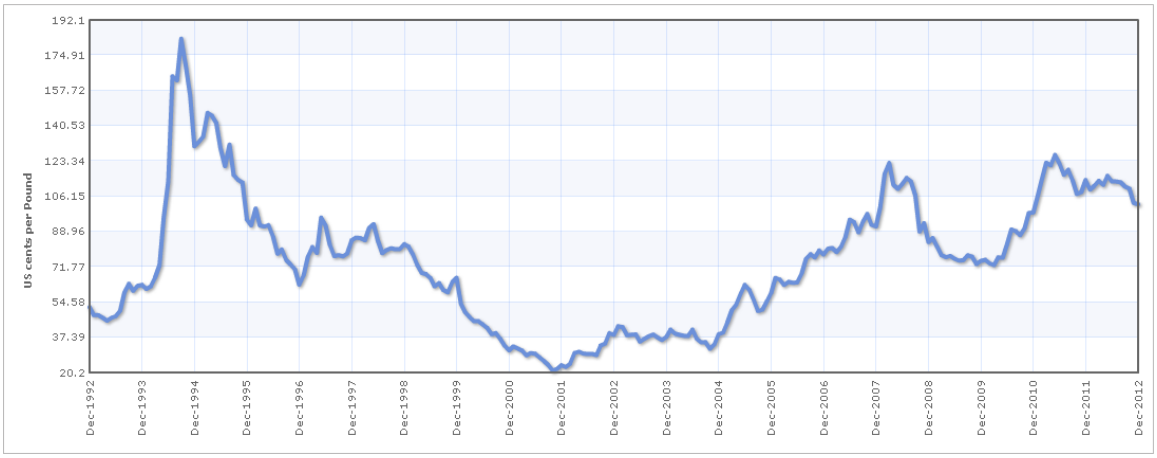

Figure 2: Robusta Coffee prices from 1992 to 2012 in USD (source: indexmundi.com)

Besides the existing volatility in the market, the coffee sector has been in a paradox situation, described by Daviron and Ponte (2005): retail prices get higher while international coffee prices continue to decrease. This paradox is mainly a result of the strong position of the five largest coffee roasters (Philip Morris, Nestlé, Sara Lee, Proctor and Gamble and Tchibo) who are able to capture the high profit margins on retail prices. In 1998, the five biggest roasters controlled 69% of the roasted and instant coffee market (Bacon, 2005). This makes them able to buy coffee at cheap prices from farmers in developing countries. At the same time these farmers are selling at prices below production costs. The main reason for this power imbalance is that, compared to the coffee roasters, farmers are not mobilized well enough to protect themselves against the global world of today. With small margins and weak economic positions they are not able to make any investments in their development (Daviron & Ponte, 2005).

2.1.2 Coffee value chain

Coffee farmers mostly organize themselves in local rural clusters; these are referred to as primary cooperatives. Primary cooperatives collect and sometimes process coffee from farmers in a specific area, but are most of the times still too small in volume to export directly to foreign markets. To increase the volume and benefit from economies of scale secondary cooperatives exist. These secondary cooperatives cover a greater region and take the responsibility of storing, exporting and in some cases roasting the coffee (Daviron & Ponte, 2005). These local rural clusters make sure the necessary amounts are achieved in order to sell coffee in bulk. Farmers that do not join a cooperative are large estate farmers, who are able to sell directly to a middleman. These large farmers sometimes also choose for vertical integration, thereby securing their margins. This part

of the value chain is not investigated in this research as these farms are mostly not owned by local people. For a graphical overview of the value chain, see below.

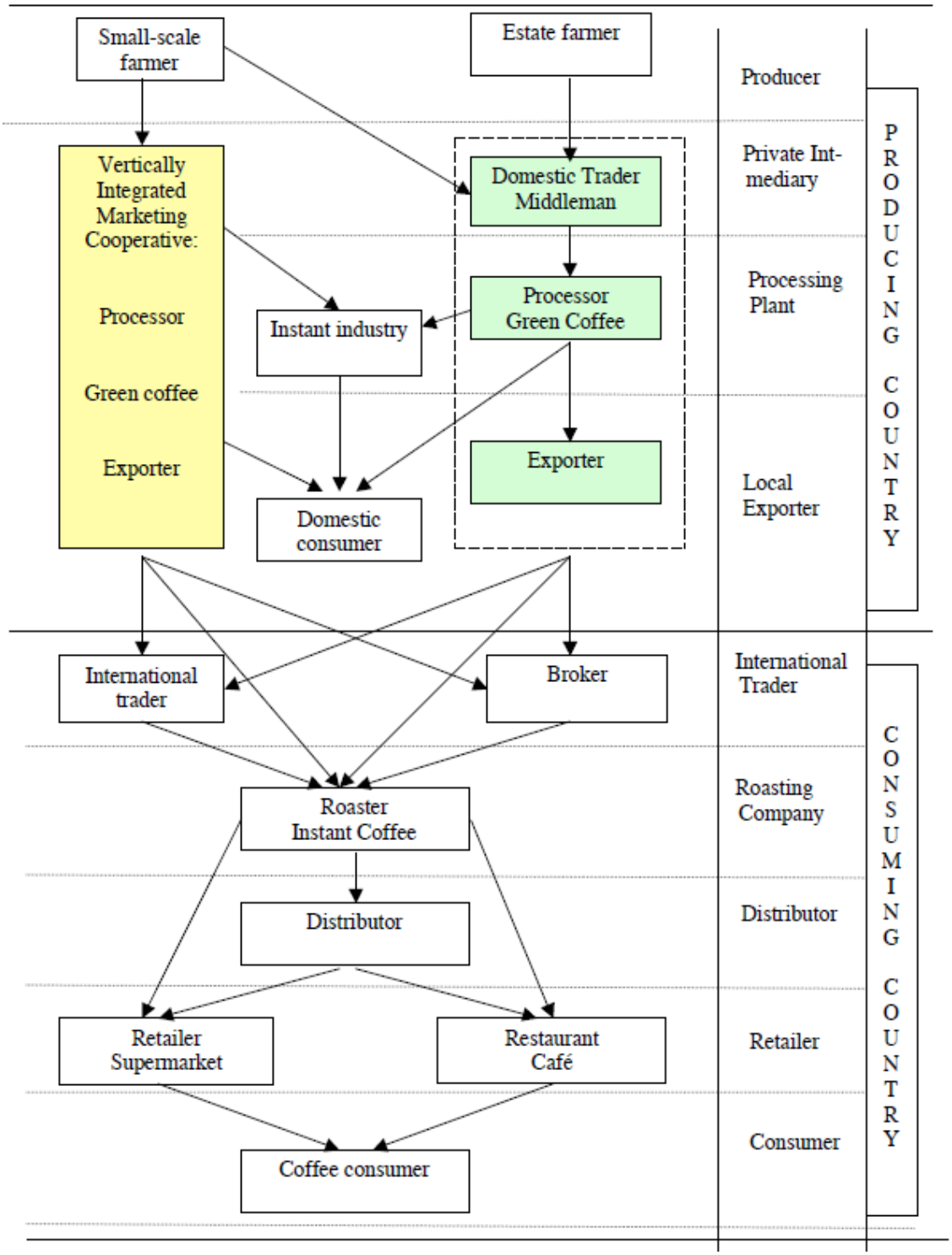

Figure 3: General structure of the coffee value chain (May, Mascarenhas & Potts, 2004, Milford, 2004; Daviron & Ponte, 2005; Schomers, 2007)

2.1.3 Coffee sector in Tanzania

Before market liberalization in the 1990s the Tanzanian coffee market was monopolized by a marketing board system controlled by the government. This board controlled the market, the prices, the transport, the processing and so on; private intervention was not existent. After liberalization of the coffee market in the mid-1990s the Tanzanian market got accessible for all buyers. With this liberalization the government stopped internal price stabilization and farmers got vulnerable for the prevailing international coffee prices. Still the market is semi-governed through the use of a national auction. In theory, there are three coffee markets in Tanzania (Tanzania Coffee Board, 2010):

1. Internal market. Farmers sell at farm gate price to private coffee buyers, farmer groups and cooperative. Coffee is sold in the form of cherry or parchment.
2. Auction. Coffee auctions are conducted every week on Thursdays during the season (usually 9 months). Licensed exporters come to the auction and buy coffee from suppliers who can be individual farmer, groups, and cooperative or from private buyers, supervised by the Tanzanian Coffee Board (TCB) in Moshi.
3. Direct export. Growers of premium top grade coffees are allowed to bypass the auction and sell their coffee directly. Direct export enables growers to establish long term relationship and contracts with roasters and international traders.

95% of Tanzanian coffee is sold by smallholder farmers and this coffee cannot be exported without flowing through this auction. Also cooperatives buying from individual farmers (indicated above as internal market) have to go through the TCB auction in order to export. The government controls which exporter is able to sell at TCB by giving permits and only allows certain groups of farmers to export. Acquiring such a permit is not easy; to be a TCB-qualified exporter farmers have to comply with certain aspects. They should either be; a) cooperation societies, b) farmer group associations, c) individual farmers or estates, or, d) companies which have entered into farming contracts with farmers (Crop Boards amendment Act of Parliament No. 23, 2001). Smallholder farmers are generally not allowed to individually sell their coffee to the TCB. Given that the producers in Tanzania are small, scattered and underdeveloped their influence on obtained export prices is very limited. Moreover, the internal consumption of coffee is negligible; making exports the major source of income. The use of primary and secondary cooperatives is therefore of major importance in the coffee sector.

The history of coffee cooperatives in Tanzania started very successful with large and profitable cooperatives until the 1970s. After that coops mostly became a tool for top-down governmental policies and were effectively integrated into state structures (Bibby, 2006), leading to this complex structure that until now still exists. Besides the primary and secondary cooperatives, described above, there are two other levels of cooperative organization. These are the APEXs and federations, which are overarching organizations so-called facilitating the (coffee) cooperatives in different ways. All of these organizations follow cooperative principles, so they have a general meeting and a

democratically-chosen board. Membership is voluntary on all levels and some entrepreneurial groups of farmers now even decide not be a member of any of these levels at all as the added value of the levels is not always evident to local farmers.

Level	Name	Objective
1st	Primary cooperative	Collecting coffee at community level
2nd	Secondary cooperative	Collecting, selling and distributing coffee at regional level
3rd	APEX	Promoting the interest of all coffee cooperatives
4th	Tanzanian Federation of Cooperatives	Organizing and stimulating democratic cooperatives on national level

Figure 4: Overview of cooperative levels in the Tanzanian coffee sector

2.2 Human coordination and economic development: cooperatives

2.2.1 Essence of a cooperative

Cooperatives differ from investor-owned firms in the way that in cooperatives the investors are at the same time the users of the firm. To explain the essence of an agricultural cooperative I follow the definition of Evans and Stokdyk (1937): ‘*’an agricultural cooperative is a business organization, usually incorporated, owned and controlled by member agricultural producers, which operates for the mutual benefit of its members or stockholders, as producers or patrons, on a cost basis after allowing for the expenses of the operation and maintenance and any other authorized deductions for expansion and necessary reserves*’’.

All traditional cooperatives follow three principles (Baarda, 2006):

1. The User-Owner Principle: Those who own and finance the cooperative are those who use the cooperative.
2. The User-Control Principle: Those who control the cooperative are those who use the cooperative.
3. The User-Benefits Principle: The cooperative's sole purpose is to provide and distribute benefits to its users on the basis of their use.

Shares are usually distributed according to the one vote per member principle, regardless of the volume of crop submitted. Thus, all members have equal power, incentive and commitment to participate in managing the cooperative (Albaek and Schultz, 1997). According to Dunn (1988) cooperatives have to fulfill certain basic premises: First, members have entered a cooperative voluntarily with full understanding of the associated rights, responsibilities and commitments. Second, the mutuality of members' interests in defining and achieving the cooperative's goals must be fully understood by all parties. Thirdly, the cooperative needs to serve the expressed needs of current users. And finally there should be active and effective control. Within the range of these principles and premises you can find dozen kinds of forms, though two main breakdowns are the open-

and closed membership cooperatives. An open-membership cooperative, also called a traditional cooperative, does not put any limit on the amount of members, nor on the amount of crop that each member has to bring in. Closed-membership cooperatives do put a limit on the amount of members and put restrictions on the amount of input a member has to submit (Albaek and Schultz, 1997; Cook & Plunkett, 2006).

2.2.2 Cooperatives and local economic development

Evidence from China showed that ‘’rural economic growth was far more important to national poverty reduction than urban economic growth’’ (Ravallion & Chen, 2004), suggesting the importance of a developed agricultural sector to the economy as a whole (Johnston & Mellor, 1961). But if unevenly distributed agricultural growth in itself is not enough, as there may just be a slight increase in welfare (Fitter & Kaplinsky, 2001). Which specific factors lead to rural economic development, has been a major topic in regional development studies for years (Binswanger, 2007). As suggested before, one of the solutions could be cooperatives, a developed form of human coordination. In developing countries cooperatives can be of major importance because of the fact that without human coordination small farmers are left without any organization and will face huge disadvantages when bringing their crop to the market or when attracting capital (Bibby, 2006). Main problems coffee producers currently face are: poor access to credit, price instability, low market power and lack of market information (May, Mascarenhas & Potts, 2004). One of the main benefits of cooperatives in developing countries is that they are able to help farmers with lobbying of public authorities, provide services, credit schemes, education, purchasing inputs for production and organize public goods with help of the collected fees (Milford, 2004). Moreover, as the volume of produced coffee is higher in a cooperative compared to an individual farmer, the possibility of engaging into long-term contracts with suppliers also increases. In this way cooperative action is able to bring market supply and demand under the farmers’ control (e.g. increase their market power) and can countervail opportunisms when these markets fail (Cook, 1995; Peterson & Anderson, 1996). Another reason for cooperatives to be considered one of the ideal models for development is because it is locally owned and - controlled, and the net profits are distributed to the local owners (Zeuli, 2002). If democratically owned and – controlled, cooperatives have the ability of informing and empowering marginalized farmers at local level through communicative actions like decision making, negotiation, and dialogue (Papa, et al., 2000; Milford, 2004). That empowering rural people can lead to strong development is shown in Asia, where the ‘’green revolution’’ and improved policies and institutions led to highly increased performance in the agricultural sector (Binswanger, 2007). Many governmental institutions have therefore acknowledged the power of these cooperatives to improve the farmer’s competitive position in developing regions.

In Africa the most popular agricultural cooperative mode has historically been the marketing of products after small farmers have individually completed their farm production operations; only in some cases more integration is established (Chambo, 2009). This also accounts for the coffee sector, as hardly any vertical integration is established due to financial and juridical restrictions, making it impossible to sustain in the market. The position of coffee producers is therefore very disadvantaged; cooperatives could be able to strengthen this position in the global market by sharing resources, information and power equally. For the case of Tanzania this leads to the first proposition;

Prop.1: Cooperatives, a developed form of human coordination, strengthens the position of farmers thereby improving the economic development on community level

2.2.3 Operating margins

As said in the preceding paragraph cooperatives have the ability to strengthen the position of farmers in developing countries and make the farmers able to countervail the existing powers in the market. These cooperatives can make important contributions to the prices obtained and the variation within these prices. In Europe, agricultural cooperatives are used and stimulated as a successful tool to protect against competition and decreasing prices (Ollila & Nilsson, 1997). According to Peterson and Anderson cooperatives increase members' returns and make these returns more secure in future periods, especially if you compare them to individual farmers. As operational returns influence the financial performance of the farmer and the degree to which he is able to invest in his business' development, a critical ratio to look at is the operating margin, for which the following formula accounts (Cooper & Kaplan, 1988):

$$Operating\ margin = \frac{Operating\ income}{Revenue}$$

The operating margin measures the rate of profitability. The higher the operating income as a part of the total revenues, the better the firm is able to make revenues. Every action that increases the benefits and decreases the costs is positive for the operating margin, thus profitability. Therefore all factors that increase the operating margin are positive for the development of the cooperative as more money will float into it. Besides obtaining higher operating margins because the farmers' market position is stronger, economies of scale achieved in cooperatives also lead to higher returns per farmer. Moreover, compared to individual farmers, cooperatives share overhead costs amongst more people, so costs per farmer will go down. If these cooperatives are managed well, these higher returns can lead to higher profitability and increased creditworthiness (Onyenucheya & Ukoha, 2007). If farmers work together in a cooperative they are better able to cover the

costs of production and thus due to higher operating margins more remains to invest in their development. This leads to the following proposition:

Prop. 2: Cooperatives can obtain higher operating margins than individual farmers and therefore imply higher economic development on community level

2.3 Risk management in cooperatives

2.3.1 Price risk insurance

Operating margins and the way cooperatives manage risks are very inter-related. After all, a cooperative remains a business that faces risks, especially in the coffee sector, so many factors influence the cooperative's profitability. In this case business risk is defined as the unpredictability of environmental and organizational variables that impact corporate performance (Miles & Snow, 1978; Pfeffer & Salancik, 1978). One of the main uncertainties for agricultural producers includes variation in their income and production (Roncoli, Ingram & Kirshen, 2001). Though farmers cannot influence the prices they receive in the market, the management of price risks can determine their capability to avoid or budget for the variability of their operating income (Barry & Fraser, 1976; Brigham & Gapenski, 1985; Beal, 1996; Hardaker, Huirne, Anderson & Lien, 2004). Therefore an effective management of risks could lead to higher operating margins and higher economic development.

As said before, price risks in the coffee sector are very high and cannot be avoided. The international prices in the coffee market have been very volatile as a result of market liberalization and increased competition. As the coffee farmers sell a commodity they do not benefit from stable retail margins. In general, the international prices of all agricultural commodities are based on the prices of paper contracts set on the specific futures market. Farmers who deal in these contracts are able to insure themselves against volatile prices for their crop, also called 'hedging' (Daviron & Ponte, 2005). Unfortunately most individual farmers in developing regions lack the training, capital or even infrastructure to make use of the futures market. This is even more hampered in the coffee sector by low forecast efficiency of futures prices of coffee as future prices tend to adapt to the spot prices, making it almost impossible to hedge the price risk (Mohan & Love, 2004). According to Carter (1997), based on quantitative measures of general risk exposure, reciprocity networks can effectively reduce the vulnerabilities of an individual farm. And also Ligon (2009) suggests that cooperatives have an advantage by nature in protecting their members against price fluctuations. Peterson and Anderson (2007) acknowledged this and designed six risk management strategies specifically for cooperatives without the use of financial markets.

Strategy		**Method of managing risks**
Direct strategies	Pooling strategy	Paying members an average price over a season, geographic area or

		across commodities
	Savings bank strategy	Saving returns in good economic times for "payout" in poor economic times
	Maintain-the-market strategy	Continue paying returns to members when non-cooperative firms have abandoned a market critical to farmers
Indirect strategies	Conservative investment	Restrict the cooperative's internal investment options only to the most secure projects
	Diversification	Expanding the cooperative's investment options by including risk reducing, non-member centered assets
	Selective vertical integration	Backward or forward integration to secure in- and output prices

Figure 5: Direct and indirect risk management strategies for cooperatives (Peterson & Anderson, 1996)

Although in practice farmers in the coffee sector bear the full risk of price fluctuations, the cooperative payment system allows smoothing the price variation within the marketing year. This payment system (above; ''pooling'' strategy) pays all farmers the same price per kilogram at the end of the year regardless of when they delivered the coffee to the cooperative. In this way, severe short-term price fluctuations are covered by all farmers together and not by one individual farmer who was (un)lucky to sell his coffee at that moment in time (also see: Daviron & Ponte, 2005). Besides the ability of cooperatives to make returns more stable and obtain higher operating margins, cooperatives are better able to build capital as most cooperative's articles of association define that surpluses out of doing cooperative business should be used to add to the reserves or so called price stabilization funds. This is described as the ''savings bank'' strategy above. While setting up reserves cooperatives stabilize prices over the years; when prices are high a higher percentage goes to a stabilization fund, when prices are low the stabilization fund is used to give members a price that covers the production costs. In that way cooperatives have a comparative advantage to private buyers as they are building capital to protect the margins of their farmers in the future. The ''maintain-the-market'' strategy is only beneficial in very limited cases, as it is a defensive strategy designed to protect member investment in their fixed assets for production. With the indirect strategies a cooperative chooses its set of investments in order to reduce the risk inherent in members' portfolios, mainly including specific capital investments for each option. If cooperatives are even able to ''sell'' these strategies as an extra cooperative service to their members to protect against risks they can even attract and retain more members (Peterson & Anderson, 1996; Manfredo & Richards, 2007). One important requirement needed for all these strategies is that the followed strategy should be coherent to the members' needs. As these strategies, if successfully implemented,

improve the cooperatives profitability (e.g. operating margins) it will lead to further development of the cooperative and the community.

Prop. 3: Price risk management strategies within a cooperative effectively lower the risk and lead to higher operating margins and higher economic development on community level

2.4 New forms of cooperatives

Different kinds of human coordination have different objectives in achieving profitability and socio-economic development in the community. Unfortunately, cooperatives in developing countries have not been successful in managing price risks yet, which could be a result of how they are structured and governed (Cook, 1995; Fitter & Kaplinsky, 2001). In order for a cooperative to reduce uncertainties while staying managed in the most democratic way has so far only been explored in the developed world (Cook, 1995; Zeuli, 1999; Cook & Plunkett 2006). Factors that influence the feasibility of these risk management instruments are: the involved costs and the ease of implementation, but also how members see and understand the necessity of the instruments. A new way of organizing cooperatives to add value to farm commodities is described in theories of the new generation cooperatives (NGCs) originated in the 1990s. These cooperatives emerged in Europe, Asia and North America as a new and better organized cooperative regarding risks, incentives and governance compared to the traditional ones (Cook, 1995; Harris, Stefanson & Funton, 1996). Cook (1995) describes that cooperatives that survive the first stages of cooperative development get into trouble when organizational structures become more complex since property rights are only vaguely defined and incentives decrease for handling in the best way for the cooperative as a whole. Cook and Chaddad (2004) continue by describing four forms of cooperatives existent in the American market, namely:

1) Traditional cooperative
2) Proportional investment cooperative
3) Member-investor cooperative
4) New-generation cooperative

Cook and Plunkett (2006) describe the emergence of new forms of cooperatives as a reaction to globalization, new technologies, overcapacity in the food sector and intra-firm coordination challenges. According to them the most important difference between the traditional (patron-owned) form of cooperatives and the new emerging forms is the property rights structure. Cook and Chaddad (2004) describe all these forms, beginning with the traditional cooperative. This traditional cooperative is one where ownership rights are restricted to member patrons; residual return rights are nontransferable, non-appreciable, and redeemable; and user benefits are distributed to members in proportion to patronage but investment may not be proportional to patronage. This is the most

commonly found cooperative in developing countries. The second form, the proportional investment model, is one where ownership rights are restricted to members, nontransferable, non-appreciable, and redeemable, but members are expected to invest in the cooperative in proportion to patronage. The biggest problem found in these first two forms is related to ownership rights misaligned with use, control, investment, incentives, and benefit distribution, therefore new visions on cooperatives originated. In the third form, the member-investor model, returns to members are distributed in proportion to shareholdings in addition to patronage, as if they were outside investors. In the new-generation cooperatives (NGC) model, ownership rights are in the form of tradable and appreciable delivery rights restricted to current member patrons. In addition, members are required to buy delivery rights on the basis of projected patronage so that usage and capital investment are proportionately aligned. In NGCs vertical integration is a common phenomenon. Zeuli (1999) proclaims that these NGCs require a substantial initial equity investment from farmer members and therefore importantly differ from the traditional forms. Due to the initial equity investment members become more aware of and involved in the (operational) results and functioning of the cooperation as a whole and the factors influencing these results. It can therefore also give incentives for active participation of members, thus in theory less free-riding and more stimulus are to stand strong together. According to the theory of Zeuli (1999) there are two ways in which the NGC can enhance the risks faced: 1) Shift of share its systematic risk exposure with capital market innovations, and 2) offer insurance directly to its members to cover independent risk. According to Ligon (2009) besides creating incentives for further investment in the cooperative capital, a new generation cooperative can fully strengthen its market position by taking advantage of the long-term nature of the relationship between the cooperative and the members. Ligon (2009) therefore suggests that a cooperative should fulfill four elements to insure all members equally against shortfalls in revenues:

1) Delivery targets determine a farmer's initial share in the cooperative
2) All members are committed to deliver al of their production to the cooperative, also when there is overproduction. But in case of a production shortfall farmers are not obliged to reach the delivery target
3) Net revenues should be shares in direct proportions to the initial shares
4) If all these elements are fulfilled, cooperatives should enter the financial market to protect against market risk using futures or forwards sales.

In this way, members are encouraged to deliver the entire crop to the cooperative, as their personal stake in the cooperative's capital rises as they deliver more. Members will get more aware of their influence and the benefits they obtain from the results of the cooperative as a whole, leading to higher commitment. Moreover, the relatively large equity contribution makes members more willing to make long-term investments in the cooperate capital, thereby enhancing their market position. This is mostly seen in new generation cooperatives having a high degree of vertical integration. Connecting these

theories with the theory of Peterson and Anderson (1996) leads to the conclusion that in new generation cooperatives farmers receive more incentives to invest in the cooperative thereby strengthening its position in the market and protecting it better against risks.

Prop. 4: New visions on property rights structures in cooperatives contribute to the price risks management strategies and the position of the farmers and therefore lead to higher economic development on community level

2.5 Conceptual framework

The foregoing propositions can be modeled in the following conceptual framework.

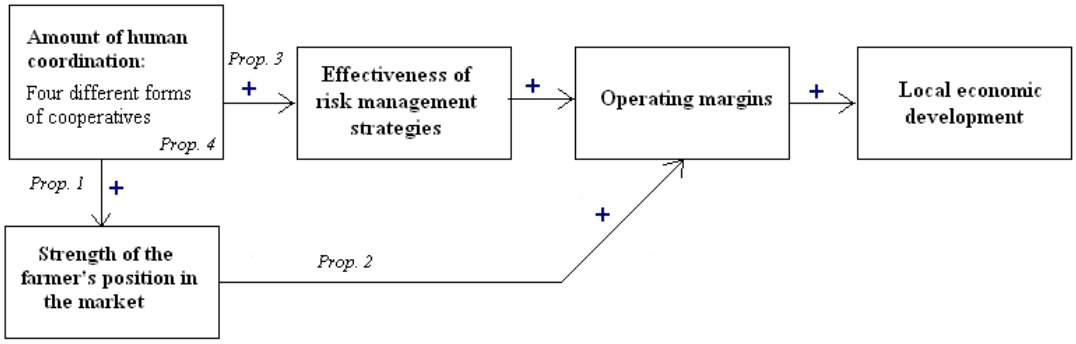

Figure 6: Conceptual framework

3. Methods

3.1 Type of study

As explained in the previous chapters this research will focus on coffee cooperatives in Tanzania and will analyze how risk management is coordinated in different kinds of human coordination initiatives; several kinds of cooperatives are compared with each other in order to analyze how its risk management influences the profitability ratios and the development of the community. This question is answered on the basis of five case studies, from which three in the coffee industry and two in other sectors. The distinctive advantage of doing a case study is its ability to describe an event in its own context and see how certain factors relate to this event (Yin, 2009). A qualitative approach is used to give an answer to the question of how human coordination, in the form of cooperative action, can contribute to a risk management system for volatile prices and how to manage these cooperatives. A set of semi-structured interviews with cooperative managers and farmers as well as local experts will help to develop these cases.

3.2 Respondents

In the period November 2012 until January 2013, semi-structured interviews were held on location with multiple types of agricultural holders (cooperatives andloosely-coupled farmers) about how they manage price risks and how effective their risk management is

in securing their prices, profitability and development. Agricultural smallholders that differ in size, degree of development and structure were expected to provide the richest qualitative information, so a combination of loosely coupled agricultural groups, small- and large scale agricultural cooperatives were selected to be interviewed. Among them were three coffee cooperatives, one more loosely-coupled group of farmers producing pyrethrum and one milk cooperative. The pyrethrum company was included as it is a cooperative initiative outside the normal system (therefore I call it loosely-coupled) but is mostly managed as a new generation cooperative. The milk cooperative union was included in this research because it was the one of the few initiatives in Tanzania that had successful performance due to vertical integration. Both cases from the other industries can lead as an example for the coffee industry. One new initiative from the coffee sector can as well provide promising insights. To attract extra information about profitability and organizational structures financial reports are collected and investigated as far as possible. Unfortunately, many unprofitable and unorganized cooperatives were encountered, that were not able or willing to share financial information of the last years.

Group	**Subgroup**
Individual farmer	
Loosely coupled partnership	
Cooperative	Traditional cooperative
	Proportional investment cooperative
	Member-investor cooperative
	New-generation cooperative

Figure 7: Overview of farmer groups and subgroups

Within the cooperative group, unfortunately, not all four types of cooperatives defined by the literature were found in Tanzania. Below you can find a schematic overview of the five cooperative respondents and the group they were assigned to as mentioned in the figure above.

Name of respondent	**Crop**	**Assigned group**
Usambara Cooperative Union	Coffee	Traditional cooperative
Kilimanjaro Native Cooperative Union	Coffee	Traditional cooperative
Mamsera Primary Cooperative Union	Coffee	Member-investor cooperative
Tanga Dairy Cooperative Union	Milk	Traditional cooperative (with vertical integration)
Pyrethrum Company of Tanzania	Pyrethrum	Loosely coupled partnership

Figure 8: Overview of cooperative' respondents

Besides the five case studies and the corresponding interviews, three other groups of local experts were interviewed in order to validate and optimize the cases. Insights of the involved risks, the existing risk management tools and willingness to lend capital were gathered by having semi-structured interviews with the first group of local experts: financial institutions. This in-depth analysis consisted of four interviews at two different banks, one national bank (National Microfinance Bank) and one local bank (Mwanga Community Bank). This helped to collect data on different levels, described by the schematic overview in *Figure 1*. The second group of local experts consisted of academics, with whom three interviews were conducted at two different institutions. Two interviews were conducted with professors at a university in Moshi specialized in cooperative business, and the other interview was with an academic historian now involved in cooperative business in Morogoro. The last group of local experts consisted of (semi)governmental authorities. One of the interviews was with an employee of a non-governmental organization from the Netherlands, called Agriterra. This person is involved with supporting and improving processes in several cooperatives in Tanzania. The other interview was with a director of the Tanzanian Coffee Board, responsible for the export auction and familiar with countless different coffee producers in Tanzania. Together, these three groups of experts contributed to the cases by discussing problems, existing theories and practicalities and by proposing possible solutions.

3.3 Geographical area of research

The geographical areas to be investigated are chosen on the basis of the food crop produced in the different areas. The Kilimanjaro region was chosen to represent the coffee producers as most of the coffee origins from this area, all case studies from the coffee sector originate from there. The region's large history with the production and collective selling of coffee starting in the 1930s but also the difficulties the local producers have been facing and the new initiatives that started here make it a very interesting region to further investigate. The choice of geographical area was made with the help of the local experts at site.

3.4 Data processing

To get into contact with local farmers first contact was established with public and private organizations involved with agriculture and agricultural development. These include; the Ministry of Agriculture, Food and Cooperatives, University of Cooperative studies in Moshi, the Tanzania Coffee Board and several local financial institutions. The gathered data is being processed at the time of collection through notes and audio tapes. During the interviews with the cooperative respondents a questionnaire was used to find out to which agricultural group they belonged, to measure their profitability and to analyze the presence or absence of risk reducing mechanism. The collected data was processed in a narrative writing style. By analyzing all the interviews and the financial

reports the cases for the five types of cooperatives were made. These cases are compared with each other on the basis of the main activities regarding risk management, profitability and development. The next chapter will discuss and compare these cases.

4. Empirical results from Tanzania

4.1 Cooperatives in the coffee sector

4.1.1 Usambara Cooperative Union

The Usambara Cooperative Union (UCU) is one of the secondary coffee cooperatives visited in the Tanga region. This cooperative has 15 primary cooperative members, representing 2600 individual farmers. Shares are non-transferable, non-appreciable, and redeemable, they do not vary in value year-to-year and no delivery targets are associated with the amount of shares owned. Also, there is no limit on the amount of members; therefore it is an open-membership cooperative of the traditional style. The UCU operates in the old cooperative system, thus is a member of the coffee APEX as well as the cooperative federation. The profitability ratios of UCU have been very low in the recent past. According to the respondent the profitability problems are a result of decreasing prices in the market and climate changes which influences the volume of produced coffee. Other respondents criticized that UCU has not been able to pay back their members for coffee bought from them on credit, thereby decreasing members' loyalty towards the cooperative. Because of late or non-payment many members have decided to sell to other buyers. Currently UCU faces several problems with paying creditors and UCU is trying to attract more money from their members in order to survive. Respondents stated that members do not contribute to the cooperative after their initial payment of their shares as their loyalty is low, so there is a low chance of attracting money from the farmers. Also financial institutions are very reluctant to invest in this cooperative union; only short term loans are provided against very high interest rates. Due to these financial problems they lack the capital to guarantee any protection against price risks. In terms of risk management strategies only the pooling strategy is used in the form of structured payments (e.g. 1st payment, 2nd payment and final payment) which was also found in all other cooperative initiatives visited. Besides protecting against price risks, this cooperative is also facing difficulties with providing their members the needed services, so their contribution to the development of the community is low.

4.1.2 Kilimanjaro Native Cooperative Union

The Kilimanjaro Native Cooperative Union (KNCU) was founded in 1933, making it the first cooperative to exist in Tanzania. This secondary coffee cooperative consists of 92 primary cooperative members; 68 of them are active members, thereby representing 62.000 individual farmers covering a large part of Northern Tanzania. Non-active members are not selling their crop through the KNCU though they still own shares. The non-active members group consists of 24 rural primary cooperatives who decided to

separate from KNCU because of non-payment, high overhead cost and bureaucracy. 22 of them formed a new group called G-32 KNCI- JVE, which is currently much more successful in terms of profits and contribution to its members[1]. Shares can only be bought by primary cooperatives, cannot be transferred to others, do not vary in value year-to-year and no delivery targets are associated with the amount of shares owned. This makes KNCU an open-membership cooperative of the traditional style. Like UCU, KNCU is a member of the coffee APEX as well as the cooperative federation.

According to the respondents KNCU is struggling with huge debt ratios, significant annual losses and therefore low working capital. In the year 2008/2009 KNCU suffered a loss of Tsh769 million; in 2009/2010 they had a profit of 200 million, but this could not make up for the previous losses. Regarding contribution to the development of the community KNCU has several initiatives to support education, health care and tourism for its members and for the region. Specifically for their own members they invested in a curing company in order to save costs and guarantee trustworthy handling of the coffee. KNCU also promotes and supports primary members who want to specialize in organic or fair trade coffee in order to obtain higher prices. Due to current financial problems they are less able to continue these activities.

In terms of risk management strategies KNCU is making some efforts to contribute to it, though it is not functioning very well. First, a savings bank strategy was encountered; the respondent claimed the existence of a price stabilization fund[2], reintroduced after the severe price declines of 2008. Unfortunately, until now this stability fund is not sufficient in size to support price falls. Furthermore a diversification and selective vertical integration strategy is found, as they invest in commercial, non-member centered assets (e.g. hotel, restaurant) and they own a curing plant. Unfortunately some diversification is funded with debt only and moreover so un-related to the farmers' business that farmers did not understand why these investments could be made but payments to their members could not be made. Finally, as in all other cooperatives, a pooling strategy is used to secure that all risk within one year is shared equally amongst all members by using this payment system.

4.1.3 Mamsera Primary Cooperative Union

The Mamsera Primary Cooperative Union (MPCU) is one of the primary cooperatives that separated from KNCU in 2003 and became a member of G-32. MPCU is one of the few initiatives in the Tanzanian coffee sector that is able to operate outside the current union system; meaning that it has permission to sell directly to the TCB auction as an individual primary cooperative. MPCU consists of 1800 individual members. Each member can decide himself how much shares he wants to buy, though the upper limit is

[1] To illustrate; in the year 2011/12 KNCU paid the farmers Tsh4,000 per kilogram of coffee while G32 KNCI-JVE members paid their farmersTsh4,500 to Tsh6,000 per kilogram. Also see figure 7.

[2] In 2011 they set aside Tsh100 per kilogram of coffee, summing up to a total of Tsh1.43 million.

(now) set on 50 shares (each worth Tsh1000). These shares are nontransferable, non-appreciable, and redeemable, and also no delivery targets are coupled to the amount of shares owned. MPCU differs from the first two cooperatives as members also get paid dividend on the basis of equity contribution[3]. MPCU buys coffee from members and non-members: both receive their payment immediately, though at the end of the year members also receive dividend and a final payment if final prices were higher than expected. The non-member group mostly consists of farmers from nearby villages, who are not able to become an official member with shares[4], but do want to benefit from the direct and good payments of MPCU; the current amount of non-members accumulates up to 10.000. Respondents claimed that members are actively involved of the management of the cooperative and its investments as they are aware of the fact that they are the direct beneficiaries of the cooperative's activities. As many farmers are willing to buy more shares to increase their capital, the directors are currently questioning whether or not to revalue shares in line with the growth of the cooperative on a more frequent basis.

MPCU is making relatively large profits and their member rates keep increasing hereby showing their growth potential in the future. The respondent claimed that the high operating margins on individual level were achieved due to fair pricing to farmers, low overhead costs and strategic selling (selling when market prices are high). They achieved better prices as they attained higher volumes, sold better quality coffee and had more market information compared to the individual farmer. Members at MPCU were much more dedicated to the cooperative as direct payment was guaranteed and second payments were available at fixed times every year. In terms of contribution to the development of the community, respondents believe that MPCU is far better able to provide good prices and makes farmers able to support themselves and their families also compared to other (secondary) cooperatives. The closely relatedness to farmers and member empowerment were identified as most important factors influencing how much they contributed to their economic development. Furthermore, MPCU has increased entrepreneurship in the region, with continuously growing employment by making profits and empowering women.

Regarding risk management strategies, MPCU follows a pooling-, a diversification- and a conservative investment strategy. MPCU uses a diversification strategy by owning a hardware shop; the conservative investment strategy is noted by the fact that the greater part of internal projects is very securely analyzed on added value and risk and besides that these investments are mostly financed on the basis of equity[5]. The trustworthy management as a result of their clear governance structure was indicated as an important factor contributing to the willingness of members to make investments in risk

[3] Last year MPCU was able to pay farmers 200% dividend over their equity capital.

[4] The government prohibited farmers from outside the three Mamsera villages (Mamsera-Juu; Mamsera-Kati; and Mamsera-Chini) to become official members of the primary cooperative. These farmers are able to sell but do not get shares, nor final payments and dividend.

[5] On the basis of share capital or reserves, so no money is needed from the bank.

management strategies. Vertical integration is not yet pursued as their current priority is increasing the volume and quality.

4.2 Cooperatives in other sectors

4.2.1 Tanga Dairy Cooperative Union

The Tanga Dairy Cooperative Union (TDCU) is a secondary cooperative for dairy farmers in the Tanga region. TDCU was established in 1985 by a bilateral Tanzania – Dutch dairy development program to stimulate and support dairy activities by coordination of the value chain of collection, processing and marketing of milk. TDCU consists of 15 primary societies, representing 5200 individual farmers. Shares are non-transferable, non-appreciable, and redeemable and no delivery targets or patronage is associated with amount of shares. Shares are revalued every five years, though it does not imply that a member's equity share has risen: existing members just have old-style shares and new members have to contribute more. Because there is no limit on the amount of members and all farmers contribute the same amount, regardless of input, TDCU is an open-membership cooperative of the traditional style.

TDCU has been able to pay farmers on time, keep overhead costs low, improve milk quality and have high profitability rates. TDCU has contributed to the economic development of the community as employment rose and net benefits to the farmers increased[6]. TDCU is very aware of the price risks involved in the dairy sector. That is why they follow several strategies in order to protect their farmers. The main one is the selective vertical integration strategy. In 1997 Tanga Fresh Ltd. was established, as a subsidiary company of TDCU, to add value (and profit) for their members by processing the farmer's milk into dairy products. From 1997 until 2013 production in this factory has risen from 15.000 to 50.000 liters per day, showing the tremendous growth in volume due to increased membership, economies of scale and efficient production. By owning this factory farmers are sure of selling their milk for good prices before the quality of the milk diminishes. As Tanga Fresh Ltd. is partly owned by the secondary cooperative, TDCU can have major influence on the prices obtained, as it is also the factory's main milk supplier. Moreover, TDCU pursues a savings bank strategy by contributing to a price stabilization fund. Besides securing the output prices, TDCU offers their members growth opportunities by providing young cattle and credit.

4.2.2 Pyrethrum Company of Tanzania

The Pyrethrum Company of Tanzania (PCT) is a loosely coupled farmer group outside the existing cooperative system. PCT contracts local farmers in the Mbeya and Iringa regions to sell pyrethrum. After harvesting, PCT processes the crop for these farmers and sells it on the international market. PCT normally organizes farmers into groups of ten to fifteen farmers and enters into a production contract with these groups. This runs for

[6] There has been an increase in benefits of $3.8million in 2010.

three seasons, thus for pyrethrum this means three years. The amount of farmers being contracted now accounts to 32500. At the moment farmers do not own shares due to lack of proper organization amongst them (e.g. primary cooperatives). The respondent claimed that more farmers chose to become a contractor as PCT is very closely positioned to farmers, always pays at the moment of delivery (including a second payment after 14 days) and educates the farmers. Again, strict quality control in the early stages, thus close to the farmer, is of very high importance. PCT has been able to improve the average yields of members by 50% just by advising and supporting farmers. Though PCT is officially not in the cooperative system in Tanzania, it is a farmer group that will mostly look like a new generation cooperative in the future, as they are planning to make 25% of the shares available for farmers. These shares are planned to be tradable and appreciable, like a commercial company, and funds will be collected for further vertical integration for the farmers. When these farmers get more organized, in cooperation with PCT, managers from PCT expect to almost double the amount of pyrethrum flowers collected within two years from now.

PCT is having positive profitability results and have been able to secure farmers with a second payment for many years. Currently, PCT is not managing risk of prices actively; besides their payment system and selective vertical integration (e.g. a refinery factory) there is no risk management strategy. Unfortunately PCT is the only buyer in the country, making farmers very dependent on only one seller, also regarding the risk of varying prices. However, PCT has made important contribution to the development of the region, as the production of pyrethrum is significantly revitalized and made Tanzania one of the prime growers of the flower.

4.3 Case comparison

4.3.1 Comparison of the coffee cooperatives

Year	Amount of members			Collected KGs			Prices per KG in Tsh		
	UCU	KNCU	MPCU	UCU	KNCU	MPCU	UCU	KNCU	MPCU
2004/2005			1024		2,680,610	128,650		1,413	1,185
2005/2006			1070		1,526,427	133,974		1,705	1,670
2006/2007			1099	228,324	2,427,846	242,235	1,398	1,658	1,910
2007/2008			1176	80,790	1,057,411	60,752	1,800	2,086	2,150
2008/2009			1255	325,773	2,457,481	254,000	1,235	1,800	2,030
2009/2010			1357	139,993	1,538,555	278,645	2,075	2,604	2,650
2010/2011			1468	178,754	1,462,836	148,020	3,741	4,372	4,700
2011/2012	2600	62000	1755		1,482,168	308,033		4,500	5,900
	Total share capital			Profits/Losses in Tsh					
	UCU	KNCU	MPCU	UCU	KNCU	MPCU			
2009/2010				(72,814,447)	(769,000,000)	51,363,534			
2010/2011	3,600,000	50,885,000	16,039,321	(43,581,738)	200,000,000	91,505,280			

Figure 9: Comparison of coffee cooperatives

A sum-up of the findings within the coffee sector is given in a graphical way above. MPCU encountered steep membership increases since its existence, while UCU and KNCU only have membership losses. Share capital per member is the highest for MPCU and the lowest for KNCU. In most of the seasons MPCU was able to achieve the highest prices for their coffee, though it did not collected the highest amounts of coffee. MPCU was also the only cooperative able to make profits for the last two years. Besides that, the projections for the upcoming year were positive in the case of MPCU only.

4.3.2 Comparison of all sectors

		UCU	**KNCU**	**MPCU**	**TDCU**	**PCT**
Crop		Coffee	Coffee	Coffee	Milk	Pyrethrum
Level		Secondary	Secondary	Primary	Secondary	Secondary
Amount of members		2600, decreasing	62000, decreasing	1800, increasing	5200, increasing	32500, increasing
Equity contribution		Tsh 1.000.000	Tsh 500.000	Tsh1000 - 50.000	Tsh 500.000	-
Profitability	*Operating margins*	Not favorable	Not favorable	Favorable	Favorable	Favorable
	Growth potential	Very low	Low	High	High	Moderate
Overhead costs [7]		20-30%	25-30%	10-14%	2-10%	10-30%
Market position		Low rank position	Low rank position	Top position	Top position	Top position
Risk management strategies: *Direct strategies*	*Pooling strategy*	X	X[8]	X	X	X
	Savings bank strategy		(X)		(X)	
	Maintain-the-market strategy					
Indirect strategies	*Conservative investment*			X	X	
	Diversification		X	X	X	

[7] Costs which are charged to farmers, thereby influencing the amount of money flowing to farmers
[8] Because UCU and KNCU suffered from losses, several problems were encountered with on-time payment

	Selective vertical integration		X		X	X
Contribution to community		0	+/-	+	+	+

Figure 10: Comparison of cooperatives from all sectors

Profitability

The profitability ratios of the two secondary coffee cooperatives (UCU and KNCU) were not favorable, as many losses accumulated over the years; this has led to a financial weak position. Moreover, the potential growth of their profits in the near future was low to very low as decreasing membership participation and low rank position in the market (mainly due to low quality crop) make it very difficult to reach significant higher profit levels in the short term. On the other hand, MPCU, TDCU and PCT had favorable operating margins due to their top positions in the market and high growth potential because of increasing membership and productivity.

Risk management strategies

All cooperatives followed a pooling system strategy, which is embedded in their standard payment structure, to share risk of sudden or short term price variations. KNCU and TDCU tried to set up a savings bank strategy, though in both cases not very successful due to lack of financial resources. TDCU and MPCU implemented a strategy of conservative investment to protect their farmers against decreasing prices in the market. MPCU especially was very successful in making profound analysis of the risks and decided carefully how and with which money to make these investments. Diversification strategy was pursued by KNCU. MPCU and TDCU and led in the two latter cases to positive incomes from outside the cooperative business. KNCU was said to have lost its focus on their members' want and needs by choosing diversification investments above payment to farmers. Selective vertical integration led in most cases to higher added value to the product, though no cost and benefit analysis was made on the integration itself.

Contribution to the community

Due to lack of profitability UCU and KNCU faced severe difficulties in paying their farmers on time; thereby decreasing their ability to contribute to the development of the community. Especially in the case of UCU, no investments were done for a long period of time. On the other hand, KNCU, given its size, had an impact not only on community level but also on regional and national level. It was noted that due to that distance from the local community KNCU was not able to identify their developmental needs. Given that financial resources were also lacking, these two cooperatives seem not to contribute

to the further development of their surrounding community. Finally, overhead costs charged to farmers influenced the farmers' ability to contribute to its own development.

5. Analysis

5.1 Human coordination strengthening bargaining position

Suggested from *proposition 1*, a cooperative strengthens the farmers' bargaining position in the market due to higher volumes of produced crop. In contrast with the theory, the total amount of coffee collected does not seem to influence the prices; larger cooperatives (e.g. KNCU) do not obtain higher prices compared to smaller cooperatives (e.g. MPCU). The most obvious reason for this is that (stable) quality is a far more important factor in determining the coffee prices than quantity. Maintaining high quality control, as MPCU does, appears to be of great importance to obtained prices and enhances the cooperative's bargaining position and reputation, as MPCU repeatedly sold for the highest prices per kg. Nevertheless, having some sort of human coordination is a main requirement for surviving in the Tanzanian coffee market and also facilitates quality control and the possibility of long-term contracts with buyers. The cases demonstrate that many farmers decided to sell their crop to other, new forms of cooperatives, like MPCU, that have been able to significantly grow in amount of members and kilograms of collected coffee. In the cases of TDCU and PCT the production was enhanced by constant advice and support on main topics as yield, productivity, quality and further product processing. Due to sharing of information and power, involvement from both sides was encouraged. Finally the cooperative's position in the market became stronger. Thus, currently the market power of coffee producers is not only enhanced by the increased volumes and quality a cooperative achieves, but also by their ability to share control and involve members at the all levels.

5.2 Operating margins

As said in the preceding paragraph, cooperatives that are able to sell high quality crop have stronger positions in the market and are better able to obtain higher prices. This led to higher operating margins in the case of MPCU. Another important factor influencing the amount of operating income is the costs. Being member of a cooperative overhead costs are shared among more farmers. If these overhead costs are kept low, by streamlining the organization, more of the revenues will flow directly to farmers. MPCU, TDCU and PCT managed to keep overhead costs relatively low, thereby increasing the profit margins for individual farmers. It can therefore be acknowledged that cooperatives positively influence the operating margins of individual farmers as they on the one hand increase prices and on the other hand decrease the costs per farmer. Out of these cases it seems that fair pricing, strategic selling and keeping overhead costs low leads to the highest operating margins and is a result of the involvement and empowerment of the members, whereby involvement is mostly a result of member empowerment. Thus

proposition 2 is supported only if the cooperative meet certain requirements to increase operating margins which will generate resources for investments in the community's development.

5.3 Price risk management

As farmers do not influence the prices of their crop, the management of risks can make important contributions to their ability to avoid or budget for the outcomes. Though in the cases the risk of fluctuating prices was claimed to be the most important risk in the coffee sector, all showed that farmers bear the full price risk. None of the cooperatives bought any financial insurance to protect against price variation (e.g. futures). Most cooperatives were able to use several risk management strategies, but only a few could actually assure a certain price and positive operating margins (e.g. covering production costs). MPCU and TDCU were most able to secure good prices by conservative investment. MPCU especially made well-thought and profound decisions, mainly due to the fact that their members governed and controlled the investment decisions made. The savings bank strategy was acknowledged as being one of the most promising strategies, though in most cases it lacked the capital to fully protect against price decreases. Old-style cooperatives are not being effective at influencing profit margins for the benefit of their members by managing risks, as became evident from the cases of UCU and KNCU. If farmers were empowered and actively involved in the management but also had faith in the long-term survival of the cooperative, as in the cases of MPCU and TDCU, there was increased willingness to invest in the (capital intensive) risk management strategies. Thus *proposition 3* is partly supported; effective price risk management leads to higher operating margins and development, but only if some requirements are met. The most important requirement is sufficient financial resources and good governance structure (increasing the member willingness for investment in these risk strategies).

5.4 New visions on cooperatives

Only mentioned in the cases, not in table, but of high importance are the managerial differences between the five cooperatives and its influence on performance. Official new visions on cooperatives, like new generation cooperatives, are not found in Tanzania. No evidence was found specifically for the influence of new visions, though some characteristics of these new visions did influence the management of cooperatives outside the traditional system. Therefore *proposition 4* in its pure form cannot be supported, though some of the characteristics of these new visions can be beneficial. It seems to be that empowering farmers and high member' participation can have immediate influence on volumes, quality control, charged overhead costs, risk management strategies and eventually the operating margins obtained. Also a fair distribution of profits, in the form of dividends, has proven to increase membership loyalty in the case of MPCU as members are willing to own more capital. Sharing power and promoting active ownership

by aligning equity with control and incentives and profitability is lacking, thus members are not encouraged to become involved. In the old-style cooperatives, farmers do not recognize the benefit of being an active cooperative owner as by producing more their share capital does not increased. Heavy investments in the own cooperative are therefore not prosecuted. The result is that members are not encouraged to deliver their entire crop to the cooperative and do not recognize the long-term benefits from being a cooperative owner (like capital building, receiving dividend). Therefore some characteristics of the new visions of *proposition 4* could be implemented in the existing cooperatives in Tanzania, as they possibly contribute to the sense of ownership and participation among members.

5.5 Cooperatives' contribution to community development

All cooperatives were aware of their responsibility towards the community or the region. As secondary cooperatives cover a greater region, their influence covered a larger area, than primary cooperatives. In the case of UCU multiple years of losses made investment in the development of their members and community impossible. KNCU has several initiatives of serving development of their members and the greater Kilimanjaro region, but evidence pointed out that their investments (in for example hospitals, restaurants) were causing severe problems for the profitability and financial health of their members. The only ones that contributed to the community development were the ones with profits and those that were able to serve their members' interest. Being closely positioned to farmers was indicated as a strong factor enhancing investments in the members' development. Moreover, cooperatives with highly empowered members were better able to indicate the needs of the environment: in the case of MPCU leading to higher margins for farmers and woman empowerment.

5.6 Answering the research question

To give an answer to the research question; *in which way do different kinds of human coordination influence price risk management for local coffee farmers in Tanzania and create sustainable economic development for the community?* It seems that cooperatives are best able to protect their members against volatile coffee prices, maintain or increase operating margins and create sustainable economic development if they: have sufficient funds to make proper investments in risk management strategies, empower their members to increase participation and understanding, have a clear governance structure to increase trust in the cooperative management and have more alignment of control and benefits so members equally profit from their investments in the cooperative.

6. Conclusions

In the development of a community several actors play a role on different levels; the macro, meso and micro environment. The coffee sector draws a good example of how

international forces influence a region and a community. Out of the existing literature a model was formed that could help farmers strengthen their position in the global market and manage the risk of variation in coffee prices, leading to higher operating margins and higher development. On the basis of five Tanzanian cooperatives several conclusions can be drawn. First, it turned out that cooperatives that obtain higher volumes of coffee do not necessarily have a stronger bargaining position in the market. Instead, having strict quality control at low level (e.g. by being close to the farmers) was the first step to obtain higher prices. Increased volumes due to economies of scale only to lead to higher prices if the quality reputation is sustained. Second, though coffee farmers' position in the market is not strong enough to secure prices, several risk management strategies specifically designed for cooperatives have proven to provide extra protection against volatile prices. These risk management strategies, like vertical integration and a stabilization fund, were able to create higher operating margins, but do need significant capital investments to be effective. In most of the cooperatives found, there was a lack of profitability, thus lack of financial resources. In line with the model of Stimson, Stough and Salazar (2009) cooperatives can stimulate endogenous growth by internal funds if members are willing to invest in these risk management strategies. Member empowerment and a clear governance structure within cooperatives were important indicators for member participation in these strategies. Thirdly, to increase willingness and understanding but also to make sure members equally benefit from investment in these risk management strategies the capital structure within the cooperatives turned out to be important. More alignment of shares, control and benefits and good governance would increase member participation and willingness to make long term investments in the cooperative and its risk management strategies. The problem of farmers joining a cooperative only to participate in selling to collect direct benefits, and not so much for long-term benefits by owning shares, might also be solved by implementing some property rights structures of NGCs. Finally, regarding community development, cooperatives that were closer positioned to the farmers were better able to indicate which development investments were needed and to finance them. On the basis of these outcomes a new, modified conceptual model is formed:

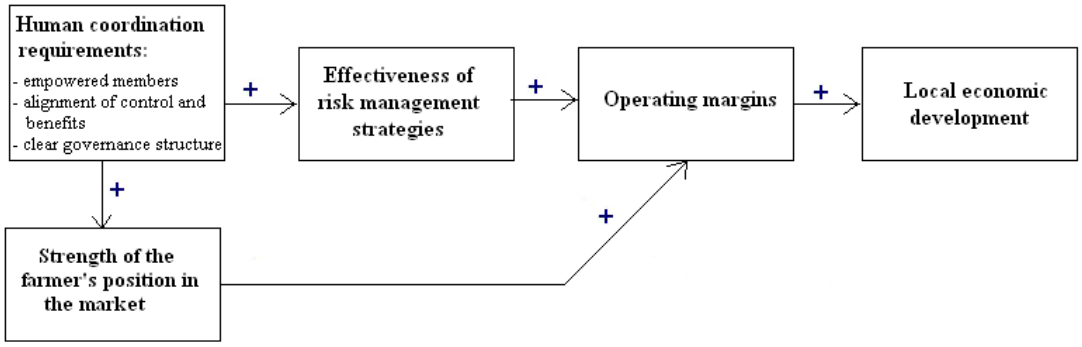

Figure 11: Modified conceptual model

The above model is then implemented in the multi-level model of development from Stimson, Stough and Salazar (2009). This multi-level model is extended by specifying the requirements in structure and conditions to which human coordination must comply before it can lead to endogenous growth of a community and a region.

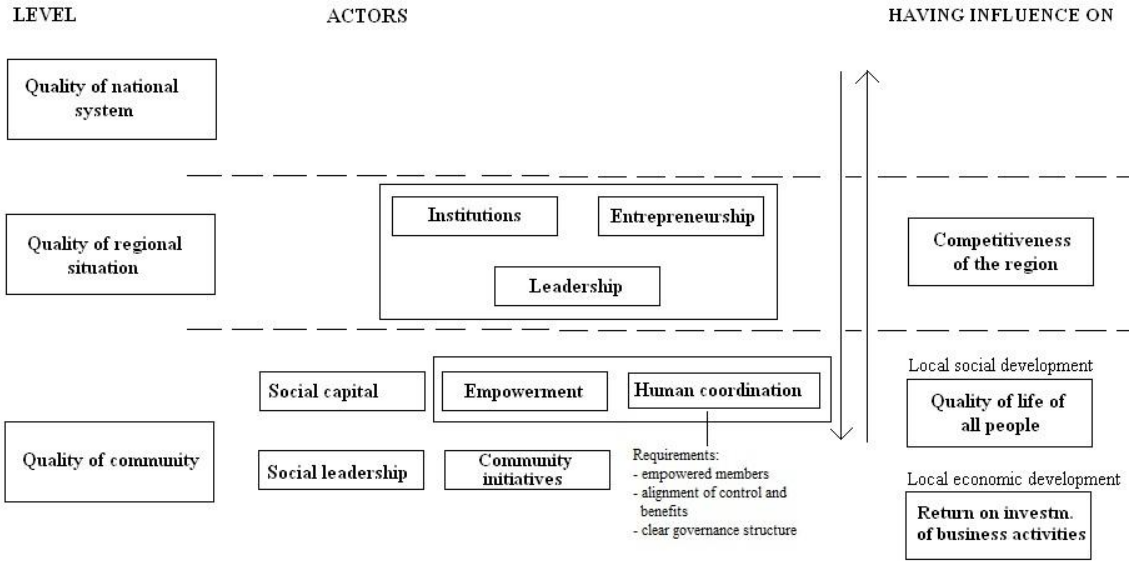

Figure 12: Modified contextual model

As a result of this study, academics should emphasize more on the requirements for endogenous growth within institutions as these requirements significantly influence price risk management and financial performance. These requirements are essential for the functioning of the model, as without these requirements human coordination specifically will not add value to the endogenous growth of a community. Besides that, in the modified model it is emphasized that empowerment and human coordination are very inter-related, as empowerment of the members is crucial to the functioning of any form of human coordination. Moreover, as cooperatives gain financial trustworthiness by modeling their business in this way, internal funding leading to higher investments in their business activity. Finally, these cooperatives could make a region more developed and competent to defend against the major forces in the international market. Other implications are of practical matter and suggest that Tanzanian farmers could immediately benefit if the government would abandon juridical restrictions and facilitate primary farmer groups to export independently and structure their own associations. Primary cooperatives are by nature more closely positioned to farmers, thus this bottom-up approach would get members to be more empowered in their own development. Guidance and education to farmers in how these cooperatives should be structured could be very important for the success of newly structured farmer groups. Finally, farmers should underwrite the long-term benefits from being a cooperative member.

There are several limitations to this study. First, the conclusions drawn from these cases are dynamic and cannot be generalized to all cooperatives in all sectors at all times as the

sample size is too small and very context- and time specific. Second, the modified conceptual model is assumed not to be complete, since the different variables are influenced by more factors from outside or even inter-relate with other variables from within the model. Besides that, the factors in the model can also influence the development of social concepts as the quality of life, though not included in this research. Thirdly, in this study a cooperative is seen as an institution instead of an agent as it has the moral obligation, besides collecting and selling, to integrate the farmers in order to deal with the risks involved in doing business (Chambo, 2009). Seeing a cooperative as an agent can have very different conclusions and implications for the research. Further research could be focused on how the variables inter-relate with each other, how different levels interact more specifically, whether the role of cooperatives should change if they act as a regional institution instead of one in the community and check the existence of these requirements in other contexts of human coordination or even other institutions.

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Appendices

Appendix 1: Overview and summary of the collected data

Interviewee		Date	Summary
Institution	**Person**		
Agriterra NGO	Mrs. J. Levelink	16-11-12	Introduction to cooperatives in Tanzania. Explanation of the structure, complexity of the system, financial risks, ownership, functioning and creation of funds. Besides that also local contacts were shared.
National Microfinance Bank (NMB) Financial institution	Mr. R. Pascal	19-11-12	General introduction to cooperatives in Tanzania and the different levels, including its history, vision of the banks on different kinds of cooperatives and modernization, current problems of ownership, good governance and price risks.
NMB Foundation Financial institution	Mr. F. Vallerian	22-11-12	Discussing of the difficulties in the Tanzanian cooperative sector; especially on the competition with private buyers and lack of capital building.
MFCU Morogoro Academic	Mr. A. Chalamila	29-11-12	Complete history of cooperatives in Tanzania, including the difficulties faced for the last decade and a critical analysis of the current difficulties and problems and challenges. Also an explanation of structure and ownership was given.
National Microfinance Bank (NMB) Financial institution	Mr. R. Pascal	4-12-12	Explanation and discussion of a commodity price risk project piloted by NMB and the World bank. Especially what was successful, what not and why. The use of financial instruments and cooperative strategies for managing risks was heavily discussed upon. Importance of leadership and ownership.
TDCU Cooperative	Sir. A. Mahadhi	5-12-12 until 7-12-12	Cooperative interview about general structure, history, ownership, profitability, finance, risks and risk strategies. Moreover a visit to a primary cooperative was established where at that time a voting for a new board was

			held. Several farmers was spoken to.
UCU Cooperative	Sir. A. Shemndolwa	7-12-12	Cooperative interview about general structure, history, ownership, profitability, finance, risks and risk strategies. Interview was focused on the current financial problems of the cooperative and possible solutions.
Mwanga Community Bank (MCB) Financial institution	Mr. A. Ghuhia	12-12-12	Conversations about empowering the community and stimulating local development through financial and organizational improvements. Focused on microfinance for the agricultural sector in the Kilimanjaro/Mwanga region.
MUCCoBS University Academic	Mr. A. Mbeiyererwa and others	13-12-12	Interview about research done in the cooperative business worldwide and in Tanzania. Several professors were spoken to in a discussion group. Discussion about high costs, long time handling crop, bureaucracy, low member loyalty, empowerment and solutions like bottom-up approach and new ideas implemented in the African setting.
Tanzania Coffee Board (TCB) Semi-governmental organization	Mr. P. Kimaryo	13-12-12	Interview about governing prices in Tanzania, price volatility in the market and risk management and discussion of several successful and unsuccessful cooperatives. Personal ideas about how cooperatives should be structured in order to protect members were shared (NGCs).
KNCU Cooperative	Mr. P. Shirima & Mr. H.P. Temba	14-12-12	Cooperative interview about general structure, history, ownership, profitability, finance, risks and risk strategies.
MUCCoBS University Academic	Mr. Kaleshu	17-12-12	Explanation of quote prices in coffee, how to see a cooperative as an institution, (moral) obligations of cooperatives, problems of price control, price risks, risk management, NGCs, cost- and profit structures.
MPCU Cooperative	Mrs. Mary & assistant manager	18-12-12	Cooperative interview about general structure, history, ownership, profitability, finance, risks and risk strategies. Focus on why leaving KNCU

			and start developing their own coop, difficulties, benefits, the role of a coop, ownership, financial success and plans for the future
PCT Cooperative	Mr. W. Mushi	4-1-13	Cooperative interview about general structure, history, ownership, profitability, finance, risks and risk strategies. Special focus on benefits of a new group, how they differ from other cooperatives/farmer groups and what the plans for the future are.

Complete interviews can be requested on demand.

Appendix 2: Questionnaire tool used for cooperatives

Cooperative: …… Level: Primary // Secondary
Person interviewed: …… Occupation:……
Date: …… Place: ……

General information
Amount of members: …….. Obliged equity: Yes // No
Amount of board members: ……..
Region: …….. Crop: ……..

Most important clients:…….

Ownership:
Limit on amount of members: Yes // No
Equity contribution: ….…….. Equity transferable: Yes // No
Existence of delivery targets: Yes // No If yes, on # of shares: Yes // No
Other obligations: …….
Vertical integration:……...

Financial information:
Profitability – margins - growth

Risks
Identify the types of risks:

How does the cooperation contribute to decreasing these risks:

Specific strategies:

Price setting process:

What does the cooperation contribute to attaining a better price: