Norwegian University of Life Sciences
NMBU School of Economics and Business

Master Thesis 2014
30 credits

The Effect of Market Integration on Community Organizations in Uganda

Julie Kilde Mjelva

Acknowledgements

First I would like to thank my supervisor, Professor Arild Angelsen, for helping me develop the idea for this thesis, giving useful advice before the field interviews and finally for giving me guidance and feedback during the writing process.

I am also grateful to Dr. John Herbert Ainembabazi and the International Institute of Tropical Agriculture (IITA) – Uganda for welcoming me to Uganda and facilitating my weeks of fieldwork. Further, I highly appreciate all help and interpretations from Mr. Patrick Lubega and Mr. Innocent Mpiriirwe. Your help in the field was crucial for the result of the fieldwork. I would also like to thank Topher for contributing to the fieldwork by ensuring that we travelled safe and always keeping our spirits up. Further, a big thanks to all the community members who made us feel welcome and provided us with valuable information.

Thank you, Per, for helping with the fieldwork, encouraging me and helping me with all those details which in the end become important for the result of this thesis.

Thanks to friends, co-students and employees at NMBU who have helped me and given me useful advice. A special thanks to NMBU Writing Center and Paul Beaumont for helping me to think - and write - clearer.

Finally, I would like to thank my family for their support.

I take the full responsibility for all estimations and potential mistakes in the thesis.

Abstract

Community organizations play crucial roles in many Ugandan communities as they reduce poverty through building employment opportunities in the villages, educate on health, agriculture and leadership, and help villages develop though exploiting the benefits of cooperating. This study uses theory from the New Institutional Economics School and theories on collective action to investigate factors affecting community organizations in Uganda, and especially how the level of market integration of a community affects the community organizations. Hypotheses of the effect of market integration, ethnic homogeneity and income inequality on the number and activity level of community organizations are tested using panel data from the Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) project by the World Bank. Additionally, qualitative data from own collected field interviews are used to investigate the factors influencing the change from informal cooperation to establishing community organizations and to complement the analysis of the findings from the quantitative models.

The results from the quantitative models weakly indicate that market-integrated communities have higher organizational activity than less market-integrated communities and that ethnical homogeneity of the community is positively related to the organizational activity of the community. These findings are also supported in the field interviews. Income inequalities do not seem to have a significant effect on the number or activity level of community organizations. Additional factors identified as influencing community organizations are NGO-presence and regional differences. Further, findings from the field interviews suggest that several community organizations struggle to get out of low-participation equilibrium where a too low number of contributing members constrains the possibility of benefiting from the organization and further constrains the interest among the community members of organizing.

Table of Contents

List of Tables

List of Figures

1. Introduction

Both community organizations and market integration are considered to be critical for economic development, but how are these two related? Community organizations can solve problems of collective action and provision of public goods, and can also provide employment, education and political influence for community members and increase their opportunities. Market integration also increases the opportunities for community members, as they can specialize and exploit comparative advantages, get better paid for their produce, and thereby develop economically. Yet, if existing community organizations do not support the market integration and enlarged economic opportunities, there is a risk that higher transaction costs, information asymmetries and opportunity costs of time associated with market integration depopulate the community and squeeze smallholder producers out of the market. Some of these hurdles can be lowered if the community members organize in an efficient way. In fact, community organizations can be critical in making markets work for the poor (Hellin et al. 2009; Markelova et al. 2009).

However, while community organizations has been acknowledged as facilitating the process of market integration, few conclusions has been drawn regarding the effect of market integration on community organizations. Markets rely on competition in order to be efficient and can promote more selfish behavior through changing community norms. Therefore, market integration can change how villagers relate to each other and further how they cooperate to solve conflicts in the community. Simultaneously, market transactions rely on reciprocal agreement and cooperation between the parties involved. Therefore it is difficult to predict how increased market integration affects the communities involved.

The effect of market integration on community organization is the topic I seek to investigate in this thesis. With a large rural developing economy and a rapid economic growth the latest two decades, the relationship between market integration and community organizations is highly relevant for Uganda. Moreover, the World Bank started the Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) project in Uganda in 2009 together with Uganda Bureau of Statistics (UBOS), which allows for a quantitative analysis of this

relationship. Thus, using the LSMS-ISA data in combination with own field interviews I address two research questions, where the first is a more general question which needs to be investigated in order to answer the second:

- What factors influence the initiation- and functioning of community organizations in Uganda?
- Do highly market-integrated communities organize more than less market-integrated communities?

The thesis is organized as follows: section 2 gives a brief background of regional differences, economic development, community organizations and local government structures in Uganda. Section 3 maps out the relevant theory and conceptual framework for the study, which is based on New Institutional Economics (NIE) and theories of collective action. The end of the section presents the hypotheses for the study. Chapter 4 presents the LSMS-ISA data and the quantitative models and briefly describes the field interview process. Further, Chapter 5 starts by presenting findings from the field interviews, continues with the results from the quantitative models, and ends with a discussion which relates the main findings to the theory. Section 6 concludes the thesis.

2. Background

2.1. Regional Differences in Uganda

Uganda is a heterogeneous country, and the regional differences in Uganda are relevant for the analysis since the data is collected from the whole country. A marked difference is between the Northern region on the one hand and the Western, Central and Eastern regions on the other. Early migration patterns have made the area north of the Nile culturally and ethnically different from the areas south-west of the Nile. In the North, Nilotic groups dominate and these groups traditionally organize in small, fragmented clans, while in the South, the Bantu-groups have formed larger, hierarchical kingdoms (Hveem 1972). Further, nomadic traditions prevail in North-East Uganda.

Later historical events, starting with the establishment of the British Protectorate of Uganda in 1894, have negatively influenced the economic development of the Northern region. The Protectorate united the diverse North and South although these areas did not constitute any ethnic, cultural or economic unity. During the 64 year long British reign, plantations and infrastructure were developed in central and south-western areas. Meanwhile, Northerners were used as cheap labor force and recruits to the army (Byrnes 1990). This led to patterns of seasonal migration and fewer employment- and education- opportunities in the Northern region. In the years following independence in 1962, a series of autocratic presidents ruled, including the brutal dictator Idi Amin. Although Uganda has been relatively stable since the current president, Yoweri Museveni, came to power in 1986, this has not been the case in the Northern region. The large ethnic group of Acholi has generally not acknowledged Museveni's government. Therefore various rebel groups developed in the North and allowed the Acholi Joseph Kony to establish Lord's Resistance Army (LRA) at the end of the 1980s. After this, the Northern region has suffered from civil wars and ravages from LRA, which has forced large fractions of the Northern population to flee to camps for internally displaced people with low standards of health and education services (Bøås & Hatløy 2005). The LRA fled the country in 2006, and many refugees have been able to return to their homes. However, the Northern region remains less developed than the other regions.

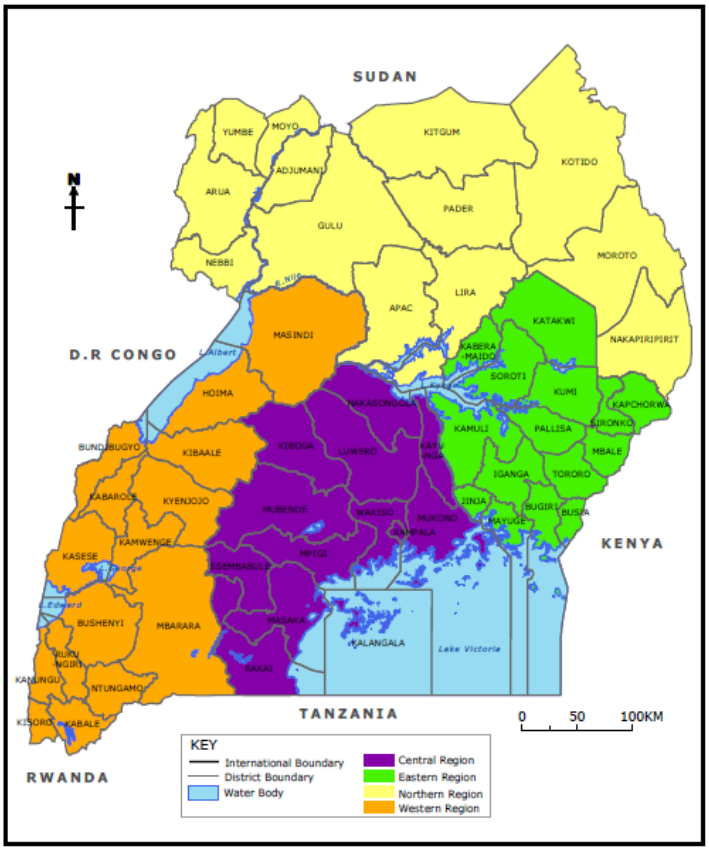


Figure 1. The regions of Uganda (Uganda Bureau Of Statistics 2006a).

2.2. Recent Economic Development in Uganda

During the British Protectorate and the first presidential period after independence, Uganda was a wealthy agricultural economy compared to neighboring countries, with high exports of coffee, tea and cotton. However, the country experienced an economic collapse under the rule of Idi Amin from 1971. This economic downturn continued also after Amin's recession, when various leaders ruled and civil war broke out. Since the current president, Yoweri Museveni, came to power in 1986 the economy has regrown. In 1989, the economic production of Uganda was one-fifth what it had been at the time of independence, but the rebuilding of infrastructure combined with political stability, economic reforms, and foreign investments allowed the economy to grow rapidly since the early 1990s (Palmer et al. 2007). However, the wealth remains unequally distributed between the urban and rural areas and between different regions.

2.3. The Development of Farmer's Cooperatives and other Community Organizations

The first farmer's cooperatives in Uganda were established in the Western and Central region, where economic development had been triggered by British investments in agriculture. The first establishment happened after the cotton and Arabica coffee were introduced early in the 20th century and farmers started exporting their products (Lindstad 2001). Through establishing cooperatives, the native farmers increased their rights and their influence on the production process which earlier had been dominated by the British and Indian immigrants. In 1946 a Cooperative Ordinance was established for the state to control and support the cooperatives (Lindstad 2001). After independence in 1962, the Cooperative Ordinance of 1946 was amended and the number and size of farmer's cooperatives continued to grow.

During the rule of Idi Amin in the 1970s farmer's cooperatives weakened, however other forms of organizations were established. The international embargo on Uganda, economic recession and absence of rule of law were all obstacles for the farmer's cooperative (Kyazze 2010). However, Amin deported most Asians from Uganda in 1972. Since the Asians had been responsible for most of the goods transportation in the country, the Ugandans were forced to take over and established transport-, insurance and credit unions (Lindstad 2001).

With the comeback of political stability from 1986, an increasing number of NGOs and donors assisted in rebuilding the country. During this period, various community organizations[1] were also established (De Coninck 2004). However, the Structural Adjustment Programs from the 1980s further weakened farmer's cooperatives.

Farmer's cooperatives have recovered after the difficult economic conditions experienced under Amin, the civil wars and later SAPs. The recovery has been supported by various NGOs, donor agencies and government agencies. Among them the National Agricultural and Advisory Service (NAADS) which was established in 2001 as a means to improve the access to information, markets, technology and capacity-building in agriculture (National Agricultural Advisory

[1] For this study, community organizations are differentiated from NGOs. NGOs are defined as organizations operating at national or international level whereas community organizations, also known as community-based organizations, operate at local level.

Services Programme 2013). Additionally, Kyazze (2010) mention how agencies such as Uganda Cooperative Alliance (UCA) and Uganda Cooperative Savings and Credit Union Limited (UCSCU) have strengthened the different types of cooperatives through advising and regulating them. The Department of Cooperative Development in Uganda also promotes cooperatives through education programs.

2.4. The Local Government Structure of Uganda

For this study, a community is defined as a group of villagers living in the same Local Council (LC) 1. The Local Council (LC) structure of Uganda organizes the country into administrative units at different levels. The structure consists of five levels, where LC1 is the lowest, consisting of 50-300 households. Further, the LC 2 is at parish, LC3 is at sub-county, LC4 is at county, and LC5 is at district-level. In many places, the LC1 represents an opportunity for villagers to solve community issues. However, De Coninck (2004) claims that the state increasingly uses the LC structure to promote own interests rather than the local democracy. Thus, problems of corruption and top-down interventions results in the Local Councils often not being perfect substitutes for community-based, bottom-up organizations.

3. Theory and Conceptual Framework

This chapter introduces the relevant theory of institutions, institutional change and the role of markets in rural developing economies and presents the conceptual framework for the study. The framework is elaborated on in sub-sections 3.2 –3.3. Finally, the hypotheses are presented in sub-section 3.4.

3.1. Introduction

This study mainly uses the New Institutional Economics (NIE) School to analyze institutions. According to the NIE School, institutions are constraints which shape human behavior and interaction and reduce transaction costs. The transaction costs are the costs of coordinating activities and can be both *ex-post* and *ex-ante*. *Ex-ante* transaction costs consist of obtaining information, any travel costs and the costs of negotiating and safeguarding agreements, whereas *ex-post* costs are those of monitoring the contract and dealing with any disputes or problems which may follow from transactions, for instance due to defects in the good traded (Lin & Nugent 1995). The institutions can be informal, such as norms, values and ideology, or formal like laws or written contracts(Lin & Nugent 1995). In game theoretic sense, the institutions and the community members are the rules and the players of the game respectively (North 2008).

The NIE School analyzes institutional change through distinguishing between the supply and demand for institutions. According to this School, the supply of institutions mainly relates to the possibilities for collective action[2] whereas the demand relates to reducing transaction costs (Lin & Nugent 1995). Institutional change is commonly caused by long-term changes in the relative abundance of factors of production or other developments which leads to disequilibria in economic relationships (Ruttan & Hayami 1984). For example, population growth and migration patterns have often changed land abundant and labor scarce areas to becoming land scarce and labor abundant. To avoid land degradation, this development prompts an institutional change in the property regime of the land, for instance from public to private property (Lin & Nugent 1995). A change in one institution will often also change other interdependent or complementary institutions and lead to a self-enforcing development.

[2] Collective action is defined as the possibility for community members to cooperate to achieve a common goal (Lin & Nugent 1995).

The market can be defined as an economic institution since it delineates the possibilities and incentives for transactions among individuals (Hoff et al. 1993). Thus, the change to increased market integration prompts changes in complementary institutions. In developed regions, institutional arrangements support complex market economies through strong third parties, rules and regulations which constrain the behavior of the participants. However, in developing regions these market-supporting institutions are often weak. Therefore a large part of the transactions are often informal, gift-like and based on personal relations. When villagers have to conduct business transactions with strangers or people that may not be trustworthy, "cash and carry" transactions are often used (Fafchamps 2004). This implies that the goods are inspected and the payment is immediately given in form of cash. Often, the "cash and carry" transaction costs are high due limited cash access and limited availability of means to properly inspect the good on the spot. When transacting with acquaintances, informal loans or quasi credit is often used and can be seen as a combination between gifts and markets (Fafchamps 2004). This makes many markets interconnected and makes networks and relations an important factor in the markets of developing regions. For example, in lack of credit markets, a landlord may lend credit to his tenant in addition to leasing out his land. Such interconnections reduce risk since the actors depend on each other on several levels and have fewer incentives to act opportunistic.

The conceptual framework for this study is shown in figure 2. It relates the theory of institutional change to the demand and supply for community organizations and specifies how this can be affected by market integration. The supply depends on the costs of providing community organizations which strongly relates to benefits and possibilities of acting opportunistic. Market integration reduces the interconnectedness among community members, thus reducing the number of games played by the same actors and reducing the net present value of cooperating in each game. Similarly, the opportunity to punish opportunistic behavior decreases because villagers depend less on the community and because many interactions are done with strangers. These relationships are further elaborated on in sub-section 3.2.1. The demand for community organizations relates to reducing transaction costs and capture benefits. Market integration increases transaction costs in the community, which increases the demand for organizing to reduce the costs. Both positive and negative selective incentives decrease due to the increased openness of the community and this further reduces both the demand for and supply of community organizations. Increased opportunity costs of labor reduce the demand for

organizing, whereas experimental studies have found that people in market-integrated communities have higher preferences for cooperation than people from more isolated communities. However, higher preferences for cooperation do not necessarily imply higher preferences for organizing in the community. Sub-section 3.3.2 and 3.3.3 further elaborates on these relationships.

Additionally, various community characteristics based on theories of collective action by Olson (1965) and theories of common resource management by various contributors (Agrawal 2001; Ostrom et al. 1994; Poteete & Ostrom 2004) are identified as affecting mostly the supply-side, but also to some extent the demand for community organizations. However, these characteristics are excluded from the conceptual framework and are rather listed in Table 1. Further, sub-sections 3.2.2 to 3.2.4 discuss community characteristics to see how these affect the supply of community organizations and how some of these are strongly related to incentives for opportunistic behavior. Sub-section 3.3.1 continues to discuss contextual factors of the community, but rather investigates how these affects the demand for community organizations.

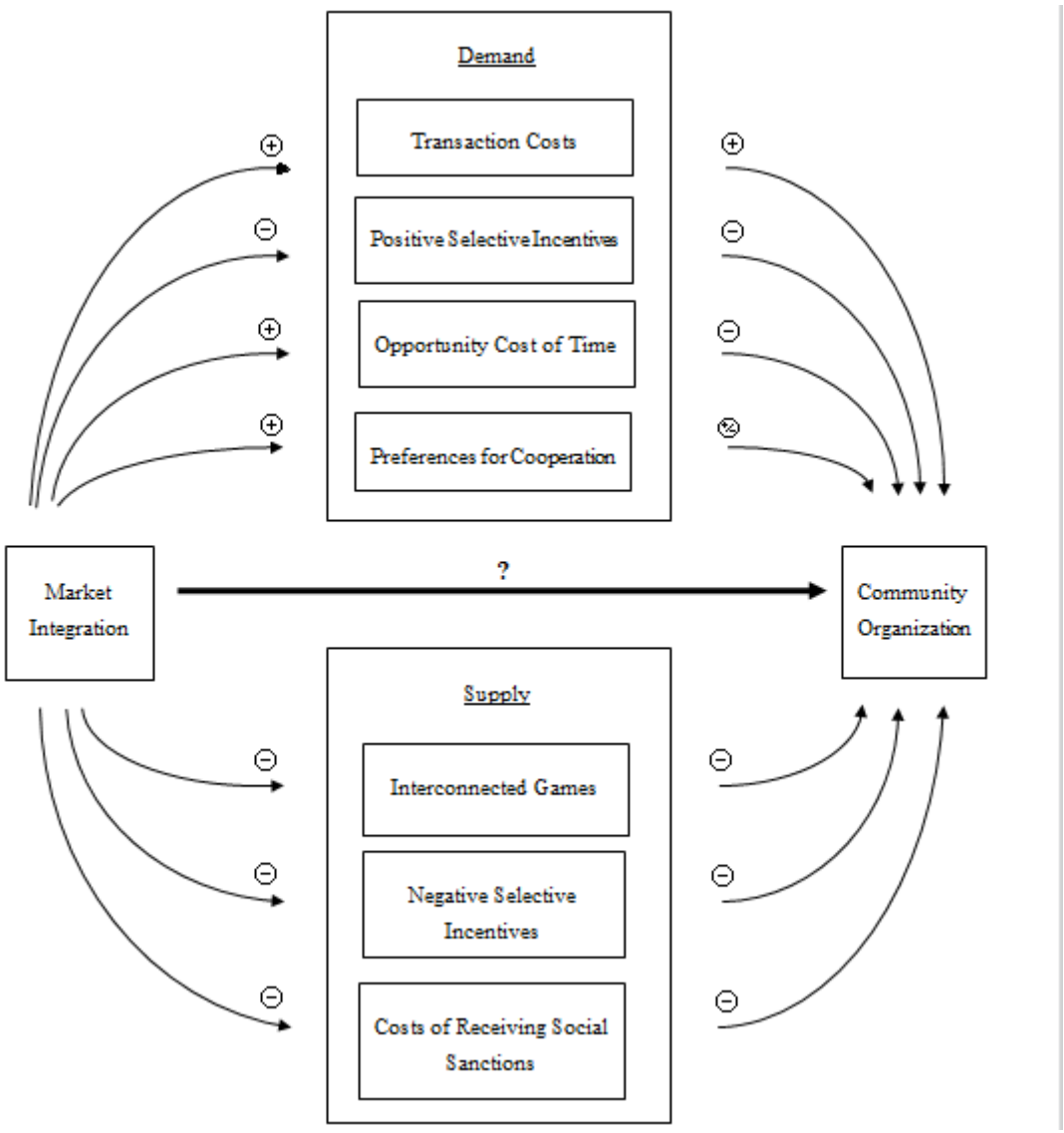


Figure 2. Conceptual Framework for analyzing the effect of market integration on community organizations.

3.2. The Supply of Community Organizations

3.2.1. Incentives for Behaving Opportunistic and Costs of Social Sanctions

The costs of collective action partly depend on the possibilities for individuals to behave opportunistic. Small groups which have personal and repeated interactions can with low costs punish opportunistic behavior through the use of social sanctions such as ostracism and reputations. The costs of being punished increases with the degree of interdependence among the group members. In the case of communities, the community members' dependence on each other as form of social and health insurance increases with the degree of isolation of the community. Increased interaction with people outside of the community reduces the costs of being punished, thus the costs of the group to sustain collective action increase.

Aoki (2001) formulate a *community social exchange game* where he seeks to find when community cooperation is beneficial for the community members. He distinguishes between exogenous and endogenous rules of the game. The exogenous rules are the laws and technology whereas the endogenous rules are the community norms. Each household can contribute to the production of social goods in the community with some costs C_s and enjoy benefits B_s from the good. The social good is non-decreasing with the number N of contributing households, however at a certain level of N the productivity of social good decreases (i.e. there exists a point where $B_s'(N) = 0$). The incentive compatibility condition for a household not to shirk cooperation is given by

$$C_s < \frac{\delta[B_s(N) - C_s]}{1 - \delta}$$

whereδ is the household's discount rate. Thus, for the household to contribute to the social good, the net present value of benefits from the social goods must be larger than the costs of contributing. In the case of using social ostracism as punishment for shirking, the right-hand side represents the social capital lost by social ostracism. As long as community members expect to be punished by social ostracism and the benefit from the social good is sufficiently large, community norms of cooperation prevails (Aoki 2001).

In closed communities, the social exchange games may be played simultaneously at different levels. For example, the community may manage a common resource in addition to producing a public good, such as for example building or maintaining a road. The management of the common good will expose the households to a similar game structure as the community social exchange game, where the household can choose to contribute to the common good with a cost and where the total benefit for all households from the common good increases with all contributions. However, when several of these games are played by the same actors, shirking in at least one game in one period leads to social ostracism which leads to a loss of the right-hand side in all games in all periods. Therefore, as long as the incentive compatibility condition holds with a sufficiently large tolerance of movement in at least one of the games, such community interconnectedness will increase the chance of ending in a cooperate solution in all games (Aoki 2001).

However, where social ostracism may be a severe form of punishment, reputational mechanisms will often prevail in closed groups even if it is not used consciously as a social sanction. Closed communities increase the transparency of household contributions to any social good. This can lead to negative and positive selective incentives. Negative selective incentives make villagers cooperate because failure to do so attracts negative attention (Aoki 2001). By the same token, households who contribute much gain social status in the community and in this way get a positive selective incentive.

3.2.2. Group Characteristics Affecting the Chance of Collective Action Success

Based on the theory of Collective Action originating from Olson (1965) and later studies of Common Resource management, characteristics affecting the chance of collective action success in communities have been identified. These characteristics are summarized in table 1 and the characteristics which are regarded as most relevant for this study due to their degree of measurability and relevance for community organizations are further discussed in these sub-sections. However, the group characteristics are most elaborated on due to their relevance for the later analysis.

Table 1 *Characteristics increasing the chance of collective action Success*

Group Characteristics	Small to medium-sized
	Homogeneity of identities and interests
	Heterogeneity of endowments
	Past successful experiences (low migration)
	Interdependent
	Differentiated goals
	Sensitivity against inaction
Institutional Arrangements	Simple and understandable rules
	Rules are locally devised
	Rules are easy to enforce
	Rules takes into account differences in violations
	Rules ensure excludability of outsiders
	Rules ensure accountability
	Effective local enforcement and Sanctions
Context	External support to reduce collective action costs which does not undermine local authority
	Stable demographic, policy, technological and market conditions
	Physical proximity between actors
	Community infrastructure
	Characteristics of community resources

Source: based on Olson (1965), Agrawal (2001) and Agrawal and Angelsen (2009) .

After Olson's contribution in 1965, the issue of the ideal group size for cooperation has been subject to debate. According to Olson, larger groups have fewer incentives for furthering the common interests of the group than small groups because each person receives less of the good himself. Baland and Platteu (1996) agree on this and explain the advantage of small groups by the fact that people know each other better and interact more at several levels which may be seen

as non-separable by the actors. This is in line with the interconnected games described by Aoki (2001). In addition to having more interactions and stronger selective incentives, small groups reduce the negotiation costs and make it easier for the group to "pre-play communicate" to increase the chance of obtaining good equilibria outcomes (Baland & Platteau 1996).

On the other hand, Baland and Platteu (1996) also suggest that the personal relationships in small groups may make them more exposed to envy and rivalry which can harm cooperation. Later studies have gone further in looking at the benefits that large groups may represent. When a group is large, more people contribute to the good and make the marginal costs of each contribution lower (Poteete & Ostrom 2004). However, this will usually happen up to a certain limit where the group becomes so large that the challenges related to negotiations and interactions outdoes the public benefits (i.e. the point where $B_s'(N) \leq 0$). Agrawal and Goyal (2001) find a non-linear relationship between the group size and degree of success, with medium-sized groups being more successful than small and large groups.

When it comes to group homogeneity, Olson (1965) postulated that people of the same origin can communicate more easily and often feel greater responsibility towards the group. Therefore it will be easier for homogenous groups to agree on goals and methods and lower chance of experiencing free-riders. Studies have found the interpersonal trust to be relatively low between people of different ethnic groups in Uganda, especially outside the central region (Bratton et al. 2000). Thus, although ethnic heterogeneity might not always have a negative impact on cooperation, this may be the case in many Ugandan communities, and I therefore include this in the later analysis.

Similarly, the extent of migration to and from the community may also affect the cooperation through its effect on trust and predictability between community members. When most inhabitants have lived for several years in the village, there is a higher chance of past successful experience which increases the chance of collective action (Baland & Platteau 1996). This is also related to how well the inhabitants of the community know each other. If they share a history they can more easily predict each other's behavior. As trust is built over time, the chances of mistrust may be higher if the community members have known each other for a shorter period. The same can be argued for the physical distance between members. In sparsely populated areas,

people typically interact less and therefore have fewer arenas for collective action and are less familiar with each other.

Where ethnical homogeneity and low migration may increase collective action, Olson (1965) argued that equality in wealth and power reduces collective action due to lower chance of meeting a critical minimum of contributions to the collective good. With inequalities, the chance that at least one individual will have such large interests and benefits from the collective good that he will gain from contributing to the collective good increases, even if others do not contribute (Olson 1965). In addition, disadvantaged individuals will have incentives to cooperate to better their endowments and increase their political power. However, inequalities in endowments and power may also lead to less trust and lower sense of fellowship among community members. Later studies show that greater equality within a group increases collective action efficiency, whereas between groups there may be an optimal degree of inequality (Bardhan et al. 2007).

3.2.3. Institutional Arrangements Affecting the Chance of Collective Action Success

The institutional arrangements are mainly developed in the theory of common resource management, but can also be transformed to other types of collective action. They comprise the rules and sanctions for the group and can be related to the social sanctions for opportunistic behavior already discussed. These arrangements are typically endogenous, which implies that the time frame for change is shorter than what it is for the group characteristics.

Traditional community institutions often facilitate collective action through allowing for efficient community interactions. Community institutions such as norms of mutual help have often been seen as rival institutions to the market economy. This has been argued from opposing angles; either the market economy destroys traditional, well-functioning community institutions, or the community institutions hinders the benefits of market development (Aoki & Hayami 2001). Several more recent studies within the tradition of NIE have argued that the community and market institutions are complements and analyzed how the institutional arrangements of a

community can be built to support a market economy (Hellin et al. 2009; Kaganzi et al. 2009; Markelova et al. 2009; Shirley 2008).

Although the traditional community institutions can be useful in the transition to increased market integration, a shift in the community institutions from collective action at community-level to collective action in smaller organizational units can increase the effectiveness of punishments. In this way, the social good from collective action changes from being a public or common good to becoming a private or club good, and the rules for membership can ensure excludability of outsiders, be easier to enforce, and be more locally devised, which all are criteria increasing the chance of successful collective action.

Moreover, the group characteristics and context affect the scope of action for changing the institutional arrangements. If for instance the heterogeneity of endowments in the group implies unequal power distribution among different interest groups, a change in the institutional arrangements which could have increased the overall welfare of the community may be oppressed by one interest group who would not gain from the change (Ruttan & Hayami 1984).The supply of community organizations can be used as an example of this; if founding a community organization is expected to weaken a dominant political bloc in the community, it may not be supplied although total community welfare could have improved. On the contrary, if the organization initiators possess power in the community the organization may be supplied even if it does not improve the overall welfare of the community. Further, if the group is small enough, the chance of negotiations to achieve the best equilibria-outcome increases. Thus, the interest group which loose from the institutional change may be compensated such that Kaldor-Hicks efficiency is achieved.

Similarly, the culture and traditions of the community can also make some institutional arrangements more accepted than others (Ruttan & Hayami 1984). The differences in the traditions of rule between the central and northern region in Uganda may affect both the need for developing organizations, but also the degree of accept for this way of cooperating.

3.2.4. Contextual Factors Affecting the Chance of Collective Action Success

The contextual factors comprise support from external actors and the physical conditions of the community such as the resources, infrastructure and technology available. Additionally, the market integration is part of the context.

Greater government presence is likely to go hand in hand with market integration due to an increased need for formal institutions which can enforce contract commitment and protect the rights of the trading parties (Greif 2008). Social sanctions in communities might therefore be replaced by monitoring and regulation by LCs. In Uganda both LC1 and LC2 are responsible for maintaining law, order and security, whereas LC3 is responsible for enacting by-laws (De Coninck 2004). This division of responsibilities differs between communities. Due to the increased demand for formal institutions which follows from market integration, communities which are more market-integrated may have stronger presence of higher level LCs.

Government presence can have contradictory effects for the degree of community organization. It can stimulate cooperation by introducing new rules and regulations and ensure compliance of these through the legal system. This can reduce the level of conflicts in the community. On the other hand, new regulations can have a "crowding out effect" on existing norms and regulations, and thus weaken community organization. Governmental organizations substituting community organizations may be less able to collect necessary information, may suffer from administrative inefficiency and may be politically biased which could make them less able to respond to people's real needs (Aoki 2001). But as already mentioned, external investments and knowledge can also positively shift the supply of organizations.

Other external facilitators of community organizations can be NGOs. Large fixed costs for the establishment of an organization demands much effort from the organization initiator(s), who usually cannot be certain about the benefits which the organization will provide in the long-run. However, support from an NGO can cover any fixed costs in an organization establishment, thus releasing individuals from the risk which this entails. The investments and knowledge brought through these external actors may shift the supply of organizations to the right.

The type of resources and the most prominent sector in the community can be relevant for how community members are used to cooperate in resource management and in income generating activities and have therefore been included as part of the context. These are included in the theory on common pool resources but then as an own category of resource system characteristics which are only partly relevant for this study. Lin and Nugent (1995) describe how at low levels of development, rural areas often consist of scattered populations prone to migration whereas industrialists are more concentrated in sectors and have higher levels of inequality which increase chances for collective action among industrial workers. Thus, the costs of organizing are lower among the industrial workers than among farmers. Further, they argue how this trend reverses through economic development; the industrial sector becomes larger and less geographically concentrated whereas farmers typically concentrate their production on fewer crops, become more dependent on marketing their products and increase their investments in capital which reduces the incentives for leaving the community. Therefore, collective action is higher among farmers than industrial workers as long as the level of development has made the agriculture commercial (Lin & Nugent 1995) . Moreover, Lin and Nugent (1995) also explain how the chance of collective action often is high in slum areas when the threat of eviction is high because the group becomes sensitive to inaction.

3.3. The Demand for Community Organizations

3.3.1. Contextual Factors Affecting the Demand for Community Organizations

Several of the characteristics affecting the chance of collective action also affect the demand for organizing through its effect on the opportunity costs of time and the net benefits from organizing. Therefore, the factors determining the supply and demand for community organizations often overlap. Especially contextual factors are relevant for the demand side. The value of the natural resources of the community will usually increase through market integration. This increases the pressure on the extraction of the resources, which increase the demand for organizing to ensure sustainable resource management. On the other hand, the supply of the community organizations may simultaneously be negatively affected since market integration

leads to double benefits from shirking in the community social exchange game: the value of the resources increases and the costs of being punished decrease.

The physical proximity between actors and the infrastructure of the community affect the time taken for villagers to do everyday activities as well as the time taken to get to organizational meetings. If the community consists of scattered households connected by poor roads the costs of attending meetings increases compared to a more clustered community with good road connections. On the other hand, poor infrastructures may be improved through collective action, thus the net benefit of organizing will not necessarily be negatively affected by poor community infrastructures.

On the other hand, good roads are closely related to increased market integration which expands the job opportunities beyond the community. This increases the opportunity cost of time for the community members and therefore makes it more difficult to maintain a high level of activity in the community organization. In this way, the community infrastructures have ambiguous effects on the demand for community organizations.

3.3.2. The Net Benefits from Community Organizations

While market integration increases the opportunity cost of time for the community members, market integration also increase transaction costs. Bardhan (1989) explains how the process of market integration involves a tradeoff between economies of scale and transaction costs. To take advantage of economies of scale and the benefits of specialization, transactions are expanded to a larger network of actors which are more anonymous. On the other hand, markets which are limited within a community have low anonymity, high flow of information and low transaction costs although the production costs are high due to the limited possibility of specializing production (Bardhan 1989). Thus, one may assume that the demand for community organizations to reduce these transaction costs increase with market integration.

Another factor which assumedly increases the net benefits of organizing is the positive selective incentives already mentioned in the section on supply. An active member of a community organization may gain higher social status in the community. However, positive selective

incentives are usually higher in a small, closed community than in a more open one due to the degree of anonymity and flow of information.

3.3.3. Preferences for Community Organizations

Although the net benefits of organizing are high, individuals may prefer not to organize. This can either be because the benefits remain invisible or because preferences to cooperate may be endogenous. Firstly, information asymmetries can lead village members to avoid organizing although their welfare potentially could have increased by doing so. If the expected gain from organizing is low, fewer want to participate in organizations. In this way, the establishment of an organization in a community may have a demonstration effect which can increase the demand for organizing if the organization is successful, but it may also reduce the demand if it is unsuccessful.

Just as information asymmetries may affect actors to make non-optimal decisions, endogenous preferences leads to different perceptions of what is optimal. Studies by Henrich et al. (2004a) show that preferences are shaped by economic and social interactions. Psychological experiments have shown that people who are exposed to money tend to behave in a more ego-centric way: they behave more independently, prefers to be alone and are less likely to accept requests from others (Kahneman 2011). This can imply that increased market access reduces preferences for cooperation. Despite these findings, cross-cultural experiments conducted by Henrich et al. (2004a) indicates that individuals in market-integrated communities behave in a less opportunistic way than more isolated ones. The study used the Ultimatum Game in several foraging societies and concluded that the higher the degree of market integration, the greater the level of cooperation in experimental games (Henrich et al. 2001). They explain that market interactions may accustom individuals to the idea that interactions with strangers may be mutually beneficial (Henrich et al. 2004b). Thus, the study suggests that market integration reduces opportunistic behavior since the benefits of cooperation outside of your own friends and relatives become more visible. However, community members might choose to cooperate with outsiders to a higher degree rather than with members of the community if there are higher

benefits of doing so. Thus the effect of market integration on the preferences for organizing within the community may not be that clear-cut.

3.4. Summary and Hypotheses

To summarize, the theories on collective action and the NIE School are useful tools to analyze the effect of market integration on community organizations. The framework suggest that the expanded interactions outside of the community which happens through market integration reduce the chance of achieving collective action in the community, but also that it increases the demand for organizing to reduce the risk of opportunistic behavior and that preferences for cooperating may increase.

However, due to the interdependence between institutions, empirical studies of the effects of institutional change are limited. Just as economic development may trigger institutional change, the institutions also affect economic development. I have not found previous empirical studies which analyze how market integration affects community organization. However, the effect of community organizations and collective action on market access has been addressed by various studies as summarized by Markelova et al. (2009), while the effect of market integration on reciprocity and opportunistic behavior is studied by Henrich et al. (2001).

Testing all of the relations of the conceptual framework is beyond the scope of this thesis. However, based on the research question, the theory and the available data I have developed the following main hypotheses and sub-hypotheses:

H1: Highly market-integrated communities have more community organizations than less market-integrated communities
H1a: Ethnical homogeneity of the community is positively related to the number of community organizations
H1b: Income-unequal communities have more organizations than income-equal communities

H2: Highly market-integrated communities have higher organizational activity than less market-integrated communities

H2a:Ethnical homogeneity of the community is positively related to the organizational activity of the community

H2b: Income-unequal communities have higher organizational activity than income-equal communities

4. Data and Methods

The LSMS-ISA data is used to test the hypotheses quantitatively. In addition, first-hand qualitative data was collected through field interviews in Uganda during July 2013. The objectives of these interviews were to investigate the factors influencing the change from informal cooperation to establishing community organizations and to complement the analysis of the findings from the quantitative models.

4.1. LSMS-ISA Data

The World Bank data is part of The Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA). It is collected in cooperation with Uganda Bureau of Statistics (UBOS) in two different periods; from 2010 to 2011 and from 2011 to 2012. The sample is based on the Uganda National Household Survey (UNHS) collected by UBOS in 2005. In this Survey, the Enumeration Areas (EAs) where drawn with a probability proportional to size (Uganda Bureau of Statistics 2006b). For the later years, new EAs were selected from the original 783 EAs from 2005 with equal probability and with implicit stratification by urban/rural and district (Uganda Bureau Of Statistics 2014). The final number of EAs for the data used is 322 and the strata of representativeness include Kampala city, other urban areas, and central rural, eastern rural, western rural and northern rural areas. The analysis will be at EA-level, which is normally the LC1, although sometimes the LC2, and will be referred to as a community.

Some variables are transformed from household or individual level within each community to get index values. The household sample size is 2716 for both years and these were randomly selected within each EA in 2005. Each period stretches over 12 months and the households are visited twice, with an interval of six months. However, the six-months intervals are only part of the agricultural survey which is not used for this study. Thus I can assume that the data from the two time periods have at least a 12 month interval.

4.2. Field Interviews

The quantitative data leaves gaps in identifying factors influencing community organizations. Therefore qualitative data collected from field interviews seeks to fill some of these gaps. First of

all, the number of organizations in a community and the meeting frequency which are used as dependent variables explain the existence and activity of community organization, but not which incentives that provoke the change from informal collective action to establishing community organizations. To investigate this, focus groups from communities were asked in what areas they had informal collective action and what benefits the organizations provided. Secondly, the control variables in the quantitative models are based on the factors identified as affecting collective action success in Table 1. Most of the control variables are *group characteristics*, although NGO presence, presence of common resources and market integration are part of the *context*. However, institutional arrangements and group characteristics are not easily measured but are assumed to change simultaneously with market integration. Some of these characteristics and their influence on community organizations can be analyzed through qualitative data.

The field interviews were carried out during two weeks with the help of two research assistants who were interpreters as well as helped to identify villages and organizations. The interviews took place in ten different communities located in Kayunga, Mukono, Wakiso, Mpigi and Kasese district in the Central and Western region of Uganda. In each community, interviews of members from organizations were prioritized (from now on referred to as the group), but in some villages the LC1 Chairperson was also interviewed. The groups consisted of between 5 to 17 organization members. Since the accessibility of LC1 Chairperson and a group from the organization varied, not all information was accessible in all the communities. In these cases this is specified in the discussion, for instance by writing “eight out of nine groups interviewed regarding this subject”. The communities interviewed are indicated by red points in the maps below.

Figure 3: Map indicating the six communities visited in the Central region (adapted from Google maps and Uganda Bureau Of Statistics (2006a)).

Figure 4: Map indicating the four communities visited in Kasese District (adapted from Google maps and Uganda Bureau Of Statistics (2006a)).

The questionnaire templates for these interviews are included in appendix B2 and B3, however since the interviews were done in focus groups, these questionnaires were not always followed

strictly. The interviews were translated into the local language in eight of the ten groups which limited the possibility for me to ask follow-up questions. However, competent interpreters often did this on own initiative.

Due to limited time and budget, only focus groups consisting of members from community organizations were interviewed. Thus, the findings related to informal cooperation may be biased since these may cover different areas for individuals who are not organized and may also be different in communities with no community organizations.

4.3. The Dependent Variables

In the following sections I describe the variables used for the quantitative analysis, present descriptive statistics of some variables and discuss their weaknesses. I summarize the variables in a table presented in section 4.5.

4.3.1. Number of Community Organizations

A key variable in the analysis is the number of community organizations per community. The community organizations are broadly defined and entail agricultural cooperatives and farmers' and livestock associations as well as business associations and savings and credit associations. Additionally, specific interest groups such as women's, youth and disabled's groups or cultural and sports groups are included. So is specific community watch- or informal community police-groups. Thus, any type of organization, interest group or cooperative which is based in the community is included.

A comparison of the number of community organizations reported in the two subsequent periods 2010/2011 gives reason to question the reliability of the variable. The maximum number of organizations per community in year 1 is 140, whereas it is reduced to 10 in year 2. 140 is not just an outlier, as several communities have reported a value above 50 in year 1. When comparing each community, reductions of more than 30 organizations from year 1 to year 2 can be observed in 13 communities. To compare, the maximum number of community organizations

in one community reported from the field interviews was 14. I have not been able to identify any cooperatives reform from the government or any other event between the two years which can explain the large differences.

Table 2 Comparison of the number of organizations reported per EA in the two years.

Year	Obs	Mean	Std. Dev.	Min	Max
2011	275	10.76	19.42	0	140
2012	185	2.44	1.83	0	10

Therefore, I assume that these differences are caused by a change in the definition of an organization, in the formulation of the question, or enumerator training and practice from one year to the next, and I find the values reported in year 2 more reliable. Having more than 100 organizations may be the case for some large urban communities with high job diversity, people live more concentrated, and income-generating activities or small businesses may be categorized as an organization. Such organizations were observed in Kampala and Kasese cities during the field interviews. However, several of the communities which have reported such high numbers of organizations are in rural areas with few households. Although the maximum value of 10 in the data from 2012 is low, it seems more realistic. Still, the data from this year suffer from a high number of missing observations in the section related to community organizations.

4.3.2. Meeting Frequency of Community Organizations

The second dependent variable is meeting frequency, defined as the aggregate number of community organization meetings in a community in a year. The communities have not reported the exact number of meetings, but have stated whether each organization meet weekly, monthly, quarterly, semi-annually or annually.

High meeting frequency can be a good indicator of organizational success. Two communities were registered has having organizations, but had no organizational meetings in a year. Such

community organizations can hardly provide benefits to the organizational members, as no meetings limit the degree of collective action that can be achieved. Organizations which cooperate on projects such as shared livestock or having small-scale businesses such as crafts- or brick-making probably meet up to 6 days per week. However, since weekly meetings is the highest value possible, those organizations would not be counted as any better than organizations such as savings- and credit organizations for which meeting more frequently than weekly seldom is constructive.

Figure 5 shows the mean meeting frequency by the different organizational categories. No large differences are observed, with the exception of community watch groups who seemingly meet more seldom than other groups.

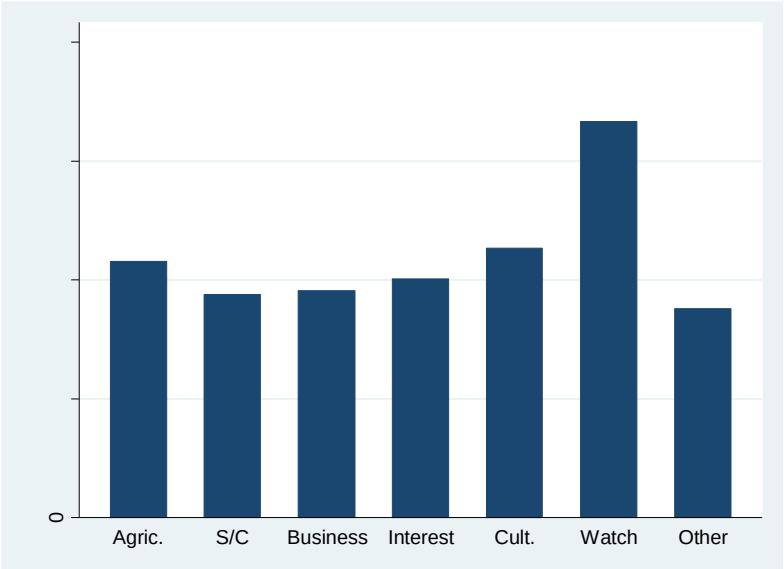


Figure 5. Mean meeting frequency given by organizational categories. Agric. = agricultural, farmer's and livestock organizations, S/C = savings and credit groups, Business = Business Associations, Interest = interest organizations for groups such as women, youth or disabled, Cult. = culture or sports groups, Watch = Community Police or Watch group.

Although this variable also is partly described by the number of organizations in the community, the variation is much less between the two years than the variable for the number of community

organizations. In fact, the mean meeting frequency per community is higher in 2012 than in 2011, although a lower number of organizations per community were reported this year.

Table 3 Comparison of the meeting frequency between the two years

Year	Obs	Mean	Std. Dev.	Min	Max
2011	275	38.49	44.67	0	350
2012	185	49.68	54.82	0	337

4.4. Transforming Individual- and Household- Variables

Several variables were given at individual or household level and needed to be transformed to generate a community level variable, e.g. the average value or an index for the community. Taking averages requires a minimum number of observations per community. Communities with fewer than ten individuals represented were reported as missing[3].

The industry- and Gini - index used household-level data. Compared to the individual level data, this further shrinks the sample if I set the limit of minimum ten households per community to calculate, for example, the Gini index. To avoid losing a large fraction of the observations, these indexes were therefore calculated at the county-level. The average number of *households* interviewed per *county* is 34, whereas the average number of *individuals* interviewed per *community* is 53. The sampling is drawn with a probability proportional to the population size at EA-level, thus these indexes should be representative for the EA.

[3]Alternatively, the limit could have been given relative to the population size of the community. However, due to possible measurement errors and missing observations on the number of households per community, this was not done.

4.4.1. Sector Index

The sector index is the share of households with farming as most important source of income (at county level). The argument for inclusion is that the most dominant sector of the village affects the interaction among villagers. The demand for cooperation related to marketing- and transport of products is often high among farmers. Although other income-generating activities arguably also demands collective action and organizing to benefit from economies of scale, communities where a large fraction of the population depends on agriculture will probably satisfy more of the group criteria related to successful collective action. An agriculture-based community will have more homogenous interests and be more independent than a community which is industrialized and specialized in different sections. However, a community with a cornerstone company will have similar attributes as an agriculture-based community. On the other hand, the heterogeneity of endowments and differentiated goals, which also are identified as positively related to collective action, will probably be fewer in such a community. Nevertheless, I choose to control for this variable and hypothesize that it is positively related to the dependent variables.

4.4.2. Ethno-linguistic Fractionalization Index

The Ethno-linguistic Fractionalization Index measures the probability that two randomly drawn individuals from the community belongs to the same ethnic group. If the society is composed of K ethnic groups and p_k is the share of group k in the total population, the ELF is calculated as:

$$1 - \sum_{k=1}^{K} p_k^2$$

This formula is based on the Simpson diversity index which is used to measure species diversity in biology and is also known as the Heterogeneity index (Maignan et al. 2000). The index is between zero and one, with one implying that all individuals in the community sample are of the same ethnicity.

4.4.3. Migration

The migration share is measured as the number of individuals who have lived in the community more than five years divided by the total number of persons interviewed in the parish. The index is between zero and one, with one indicating no immigration.

The theory of collective action suggests that individuals who know each other well and who have past successful experiences have higher chances of achieving collective action due to a higher level of trust and mutual understanding. I assume that after five years, immigrants would be integrated into the community in a sufficient way that it will no longer negatively affect cooperation. Thus, I expect that this index is positively related to the dependent variables.

4.4.4. Time spent on non-market activities

This variable is measured as the average time spent fetching firewood and water for a household in each community in a week. This is related to the opportunity cost of time and the village infrastructure. Poor village infrastructure is believed to positively affect collective action in general since it increases the demand for collective action to make improvements. On the other hand, it also increases the opportunity cost of time which I assume negatively affects the meeting frequency of organizations. However, as discussed in the theory, this variable may strongly correlate with the market integration index and is therefore used with caution.

4.4.5. Market Integration

Market integration has commonly been measured at national level and for specific products. In such studies, one looks at price differentials between countries to test to what degree "the law of one price" is followed (Fackler & Tastan 2008). This has also been the approach for measuring market integration in developing countries (Fafchamps 2003). For measuring market integration at community level Henrich et al. (2010) use the percentage of purchased calories in diet.

For this study, market integration is measured as the share of cash income by total income, i.e. income from all sources (labor, household enterprises, property income, interests from investments, pensions and life insurance, remittances, income from sale of assets and other income). Thus, several markets are captured in the index, and it gives an indicator of the household's overall involvement in market transaction as opposed to production for own consumption.

The index is calculated at community-level, although the data set gives the wages at individual-level and other income at household-level. The wage is given per hour, day, week or month whereas the other sources of income are given per year. The wages were transformed to monthly values since this was the value most frequently reported and would give fewer errors. However, villagers may estimate the value of their income differently when stating it as income the latest month versus the latest year. Nevertheless, any measurement errors are assumed random and not related to whether the income is given as cash or in-kind.

Due to possible weaknesses in the market integration index, I test alternative explanatory variables measuring market access as the minutes taken for villagers to get to product markets and banks from the village center using the most common means of transport (estimated by a community official in the LC1). The market access variable is given at community-level. Thus where the market integration index gives room for measurement errors in its transformation to a community index, the market access variable does not have this problem. On the other hand, the market access variables may also be inaccurate since distance and road qualities can vary a lot between different households of a community and may also vary within a year in the case of seasonal roads. Additionally, the community official was asked to state the distance in kilometers. However, in the data from 2010/2011 this value has an average of 300 km to the closest product market. This is not realistic. The values reported in the 2011/2012 data seem slightly more reliable. However, the distance in kilometers cannot be used, and it also makes the reliability of the minutes reported questionable. Since the villagers are more used to think about the time they use to get to the markets than the actual distance to get there, and since the distance values are so high, it seems like minutes is a more reliable indicator of market access than kilometer-distance.

The market integration index does not differ between markets due to the limited number of observations per community. However, I have one variable for the access to product markets (both agricultural and non-agricultural) and one variable for the access to banks. This distinction can also give useful results, although possible correlation between the two, in addition to the measurement errors, can become problematic.

4.4.6. Gini Coefficient

The Gini coefficient measures income differences between households in a community. The coefficient uses both cash and in-kind income (i.e. it is based on the same data as the market-integration index). Therefore, since all types of income except wages are given as yearly value, the wages also needed to be transformed. This gives further room for measurement errors. In the wage section, 97 % of those asked replied that the main activity the last 12 months was the same as the main activity the last week. For these respondents, the monthly wage was multiplied by 10 to get the approximate yearly wage. This is based on the mean number of months worked per year which is reported in the data from year 1 (only 1 % reported this in the data from year 2). The household income is divided by the number of household members such that the value used for the Gini calculation is the average income level per household member per year.

The Kernel density of income is given in figure 6 and shows large income inequalities. Most households are clustered around an income of 600 000 UGX per household member per year, but several households have much higher reported incomes, with a maximum value of 44 400 007 UGX per household member per year. 62 households have reported zero income in at least one of the years.

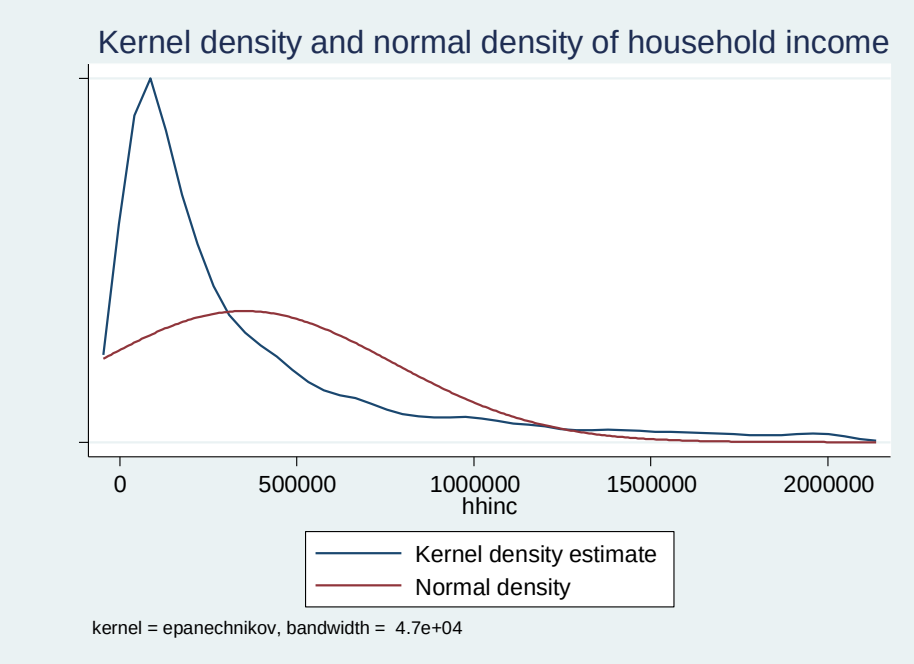


Figure 6. Kernel density and normal distribution of household income (excluding 5 % of the population with estimated yearly income above 2 089 000 UGX).

4.5. Other Explanatory Community-level Variables

In addition to the above mentioned variables, I control for the number of households in each community, the number of active NGOs in the community, the existence of communal resources in the community and the region to which the community belongs. The number of organizations should naturally increase with the population. However, as the theory suggests, it may be more difficult to achieve collective action in more populated communities than in less populated ones.

Presence of NGOs is expected to positively affect all dependent variables due to its shift of the supply curve to the right. The LSMS-ISA community questionnaire have one section which asks for the number of community organizations and another which asks for the number of NGOs present in the community. However, it does not specify the difference in definition between the two. The NGOs are categorized as local, national or international. Since the border between a local NGO and a community organization is unclear, local NGOs are excluded from the variable to avoid the variable from being biased.

The dummy for communal resources may affect the dependent variables positively due to more areas of interaction between the community members.

Table 4 Description and summary of variables at community level

Variable	*Description*	*Obs*	*Mean*	*Std. Dev.*	*Expected sign*	
					Model1	*Model2*
noorg	The number of organizations in the community	460	7.415	15.596	*	
smfreq	Sum of meeting frequency in community	460	42.991	49.256		*
nohh	The number of households living in the community	562	357.662	405.945	+	+
northern	Dummy variable for Northern region community	630	0.227	0.419	?	?
eastern	Dummy variable for Eastern region community	630	0.221	0.415	?	?
western	Dummy variable for Western region community	630	0.225	0.418	?	?
migshare	Share of population who has lived more than five years in the village	617	0.827	0.143	+	+
elf	Ethno-linguistic fractionalization index	582	0.330	0.292	+	+
gini	Gini-coefficient	503	0.559	0.110	+	+
sector	Share of population with agriculture as most important source of income	594	0.444	0.295	+	+
timewf	Average hours spent collecting firewood and water household/week	565	3.740	1.920	+/-	-
maint	Market integration index	570	0.848	0.182	+	+
ingo	Number of national and international NGOs operating in community	450	0.496	0.853	+	+
bankmin	Average minutes taken to get to a formal bank	375	58.349	64.422	-	-
maproduct	Average minutes taken to get to agricultural and non-agricultural produce market	403	42.622	40.390	+/-	+/-
commonr	Dummy for whether the community owns any	438	0.397	0.490	+	+

communal resources

Note: * indicates dependent variable.
Source: World Bank LSMS-ISA Uganda (2010/2011 – 2011/2012).

A panel-summary to show the differences between the variables over the years are given in appendix A1. This shows suspiciously large within-community variations for some of the variables. The issue for the number of organizations-variable and the access to markets have already been mentioned, but in addition, the numbers of households and the time spent on non-market activities large within-variations. Due to the short time-period for the panel, the reliability of these values can therefore be questioned.

As can be seen from the number of observations, all variables have missing observation. Although the number of EAs in the survey as reported by the World Bank is 322, the panel is unbalanced and the number of observations is rarely above 600 for any variable. Additionally, due to differences in the coding of the communities between the years, I end up with observations from 308 different EAs in the data from 2012. Ideally, the missing observations are random such that the estimates are not affected by attrition bias. However, this cannot be stated with certainty.

4.6. Methods

In this section, I present the quantitative models used to test the hypotheses and discuss possible problems with the models and the data used.

4.6.1. Model 1: Number of Organizations

The first model, referred to as Model 1a, is a cross-sectional Poisson model used to test H1, H1a and H1b. I only use observations from the latest year (i.e. the period 2011/2012) because of the large within-variations of the number of organizations. The limited distribution combined with the fact that a nontrivial number of communities have zero organizations, makes the number of

organizations per community a count variable (Wooldridge 2002). Consequently I run Poisson models for:

$$noorg = \beta_0 + \beta_i \mathbf{x}_i + u$$

where *noorg* is the number of organizations, β_0 is a constant term, $\mathbf{x}_i$ is a vector of explanatory variables for community i, and u is the error term.

For a Poisson model, the variable should have a Poisson distribution. This distribution depends on the conditional mean of the number of organizations and can be written as

$$f(noorg|\mathbf{x}) = \exp[-\exp(\mathbf{x\beta})][\exp(\mathbf{x\beta})]^{noorg}/noorg!,$$

where *noorg*! is *noorg* factorial and the expected value (E (*noorg*|**x**)) is modeled as an exponential function. Another assumption for the Poission distribution is that the conditional variance is equal to the conditional mean, or

$$\text{Var}(noorg|\mathbf{x}) = \text{E}(noorg|\mathbf{x}).$$

If these assumptions are satisfied, the Maximum Likelihood Estimators from the model are efficient (Wooldridge 2002). I use Pearson's post-estimation test of the goodness of fit of the model to check the distributional assumptions for the model and a link test to check for model misspecification.

Additionally, I run a second model (Model 1b), where I change the market integration index with the two explanatory variables for market access. I compare the differences between the two models both to check whether the coefficient for Gini and the coefficient for ELF changes or may be biased due to correlation with the market integration index combined with omitted variables, and to see whether access to banks have a different effect on the number of organizations than access to product markets.

4.6.2. Model 2: Meeting Frequency

In the second model, referred to as Model 2a (and Model 2b), the dependent variable is the sum of the meeting frequency in the community. These models assume that high meeting frequency indicates a well-functioning organization. Just as the number of organizations, the meeting frequency is characterized by a nontrivial distribution at zero for those communities with no organizational activity. However, it differs from the number of organizations in that the distribution of the meeting frequency at positive levels is roughly continuous, and the communities without organizations are not of interest. Additionally, data from both years were used for this model.

Since the meeting frequency is non-normally distributed, I use the logarithm of the meeting frequency plus one as dependent variable (since some communities have a meeting frequency of zero). This distribution is closer to normal. The distribution of the normal meeting frequency compared with the logarithm of meeting frequency is compared in appendix A2.

Three possible models were considered to test H2, H2a and H2b; a Tobit model, a Two-part model and a Heckman model. A Tobit model would be suitable under the assumption that communities organize informally although they do not have organizations and therefore such informal activities are not captured. However, a Tobit model strongly relies on homoscedastic and normally distributed errors and these assumptions were shown not to be fulfilled in the model. The Two-part model relaxes the error assumptions. Additionally, the argument of uncaptured informal activity is weak; communities without community organizations are not expected to have community organization-meetings. The Two-part model rather allows seeing the differences in the variables explaining whether the community has a positive number of organizations, and in the second part exploring the variables affecting the meeting frequency in these communities. Thus, whereas the number of households in the community can explain the number of organizations and the activity level of those, I exclude it from the first part since it presumably does not affect whether any organization exists.

Similar advantages as those for the Two-part model are also relevant for the Heckman model. The main difference is that the Two-part model relies on the assumption that after controlling for the regressors, the communities with organizations are randomly selected from the population,

i.e. there is no selection bias. The Heckman model however controls for such selection bias. Since assuming no selection bias is questionable, I tested the Heckman model as well as the Two-part model. However, the Heckman model did not converge, whereas the two-part Heckman model got an absolute rho-value of 1.467 which is above the acceptable range. This indicates that the coefficient variance–covariance matrix is not positive definite and could be due to lack of an exclusion restriction as well as problems of collinearity among the regressors (Wooldridge 2002).

The final model is therefore a two-part model. The first part is a Probit for whether the community has organizations or not, and the second part is a log-normal model to investigate the factors explaining organizational activity for those communities with organizations:

$$\text{Part 1: } \Pr(d = 1 \mid \mathbf{x}) = \varphi(\mathbf{x}_{it1}'\boldsymbol{\beta}_1)$$

$$\text{Part 2: } \ln(smfreq \mid d = 1, \mathbf{x}) \sim N(\mathbf{x}_{it2}'\boldsymbol{\beta}_2, \sigma_2^2),$$

where *d* is a dummy for the existence of organizations in the community, φ is the standard normal density function and $\mathbf{x}_{it1}$ and $\mathbf{x}_{it2}$ are vectors of explanatory variables (Cameron & Trivedi 2009).

Panel data allows controlling for time-invariant community characteristics which may affect the organizational activity. These may be roughly constant factors such as geographical factors and demographic features of the population which are not already controlled for, for instance access to education, state presence or historical factors. Regional variation is already controlled for. So is the ethnic composition of the community as well as the number of households. Still, the community-specific factors of institutional arrangements and some of the external characteristics remain uncontrolled for. Although panel data offers methods, such as Fixed Effects estimators, to control for c_i correlated with $\mathbf{x}_{it}$ this is not a good method for this data set. Using Fixed Effects estimators to control for any correlation between c_i and $\mathbf{x}_{it,}$ gives large standard errors since there is not enough variation between the years to give precise estimates. Besides, for the variables where the variation is large, this variation may be caused by measurement errors since all of the explanatory variables are factors which are assumed to have low variation within a community over a period of one or two years. I therefore test for the significance of community-specific

effects and compare results from Random Effects Generalized Least Squares and Pooled Ordinary Least Squares.

Since the data is given over two years, I further specify the within and between variation of the variables:

$$\text{Part 1: } d_{it} = \beta_{10} + \beta_{11} y_t + \beta_{12} \mathbf{r}_i + \beta_{13} \mathbf{x}_{it1} + \beta_{14} u_{it}$$

$$\text{Part 2: } lsmfreq_{it} = \beta_{20} + \beta_{21} y_t + \beta_{22} \mathbf{r}_i + \beta_{23} \mathbf{x}_{it2} + \beta_{24} u_{it}, \text{ if } d_{it} = 1.$$

Where y_t is a year dummy, $\mathbf{x}_{it}$ is a vector of exogenous time- and community-varying explanatory variables (changing between part 1 and part 2) whereas $\mathbf{r}_i$ is a vector of region-dummies. d_{it} is the dependent dummy for the existence of organizations in the community, whereas $lsmfreq_{it}$ is the logarithmic dependent variable for community organization activity. If the error-term u_{it} captures community specific-effects (c_i), this causes biased and inconsistent estimates as long as c_i is correlated with $\mathbf{x}_{it}$. The Random Effects model includes c_i as part of the error term, but assumes that these are purely random.

Lastly, changing the market integration variable with the two market access-variables is also explored in Model 2b. The results from Model 2a can be assumed more reliable than the results from Model 2b due to the unexplained large within-variations from one year to the next in the market access-variables.

4.6.3. Issues with the Data and the Models

Two main problems arise in these models; measurement errors and omitted variables. Both problems can make the models suffer from endogeneity. In the case of a measurement error, the difference between the observed market integration and the actual market integration will be captured by the error term. This violates the assumption of the error term being orthogonal to the explanatory variables, i.e.

$$E(u|\mathbf{x}) \neq 0$$

and the estimated coefficients become biased and inconsistent unless the measurement error is uncorrelated with the other explanatory variables. The same assumption is violated in the case of

an omitted variable. The omitted variable is explanatory for the dependent variable, but ends up in the error term.

As already mentioned institutions are interrelated and often change simultaneously. Therefore, to keep some institutions constant while testing the effect of changes in others may not always make sense. Many of the factors from the conceptual framework cannot be tested directly, but may be captured through the market integration variable. For example, I do not have a proxy for state presence, although theory suggests that this affects collective action. However, as I believe that state presence increases with market integration, the market integration index may capture some of the effects of state presence on the dependent variable. This makes the coefficient for market integration biased and inconsistent, which is not too problematic as long as direction of the bias is known. However, other explanatory variables which are uncorrelated with the omitted variable will also be biased and inconsistent as long as they are correlated with market integration, which they probably are. I have not succeeded in finding satisfying instruments or proxies to solve endogeneity issues for the models. I therefore take caution when interpreting the results.

Strong correlation between explanatory variables combined with a small sample size may also lead to multicollinearity. The degree of market integration may be correlated with the size of the community, the most prominent industry and the time spent fetching water and firewood. Multicollinearity is not a big problem as long as the correlation between the variables is not too high. It does not violate any of the assumptions for the models, but it increases the variances of the variables. However, it may be better to include a variable which is highly correlated to another than to exclude it if it is relevant for the model. Excluding the variable may give an omitted variable bias which is more devastating for the model than multicollinearity.

I take special caution with the variables *timewf, sector, migshare*/*elf* and *bankmin*/*maproduct* due to collinearity. Since the time spent collecting firewood and water may be strongly correlated with the market integration index as well with the most prominent sector of the community it may be more problematic to include it than to omit it. The same goes for the migration share and ELF. A stable population may be more ethnically homogenous than a population with higher levels of migration. Generally, I try models including and excluding several of the explanatory

variables to investigate the differences when including a variable probably suffering from collinearity or endogeneity versus omitting it. Table 5 shows the correlation coefficients between these variables, which indicates that the correlation between *elf* and *migshare* is lower than between the other two pairs of variables.

Table 5 **Correlation Coefficients Between Assumedly Correlated Variables**

timewf and maint	*sector and maint*	*elf and migshare*	*bankmin and maproduct*
-0.312	-0.318	-0.183	0.432

5. Results and Discussion

I first present the results of my fieldwork, addressing in particular the factors influencing the change from informal cooperation to establishing community organizations and complementing the LSMS-ISA data in identifying factors affecting community organizations.Then in section 5.2 I analyse the results from the quantitative models. The last sub-section brings together the various results and discusses them in relation to the theory and my overall research questions.

5.1. Field Interview Findings

5.1.1. Informal Cooperation versus Cooperating through Community Organizations

Since I have assumed that the group characteristics, institutional arrangements and external factors which influence collective action in general also influence the supply of community organizations, it is relevant to discuss when community members change from cooperating informally to establishing community organizations. When asked about informal cooperation between villagers, the following areas of cooperation were mentioned in at least one group:

- Management of common resources
- Information exchange
- Product marketing
- Local road maintenance and
- Informal insurance.

On the other hand, when asked about areas of cooperation for the community organizations, nine out of ten organizations cooperated on farming in some way; either through knowledge sharing, common livestock keeping, sharing of livestock offspring or joint crop production. Additionally, the following areas of cooperation were mentioned:

- Production of merchandises such as snacks and crafts
- Marketing
- Reforestation projects (which for instance included production of energy efficient cooking stoves)

- Purchase of special goods which could be rented out or used for special occasions (for example plastic chairs or cutlery)
- Counseling
- Brick-making
- Political lobbying and
- Sensitization of co-villagers regarding issues such as bio-gas installation, health, sanitation or education.

Thus, the community organizations covered a broad spectrum of needs for their members and most of the community organizations had multiple purposes though their name symbolized the main objectives.

Compared with the activities subject to informal cooperation, the organizational activities are more specific. Villagers cooperate informally to exchange information, but community organizations work actively to get information regarding special subjects of need for co-villagers and later teach the knowledge to others. When it comes to marketing, no clear difference was found between the marketing achieved by farmers cooperating informally and marketing through community organizations.

Further, community organizations were found to manage resources with a higher degree of rivalry than those managed by the whole community. Community organizations share livestock and crop production, whereas the whole community shares wetland areas. Only one group told us that the community shared a common resource which did not consist of wetland area but of pasture. However, this community struggled with conflicts between community members who kept cattle and community members who wanted to grow crops on the common land. Thus, for common resources with high degree of rivalry in use, these seemed to be better managed by community organizations since rules of use would be easier established and maintained in an organization than within a whole community. The wetland areas also had rules related to the degree of extraction of wetland plants and rules against waste disposal to keep the resources clean. However, the degree of rivalry of this resource was lower than that for the land.

Local road maintenance was not found to be done by any community organization. This is rather categorized as a public good. In some villages, the village members would meet once a month to

work together on road maintenance. Depending on the size of the village and the level of interdependence and interaction among villagers, this way of road maintenance is subject to free riding. However, in other villages the road maintenance was the responsibility of the LC or the Ministry of roads.

The area of informal cooperation which was mentioned by most groups was informal insurance. Four of the groups interviewed said that village members generally help each other in times of loss and in times of happiness. They explained that if someone lost a family member or got married, the village members would contribute with food, drinks or money to the relevant family. A person in one of the groups said that the whole village was like one big family who helped each other in times of need or shock. Thus, the informal networks of the community members functioned as insurance for the community members. On the other hand, several of the community organizations also aimed to provide insurance for its members.

Nine out of ten organizations interviewed cooperated to save money and provide credit for co-members, and some of these had a special amount saved available for co-members in shock or in times of need. Thus, the same service was provided both informally through community networks and more formally through community organizations. Nevertheless, both the insurance through the community organizations and through informal networks are vulnerable to covariate shocks. For instance, one community interviewed had many farmers dependent on maize production but experienced a bad season due to lack of rain. However, since a large proportion of the villagers depended on maize, they had few possibilities of helping each other through the period of low harvests. Although both forms of insurance were vulnerable in such cases, community organizations provided marginally better insurance since these usually had savings which could be divided among members and it was easier for community organizations to obtain formal credit from banks or support from NGOs than for individual community members.

Despite the marginal improvement from informal cooperation in the case of covariate shocks, the role of the community organizations seemed to mainly comprise cases of idiosyncratic shocks. Community organization members experiencing sudden death or illness of a family member would receive an amount of special savings for shock cases. Instead of keeping savings, some community organization also had an agreement of a certain sum that each member would

contribute with if any of the co-members experienced a shock. Thus, the insurance provided through the community organizations were more predictable compared to informal cooperation in the case of idiosyncratic shocks. Further, adequate, formal insurance was often not available.

Using community organizations to save and gain credit was not only popular due to the insurance factor, but also due to the beneficial interest rates in the community organizations compared to those received by formal banks. Several of the groups interviewed told us that although formal banks were available, they preferred the credit groups of the community organizations due to the high interest rates for obtaining credit through banks and because surplus from interest rates in the organization was used for organizational members and to strengthen the organization. The credit obtained was used for whatever the members of the community organizations needed such as house construction and improvement, pesticides, investments in new crop varieties, means of transport, medicines and school fees. This also increased the marketing opportunities for the villagers since they became more flexible and could avoid distress sales. For example, a woman from Kasese District told us that they used to sell their livestock quickly at a low price to be able to pay the school fee in time, but that the credit access from the organization allowed them to wait. Thus, in addition having more predictable and marginally better insurance through community organizations, the ownership to the community organizations compared to formal banks made these preferable.

5.1.2. Factors Influencing Community Organizations

This sub-section aims to complement the quantitative analysis in identifying factors affecting community organizations. I begin by presenting findings related to market integration, continue with NGO presence, ethnic heterogeneity and population size which also are captured in the LSMS-ISA data and end with other factors not captured by the LSMS-ISA data but mentioned in the field interviews.

Although this study mainly investigates the degree of market integration of a community, the possibilities for investing the effect of market integration on community organization through the field interviews were limited. It is easier to ask focus groups questions of how they expect

improved market access in form of better road access to affect their organizations than to ask how they expect increased market integration to affect community organizations, albeit the question remains hypothetical. On the other hand, improved road access is obviously perceived as positive. Thus it is not surprising that when asked about this directly, all groups perceived improved market access through improved roads to have a positive impact on community organizations. Three reasons were given for this; better roads would increase the traffic in the area such that more people would know about the organizations, better roads would reduce the costs for organizational members to travel to meetings, and better roads would facilitate marketing of the organization's products and therefore contribute to the success of the organization, which in the next phase would attract more members and increase enthusiasm for the organization

On the other hand, when asked about obstacles for the community organizations, it was shown that market integration in the form of increased opportunities for the community members could have a negative effect on the community organizations. One youth group told us that literate youth in the village tended to look down at the organization members and preferred to commute to Kampala to work there rather than in the village. This youth group was situated in Mukono district, quite close to Kampala. Thus, it seemed like the high degree of opportunities outside of the community made the resourceful youth avoid organizing in the community. Another organization mentioned modernization as a hinder to community cooperation because some villagers preferred to travel to town centers and cities to get office jobs rather than being farmers.

However, other community members used the community organizations as stepping-stones into the labor market. Female members told us that they had become more empowered as result of the membership in the organizations. Members had learned new skills through the organization and had experienced individual development. A woman in Kasese district explained that she had become part of the Town Council through her engagement in the community organization and that the organizational experience had taught her to talk in public and participate in discussions.

In addition to market access, the income inequality, ethnic heterogeneity, community population size and NGO presence was investigated in the field interviews. No general patterns of the effect of population size or ethnic heterogeneity on the community organizations could be traced.

However, religious differences were mentioned as an obstacle for cooperation in two of the groups. Firstly, the religion complicated cooperation for livestock since Muslim members did not want to participate in pig holdings. Secondly, some religions offered different working days which could complicate the agreements on appropriate times to meet and to work together.

Limited evidence was found in the field interviews against H2b of income inequalities increasing organizational activity. Poverty was mentioned by four organizations as an obstacle to cooperation. This was mainly because the poorest in the villages struggled to ensure their own basic needs and did not have time or effort to participate in the organizational activities. For example, one of the groups cooperated on livestock and had been instructed to construct cemented floors for keeping pigs. However, some of the members did not have floors in their own house and naturally hesitated to invest in this for pigs. Further, other villagers might have had the time to invest in the organization, but they could not afford becoming members due to the membership fee or other terms of membership such as land requirements or weekly saving contributions for the groups. Therefore, the poorest villagers seemed to be excluded from many of the organizations. In one of the villages, we only interviewed one group member who was among the wealthiest in the organization. She had achieved a lot on her own farm, and could be used as a model example for others. However, she explained how other organization members did not want to try to invest in the same equipment as she had because they thought that this was not possible without her level of wealth. These same members participated little in the organization because they had lost hope for the future. Thus, in the communities visited, economic inequality seemed to reduce participation in the organizations, both due to exclusion of the poorest members, difficulties in finding common projects to cooperate on and higher sense of hopelessness which decreased the motivation for participating in organizations.

The experiences of NGO presence varied between the communities. In one community an NGO had managed to get money from the villagers to encourage organizing but ended up never giving anything back. Therefore, the NGO had led to mistrust towards organizations in general in the community. Other groups told us that they were worried about NGOs leaving the community and therefore ending their donations. The presence of the NGOs might have crowded out local initiative and led to a dependency of external sources for some organizations to sustain. As some villagers expressed mistrust towards NGOs, they also told us that NGOs demanded a lot of

structures to be in place before they would donate. These requirements were problematic for some villagers as it was costly for them to prioritize these constructions and then wait a long time before they could receive what they needed from the NGOs. Thus, it seems like NGOs initiated community organizations, but that their presence did not have an unequivocal positive effect on the organizational activity.

5.1.3. Obstacles to Community Organizations

Remaining factors identified through the field interviews as influencing community organizations were mainly obstacles such as laziness, impatience and mistrust. Attempted solutions to these obstacles were also discussed in the field interviews.

The community organizations interviewed struggled with low participation by the organization members rather than with too few members. One of the main reasons mentioned for this was member's impatience. If the members did not see quick results and received benefits quickly after they joined, they could stop attending meetings or resign from the organization. Some groups explained that members stopped attending meetings once they had received benefits. Members who were skeptical to the credit and savings groups, wanted to see quickly how this could benefit them, but since credit often rotated among members the waiting time for receiving own credit could be long. Thus, for those members, the interest rate of the bank would perhaps be preferred since the credit was quicker.

From the organizations interviewed, it seemed like the older organizations struggled more with low participation than the newer ones. Out of nine organizations, five told us that the participation in the organization had increased. These five were established in 2010 or later. Three of the groups told us that participation had decreased. These were established in 1988 and 2006. The last group, which was established in 2002, told us that the degree of participation fluctuated and that the number of members had increased, but that the participation in meetings had decreased. This indicates that the age of the organization is negatively related to its degree of success, which is strange since the theory suggests that cooperation is facilitated by reciprocity and trust built over time. However, it may be related to the problem of impatience already

mentioned. If the benefits from the organization are not visible in the short-term, members may lose patience and give up. On the other hand, although benefits are easily visible in the short-term, these may be difficult to sustain in the long-run. As mentioned, some organizations had experienced members who stopped to participate in the organization as soon as initial benefits were received.

The mistrust was in one village explained as hindering organizational demand because villagers had negative experiences with organizations. Besides, community organizations had seldom been successful in the village and therefore the elderly were skeptical of joining. Thus, a negative demonstration effect had affected the perceived benefits of organizing in this village. Another mistrust-enhancing issue which was mentioned by three groups was failure of loan repayments among members. Finally, one group told us how they shared livestock, but that the person agreeing to keep the livestock at his land ended up getting all the responsibilities for the animals, even though this was supposed to be shared between all members. Thus, the possibilities of free-riding increased the mistrust in the organizations.

The most common solution to free riding seemed to be using fines as punishment for breaking organizational rules. Two organizations also mentioned that they had kicked out members due to misbehavior or breaking of rules. However, this had happened after repeated warnings.

One group informed that they had never experienced that any organization member had broken rules, but rather struggled with theft from outsiders. They therefore hoped that more villagers would join their organization rather than stealing from them. Thus, in this case the organization had succeeded in creating norms of cooperation within the organization, but got problems due to outsiders. The groups blamed the thefts on unemployed youth in the communities.

5.2. Quantitative Models

5.2.1. Factors Influencing the Number of Community Organizations

The first set of hypotheses (H1, H1a and H1b) concern the number of community organizations in a community. Table 6 compares the results of a model using the market integration index (Model 1a) with a model where the market integration index is replaced with access to product

markets and banks (Model 1b). As shown in appendix A3, I first tried a relaxed model where all explanatory variables from Table 4 were included. However, since the coefficient for time spent collecting firewood and water (*timewf*) is strongly insignificant, including it may decrease the efficiency of the market integration index since these are correlated. Compared to the model including *timewf,* none of the coefficients change significantly. Both models can reject model misspecifications at 10 % in the Link test.

In Model 1b, which uses the market access variables, the log likelihood is higher compared to Model 1a. Much of this change, however, may be caused by including an extra explanatory variable. Appendix A2 shows Model 1b without the variable for bank access due to possible correlation with product market access. Although *maproduct, sector* and *gini* remains insignificant in both models, their sign become negative when excluding *bankmin*. These changes cannot easily be explained, but indicate that the model suffers from endogeneity and collinearity. Excluding *bankmin*, which is negative in Model 1b, and only significant at 15 %, seems to cause a negative bias in *maproduct, sector* and *gini*.

Table 6 **Poisson Model for Number of Organizations in 2012**

Variables	Model 1a	Model 1b
nohh	**0.0003****	**0.0004***
	(0.0001)	(0.0002)
	1.99	1.81
northern	**0.8588*****	**1.0087*****
	(0.2150)	(0.2508)
	4.00	4.02
eastern	0.2501	-0.0022
	(0.2467)	(0.3550)
	1.01	-0.01
western	0.1679	0.1548
	(0.2294)	(0.3063)
	0.73	0.51
elf	0.2058	0.3277
	(0.2647)	(0.3368)
	0.78	0.97
gini	-0.0771	0.2259
	(0.5440)	(0.6722)
	-0.14	0.34
sector	0.0255	0.0586

	(0.3093)	(0.3452)
	0.08	0.17
maint	0.4816	
	(0.4100)	
	1.17	
ingo	**0.1153***	0.1301
	(0.0659)	(0.0843)
	1.75	1.54
commonr	0.0151	-0.0486
	(0.1433)	(0.1712)
	0.11	-0.28
migshare	0.3136	0.5222
	(0.489)	(0.5768)
	0.64	0.91
bankmin		-0.0015
		(0.0010)
		-1.46
maproduct		0.0016
		(0.0019)
		0.84
constant	-0.3232	-0.3070
	(0.6107)	(0.6999)
	-0.53	-0.44
Log likelihood	-242.715	-156.136
LR χ^2	41.14	46.40
Pseudo R^2	0.078	0.129
Prob> χ^2	0.000	0.000
Number of observations	136	89

***Significant at 10% **Significant at 5% ***Significant at 1%.**
Standard errors are given in parentheses and t-values are given below.

Turning to the main research topic, these models give no evidence supporting any of the hypothesis since neither the coefficient for ELF, Gini or market integration are significant in any of the models. Thus, neither the level of market integration of a community, income inequalities nor the ethnic homogeneity of the community seems to significantly affect the number of community organizations.

However, other factors which are shown as significant may be discussed. The northern dummy and the number of households are significant at 10 % or lower in both models. According to Wooldridge (2009), the estimates from a Poisson model can be interpreted similarly to a log-

linear OLS model, given that we have an exponential mean function. For example, Model 1a indicates that a community situated in the Northern region has 85.88 % more organizations than a community in the central region, and that one more household increases the number of organizations by 0.03 %. Yet, possible biases and inconsistencies in the estimation should make one careful to draw too precise conclusions. When looking at Model 1b, the Northern dummy increases such that the number of organizations in the Northern region is double the number in the central region. Although there is a large chance that this coefficient is positively biased, the Northern region can be concluded to have more community organizations compared to the other regions. Explanations of this may be the culture and traditions for organizing, as well as the special history of the region. The oppression against the government may have been an incentive for groups to organize politically or the civil wars may have stimulated establishment of self-help organizations.

The NGO variable is also significant at 10% in Model 1a, and its lack of significance in Model 1b may be caused by the loss of observations from Model 1a (in appendix A2, where the number of observation is 119, the coefficient for NGO-presence is significant at 5%). Although its standard errors are higher and the level of significance decreases to 15 % in Model 1b, it seems like NGO presence shifts the supply curve of organizations to the right.

It is also worth noting that the coefficient for the access (i.e. distance) to banks has a relatively high t-value (significant at 15%) and is negative. This suggests that poor access to banks has a negative effect on the number of community organizations. Just as NGO presence reduces the costs of supplying organizations, lack of credit may increase the costs. However, the insignificance of the variable prevents drawing any conclusions.

5.2.2. Factors Influencing Organizational Activity

The second set of hypotheses concern organizational activity and is tested using panel data and a Two-part model.

The Breusch and Pagan Lagrangian Multiplier (BPLM) test for random effects indicates that there are community-specific effects in the second part of the model, but not in the first. In other

words, there is no evidence of unobserved community-specific effects which affect the existence of community organizations, but communities with community organizations may have unobserved effects affecting the degree of participation. This finding indicates that the model does not suffer from selection-bias. Further, the Hausman test rejects that the unobserved effects are uncorrelated with each explanatory variable. Yet, as already discussed, no suitable model have been found which can control for this. I try running a Fixed Effects model, which gets a p-value of 0.739, confirming that the model is overall insignificant. However, given the Hausman test results and the fact that both the theory and the BPLM test results suggest omitted community-specific variables, the results of the pooled and random-effects model must be interpreted with the background of possibly being inconsistent and biased.

For the first part I run a Pooled Probit model, whereas I report both Pooled OLS and Random Effects GLS results from the second part. I assume that most of the explanatory variables affecting the organizational activity also affect the probability that the community has a positive number of organizations. I continue to exclude the variable for time used for water and firewood collection since this variable remains insignificant. However, I exclude the migration share in the first part, as I expect this to affect the organizational activity through past successful experiences and higher chance of more community members knowing each other well, but it should not affect the probability of having community organizations.

Table 7 **Two-part Panel Model for Organizational Activity using Market integration index (Model 2a)**

Variables	Pooled Probit for positive number of organizations (Part 1)	Pooled OLS for meeting frequency (Part 2)	Random Effects GLS for meeting frequency (Part 2)
y2012	0.1400	0.0856	0.0446
	(0.2148)	(0.1339)	(0.1331)
	0.65	0.64	0.34
nohh	0.0002	0.0001	0.0001
	(0.0003)	(0.0002)	(0.0002)

	0.55	0.46	0.68
northern	0.3108	**0.4676***	**0.4715***
	(0.4455)	(0.2533)	(0.2544)
	0.7	1.85	1.85
eastern	-0.3575	0.0729	0.0963
	(0.4089)	(0.2661)	(0.2611)
	-0.87	0.27	0.37
western	-0.0178	-0.0567	-0.0632
	(0.3974)	(0.2356)	(0.2334)
	-0.04	-0.24	-0.27
elf	-0.6784	**0.5189***	0.4787
	(0.4824)	(0.3008)	(0.2953)
	-1.41	1.73	1.62
gini	-1.5161	-0.3010	-0.3831
	(0.9489)	(0.5727)	(0.5646)
	-1.6	-0.53	-0.68
sector	0.7570	-0.2187	-0.1332
	(0.5960)	(0.3464)	(0.3477)
	1.27	-0.63	-0.3800
maint	**1.1827***	**0.7766***	0.6989
	(0.7111)	(0.4563)	(0.4423)
	1.66	1.7	1.58
migshare		-0.6284	-0.6315
		(0.6578)	(0.6460)
		-0.96	-0.98
commonr	0.0758	-0.3082	-0.2594
	(0.3128)	(0.1968)	(0.1949)
	0.24	-1.57	-1.33
ingo	0.1028	0.1120	0.1128
	(0.1473)	(0.0804)	(0.0791)
	0.7	1.39	1.43
constant	0.8806	**3.4220*****	**3.4831*****
	(0.8464)	(0.7827)	(0.7727)
	1.04	4.37	4.51
Prob> χ^2	0.094		
Prob> F		0.000	0.000
Number of Observations	273	248	248

***Significant at 10% **Significant at 5% ***Significant at 1%.**
Cluster robust standard errors are given in parentheses and t-values are given below.

The overall model for the Probit first part is significant at 10 %, and the Link test does not indicate any model misspecification. Only the coefficient for the market integration index is

significant at 10% or lower. In addition, its coefficient value is relatively high. This indicates that the probability that a community has community organizations increases with the market integration of the community.

When comparing the Pooled OLS and the Random Effects GLS models for part 2, the differences are small. The main difference is that more variables are significant at 10 % or lower in the pooled model. Since the BPLM test indicates that the errors are serially correlated, the random effects-estimates may be more efficient.

The dummy for the Northern region is again significant in explaining meeting frequency for organizations. This is logical since its significance was high in Model 1a, and communities with many organizations usually will have more meetings.

The coefficient for the market integration index is significant at 10 % in the Pooled OLS model, but only at 15 % in the Random Effects GLS model. Thus, given that any community-specific effects are uncorrelated with the other explanatory variables, Model 2a gives limited evidence supporting H2 of the activity of community organizations being higher in more market-integrated communities.

Moving to H2a, the sign of ELF is negative in the first part, but positive in the second part. Although only the pooled OLS estimator is significant at 10%, the t-values of the coefficients have increased in this model compared to Model 1a and 1b. The negative coefficient for ELF in part1indicates that ethnic heterogeneous communities have larger probability of having community organizations than more ethnic homogenous communities, although the low significance of the variable prevents me from drawing certain conclusions. However, for communities with community organizations, the activity of those organizations appears to be positively related to the ethnic homogeneity of the community. This indicates that ethnical homogenous communities have higher organizational activity than less ethnical homogenous communities.

When it comes to H2b, regarding income inequality, the coefficient for Gini remains insignificant at 10 % in both parts. However, in part 1, the t-value for the coefficient is relatively high and it is not far from significant at 10%. The coefficient sign is negative and weakly

indicates that communities with high income inequality have lower chance of establishing community organizations. Nevertheless, the non-significance of the coefficient prevents me from drawing any certain conclusions.

In Model 2b, where I replace market integration index with the variables of market access, the level of significance of several variables increases, especially in the first part. Both the year dummy, the eastern dummy, the sector index and the coefficient for Gini becomes significant at 10 % or lower in the first part. However, the results of the second part are more in-line with the ones from Model 2a.

Since the coefficient for Gini becomes significant at 5 % and remains negative, this strengthens the symptom of lower chance of establishing community organizations in income-unequal communities. Still, in the second part, the coefficient is again insignificant at 10%, and its coefficient value has changed to positive sign. Thus, the only conclusion that can be drawn from these models regarding H2b of the effect of income inequalities on the level of community organization activity, is that the effect seems to be insignificant.

Table 8	**Two-part Panel Model for Organizational Activity using Market access variables (Model 2b)**		
Variable	Pooled Probit for positive number of organizations (Part 1)	Pooled OLS for meeting frequency (Part 2)	Random Effects GLS for meeting frequency (Part 2)
y2012	**0.5294***	0.1214	0.0817
	(0.3127)	(0.1554)	(0.1400)
	1.69	0.78	0.58
nohh	-0.0001	-0.0001	0.0001
	(0.0004)	(0.0002)	(0.0003)
	-0.28	-0.31	0.3
northern	0.1793	**0.8247****	**0.8915****
	(0.4573)	(0.3365)	(0.3609)
	0.39	2.45	2.47
eastern	**-1.3385*****	-0.5016	-0.2592
	(0.4276)	(0.4242)	(0.4338)
	-3.13	-1.18	-0.6
western	-0.0321	0.0480	0.1448
	(0.4710)	(0.3763)	(0.3798)

	-0.07	0.13	0.38
elf	-0.2117	**0.8028****	0.5972
	(0.6856)	(0.3974)	(0.4345)
	-0.31	2.02	1.37
gini	**-3.6540****	0.5106	0.3496
	(1.4265)	(0.7953)	(0.8244)
	-2.56	0.64	0.42
sector	**1.3344****	0.0060	0.0352
	(0.6711)	(0.4545)	(0.4393)
	1.99	0.01	0.08
bankmin	-0.0025	**-0.0051*****	**-0.0040****
	(0.0022)	(0.0015)	(0.0017)
	-1.18	-3.35	-2.26
maproduct	0.0020	**0.0047****	**0.0039***
	(0.0047)	(0.0021)	(0.0021)
	0.43	2.24	1.89
commonr	-0.0902	**-0.4820***	-0.2965
	(0.4024)	(0.2677)	(0.2444)
	-0.22	-1.8	-1.21
migshare		-0.5938	-0.8473
		(0.6823)	(0.6787)
		-0.87	-1.25
ingo	0.4102	0.1096	0.0637
	(0.2951)	(0.0900)	(0.0796)
	1.39	1.22	0.8
constant	**3.0707*****	**3.5098*****	**3.6141*****
	(0.8878)	(0.8018)	(0.8092)
	3.46	4.38	4.47
Prob> χ^2	0.000		0.000
Prob> F		0.000	
Number of Observations	179	164	164

***Significant at 10%, **Significant at 5%, ***Significant at 1%.**
Cluster robust standard errors are given in parentheses and t-values are given below.

Continuing with the significance of variables in the first part, the year-dummy and the dummy for the eastern region have become significant at 10% or lower. The sudden significance of the year-dummy seems to be related to the large within-variation of *bankmin*. As shown in appendix A4, running Model 2b without *bankmin* reduces the significance of the year dummy. The significance of the sector index has also increased compared to Model 2a. Thus, it generally seems like the variables explaining the existence of community organizations differ from the ones explaining the organizational activity.

In the second part of Model 2b, both the access to banks and the access to product markets are significant at 10% or lower. The access to banks remains negative, whereas the access to other products has a positive sign. It therefore seems like low access to product markets has a positive effect on meeting frequency, whereas low access to bank has a negative effect on meeting frequency. No obvious explanation exists for this difference, and there are several uncertainties in the model. Appendix A4 shows Model 2b without the access to banks as explanatory variable. When excluding this, the number of significant variables reduces and only the dummy for the northern region remains significant at 10 % in the Random-effects second part.

The coefficient for ELF is significant at 5 % in the Pooled model, but not significant in the Random Effects model. Its coefficient value is positive and quite high. This strengthens the findings from Model 2a regarding ethnical homogeneity.

5.3. Discussion

5.3.1. The Effect of Market Integration and Market Access on Community Organizations

The quantitative models find no support to H1 of market-integrated communities having more organizations, while Model 2a gives limited evidence to support H2 of higher organizational activity in market-integrated communities. The strongest evidence found through the quantitative models regarding the effect of market integration on community organizations is that the probability of having community at least one organization is higher the more market-integrated the community is.

Model 2b suggests that access to product markets reduces the activity level of community organizations, whereas access to banks increases the activity level. However, the coefficient values of these variables are low, and the access to product markets does not remain significant when excluding the bank access-variable. Thus, access to product markets seems to have different effect on the activity level of community organizations than access to credit markets. Viewing these findings through the lenses of theory and the field interviews can give some explanations.

As suggested in the conceptual framework, market integration may increase the opportunity cost of time for community members which may negatively affect the willingness to participate in community organizations. However, no strong evidence was found in the field interviews of this having a negative effect on community organizations. If higher market integration implies more job opportunities for the community members, this can have various consequences for the community. First, more opportunities outside of the community make the community organizations less attractive for some individuals. Communities close to Kampala experienced co-villagers who preferred to travel out of the community, rather than participating in community organizations. In Mukono district the most educated youth travelled from the village, whereas the remaining youth established a livelihood from cooperating on brick-making and keeping livestock. Although this may inhibit the general development of the community if the most resourceful villagers leave the community, it is not necessarily negative for the community organizations since a large fraction of the population stayed and organized themselves.

Moreover, if the thefts experienced from the organizations were done by unemployed youth (as the groups asserted), market integration may be positive for these organizations if it implies increased work opportunities. Thus, rather than increased opportunity cost of time and thereby reducing the individual net benefits, it reduces the cost for organizations in dealing with theft from non-members.

Some organizations were initiated due to the lack of job opportunities for the villagers. Such organizations may be less relevant when the labor market improves and more job opportunities emerge. Still, since the organizations were an important stepping-stone into new employment opportunities for some villagers, they can remain relevant. Thus, market integration increases the job opportunities for the villagers and makes some villagers prioritize work outside of the community; yet the community organizations remain relevant as a source of employment within the community.

Although market-integrated communities have more work opportunities outside of the community, this does not necessarily increase the opportunity cost of time for the villagers. The interviews suggest that the improved road quality associated with higher market integration can reduce the opportunity cost of time for villagers since the transportation costs and the time taken to do different activities decrease. Since physical proximity between actors can increase the

chance for successful collective action, the improved infrastructures associated with market integration may have the same effect for the villagers. As the focus groups explained, it will become easier for community organization members to travel to the organizational meetings, and the information flow regarding organizational benefits will improve. Thus, market integration (and the factors underlying that, such as improved infrastructure) reduces the cost of organizing.

At the same time, for farming, brick-making and other community organizations working to market their products, increased market access would obviously be positive. Thus, market access expands the external opportunities for the community-members simultaneously as the costs for community organizations to benefit from marketing own products and to organize meetings decrease. If the lower marketing and travelling costs for the community organization, perhaps combined with an increased number of participating members, can make the benefits from organizing sufficiently large to outweigh the higher opportunity costs of time for community members. If so, better market access will be positive for the organizational activity in the community.

Due to the high number of credit and savings organizations found in the field interviews, and the different signs of the bank access and the product market access variables, the credit market access should be analyzed and discussed separately. The variable describing the time taken to get to a formal bank was negative and significant in explaining the organizational activity for communities with community organizations. This indicates that imperfect access to formal credit markets negatively affect community organizations. Given that community organizations functioned as a substitute for formal banks, one would expect the sign of the coefficient for bank access to be positive. In other words, the less accessible the formal bank is, the stronger the incentive for villagers to organize within the community to provide credit. However, this effect was not found neither in the quantitative data nor in the field interviews.

Through the field interviews, it was found that many joined community organizations to get credit rather than going through formal banks. However, this does not explain why low access to banks is negative for the activity level of the community organizations. Without access to banks, it may be more difficult for community organizations to be successful since the opportunities to invest in projects decrease. However, little information on such relationships was found in the

field interviews, and the evidence of this negative correlation is also limited in the quantitative model.

Alternatively, the negative relationship may again be related to road quality. If the time taken to reach formal banks is high, this may be explained by poor road quality which, as already discussed, increases the costs of participating in organizational activities. Still, the positive sign of the access to product markets makes such a conclusion questionable.

5.3.2. Ethnic Homogeneity

I found limited evidence in both the quantitative and qualitative analysis supporting H1a and H2a regarding the effect of ethnic homogeneity on community organizations. Given that the assumptions of no selection bias and no remaining community-specific effects hold, H2a cannot be rejected. In other words, more ethnically homogenous communities also have higher organizational meeting frequency. However, the indications of community-specific effects, and the insignificance of the Random Effects estimates prevents me from drawing any firm conclusions.

5.3.3. Income Inequalities

Limited evidence was also found regarding H1b or H1a of the effect of income inequality on the number or activity level of community organizations, at least in the quantitative models. Model 2b suggests that income inequality in the community is negatively related to the presence of community organizations. However, since this cannot be concluded from Model 2a, the evidence of this remains ambiguous. Further, the field interviews suggested that income inequalities in the community negatively affect the activity level of the community organizations due to lower motivation to cooperate with households at another income-level and difficulties in agreeing on common projects. Thus, the field interview findings partly support the theory of an optimal level of inequality between groups and income equality within groups, since the findings suggest that within-group inequalities are problematic.

Additionally, some groups mentioned that the poorest villagers were excluded from the community organizations since they could not afford to pay the membership fee. In this case, the community organizations may have a negative effect for the poorest members of the community since they cannot choose to benefit from the public good of the community organization. Moreover, the community organization may work to promote the interests of its members, which may compete with the interests of excluded members.

5.3.4. Other Factors influencing Community Organizations

The laziness, impatience and insufficient education, which were mentioned by the villagers as obstacles to community organizations, are related to the selective incentives for contributing to organizations. As long as membership in the community organization is voluntary and breaking of rules can lead to exclusion from the organization, the choice for the individual to cooperate can be seen as a social exchange game. Organizations will exist as long as the benefits from the organizational activity outweigh the costs of joining. These benefits depend on having an accurate number of contributing members (N) as well as a "not too high" discount rate. In the communities where individuals did not contribute to the community organizations due to impatience, i.e., a high discount rate, this would inhibit the organizations growing and reaching a sufficient number of contributing members. However, for those who mentioned laziness as an obstacle for participating, the "lazy" individuals may have different preferences for cooperating than the other members. Similarly, education also influences people's preferences.

For the individuals who were members of the community organization but chose not to participate much, the cost was not total exclusion from the organization, as this was a rarely used punishment. Fines used to be the most common form of punishment for breaking organizational rules, but these rules were rather related to talking when you are not supposed to in meetings or coming late. Few organizations practiced fines for not showing up at meetings. A reason for not using exclusions or other stronger punishments for non-contributors may be the high cost of doing this if the organization already struggles with few active members. Thus, for the community organizations struggling with too few contributing members, it may be difficult to get back to levels where enough members contribute to the organization to make it more beneficial. This can be seen as a low-participation equilibrium where the benefits are low; more

members will increase the individual benefits, but moving to the high level equilibrium is challenging.

The significance of the NGO variable in Model 1a is partly in accordance with the findings from the field interviews. Various NGOs had a clear presence in many of the villages visited, and had founded and advised half of the organizations interviewed. However, although NGOs may shift the supply of community organizations to the right, they do not seem to affect the level of organizational activity in a significant way.

The conclusions from the quantitative models rely on strong assumptions with varying credibility. Testing institutions empirically leads to problems of endogenous right-hand side variables. The weaknesses of the LSMS-ISA data further increase the chance of noise and possibly also biased results. The LSMS-ISA data proved to have clear limitations in use and appears to suffer from inconsistency in question formulation between the years, which leads to unreliable values for some variables, especially in the data from 2010/2011. Paradoxically, these data are collected by perhaps the most credible development organization in the world, i.e., the World Bank, and highlight how difficult data collection in developing countries can be.

6. Conclusion

This thesis uses a conceptual framework based on the New Institutional Economics School and theories on collective action to analyze how different factors, and especially market integration, affects community organizations. Cross-sectional and panel data from the LSMS-ISA project of the World Bank is used to test the significance of different factors on the number and activity level of community organizations. Further, these findings are complemented by findings from own field interviews.

The field-interviews show that most community organizations in Uganda have multiple purposes and activities, and that they play crucial roles in many communities as they reduce poverty through building employment opportunities in the villages, educate on health, agriculture and leadership, and help villages develop though exploiting the benefits of cooperating. The insurance and credit provided through community organizations are key reasons for participating in the community organizations. Further, many choose to organize on farming and to manage resources which are rivalrous in use through the community organizations.

None of the quantitative models allows drawing strong conclusions regarding the hypotheses of the effect of market integration on the number of organizations or the activity-level of the community organizations. However, the pooled two-part model suggests that market- integrated communities with community organizations have higher organizational activity than less market-integrated communities. The findings from the field interviews suggest that higher market integration makes some individuals choose to commute to work outside of the community rather than contributing to the social good in the community. However, since market-integrated communities often have better roads, the costs of travelling to organizational meetings decrease, information flow increase and the profits for organizations cooperating on marketing increase. Further, better job opportunities outside of the community seemed to affect community organizations positively. Thus, the net benefits from participating are seemingly higher in market-integrated communities than in more isolated communities. However, data weaknesses and non-exogeneity in testing institutional relationships empirically limits the possibility of drawing too strong conclusions of this.

The pooled two-part model gives limited evidence supporting the hypothesis of higher levels of organizational activity in ethnical homogenous communities. No strong evidence supporting this was found in the field interviews, although religious differences seemed to inhibit some organizational activities.

The field interviews found villagers below a certain income level to be excluded from some community organizations. Additionally, the findings suggest that income inequalities within community organizations decrease the motivation for the lowest income-members and make it more difficult to agree on common areas of cooperation. However, this could not be confirmed by the quantitative models.

NGO presence and regional differences were also identified as affecting community organizations in the cross-sectional and panel data models. NGOs initiate many community organizations, but have lower effect on the organizational activity after organizations have been established. Moreover, the regional differences in Uganda explain much of the variations in the number of community organizations as well as the activity level of these.

Additional findings from the field interviews suggest that several community organizations struggle to get out of low-participation equilibrium where a too low number of contributing members constrains the possibility of benefiting from the organization and further constrains the interest among the community members of organizing.

Complementing quantitative analysis with qualitative analysis can be useful to overcome some of the limitations in testing institutions empirically. However, both the results from the panel data models as well as the theory suggest that there are further community-specific factors, such as state presence or access to education, which affect community organizations and which should be identified to enable stronger conclusions.

This study is mainly based on a general definition of market integration and community organizations. However, some evidence suggests that access to credit markets has a different effect on community organizations than access to product markets. Further investigating these differences can give insights to the more complex effects of market integration on community organizations, i.e., the channels of impact, and how it can vary between different types of

organizations. Moreover, the effect of market integration over time and how the degree of market stability affect community organizations can also be investigated when longer panel data sets become available.

References

Agrawal, A. (2001). Common Property Institutions and Sustainable Governance of Resources. *World Development*, 29 (10): 1649-1672.

Agrawal, A. & Goyal, S. (2001). Group Size and Collective Action: Third-party Monitoring in Common-pool Resources. *Comparative Political Studies*, 34 (1): 63-93.

Agrawal, A. & Angelsen, A. (2009). Using community forest management to achieve REDD+ goals. In *Realising REDD+: National strategy and policy options*, pp. 201-212. Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Aoki, M. (2001). Community Norms and Embeddedness: A Game-Theoretic Approach. In Aoki, M. & Hayami, Y. (eds) *Communities and Markets in Economic Development*, pp. 97-126. New York: Oxford University Press.

Aoki, M. & Hayami, Y. (2001). Introduction: Communities and Markets in Economic Development. In Aoki, M. & Hayami, Y. (eds) *Communities and Markets in Economic Development*, pp. 15- 24. New York: Oxford University Press.

Baland, J.-M. & Platteau, J. P. (1996). *Halting degradation of natural resources: is there a role for rural communities?* [New York]: Food and Agriculture Organization of the United Nations. 423 pp.

Bardhan, P. (1989). The New Institutional Economics and Development Theory: A Bref Critical Assessment. *World Development*, 17 (9): 1389-1395.

Bardhan, P., Ghatak, M. & Karaivanov, A. (2007). Wealth Inequality and Collective Action. *Journal of Public Economics*, 91 (9): 1843-1874.

Bratton, M., Lambright, G. & Sentamu, R. (2000). Democracy and Economy in Uganda: a Public Opinion Perspective. *Afrobarometer* (4).

Byrnes, R. M. (1990). *Uganda: A Country Study*. Washington: GPO for the Library of Congress. Available at: http://countrystudies.us/uganda/ (accessed: 23.02.2014).

Bøås, M. & Hatløy, A. (2005). Northern Uganda Internally Displaced Persons Profiling Study: Office of The Prime Minister, Department of Disaster Preparedness and Refugees. 53 pp.

Cameron, A. C. & Trivedi, P. K. (2009). Tobit and Selection Models. In vol. 5 *Microeconometrics using Stata*, pp. 535-566. Texas: Stata Press College Station, TX.

De Coninck, J. (2004). The State, Civil Society and Development Policy un Uganda: Where are We coming from? In Brock, K., McGee, R. & Gaventa, J. (eds) *Knowledge, Actors and Spaces in Poverty Reduction in Uganda and Nigeria*, pp. 51-73. Kampala: Fountain Publishers Ltd.

Fackler, P. L. & Tastan, H. (2008). Estimating the Degree of Market Integration. *American Journal of Agricultural Economics*, 90 (1): 69-85.

Fafchamps, M. (2003). *The transmission of international commodity prices to domestic producers*. CSAE Working Paper Series.

Fafchamps, M. (2004). *Market Institutions in Sub-Saharan Africa - Theory and Evidence*. Massachusetts: Massachusetts Institute of Technology.

Greif, A. (2008). Commitment, Coercion and Markets. In Menard, C. & Shirley, M. M. (eds) *Handbook of New Institutional Economics*, pp. 727-786. Berlin: Springer-Verlag.

Hellin, J., Lundy, M. & Meijer, M. (2009). Farmer Organization, Collective Action and Market Access in Meso-America. *Food Policy*, 34 (1): 16-22.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. & McElreath, R. (2001). In Search of Homo Economicus: Behavioral Experiments in 15 small-scale Societies. *The American Economic Review*, 91 (2): 73-78.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. & McElreath, R. (2004a). *Foundations of Human Sociality*. New York: Oxford University Press.
Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. & McElreath, R. (2004b). Overview and Synthesis. In Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E. & Gintis, H. (eds) *Foundations of human Sociality*, pp. 8-54. New York: Oxford University Press.
Henrich, J., Ensminger, J., McElreath, R., Barr, A., Barrett, C., Bolyanatz, A., Cardenas, J. C., Gurven, M., Gwako, E., Henrich, N., et al. (2010). Markets, Religion, Community Size, and the Evolution of Fairness and Punishment. *Science*, 327 (5972): 1480-1484.
Hoff, K., Braverman, A. & Stiglitz, J. E. (1993). *The Economics of Rural Organization*. Oxford and New York: Oxford University Press.
Hveem, H. (1972). *Uganda - en politisk översikt*. Afrika institutets skriftserie. Stockholm: Wahlström & Widstrand.
Kaganzi, E., Ferris, S., Barham, J., Abenakyo, A., Sanginga, P. & Njuki, J. (2009). Sustaining Linkages to High Value Markets through Collective Action in Uganda. *Food Policy*, 34 (1): 23-30.
Kahneman, D. (2011). *Thinking, Fast and Slow*: Farrar, Straus and Giroux.
Kyazze, L. (2010). Cooperatives: The Sleeping Economic and Social Giants of Uganda. *Coop Africa Working Paper No.15*: ILO Country Office for the United Republic of Tanzania, Kenya, Rwanda and Uganda. 28 pp.
Lin, J. Y. & Nugent, J. B. (1995). Chapter 38 Institutions and economic development. In Jere, B. & Srinivasan, T. N. (eds) vol. Volume 3, Part A *Handbook of Development Economics*, pp. 2301-2370: Elsevier.
Lindstad, O. (2001). I støpeskjeen: Rapport om jordbrukssamvirket i Uganda 1913-2000: Det kgl. selskap for Norges vel.
Maignan, C., Ottaviano, G., Pinelli, D. & Rullani, F. (2000). *Bio-Ecological Diversity vs. Socio-Economic Diversity: A Comparison of Existing Measures*: Fondazione Eni Enrico Mattei, Working Papers: 2003.13. Unpublished manuscript.
Markelova, H., Meinzen-Dick, R., Hellin, J. & Dohrn, S. (2009). Collective Action for Smallholder Market Access. *Food Policy*, 34 (1): 1-7.
National Agricultural Advisory Services Programme. (2013). Cumulative Progress Report FY 2011/2012 - 2012/2013. *Cumulative Progress Report*: NAADS. 37 pp.
North, D. (2008). Institutions and the Performance of Economies Over Time. In Menard, C. & Shirley, M. M. (eds) *Handbook of New Institutional Economics*, pp. 21-30. Berlin: Springer-Verlag.
Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*. Cambridge, Mass.: Harvard University Press. 186 pp.
Ostrom, E., Gardner, R. & Walker, J. (1994). *Rules Games and Common - Pool Resources*: University of MICHIGAN Press.
Palmer, R. R., Colton, J. G. & Kramer, L. (2007). Empires into Nations: Africa and the Middle East after the Second World War. In *A history of the modern world*, pp. 945-994: Knopf.
Poteete, A. R. & Ostrom, E. (2004). Heterogeneity, Group Size and Collective Action: The Role of Institutions in Forest Management. *Development and Change*, 35 (3): 435-461.
Ruttan, V. W. & Hayami, Y. (1984). Toward a Theory of Induced Institutional Innovation. *The Journal of Development Studies*, 20 (4): 203-223.

Shirley, M. M. (2008). Institutions and Development. In Menard, C. & Shirley, M. M. (eds) *Handbook of New Institutional Economics*, pp. 611-638. Berlin: Springer-Verlag.
Uganda Bureau Of Statistics. (2006a). Analytical Report: Population Size and Distribution. *2002 Uganda Population and Housing Census*. Kampala: Uganda Bureau of Statistics. 60 pp.
Uganda Bureau of Statistics. (2006b). Report on the Socio-Economic Module. *Uganda National Household Survey 2005/2006*. Kampala. 195 pp.
Uganda Bureau Of Statistics. (2014). *The Uganda National Panel Survey (UNPS) 2011/12: Basic Information Document*. The Uganda National Panel Survey (UNPS). Kampala. Available at: http://siteresources.worldbank.org/INTLSMS/Resources/3358986-1233781970982/5800988-1265043582346/6752587-1388762908476/UNPS_2011_Basic_Info_Doc_Rev2014Feb.pdf (accessed: 05.03.2014).
Wooldridge, J. M. (2002). *Econometric Analysis of Cross Section and Panel Data*. London: MIT Press. 735 pp.
Wooldridge, J. M. (2009). *Introductory Econometrics: a Modern Approach*. Mason, Ohio: South-Western Cengage Learning. 865 pp.

Questionnaires from the World Bank LSMS-ISA data:

- Community questionnaire 2010/2011:

  http://siteresources.worldbank.org/INTLSMS/Resources/3358986-1233781970982/5800988-1265043582346/6752587-1364906164022/UNPS.Community.Qx.22092010.pdf (accessed: 13.05.2014)

- Household Questionnaire 2010/2011:

  http://siteresources.worldbank.org/INTLSMS/Resources/3358986-1233781970982/5800988-1265043582346/6752587-1364906164022/UNPS_2010-11_Household_Questionnaire.pdf (accessed: 13.05.2014)

- Community questionnaire 2011/2012:

  http://siteresources.worldbank.org/INTLSMS/Resources/3358986-1233781970982/5800988-1265043582346/6752587-1388762908476/Uganda2011-12HouseholdQuestionnaire.pdf (accessed: 13.05.2014)

- Household Questionnaire 2011/2012:

http://siteresources.worldbank.org/INTLSMS/Resources/3358986-1233781970982/5800988-1265043582346/6752587-1388762908476/Uganda2011-12CommunityQuestionnaire.pdf (accessed: 13.05.2014)

Appendix A

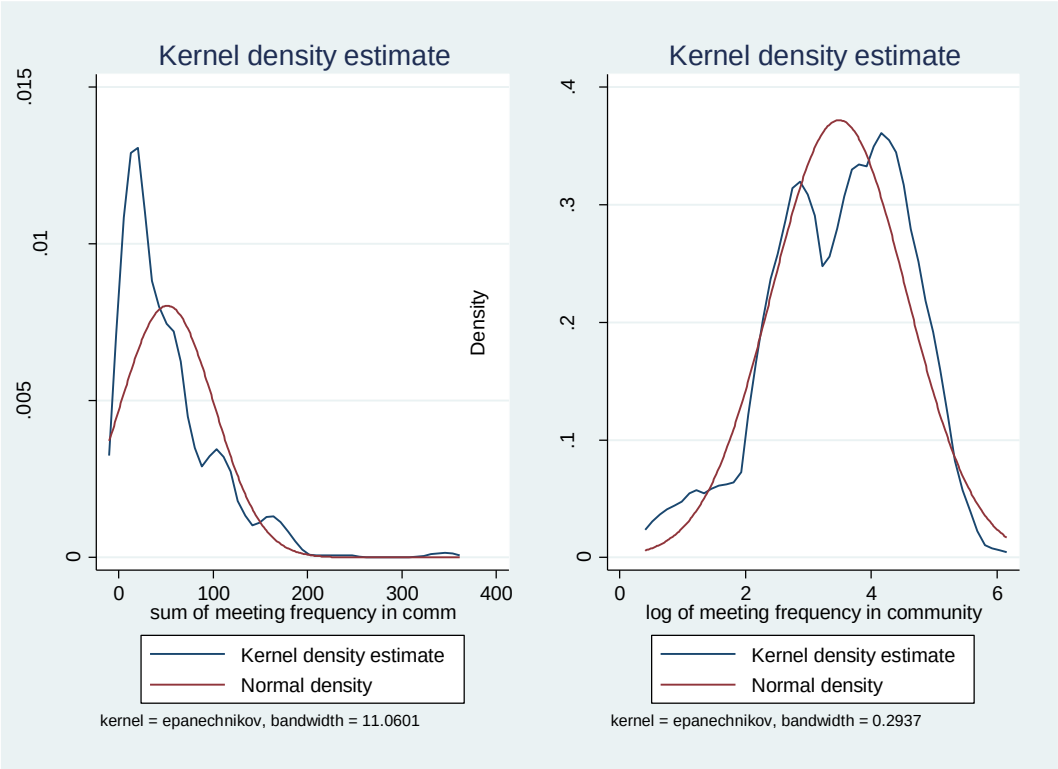
A1: Summary of Within- and Between Variations

Table A1. Summary of Within- and Between Variations of Variables

Variable		Mean	Std. Dev.	Min	Max	Observations
noorg	overall	7.4152	15.5956	0	140	N = 460
	between		13.9324	0	140.0000	n = 289
	within		9.2240	-44.5848	59.4152	
smfreq	overall	42.9913	49.2565	0	350.0000	N = 460
	between		44.3097	0	350	n = 289
	within		22.0647	-63.5087	149.4913	
nohh	overall	357.6619	405.9450	25	3000	N = 562
	between		394.6461	46	3000	n = 285
	within		109.9224	-913.838	1629.162	
northern	overall	0.2270	0.4192	0	1.0000	N = 630
	between		0.4173	0	1.0000	n = 322
	within		0.0000	0.226984	0.226984	
eastern	overall	0.2206	0.4150	0	1.0000	N = 630
	between		0.4173	0	1	n = 322
	within		0.0000	0.220635	0.2206	
western	overall	0.2254	0.4182	0	1	N = 630
	between		0.4173	0	1.0000	n = 322
	within		0.0000	0.225397	0.2254	
migshare	overall	0.8276	0.1433	0.25	1.0000	N = 617
	between		0.1317	0.25	1.0000	n = 313
	within		0.0564	0.56491	1.090272	
elf	overall	0.3296	0.2918	0	1.0000	N = 582
	between		0.2804	0	1	n = 320
	within		0.0850	-0.17039	0.8296	
gini	overall	0.5591	0.1103	0.3362	0.87916	N = 503
	between		0.1001	0.34583	0.8792	n = 254
	within		0.0474	0.353484	0.7648	
sector	overall	0.4440	0.2947	0	1	N = 594
	between		0.2847	0	1	n = 303
	within		0.0818	0.09221	0.795758	
timewf	overall	3.7404	1.9205	0	10.86	N = 565
	between		1.7669	0	8.145909	n = 314
	within		0.7730	0.850274	6.630577	
maint	overall	0.8480	0.1817	0.033387	1	N = 570

	between		0.1572	0.192201	1	n =	318
	within		0.0983	0.402211	1.293889		
ingo	overall	0.4956	0.8527	0	5	N =	450
	between		0.7726	0	4.5	n =	287
	within		0.3834	-1.50444	2.495556		
bankmin	overall	58.3493	64.4220	0	360	N =	375
	between		57.1238	2	270	n =	259
	within		24.8937	-76.6507	193.3493		
maproduct	overall	42.6216	40.3896	0	300	N =	403
	between		36.1412	0	180	n =	265
	within		18.5735	-99.8784	185.1216		
commonr	overall	0.3973	0.4899	0	1	N =	438
	between		0.4658	0	1	n =	281
	within		0.1790	-0.10274	0.89726		

A2: Meeting Frequency Distribution



Kernel Density of log and non-log meeting frequency variables.

A3: Model 1a Including Time Spent on Non-market Activities

Table A2: Model 1a with *timewf* included

Variable	
nohh	**0.0003****
	(0.0002)
	1.97
northern	**0.8533*****
	(0.2220)
	3.84
eastern	0.2496
	(0.2469)
	1.01
western	0.1674
	(0.2295)
	0.73
elf	0.1969
	(0.2685)
	0.73
gini	-0.0773
	(0.5475)
	-0.14
sector	0.0179
	(0.3182)
	0.06
maint	0.5116
	(0.4469)
	1.14
ingo	**0.1136***
	(0.0663)
	1.71
commonr	0.0099
	(0.1471)
	0.07
migshare	0.3138
	(0.5237)
	0.6
timewf	0.0066
	(0.0462)
	0.14
constant	-0.3629

	(0.6895)
	-0.53
Log likelihood	-239.876
LR χ^2	40.99
Pseudo R^2	0.079
Prob> χ^2	0.000
Number of observations	134

***Significant at 10% **Significant at 5% ***Significant at 1%.**
Standard errors are given in parentheses and t-values are given below.

A3: Model 1b Excluding Bank Access

Table A2: Model 1b with *bankmin* excluded

Variable	
nohh	**0.0005****
	(0.0002)
	2.46
northern	**0.9115*****
	(0.2446)
	3.73
eastern	0.2852
	(0.2746)
	1.04
western	0.3078
	(0.2812)
	1.09
elf	0.1598
	(0.2937)
	0.54
gini	-0.1733
	(0.5901)
	-0.29
sector	-0.1068
	(0.3230)
	-0.33
maproduct	-0.0004
	(0.0016)
	-0.25
ingo	**0.1860****
	(0.0761)
	2.44
commonr	-0.0196
	(0.1611)
	-0.12
migshare	0.4382
	(0.5200)
	0.84
constant	-0.0373
	(0.6266)
	-0.06
Log likelihood	-211.235
LR χ^2	43.48
Pseudo R^2	0.093

Prob> χ^2	0.000
Number of observations	119

***Significant at 10% **Significant at 5% ***Significant at 1%.**
Standard errors are given in parentheses and t-values are given below.

A4: Model 2b Excluding Bank Access

Table A4 **Two-Part Panel Model for Organizational Activity using Market Access variable but not Bank Access (Model 2b without *bankmin*)**

Variable	Pooled Probit for positive number of organizations (Part 1)	Pooled OLS for meeting frequency (Part 2)	Random Effects GLS for meeting frequency (Part 2)
y2012	0.2911	0.0422	-0.0221
	(0.2409)	(0.1438)	(0.1372)
	1.21	0.29	-0.16
nohh	0.0000	0.0000	0.0001
	(0.0004)	(0.0002)	(0.0002)
	0.05	0.03	0.53
northern	-0.2115	0**.6289***	**0.6741****
	(0.4139)	(0.3207)	(0.3351)
	-0.51	1.96	2.01
eastern	-0.6888	0.1764	0.2398
	(0.4353)	(0.3400)	(0.3412)
	-1.58	0.52	0.7
western	0.0170	0.1562	0.1296
	(0.4470)	(0.3335)	(0.3378)
	0.04	0.47	0.38
elf	-0.7889	**0.6306***	0.4775
	(0.5028)	(0.3249)	(0.3280)
	-1.57	1.94	1.46
gini	**-3.1011*****	0.0059	-0.1278
	(1.1665)	(0.6693)	(0.6712)
	-2.66	0.01	-0.19
sector	0.7723	-0.5692	-0.3808
	(0.6171)	(0.4023)	(0.3975)
	1.25	-1.41	-0.96
maproduct	0.0003	0.0008	0.0009
	(0.0029)	(0.0017)	(0.0016)
	0.09	0.5	0.53
commonr	0.0162	**-0.4446***	-0.3138
	(0.3730)	(0.2457)	(0.2377)
	0.04	-1.81	-1.32
migshare		-0.3963	-0.3742
		(0.7023)	(0.6901)
		-0.56	-0.54
ingo	0.3537	0.1341	0.0852
	(0.2461)	(0.0993)	(0.0903)
	1.44	1.35	0.94

constant	**3.0765*** **	**3.7349*** **	**3.6616*** **
	(0.7481)	(0.7532)	(0.7441)
	4.11	4.96	4.92
Prob> χ^2	0.038		0.000
Prob> F		0.000	
Number of Observations	235	215	215

***Significant at 10%, ** Significant at 5%, ***Significant at 1%.**
Cluster-robust standard errors are given in parentheses and t-values are given below.

Appendix B

B1: Research Introduction letter from IITA

International mailing address
IITA c/o Lambourn (UK) Limited
Carolyn House, 26 Dingwall Road
Croydon CR9 3EE, UK

Headquarters
IITA-Nigeria
Oyo Road PMB 5320
Ibadan Nigeria
Tel.: (+234 2) 241 2626
Fax.: (+234 2) 241 2221

IITA-Uganda
15 Naguru East Road,
Naguru
P.O.BOX 7878
Kampala Uganda
Tel: +256 41 2850604
Fax: +256 41 285079

Friday, July 05, 2013

THE EFFECT OF MARKET INTEGRATION ON COMMUNAL ORGANIZATION IN UGANDA

Chairperson LC V
District .....
Chairperson LCI .....
Rice Scheme/Farmers' Association .....

This is to introduce to you **Ms. Julie Kilde Mjelva, Mr. Per Refseth** and **Mr. Patrick Karugendo** from the International Institute of Tropical Agriculture (IITA). IITA is an international non-profit research-for-development (R4D) organization created in 1967, governed by a Board of Trustees, and supported primarily by the Consultative Group of International Agricultural Research (CGIAR). Our R4D is anchored on the development needs of sub-Saharan Africa. We develop agricultural solutions with our partners to tackle hunger and poverty by reducing producer and consumer risks, enhancing crop quality and productivity, and generating wealth from agriculture. Please visit http://www.iita.org/ for more information on IITA. IITA works closely with national organizations like MAAIF, NARO, Makerere University and other private organizations involved in agriculture.

Julie, Refseth and Patrick are conducting research on the **Effect of Market Integration on Communal Organization in Uganda**. Market integration can change how community members relate to each other and how they cooperate to solve conflicts in the community. Market transactions rely on reciprocal agreement and cooperation between the parties involved. Thus, this research is aimed at identifying whether market integration increases or reduces cooperation among the members in a community. Any assistance accorded to Julie, Refseth and Patrick will be highly appreciated. If you have any questions, don't hesitate to call me at +256(0)414285060/4 or 0757787880

Sincerely,

Janet Anyango
Administrative Officer
IIT – Uganda

INTERNATIONAL INSTITUTE OF TROPICAL AGRICULTURE
IITA - UGANDA
P. O. Box 7878, Kampala, Uganda
Tel: (256 - 41) 4285064
Fax: (256 - 41) 4285079
E-mail: iita@iita-uganda.org

B2: Questionnaire for Group Interview

Interview of Focus group: Members of an organization

Objectives:

- **Get an understanding of the general cooperation and loyalty for the village**
- **Get an insight into how groups and organizations in the village functions**
- **Learn how organizations are established**
- **See what common goods are provided by the organization**
- **Look at issues related to coordination of the organizations and problems of free riding**

Introduction to the research

Introduce ourselves.

We are from the International Institute of Tropical Agriculture (IITA) and the University of Life Sciences in Norway, and we will study the effect of market integration on communal organization in Uganda. Therefore, we would like to ask you some questions to understand how your organization functions and whether you have had any problems related to the organization.

We will use data collected by the World Bank and Uganda Bureau of Statistics, but your information can help us to understand more about how your village is organized and how you cooperate.

Your participation is voluntary, and you may decide not to participate. All information you provide will be confidential. There will be no way of knowing that you have provided this information.

This is a group interview. Please feel free to debate, disagree and critique. There is no right or wrong way of thinking.

The interview will take approximately 2 hours.

Do you agree to participate?

1. Participants introduce themselves to the group. Name and whether you have any specific role/position in the organization.
2. General questions about cooperation in the village

1. What traditions of giving or sharing exist within your village?	Or: How do people help each other in your village? E.g. in case of a shock.		
2. How about cooperation? In what ways does your village work together?			
3. Do you see a need for more cooperation in any of the following areas?	No need for more cooperation	Some need for more cooperation	Major need for more cooperation
Marketing			
Access to credit			
Exchange information			
Jointly manage a resource			
Health			
Education			
Road maintenance			
Other, specify			

4. What are the obstacles or barriers to working together?	List the obstacles, and use stones to make participants range them according to their importance.		
5. In what ways does your village work with other villages?	E.g. resource sharing.		

3. Overview of all organizations in the village

1. Can you list the different organizations of the village and categorize them according to their purpose?	
2. Which organizations have the most members? 3. Which have the fewest members?	
4. Which organizations are most important for the village? 5. What benefits do these organizations provide for the village?	

4. Participation in organizations and market access

1. Have you observed any change in the degree of participation in village organizations over time? 2. If yes, would you say that it has become easier or more difficult to get people to participate now than earlier?	E.g. number of meetings, activities, number of people joining these.

3. If easier or more difficult: What do you think are the reasons for this?	if many reasons: use stones to make participants range them according to their importance.
4. What types of roads exists from the village to the nearest market for agricultural goods?	Tarmac, Murram, Graded, Seasonal…
5. How would access to a better road affect your interest in participating in village organizations?	E.g.: If you had a tarmac road, would your interest in joining the different organizations decrease? In that case: what organizations would be affected?

6. Factual questions about the organization which participants are members of

1. When was the organization established?	
2. Who took the initiative to establish the organization?	
3. How many members does the organization have?	
4. What are the terms of membership?	
5. How is the organization structured?	E.g. board, committees etc.
6. How often do the different committees of the organization meet?	
7. What are the main activities of the organization?	

8. Participation in the organization which participants are members of

1. What benefits do you get from being members of this organization?	
2. Do you think more people should join the organization?	
3. What do you see as the reasons for why villagers in the target group choose not to be members of the organization?	List these reasons and use stones to make the participants range them according to their importance.
4. Have any members ever quit the organization? 5. Did they give any reasons for this?	

7. Rules and Enforcement

1. Are there any rules for the members of the organization? 2. What kind of rules?	If NO: Go directly to next section
3. Can you remember anyone breaking these rules the last 5 years? *4.* What did the other members of the organization do when this was discovered?	

8. Problems

1. What kind of problems have you had in the organization?	Use stones to range the problems according to how harmful they are for the organization.

2. What have you done to solve the problems?	List efforts.
3. Which efforts have worked? How did they work?	

9. Draw a resource map of your village.
10. Round up and thank all the participants.
11. Do the participants have any questions?

B3: Questionnaire for LC1 Chair Person or other leader of village

Objectives:

- **Get basic information about the village related to the overall analysis of LSMS-ISA data**

Introduction to the research

We are from the International Institute of Tropical Agriculture (IITA) and the University of Life Sciences in Norway, and we will study the effect of market integration on communal organization in Uganda. Therefore, we would like to ask you some questions to understand how your organization functions and whether you have had any problems related to the organization.

We will use data collected by the World Bank and Uganda Bureau of Statistics, but your information can help us to understand more about how your village is organized and how you cooperate.

Your participation is voluntary, and you may decide not to participate. All information you provide will be confidential.

The interview will take approximately 30 minutes.

Do you agree to participate?

Note: date, village

1. Village Information

2. How many households and individuals currently live in the village?	
3. Can you list the different ethnic groups in the village? 4. Can you give an approximate share of people from each ethnic group?	
5. Approximately how large share of the population have immigrated to the village during the last 5 years? 6. What have been the reasons for this?	
7. Approximately how large share of the population have emigrated from the village during the last 5 years? (departures) 8. What have been the reasons for this?	

2. Market Access

1. What is the distance from the village centre to the nearest market for agricultural products (in *km* and in *minutes* by *most common means of transport*)?	Km		Minutes		Transport	
2. How far is it from the village to the district headquarter?	Km		Minutes		Transport	
3. On average, how frequently do most residents of the village go to a market for agricultural goods?	Almost every day	2-4 times a week	Once a week	Once every two weeks	Once a month	More seldom

3. Share of resources sold at market

1. Approximately how large share of the agricultural products from the village is sold to people outside of the village?	Less than 5 % If easier use fractions: 0	5-25 % 1/4	26-50 % 1/2	51-75% 3/4	More than 75% Almost everything

4. Use of community resource

1. Does the village own any communal land? (Crop land, forest, pasture, other)	If NO: Go directly to section 7 If YES: How much land? What kind of land?
2. How has the rules of access and use of the land been determined?	
3. What forms of restrictions does the village place on its members regarding access and use of the land?	E.g. time restrictions, limitations on numbers of users at a given time, rotation…
4. How does the village ensure compliance of the rules for the land use?	E.g. fine, confiscation of tools, social sanctions etc.

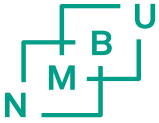
5. Government interventions

1. In the past 5 years, have the government taken over any communal resources? 2. If yes: What was the reason for this?	

3. During the past 5 years, has the community been granted control over any resources?	

Round up and thank the participant.

Does the participant have any questions?



Norwegian University
of Life Sciences

Postboks 5003
NO-1432 Ås, Norway
+47 67 23 00 00
www.nmbu.no