Chapter 10
Conclusions and implications

10.1 Introduction

This thesis explores and describes the contractual relationships of smallholder farmers (SHFs) and factory owners (FOs) in four agro-industries of Tanzania. It explains the problems in these relationships and the use of governance instruments in these cases to solve these problems. It assesses the (relative) efficiency of the agro-industry institutions. The relationships between SHFs and FOs and the associated problems are studied in an economic organisational framework. Furthermore, in this thesis a theoretical model is developed to describe the behaviour of farmers in this relationship. With this economic organisational approach, the actual behaviour of participants in four cases in the agro-industries of sugarcane, tobacco, and tea has been studied. The research questions are as follows:

1. What contractual relationship exists between factory owner (FO) and smallholder farmer (SHF)?
2. What governance problems come up in the relationship between FO and SHF?
3. Why do these governance problems arise?
4. What lessons can be drawn to facilitate the achievement of efficiency in the agro-industry institutions of Tanzania?

In order to answer the first question, chapter 2 gives a description of the development of the agro-industry institutions in Tanzania. In chapter 3, the economic organisational framework is discussed, which is used as the theoretical lens with which the agro-industries are studied. It includes a short discussion of the main theories in the literature on economic organisation, focusing on property rights theory, transaction cost theory and agency theory. These theories provide the basis for developing a model describing the behaviour of farmers and for studying the contractual relationships in Tanzania. To answer the second research question, four cases in the agro-industry in Tanzania are discussed in the chapters 5 to 8. In each of these cases, specific
problems in the relationship are discussed and addressed from the viewpoint of the framework discussed in chapter 3. The case chapters contain a first assessment as to why these problems come up. Chapter 9 tackles this issue more fully via an extensive cross-case analysis. This yields explanations why these problems occur and what governance instruments have been used in order to solve these problems. Chapter 9 ends with an assessment of the (relative) efficiency of the economic organisation of the relationships in the four agro-industries. Below the research question are addressed.

10.2 The types of contract

The types of the contractual relationships between the SHFs and the FOs includes the pricing of the crops, quality and measurements, operating boards, credit and services provision, social services provision and the transportation of the farm produce.

The pricing of the crops: The pricing system is set by the Laws of Tanzania for each of the three crops. The respective boards (the Sugar Board of Tanzania, the Tanzanian Tobacco Board, and the Tea Board of Tanzania) negotiate annually with the members of the cooperative apex societies and factory owners. The system not only sets prices but also differentiates that to different qualities of the produce.

Quality and measurement: Quality of farm produce determines the prices that FOs can obtain in the (world) markets. In two cases (MSEL and AOTL), this is directly translated to the prices SHFs can earn on their crops. It is in these two cases that the measuring of the quality is problematic. The problem of attributing sucrose levels to either individual farmers (MSEL), or a very complex grading system without transparent setting of the grade (AOTL). In the two other cases, quality no longer fluctuates (tealeaves in TATEPA, sugarcane in KSCL). Intensive forms of monitoring need to ensure a uniform good quality of the produce. In TATEPA, this monitoring system has developed to such an extent that uniform quality is ensured. In KSCL, the monitoring cannot prevent opportunistic diversion of fertiliser to other crops.

Operating board: The FOs in the agro-industry organises the economic activities of the value chain through Operating Boards (OBs) although in different forms. In two cases, the OB sets up harvesting schedules, organises the harvesting and the transport of crops (MSEL, KSCL). In KSCL, the OB may decide whether to include a farmer in
the schedule or to discard the produce in case of low quality. In two cases, the FOs outsource part of this service to another outside entity (AOTL and TATEPA).

Credit services provision: In all four cases, the respective agro-industry Acts oblige the FOs to supply fertilisers to the SHFs on credit. Although the way in which credit is provided in these cases helps to overcome endowment problems facing the SHFs, it is not a full success as it interacts with other problems in the cases, especially the measurement of sucrose levels (MSEL) and the grading of tobacco (AOTL).

Social services provision: The social services concern the development of infrastructure such as the construction of feeder roads, the building of schools for farmers’ children and the establishment of health centres. Although social services are provided by government agencies, donor agencies, FOs and contracted agents, the level of services differ among the cases. TATEPA provides the higher level of social services, partly as it is obligated to do so as a fair trade organisation.

Transportation: In all four cases, transport facilities are outsourced. During the harvest season MSEL contracts transporters from any interested party/company owning trucks, KSCL contracted one company doing all its transport activities (UNITRANS). In these two cases, transporters haul sugarcane from the farm. AOTL and TATEPA only transport from market centres to the factory as SHF bring their produce themselves to that centre. In KSCL and TATEPA, the FOs contracted a new partner upon the discovery of opportunistic behaviour by drivers.

Governance Problems

The contracts in the agro-industry institutions are affected by governance problems. These problems occur due to bounded rationality, information asymmetry and opportunism leading to moral hazard, adverse selection, hold out and collective action problem.

Moral hazard: Moral hazard affects three cases in the process of execution of the contract, such as fire accidents (MSEL), diverting fertilisers (KSCL) and defaulting on loans for subsidised fertilisers (AOTL).
Adverse selection: Problems associated with adverse selection are indicated in two cases due to attractive contractual terms (KSCL) and due to a lack of screening of members of the cooperative society (AOTL).

Hold out problem: Hold out problems are indicated in the case MSEL, where farmers strive to sell in the dry season and not in the rainy season, mainly due to the pricing scheme and the measurement problem.

Problems associated with collective action: Problems of collective action occur in AOTL, because of free riding of members when they need to repay debts in the farmers’ group. It also occurs in MSEL where farmers set fire to their fields without coordinating their actions with other farmers. This results in a harvesting schedule problem for the OB, which it can only partly solve.

10.3 Why do these problems arise?

The problems discussed above arise because of different factors; these are considered below.

Causes for moral hazard: In MSEL, the causes are the pricing scheme, the measurement problem, the fire accident clause, the outstanding loan for subsidised fertiliser, the limited capacity of the factory and the seasonal fluctuation in sucrose levels. These together give rise to the opportunistic behaviour of SHFs trying to make sure that they can harvest at the height of the dry season. In KSCL, the fixing of the sucrose level on 9% and the quota system makes the SHF to neglect sugarcane and divert fertiliser to other crops. In AOTL, easy access to credit via ATTT, lack of farming skills, and the possibility to escape liability result in a rigging of the system in which farmers opportunistically default on their contractual obligations. In TATEPA, such opportunistic problems do not crop up as the screening and monitoring system, including peers’ monitoring, provide pressure to adhere to an implicit contract.

Causes for adverse selection: Adverse selection is indicated at KSCL and AOTL. At KSCL, the Kilombero valley is fertile and abundant and indeed farmers have been flocking to the valley over the years. There is no screening whatsoever at KSCL. Without screening, opportunistic SHFs divert fertilisers from sugarcane to using it on maize or rice in their farms. At AOTL, adverse selection comes up as the primary
cooperative society (PCS) accepts all applicants and ATTT accepts all members of the PCS. ATTT is then confronted with farmers who use the fertiliser on credit for their own interest.

**Causes for hold out problems:** Due to a lack of information at MSEL regarding the measurement and assignment of sucrose levels, farmers hold out for the dry season in order to maximise their return on investment.

**Causes of collective action problems:** At MSEL, collective action occurs because the MOA and MSEL lack information concerning the sucrose levels. Some members of MOA cause a fire accident in order to force the harvesting of their sugarcane. This action leads to pressure on the harvesting schedule. At AOTL, opportunistic SHFs receive fertilisers on credit in a group, but after receiving the fertilisers run away. The other group members are not able to, or will not discipline these free riders as they are, e.g. neighbours or even relatives, and the fact that next year they themselves may be the farmers that end up in debt due to the grading problem.

### 10.4 Lessons to improve agro-industry institutions in Tanzania

The lessons that can be drawn from these case studies are that these problems can be eliminated if farmers could be motivated to follow the transformation path shown in figure 18. Achievement of efficiency in this context might occur through the promoting of farmers to become independent SHFs. Such SHFs are able to negotiate privately with FOs at lower transaction costs. In order to become independent farmers, the FOs and cooperative society need to take into account the type of SHF transacting with them. The governance instruments that can be used are monitoring, screening, collective bargaining and incetnives.

**Monitoring:** Monitoring mitigates moral hazard. At TATEPA, monitoring is intensified through TRIT, VTC and FLO members. Although TATEPA-like forms of monitoring may be used in order to prevent fire accidents in MSEL, first the adverse incentives in that relationship need to be removed. At KSCL, leaving the 9% and quota problem apart, KCT might intensify the monitoring of SHFs throughout the sugarcane growing seasons in order to mitigate the diverting of fertiliser. Furthermore, with the monitoring KCT might indicate to SHFs that it will advice the OB whether or not to have their fields harvested. At AOTL, ATTT might intensify the monitoring of
the use of fertilisers. For that to work ATTT first needs to constrict the possibility that farmers set up farms anywhere in the pori (virgin forest). This possibility might make the monitoring of farmers that run away or defect to the pori prohibitively costly.

**Screening eliminates adverse selection problems.** TATEPA screens potential members and selects only those who adhere to good farming practices in Rungwe. Screening minimises the changes of an adverse selection of parties. It is also an incentive to the RUTECO SHFs to change as they see RSTGA members become successful tealeaves farmers. If KSCL would decide to screen the ROA and KCGA members and select only those who adhere to good farming practices, other members who are not selected, may learn from those who adhere to the contract. Embracing good farming practices may then become the norm in the valley. However, in order for screening and monitoring to work effectively, KSCL needs to address the problems due to the quota rule. The same applies to AOTL. Screening the members of PCS on good farming practices might result in not selecting many poor farmers. This problem has to be addressed in a different manner. For instance, farmers without good grades need to accept intensive monitoring by extension officers of ATTT, assessing the tobacco in the farm before harvesting (costs might be covered by an additional charge). Farmers wanting to start tobacco farming, but with whom ATTT runs the risk of opportunistic defaulting, might be offered a training contract on a plot of farmland that can be easily monitored and controlled by ATTT. After proving their farming practices, they might be allowed to deliver tobacco leaves to ATTT as independent farmers. They then can set up their own farms.

**Collective bargaining mitigates hold out and collective action problems.** In all cases, the collective bargaining system with the cooperative societies of Tanzania is operative. It minimises negotiation and haggling costs on local and district levels and leads to uniform pricing schemes across the country. Unfortunately, the TATEPA case also shows a politicised cooperative society system, eliciting favouritism and bribery. The cooperative system might fill a bargaining need at the national level, but it might add costs to the system on lower levels.

**Incentive schemes matter if they are clearly understood by the targeted beneficiaries (i.e. SHFs).** The four cases do illuminate the fact that the pricing scheme is an important incentive for farmers. However, it also shows that without transparency and information sharing, the scheme might easily have adverse effects (MSEL). Adding
to a complex grading system, as is the case in AOTL, aggravates the problems. In MSEL, the measurement system needs to be developed further so that assignment of sucrose levels to individual farmers occurs correctly and in a transparent way. In AOTL, either the complex grading system needs to be simplified, or those grading the tobacco should be completely trustworthy to the SHFs. In that latter case, no change in the system is necessary. In the case that such a form of trust cannot be attained, the grading result should be shared with the SHF at the *gulio* and not be subjected to change anymore in a final round in the factory. In KSCL, the combination of the 9% rule and the quota system inhibits efficiency. If the valley is simply too big and too fertile for one sugar company to service, other factories might be let in, or farmers might be able to grow and sell other crops. As these may not be cash crops but food crops, the government policy for subsidising fertiliser only for cash crops, puts food crops at a disadvantage.

### 10.5 Public policy implications

The public policy recommendations that follow from this study concentrate on the promotion of the cooperative societies, mitigating the problem of farmers running away (farmers category A), mitigating opportunistic farmer behaviour of diverting fertilisers, and apportioning fertilisers. The last policy recommendation is on promoting independent SHFs who are potential future investors in agriculture who can create jobs for themselves and for the poor SHFs.

**Promoting cooperative societies**

All farmers and agro-industry firms in Tanzania operate through cooperative societies. The cooperative societies started during the colonial rule and they continued through the Ujamaa-African socialism until privatisation. Cooperative society institutions have some advantages and disadvantages when it comes to achieving efficiently governed agro–industry institutions. One important advantage is organising the SHFs in the grassroots communities. The presence of cooperative societies minimises transaction costs of searching the parties to deal with. The cooperative society institutions are the backbone of the rural economic system, allowing their members to learn-by-doing in Tanzania. These skills are not only helpful to grow cash crops, but also to grow other food crops. Cooperative societies, therefore, might become a place for training. If possible, they might
change to become centres for businesses in the districts where the members attend training to enhance their skills.

**Mitigating run away behaviour (farmer category A)**

The AOTL case has revealed the problem of farmers who “run away.” Although three different parties do the grading of tobacco, the final grade is set and the decision to discard the produce is made in the absence of the SHFs. To eliminate the mistrust that has arisen, the government of Tanzania can help changing the practice by amending the Tobacco Industry Act (2001), to incorporate a clause, which prescribes that the final grading must be set at the *gulio* in the presence of the SHF, and he must be provided with valid notification of that grade.

**Mitigating the behaviour of diverting fertilisers (farmers category B and C)**

As the cases KSCL and AOTL have shown, diverting fertilisers might be a rational choice for SHFs to mitigate the consequences of uncertain future contractual claims. The conditions of the Sugarcane Industrial Act (2001), and the Tobacco Industry Act (2001), direct SHFs to choose planting tobacco, sugarcane or other cash crops. Those who divert fertiliser from these cash crops to food crops do so because they do not receive such subsidised fertiliser to grow food crops. For example, maize and rice (see case KSCL) and groundnuts (see case AOTL) are food crops, which the SHFs can trade in the domestic market. If SHFs might obtain subsidised fertiliser for these and several other indigenous crops then their revenues generate (additional) income to the SHFs. This might help abating the problem of diverting fertilisers. The other option is to eliminate the subsidy on fertiliser altogether, but then SHFs might not use the fertiliser at all for the growing of food crops as that might be too expensive and the net margin for SHFs on cash crops will suffer.

**Promoting SHFs to adhere to the contract (category D) and independent SHFs (category E)**

Achieving efficiency depends in part on the adherence to the contract. Keeping promises creates trust among individuals who carry out transactions. At TATEPA, the screening and monitoring effort developed trust between the SHFs and the FO. The TATEPA case is a good example of promoting independent SHFs, who were organised
via the non-governmental society RSTGA. RSTGA replicates the formal cooperative structure of which RUTECO is part. With this setup TATEPA can screen SHFs on farming practices and circumvent the official cooperative structure. Furthermore, due to this setup, FLO membership became possible and with that the fair trade market opened up.

This use of informal rules promote adherence to the contract and in the end promote independent SHFs. One important remaining question is whether this form of organising might be extendable to other cash crops in Tanzania. More generally, the government of Tanzania might contemplate promoting the following.

**Enforcement of informal rules:** in order to overcome problems associated with moral hazard, adverse selection, hold out problem, and collective action problems, participants need to be able to enforce informal rules. In TATEPA, informal rules were upheld via the organisation of farmers in tea villages and the monitoring of farmers via peers, contracted experts, and FLO outsiders.

**Encourage screening:** Allowing cooperative societies, probably in cooperation with FOs, to screen SHFs might mitigate defaulting behaviour. If such screening is coupled with a policy to train farmers who do not yet meet the criteria, the main disadvantage of screening in that it leaves people out, might be mitigated and even stimulate poor farmers to start training in order to adhere to good farming practices.

**Set an incentive scheme:** The incentive scheme should relate to the specific character of agro-industry farm produce (e.g. sugarcane, tobacco, tea, etc.) in order to stimulate good farming behaviour. However, if it confounds with other (institutional and agronomic) problems, the incentive scheme might stimulate unwanted behaviour. In order to prevent such an inefficient outcome the research in this thesis has shown that an integral approach is needed. In specifying a scheme these other issues have to be taken into account.

**Encourage bonding:** Incentive schemes are important to motivate SHFs, but their bond with the factory might be strengthened further via representation mechanisms and even share participation plans. The TATEPA case shows that with some additional training and support it will increase their feeling of ownership.
10.6 Further Research

Tanzania is a country in which 120 tribes live, each tribe with its own norms and values, embedded in the Kiswahili cultural context. Tanzania is a Swahili speaking country, characterised by institutional transformation processes that have been going on from colonial periods to current trade liberalisation. One of these important transformations was the change to Ujamaa-African socialism, which failed to alleviate income poverty and poverty of mindset (leading to short planning horizons). Currently, the country is still in a transition from Ujamaa-African socialism to market liberalisation. In order to transform and design efficiently governed institutions, the questions concerning (the definition and enforcement of) property rights and the (informal) execution of contract need to be solved. A law and economics view of these questions, as presented in this thesis, provides insights in the nature of the problems encountered by participants and the complex set of institutional details that shape their behaviour. This study recommends the following areas of further study:

Studying the behaviour of SHFs and their choices with respect to their farming practices. Such a study needs to include the role of incentives in contracts and the way in which a particular type of cash crop influences such incentives. The next step is to provide suggestions on how farmers may move upwards on the transformation path.

In a more general interpretation, such a study may look in more detail at the differences between formal and informal contracting practices in order to find out whether or not such differences might block farmers from going upward on the transformation path.

Apart from the “cash crops” which were established during the British rule, there is a need to study whether or not other income generating crops (i.e. “food crops”) might be integrated into the cooperative societies’ structure and whether or not such crops might be (temporarily) supported in the same institutional manner as the cash crops.

10.7 Summary

This chapter reflects on the research questions taken up in this thesis. The answer to the first research question is found describing the contractual relationships between SHFs and FOs in selected agro-industries of Tanzania. The findings are that these relationships have a
formal as well as informal contractual basis which cover the main issues of pricing of crops, quality and measurement, harvesting organisation via operating boards, credit services provisions, social services provision and transportation of crops. The answer to the second research question is to describe the governance problems that arise within those contracts from an economic organisation theoretical framework. The findings are that the main problems are associated with moral hazard, adverse selection, hold out and collective action.

With regard to the third research question as to why these problems arise, the research findings point to the interplay of case specific reasons together with the behavioural assumptions of opportunism, bounded rationality and asymmetrically distributed or even a lack of information. Moral hazard is found in all cases. For instance, in the MSEL case, farmers opportunistically use the fire accident clause in order to force the harvesting of their crops. Such behaviour is stimulated due to the seasonal fluctuation in sucrose levels, the pricing system and information and measurement problems. In the KSCL case, fertiliser is diverted to other crops due to a quota system and the specific pricing mechanism. In the two cases of KSCL and AOTL, the findings indicate a form of adverse selection. In KSCL, farmers might be attracted to the valley because of its favourable contractual terms. In AOTL, all members of the cooperative society are contracted without any form of screening, making it attractive for SHFs to apply for membership and have (easy) access to subsidised fertiliser. The findings in the MSEL case indicate a hold out problem when farmers did not want to sell in the rainy season, but only in the dry season. Collective action problems come up in MSEL, where the fire accidents could not be controlled by the operating board, and in AOTL, where farmers free ride on the members of the group when they need to repay debts.

Although no definitive efficiency assessment can be provided based on the findings in this thesis, efficiency might increase if problems can be (further) mitigated. From this perspective, the case findings also lead to an answer to the last question: what lessons can be drawn. In MSEL, the main culprit seems to be the measuring of the sucrose level. Solving this would enhance transparency and reward farmers for their true farming efforts. Furthermore, the pressure to sell in the dry season might be mitigated if the pricing system would look at relative instead of absolute performance. However, it takes a rare combination of real agronomic expertise, local knowledge and some economics in order to be able to find a solution to this problem. In KSCL, it is the combination of a fixed sucrose level, the quota system, scheduling and
abundant fertile land that create the behavioural problems. A solution to the measurement problem (as in MSEL) including a pricing system based on relative values, might help solving part of the problems. If the factory cannot increase capacity, it might be better to introduce other cash crops. This would give farmers an alternative and decrease the acreage of sugarcane. In AOTL, the diminishing contractual morale needs to be halted. AOTL needs to start screening, monitoring, and training SHFs extensively in order to stop the process. TATEPA might stand model here for AOTL, although it remains to be seen whether such a model is actually usable in that specific context. As an alternative, AOTL might start contracting the farmers with larger estates only, or it might integrate backwards. The larger farmers are more knowledgeable and more easily monitored than the smaller farmers. These types of solutions will do less to lift poor small farmers out of poverty. TATEPA seems to perform best. Although it has higher administrative costs due to its extensive monitoring effort, the set up of the system has lifted tealeaves farmers to independency and eliminated or circumvented many behavioural problems that are still present in the other cases. The help of the FLO in organising the system cannot be overlooked. It is partly due to the willingness of customers to pay premium prices, that the administrative costs are covered and transparency is forced upon participants.

The chapter gives some public policy implications, e.g. promoting cooperative societies, which help to overcome the endowment problem of the SHFs through training and access to credit. Another implication concerns mitigating opportunistic behaviour of SHFs in lower regions of the transformation path. The chapter also proposes areas for further research, including studying individual behaviour of the SHFs in order to find ways to help them move upwards on the transformation path and studying formal and informal contracting practices that drive farmer behaviour.