Contractual governance in agro-industry institutions in Tanzania
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Chapter 9
Cross-Case Analysis

9.1 Introduction

This chapter compares the findings of the four cases, highlights similarities and differences, and puts forward arguments explaining these. The focus is on the contractual relationships between the smallholder farmers (SHFs) and the factory owners (FOs), the governance problems that come up in this relationship and whether the cases together might point towards a solution to these problems. The contractual relation of SHFs with an FO involves the pricing of the crop, quality and measurements, operating board, credit services provision, social services provision and transportation of crops.

9.2 The contractual relationship between SHFs and FOs

The contracts between SHFs and the FOs comprise the pricing, the quality and measurement, the organisation of the harvesting via the operating boards, and services provided by the FOs. These are discussed below.

Pricing the crops

The value of the crop for the farmer is measured in terms of the net sales income he receives after harvesting. In all four cases, the underlying philosophy of FOs is that more efforts exerted in the farm, using good farming practices, should result in higher quality, and should translate directly into higher sales income for farmers. Pricing, quality control, training, and services are all aimed at increasing the quality of crops next to the amount. Here, the FOs acts as principals, while the SHFs act as agents of the FOs.

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 result of these negotiations are published in newspapers and used in all the contracts of FOs with specific primary cooperative societies. This is a specific set up in the Tanzanian context as the SHFs have been selling their farm produce through the cooperatives since British colonial rule. In three cases, MSEL, KSCL, and AOTL, SHFs sign contracts individually based on the generic pricing terms agreed on the national level. Only in the case of TATEPA, SHFs do not sign the contract themselves. All prices are based on world market prices, although with tea the FLO guarantees a minimum price for the farmer.

Although the process of setting the pricing system is similar, the contracts differ in the way in which prices are set. Differences are related to the nature of the produce. Two of the crops are perishables (sugarcane and tealeaves) which require immediate attention as soon as the SHFs have harvested them, and one is not (tobacco). In all cases, prices depend on quality, based upon the specific farm produce. At MSEL, the price fluctuates according to the sucrose levels in sugarcane. At KSCL, the price is fixed on a minimum level of sucrose in the sugarcane (9% sucrose level). At AOTL, tobacco prices depend on the grades. In the tea industry, prices depends on the grading of tea, but at TATEPA, all harvested tea is of high quality and thus prices are set on the highest grade. At MSEL and AOTL, a farmer’s income thus fluctuates with the quality and quantity of the farm produce, while at KSCL and TATEPA income varies only with quantity.\(^8\)

KSCL started with a similar pricing schedule as MSEL, i.e. prices correlated with the sucrose levels, but this system was abolished in 2002. KSCL, KCGA, and ROA members negotiated privately to neglect the regulations laid down by the SBT. KSCL and the associations decided to fix the price at a 9% sucrose level. This was done to circumvent the measurement problem, which is associated with the sucrose level in sugarcane. Due to the natural fertility of the Kilombero Valley, this level of 9% is attainable by many farmers. Although this solved the measurement problem, it generated others. These are discussed in separate sections below. When compared to MSEL, KSCL produces more efficiently as its ratio of sugar per ton of sugarcane is higher than that of MSEL.

\(^8\) Apart from the fluctuation due to world market prices.
TATEPA does not use the tea grading system anymore. The RSTGA farmers, all deliver high quality tea. Due to initial screening by TRIT, training and intensive monitoring (by peers as well as by outsiders such as FLO visitors), high prices due to the fair trade mark, TATEPA has no need to grade tealeaves. It is thus able to eliminate the problems that develop due to the measurement of the quality of the produce.

The collective price setting process can be interpreted to mitigate the consequences of information asymmetry and haggling possibilities in private negotiations. First, as the SHFs who live in the rural area cannot easily observe the world market prices, it seems efficient for them to negotiate collectively. It ensures equal treatment of farmers across the country and corresponds with the Ujamaa legacy and the associated mindset of many SHFs that the government should do that for them. Second, it prevents haggling and rent seeking on local district levels by either FOs and/or local cooperative societies. This saves transaction costs. Indeed, the four cases do not show evidence of haggling or rent seeking with respect to pricing. The price setting on the national level is taken as given. Although KSCL and TATEPA chose not to use the system in measuring sucrose levels and the grading system for tealeaves respectively, they did use the national prices associated with a fixed sucrose level of 9% and the grade for high quality tea.

**Quality and measurement**

The section above has shown that quality of the produce determines the prices that FOs can obtain in the (world) markets. As quality is important to the FOs, the pricing is related to the quality of the produce. For example, the higher the sucrose levels in sugarcane the higher the amount of sugar produced. The higher the sucrose level in sugarcane the SHF delivers, the higher the quality of the sugarcane. In tobacco, the best grades make better tobacco and thus fetch higher prices than those with low grades. Although pricing is part of the contractual system to generate higher quality, is not the only contractual instrument. Controlling for quality is as important as is the price. In two cases, the FOs monitor quality prior to harvesting via separate monitors (TRIT, KCT). In the other two cases (MSEL and AOTL), such prior monitoring does not exist. In all four cases, FOs assess the quality of farm produce after harvesting and either accept or discard the produce. Assessing quality implies a standard against which the produce can be rated through a specific measuring system of a specific farm produce (i.e. sugarcane analysis, tobacco and tea.
grading). Together with the pricing, the standard is set on a national level (between boards, the members of the cooperative apex societies and factory owners; see the section on pricing above). The actual measurement is done locally. The way in which this is done differs from case to case, but in three of them monitors are contracted to (help) assess the produce (tobacco: ATTT; sugarcane in Kilombero: KCT; tea: TRIT) and in the MSEL case it is done by the factory itself (the laboratory department). In tea, additional monitors are the Village Tea Committees (VTCs) and FLO members. In tobacco, the regulatory body is also involved in grading the produce.

In MSEL, the measuring of sucrose levels is done just after crushing the sugarcane. Although the sugarcane department can correctly measure the sucrose level of such a sample, it cannot attribute this finding correctly to the individual farmer who delivered this sugarcane to the factory. As there is no prior assessment of the quality in the farmer’s field, nor a form of attributing ownership of the sugarcane in the Cane Yard, the smaller farmers do not have evidence of sucrose levels in their specific cane, nor is it possible to prove that a specific reading corresponds to their sugarcane.

In KSCL, quality assessment was similar to MSEL until 2002. After 2002 negotiations between KSCL, ROA and KCGA decided to fix the sucrose level at 9% for sugarcane accepted by the factory. KSCL intensified quality control via a quality assessment of the sugarcane at the Cane Yard by the operating board (OB), either accepting or discarding the sugarcane. KCT sends out extension officers to farmers’ fields to inspect the sugarcane (apart from giving advice). If the sugarcane is not of sufficient quality, the farmer is taken out of the harvesting schedule. Although KSCL has no problem with the actual measuring of the sucrose level as it occurs in MSEL, farmers can no sell their produce every season anymore due to overproduction of sugarcane. As a result, farmers have diversified into the production of other crops using the fertiliser intended for the sugarcane, which on its turn jeopardises quality.

In AOTL, the quality of tobacco is graded according to a complex nationwide system, comprising of 150 different grades. The farmer, the regulatory agency (TTB), the PCS classifier, and the joint venture ATTT at the gulio do the grading. Grading is done through touching, smelling and inspecting its physical appearance and thus involves a subjective judgement. Afterwards, the graders, not including the farmer, settle for a grade on the tobacco. A final round of grading occurs when the tobacco has been transported by rail to the AOTL
factory. ATTT trains and advises farmers, but does not assess the quality of tobacco prior to harvesting. The grading system is complex and not easy to comprehend for a farmer. This may easily lead to the result of overestimating quality by the farmer himself. As the second round of grading is neither transparent to the farmer nor communicated to the farmer, nor is the outcome of the final round, the definitive assessment of the quality and the corresponding payment might not be congruent with the outcome in the first round of grading. This leads to dissatisfaction of the SHFs, who might end up in debt, and then might run away from these obligations. The incongruence between the first and the last round of grading might be caused by SHFs who opportunistically overestimate their tobacco, but it might also be attributed to farmers who are unable to grade tobacco correctly themselves and/or classifiers who might hesitate to disappoint farmers directly in the first round. In addition, the perceptions of farmers of opportunistic switching of labels in the second round and/or perceptions of opportunistic downgrading at the factory further create mistrust in the relation. For individual farmers it is impossible to find out the real source of the divergence between the first and the last round of grading. The grading process and its outcome then become non-transparent.

In TATEPA, the members of RSTGA produce only high quality tea. Although a grading system exists on the national level, in Rungwe RSTGA members do not need to use that system. Through TRIT, TATEPA screens the SHFs in order to make sure that only farmers who can produce good quality tea join the RSTGA and adhere to good farming practices. An intensive monitoring system exists to ensure a high quality of tea leaves. This monitoring starts in the farm via TRIT extension officers, quality assessment is done at the tea village buying centres by TRIT and VTC. Last, FLO visitors inspect farms as well as production facilities and assess payment policies of TATEPA to ensure the whole value chain adheres to fair trade regulations. Such inspection revealed that truck drivers rigged the system. TATEPA introduced the digital weighing scale in order to correctly assess the weight of the tea leaves and attribute that to the owner. This eliminated the opportunistic behaviour of truck drivers and created transparency in the system. As the RSTGA has devised an alternative governmental system (tea villages), apart from the district governmental system, it has been able to screen and select farmers to become members. This created tensions with the district authorities as it leaves some farmers out and empowers the RSTGA while it officially has no such powers.
Two cases (MSEL and AOTL) lean on prices as an incentive to increase quality, while two cases (KSCL and TATEPA) lean on extensive monitoring to either ensure a minimum level of quality (KSCL), or maintain high quality (TATEPA). In MSEL and AOTL, the assessment of quality leads to inefficient behaviour of SHFs wanting to sell sugarcane only in the dry season (MSEL) and farmers ending up in debt and then trying to rig the system (AOTL). In KSCL and TATEPA, assessment itself is not a problem, although in KSCL overproduction leads to the diversion of fertiliser and the relative neglect of the sugarcane. The only case in which the actual quality assessment is solved for both farmers and FOs satisfactorily is TATEPA. It solved the quality assessment by excluding lower quality tea from (non-RSTGA) farmers and intensively monitoring farmers and it solved the transparency problem with the digital weighing scale. Although prescribing such a solution to the other cases seems simple, it very much depends on the actual circumstances whether or not such a solution would actually work. In MSEL, a start might be to measure farmers’ sugarcane on sucrose levels individually (even in farms) and in AOTL farmers’ tobacco should get their definitive grade with the farmer present. Whether such a solution is technically or organisationally feasible is worth further study.

Operating board

The FOs in the agro-industry organises the economic activities of the value chain through Operating Boards (OBs) although in different ways. The OB set up the harvesting schedule, organises the harvesting and the transportation of crops. In case the FO outsources this service to another outside entity, a contractual relation develops. Take the example of TATEPA where TRIT is contracted to perform such a service and AOTL where the joint venture ATTT is performing that function. In case the FO organises the OB itself it appoints the members of the OB, and no written contract is needed. Examples are MOC in MSEL and KCT in KSCL.

At MSEL, MOC schedules the harvesting and monitors the sucrose levels on behalf of MSEL. MOC comprises two people from MOA, two people from MSEL and one technical officer of MSEL (the chairman). MOC needs to ensure the daily rate of delivery (DRD) of sugarcane supplied to the factory. It reports on any anomaly concerning sucrose levels (i.e. when it falls below the average of 8%). Accidental fires need to be reported to MOC. MOC then decides whether to harvest the sugarcane. Not harvested SHFs perceive a
conflict of interest here, as MOC members are also farmers themselves and therefore might favour some over others.

At KSCL, the Operating Board (OB) comprises of four representatives from KSCL and two representatives from each of the two associations, ROA and KCGA. The OB has similar functions as those of MOC in MSEL; added to that is the assignment of quota to the associations. KSCL sets the quota of sugarcane to be harvested, OB assigns them to the associations, and these assign quotas to individual farmers. The OB inspects the sugarcane delivered to the factory and may reject it if it is of low quality. If the delivery schedule cannot be met (e.g. due to low quality), then the OB fills that supply gap with sugarcane from other farmers whose sugarcane has been assessed by the KCT as being of good quality. Filling the gap in this way has created suspicion among the SHFs who perceive favouritism and bribery associated with OB’s management of the harvesting schedule. Such suspicions also stimulate to divert subsidised fertiliser to other crops (maize and rice) instead of the contracted one (sugarcane).

AOTL has allied with TLTCL to set up the joint venture ATTT in order to mitigate the problem of farmers’ opportunistic defaulting. ATTT does not schedule harvesting activities, nor does it arrange for transport from the farm to the gulio. Officers of ATTT provide extensions services to farmers and grade tobacco at the gulio. ATTT still faces the problems of defaulting farmers in the Tabora region.

TATEPA outsources the monitoring and control services via TRIT. TRIT does not schedule the harvesting as tea is harvested continuously throughout the year. TRIT officers train RSTGA farmers, provide advice, and monitor tea quality. Scheduling is not needed, as it is in KSCL and MSEL, as factory capacity is not a bottleneck (even when tea is sold in the rainy season) and tea is not graded anymore.

In two cases the respective OBs have the responsibility to harvest planning (MSEL and KSCL) and in two cases it does not (ATTT and TATEPA). Sugarcane needs planning due to the fluctuation in sucrose levels depending on the season and the limited processing capacity of the factory. Although tobacco is seasonal too (harvested in the dry season), once it is dried it can be stored waiting for processing elsewhere. Tea is harvested throughout the year and although it is interesting for the farmer to harvest in the rainy season, the case implicitly shows that the tea factories of TATEPA have not reached their limits (yet). In sugarcane, problems partly develop due to capacity limitations. Minimising these problems, the OBs’ organisation is
required. In doing so, it leads to suspicions of favouritism by SHFs. Some of this may be addressed by more transparency (measuring sucrose levels of sugarcane of individual farmers), abating the asymmetry in information (or lack of information), and objective scheduling procedures to eliminate suspicions of favouritism.

**Credit services provision**

In all four cases, the respective agro-industry Acts obligate the FOs to supply fertilisers to the SHFs on credit.\(^{89}\) Providing fertilisers on credit is inherited from the colonial period throughout Ujamaa period (see chapter two). The government subsidises these fertilisers and sells them through its agents.\(^{90}\) Every SHF may buy fertiliser directly with such an agent, or first apply for credit from the bank to buy fertiliser. Many farmers are not familiar with the banking system and do not apply for credit. Moreover, many SHFs have no legal property to secure the loan: their farmland and houses are not legally registered and are not accepted by the bank as collateral. Even if the land would have been registered, its value might not be enough to cover loan and legal costs when foreclosed. In order to overcome this problem, FOs apply for loans and act as guarantor for credit providers. The credit provision via FOs overcomes the endowment problem of the SHFs in order to be able to invest in agricultural activities.

In all four cases fertilisers are required to grow cash crops (i.e. contracted crops). The FOs require mass production and good quality farm produce as raw material for the factories. The FOs provide credit through the cooperative societies. In the four cases, the specific cooperative societies are MOA (MSEL), KCGA and ROA (KSCL), PCS (AOTL) and RSTGA (TATEPA). MOA and PCS provide credit to groups of ten farmers,\(^{91}\) KCGA, ROA and RSTGA provide credit to individual farmers.

At MSEL, not all SHFs who contract with the factory, borrow via MOA for farm inputs. Independent SHFs, i.e. those SHFs with larger farms who have become financially independent over the years, do not need to borrow through the cooperative society. The SHFs who do not need to borrow via MOA in order to buy fertiliser use MSEL as a guarantor. The loan is repaid via deductions when selling sugarcane to MSEL.

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\(^{89}\) The Sugar Industry Act, 2001, Tobacco Industry Act, 2001 and Tea Act, 2003 stipulate the rules governing the agro-industry institutions of the four cases.

\(^{90}\) In MSEL, many agricultural shops sell fertiliser, in KSCL it is KCT that sells fertiliser, in AOTL it is ATTT, in TATEPA it is WATCO.

\(^{91}\) In Tanzania, this is called group collateral. See chapter 2.
MSEL then repays the agencies who supplied the fertilisers. Servicing the loan becomes problematic when a farmer is assigned a low sucrose level, leaving the SHF indebted. Although sucrose levels may actually be low, it may also be attributable to the sampling procedure in MSEL. This pressurises farmers to sell only in the dry season in order to prevent losses due to the sampling procedural problems. When all SHFs postpone selling sugarcane until the dry season, this leads to problems in the harvesting schedule. It also stimulates the opportunistic burning of sugarcane as this forces the MOC to harvest a farmer’s sugarcane.

KSCL has set up KCT, a community development agency, which acts as intermediary agent for various credit providers as KCGA and ROA. The societies provide loans to individual SHFs. KCT also acts as the project coordinator for community development, attracting loans from donor agencies. As KSCL cannot buy all sugarcane produced in the valley, those farmers that cannot sell, but have taken out a loan may end up defaulting upon their obligations. SHFs have diversified into rice and maize in order to be able to repay the loan and support their family.

AOTL provides credit to the PCS, which in turn provides fertilisers on credit to its members. The PCS still uses the British colonial set up. Some SHFs receive fertilisers on credit and decide to sell them directly on the market. Others receive fertilisers on credit and decide to use it to grow only their own crops, e.g. groundnuts, maize, rice, and other food crops. Others partly use the fertiliser for their own crops and partly for the contracted tobacco crop. As some of these SHFs will not be able to repay the loan, AOTL sues the defaulters and claims damages. When AOTL is granted permission by the court to foreclose on property, often the value will be insufficient to redeem the loan.

TATEPA does not arrange for the provision of credit. The SHFs of Rungwe buy fertilisers in cash. WATCO supplies subsidised fertilisers to earmarked private shops in the tea villages. The tea village members, either themselves or through the VTC, may privately negotiate with the shopkeeper to get fertiliser on credit. As farmers receive monthly payments from WATCO for their tea, defaulting has not yet occurred.

Although the provision of credit is more or less the same in the four cases, with the exception of TATEPA were the FO is not engaged in credit provision, different problems come up. In MSEL, the credit provision actually contributes to a worsening of the scheduling...
problem, which stimulates the SHFs to choose selling in the dry season in order to be sure that they will be able to repay. In AOTL, some farmers opportunistically take out loans for fertiliser in order to sell it directly on the market. In Kilombero, due to the quota system farmers have diversified to other crops in order to be able to repay the loan. Although the way in which credit is provided in these cases helps overcoming endowment problems with small farmers, it is not a full success as it interacts with other problems in the cases, especially the measurement of sucrose levels and grading of tobacco.

Social service 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. The provision of social services relates to the production of farm produce. All firms construct roads in the rural area, because the farm produce requires transport. All FOs build schools and provides training which enhances SHFs’ capacity to apply good farming practices. In addition, the FOs provide agronomic advice in order to increase production and quality. In each case, FOs provide health services, which are crucial to the SHFs. With health problems (e.g. malaria or HIV/AIDS), the SHFs cannot continue farming.

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. Customers of the fair trade brand pay a premium price to support development projects. TATEPA has to make sure that this premium is well spent.

Transportation of crops

All four cases outsource transport services. During the harvest season MSEL contracts any interested party/company owning trucks. KSCL contracted UNITRANS Company Limited (UNITRANS) in 2001 to deal with all motor vehicles at KSCL. UNITRANS, on its turn, contracts private drivers. AOTL contracts the Tanzania Railway Corporation Limited (TRCL) to transport tobacco from Tabora to Morogoro. TATEPA contracts Jilanjo company Limited (Jilanjo).

Two FOs in the four cases experienced transport problems. KSCL experienced opportunistic drivers who used logs and sacks of sands to increase the weight of a truckload of sugarcane. Upon discovery,
KSCL contracted UNITRANS, changed to a fixed load of six tons per truck and payments per trip. TATEPA also experienced opportunistic drivers who bought tea at throwaway prices from farmers. It decided to contract Jilanjo. Drivers are still paid per kilo, but with the introduction of the digital scale, the problem of opportunistic behaviour was eliminated and also transparency in the whole value chain increased. MSEL contracts individual private owners of trucks who are paid per trip. ATTT does not organise the transport from the farm to the gulio; it only organises the transport from the gulio to the factory.

9.3 Governance problems in the contractual relationship

Chapter 3 discusses the contractual relations and the associated behavioural problems from the perspective of economic organisation. Specifically, the chapter addresses the problems of moral hazard, adverse selection, hold out and collective action. In this section, the cases are analysed in respect to these problems.

Moral hazard in the agro-industry

Moral hazard arises when a contractual participant acts opportunistically ex post in order to appropriate value from the other party. As such, behaviour comes up during the process of execution of the contract; it deprives or lowers the value of the contracted property to the other party.

MSEL

At MSEL, some members of MOA misuse the fire accident clause. They set fire to their fields in the dry season in order to force MOC to harvest their cane and sell sugarcane at higher prices. Although the fire accident clause can be seen as the triggering element in the contract, the behaviour can not solely be attributed to that clause. Important contributors are the pricing structure, the fact that sugarcane has a seasonal peak in sucrose levels, the problematic sampling of the sucrose levels and the limited factory capacity in that period. One consequence is that MOC cannot handle the reported fires and organise the cutting and the transport at short notice, resulting in the harvesting of only a few fields and hence, suspicions of favouritism and bribery problems emerge.
Mitigating moral hazard implies tackling the perverse incentives associated with the nature of sugarcane and the contractual terms triggering opportunistic burning. The measurement of sucrose levels need to change in order to ascertain that the measurement of the sucrose level of a specific amount of sugarcane is attributed to its correct owner. However, even MSEL does not have that knowledge now. In that sense, it is not an asymmetry of information but a lack of information. Furthermore, the limited crushing capacity of the factory in the dry season together with the pricing structure makes the organisation of the harvesting problematic. The incentive for farmers to harvest only in the dry season need to be mitigated by offering incentives to the farmer so that he is interested to sell at the beginning of the season, or even in the rainy season. Then the fire clause needs to be removed from the contract in order to relieve the pressure on the harvesting schedule and eliminate the final part of the incentive for farmers to force the MOC’s hand in harvesting in the dry season.

KSCL

At KSCL, prior to contracting UNITRANS, private drivers were paid according to the weight of sugarcane delivered. The drivers opportunistically increased the weight of the load by carrying logs and sacks of sands in the truck. Such behaviour was not detected, as the load was not checked upon entering the automated entrance to the Cane Yard. KSCL solved this problem by contracting UNITRANS and prescribing the size of the truck and the maximum weight trucks are allowed to carry. A second form of moral hazard occurs when farmers divert fertiliser to non-contracted crops (maize and rice). This behaviour arises partly because of the fixed sucrose level and the chance of not being able to harvest. As a farmer may not be included in the schedule, a farmer is uncertain whether he will be able to sell his sugarcane to KSCL. This uncertainty for the farmer stimulates him to diversify his efforts to other crops.

Members of ROA and KCGA have been growing sugarcane in the valley for about 40 years (as of 1967). Fixing sucrose levels and setting quota have changed their behaviour to become more opportunistic. One alternative for mitigating this form of moral hazard is to improve the measurement of sucrose levels (in the same manner as discussed above by MSEL). Another alternative is to increase the monitoring of farmers on farming practices and quality of sugarcane and at the same time to guarantee that the factory will purchase the sugarcane that is scheduled. This might eliminate the diversification incentive.
AOTL

At AOTL, moral hazard occurs as some members of the PCS directly sell subsidised fertiliser bought on credit. As a result, farmers run away when they need to repay. As poor farmers do not have valuable properties that can be subjected to foreclosure, he has no interest in staying at the farm. Other farmers use the fertiliser (partly) on their own crops instead of tobacco. If the harvested crop does not yield enough, farmers cannot repay the loan and either run away or register under another name. The complex tobacco grading system and the lack of transparency in setting the final grade creates mistrust by farmers. In turn, this stimulates opportunism by farmers.

As PCS accepts all farmers, AOTL accepts all PCS farmers, and supplies cheap fertiliser to farmers via ATTT, ATTT is confronted with different types of farmers that use the system opportunistically. One alternative might be that AOTL starts screening PCS members and contract only those SHFs who can adhere to good farming practices. In order to keep up the quality of the tobacco, AOTL will need to improve upon monitoring farmers and increase transparency in the grading of the tobacco.

TATEPA

At TATEPA, although the members of RSTGA were deprived of good prices by the opportunistic Caspian drivers, the better explanation of this behaviour is from the perspective of information asymmetry rather than from a moral hazard perspective. Farmers were not informed, therefore they were unaware of the better prices offered by TATEPA.

Adverse selection in the agro-industry institutions

All four firms (MSEL, KSCL, AOTL, and TATEPA) contract the SHFs of the cooperative societies. All village members in the rural areas can become members of a cooperative society by virtue of living there. Adverse selection might occur as a village member may decide to become a member of a cooperative society and that society accepts him as a member.

At MSEL, no specific problems are encountered pointing to adverse selection. Although one might hypothesise why this is not the case, the case itself provides not enough data to address the issue sufficiently. For instance, MSEL is not located in a remote area, restraining entry. One explaining factor may be that the land is less fertile and abundant
in Turiani than it is in Kilombero. This constrains entry by farmers seeking out attractive contractual terms.

At KSCL, the Kilombera valley is fertile and abundant and indeed farmers have been flocking to the valley over the years. It even made it necessary to introduce a quota system to limit the supply. KSCL and the associations may have attracted farmers because of the attractive contractual terms. If any adverse selection has taken place, then the associated negative consequences of such selection do not yet show up in the production statistics discussed in the case.

At AOTL, adverse selection comes up as the PCS accepts all applicants; ATTT accepts these applicants as farmers and provides them with subsidised fertiliser. Cheap fertiliser is sold on the spot or (partly) used on other crops. AOTL has trouble suing defaulting farmers, and even if AOTL can claim a farmer’s property, its value is negligible.

At TATEPA, the problem of adverse selection is mitigated or eliminated through screening. SHFs are screened before they can join RSTGA. The criteria for accepting a farmer are that he understands and applies good farming practices.

In the studied cases, MSEL does not show evidence of adverse selection problems, KSCL might suffer but adverse effects do not yet show and TATEPA eliminated it through extensive screening. Only AOTL suffers from adverse selection. To mitigate it, either the PCS or ATTT might consider more extensive forms of screening (and following this up with intensified monitoring) before accepting a farmer as a member if the associated costs are lower than accepting the consequences of adverse selection.

**Hold out problems**

Hold out problems were not typical to the four cases. Hold out happened at MSEL in 2007 when the members of MOA stopped supplying sugarcane to MSEL. The sugarcane cutters’ strike for higher wages interrupted the supply of sugarcane of MSEL’s own estate to the factory. As MSEL asked farmers to supply sugarcane to the factory, farmers offered higher wages to the cutters. In order to maximise that opportunity, cutters started to burn fields in Turiani. As MOC could not handle the number of fire accidents, this resulted in an abrupt shortage of sugarcane supply from the SHFs for a couple of weeks. The second form of hold out occurs as farmers hold out to supply
sugarcane only in the dry season, which delivers them higher prices than when they deliver the same sugarcane at the beginning of the crushing season. This disrupts the daily rate of delivery for the factory and the harvesting schedule of MOC. This kind of behaviour might be addressed by altering the pricing scheme such that the incentive to deliver in the dry season is weakened. However, KSCL shows that such a change might result in additional regulation (quota system) that on its turn generates unwanted behaviour.

Problems that emerge from collective action

Transacting through the cooperative societies is a pervasive custom in the rural areas. The Sugar Industry Act (2001), Tobacco Industry Act (2001), and the Tea Act (2003) give the cooperatives legal basis for organising SHFs. The Cooperative Act (2003) makes it mandatory for individual farmers to operate through the setting up of cooperative societies for cash crops.

At MSEL, a collective action problem comes up in managing the fire accidents. When farmers set fire to their fields, they do so irrespective of the decisions of other farmers to set fire to the fields. This creates a problem for MOC when handling the fire accidents early in the morning. MOC cannot accommodate all and, consequently, some farms cannot be harvested. These fire accidents changes the priority in harvesting, damaging the interests of scheduled farmers. Suggestions to solve this problem have been discussed in the subsection on moral hazard.

At AOTL, as farmers receive fertiliser in groups of ten, some of them may free ride upon the others by not repaying the loan. As these farmers receive fertilisers on credit, sell it on the market, and then run away from their obligations, they free ride on the other members. These 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 end up in debt due to the grading problem. Eliminating free riding at AOTL might start with the offering of the loan to the individual SHF, not a group. This already happened as AOTL started to encourage the SHFs to contract as independent farmers. Furthermore, a court judgement in 2007 made that AOTL could not foreclose on the properties of those group members. In the subsections above, suggestions for solutions have already been discussed to address this problem.
9.4 Applying the farmer behaviour model (FBM) to the cases

The FBM model, introduced in chapter 3, is, for ease of exposition, shown below in figure 18.

*Figure 18 Four cases and the FBM*

The alternative behaviours of farmers are assessed with respect to the monetary value of fertiliser and the production possibility curves of five types of farmers. The first one is characterised by point A in the figure, portraying a farmer who sells the subsidised fertiliser directly on the market and therefore earns the monetary value of fertiliser (MVF) of OZ. The second is characterised by point B, portraying a farmer using the fertiliser on his own crops only. Point C is for the third type of farmer who partly apportions fertiliser to the cash crop and partly to his own. Point D is portraying the fourth type of farmer,
using all fertiliser on the cash crop and point E for the fifth type, an independent farmer, who buys additional fertiliser for his cash crop.

In AOTL, all types of farmers show up in the case, indicating by the arrows emanating from “AOTL” in the figure. The case shows evidence of all behavioural problems conceptualised in the FBM. In KSCL, farmers of type C and D come up in the case. In MSEL, farmers of type D and E show up. In addition, in TATEPA only farmers of type E show up. With respect to the theory behind the model, it is only in the case TATEPA that the full economic potential of SHFs together with the FO seemed to have been realised as it operates at the highest production possibility frontier. As AOTL includes all types of farmers, interpreted within the FBM, SHFs and FO are not operating at full economic potential. Its economic efficiency is then an average of these five types of farmers. In order to increase efficiency it needs to transform farmers from lower levels of production possibility frontiers to higher ones.

The discussion above has shown that participants need to solve specific behavioural problems in order to make that transformation. In this view, MSEL and KSCL operate in between AOTL and TATEPA. Here, an increase in economic efficiency might be possible if in both cases the participants solve the problems discussed above. However, as they are still in transition, problems might increase and then a reverse transformation might occur. The figure shows that, when the four cases are compared, TATEPA is efficiently governed. From that perspective, MSEL and KSCL follow in second and third place, while AOTL is the fourth.

9.5 Instruments for solving problems

Chapter 3 also discusses the instruments for solving behavioural problems in contractual relations: screening, collective bargaining, incentives, monitoring and bonding. Below, these are considered per case

**MSEL**

In MSEL, farmers are not screened before they are allowed to deliver sugarcane to MSEL. Farmers have to apply for membership of MOA, but MOA itself does not screen farmers. As MSEL does not have the problem of type A, B and C farmers, as it has type D and E farmers such screening seems not necessary. Collective bargaining is done on a
national level, which establishes grades, prices, services etc. MOA and MSEL follow that result. The only collective bargaining breakdown occurred when cutters hold out for higher wages. Incentives (i.e. pricing scheme) are focused on sucrose levels in sugarcane. Although this stimulates the farmers to increase quality, together with the problematic measurement system, the seasonal sucrose fluctuations and limited factory capacity frustrates farmers. Although MSEL officials train, provide advice, and monitor sucrose levels in the farms, they do not monitor farmers’ performance.

**KSCL**

In KSCL, farmers are not screened before they are allowed delivering sugarcane. Farmers have to apply for membership of ROA or KCGA, but both associations do not screen farmers. KSCL has type C and D farmers. So screening might help here, although the type C farmer might actually be the result of a reverse transformation, i.e. a farmer of type D becoming type C. KSCL follows the collective bargaining system of which MSEL is also part. The pricing scheme is different from MSEL; it fixes the price on 9% sucrose in order to eliminate the measurement problem MSEL is still facing. As a result, farmers were attracted to Kilombero, which increased the amount of sugarcane produced in the valley. KSCL had to set sugarcane quota. The unintended consequence of this was the creation of uncertainty for the farmer whether or not he could sell sugarcane to the factory. Farmers diversified their efforts to other crops. KCT monitors farmers on good farming practices. They report to the OB about the condition of the sugarcane, and that report explains whether a farmer’s sugarcane qualifies for harvesting or not. The OB may then decide to discard the cane if it is of low quality. Although the case does not provide specific evidence for the following conjecture, it might be that if a type C farmer apportions less fertiliser to sugarcane than a type D farmer, then he might run a higher risk of growing a lower quality of sugarcane. KCT may then exclude him from the schedule. It might be explained that the natural fertility of the valley prevents a further reversal in the transformation of the SHFs from type C farmers to type B.

**AOTL**

In AOTL, farmers are not screened either. PCS accepts every applicant and ATTT accepts any member. AOTL has all five types of farmers. Screening might help here as AOTL has problems with opportunistic farmers of type A, B and C. Collective bargaining follows the same
pattern as in KSCL and MSEL. The pricing scheme is based upon the grading system (set nationally). This complex system and the non-transparent way in which the final grade is set create mistrust among farmers. For specific farmers, the system might result in a reverse transformation instead of helping the farmer move upwards. Although ATTT officers train, provide advice and classify tobacco they do not monitor a farmers produce or his farming performance.

**TATEPA**

In TATEPA, farmers are screened by TRIT before they may become a member of RSTGA and deliver tealeaves to WATCO. TATEPA has type E farmers. TRIT officials monitor farmers’ practices and the tealeaves’ quality before the leaves may be brought to the tea-buying centre. At the centre, VTC members and TRIT officials also inspect the tealeaves and discard low quality. FLO visitors inspect farms, their tea, the processing facilities, and the pricing scheme. Collective bargaining follows the same pattern as in the other cases. TATEPA and WATCO both have farmer representatives (via RSTGA) in the supervisory board. As farmers deliver high quality tea, the grading system is not used. Farmers receive high prices, apart from the fair trade premium that is used for community development. Farmers deliver tea throughout the year while WATCO offers the same prices throughout the year even in the rainy season. Via small deductions on the tea, price farmers buy WATCO stock. An RSTGA fund, TRUST, administers the scheme. Dividends are paid out to the individual farmers. Buying shares can be interpreted as a bonding mechanism, which enhances farmers’ feelings of ownership for their factory.

The discussion shows that instruments are used differently in the four cases, although similarities also come up. In the table below, the governance instruments are compared across the cases. Left out is the collective bargaining, as this does not differ much in the four cases.
Table 3 Governance instruments employed in four cases

<table>
<thead>
<tr>
<th>Firm</th>
<th>Screening</th>
<th>Pricing scheme</th>
<th>Monitoring</th>
<th>Bonding</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSEL</td>
<td>None</td>
<td>On sucrose levels</td>
<td>Training, advice</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No discard-decision</td>
<td>None</td>
</tr>
<tr>
<td>KSCL</td>
<td>None</td>
<td>Fixed on 9%</td>
<td>Training, advice</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Discard-decision by OB</td>
<td></td>
</tr>
<tr>
<td>AOTL</td>
<td>None</td>
<td>On grades</td>
<td>Training, advice,</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>No discard-decision</td>
<td></td>
</tr>
<tr>
<td>TATEPA</td>
<td>Yes</td>
<td>Fixed on premium quality</td>
<td>Training, advice,</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Discard decision by TRIT</td>
<td></td>
</tr>
</tbody>
</table>

Generally, table 3 shows that MSEL and AOTL use the instruments in a similar manner. They rely on prices dependent on quality (via measuring sucrose levels or grading), do not monitor farmers (in that they do not to decide whether to discard prior to or at the harvesting), and have no bonding mechanism. KSCL and TATEPA have in common that price is not dependent on grades and monitor farmers so that they can decide to discard sugarcane or tea. On top of that, TATEPA screens farmers and employs a bonding mechanism.

Table 3 does not include the costs of maintaining the governance system. The cases do not provide the data to estimate the costs of running the system. These costs fall, partly, in two categories: private and social costs. Social costs also have to be taken into account for assessing efficiency. The table 4 below provides an overview.

For MSEL, table 4 shows the private costs that are caused by the behavioural problems (extensively discussed above), but also lists a social benefit. MSEL acts as guarantor for farmers’ debts. If it would not do such a thing, farmers might have difficulty applying for credit.

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92 Social costs arise if others, not being part of the group of contractual parties, are confronted with costs due to the choices of these contractual parties. See Coase (1960) for a seminal discussion on the issue of social costs. These social, or external, costs have not been discussed extensively in chapter 3 as this chapter has focused on the behavioural problems within the contractual relation between farmer and factory owner. However, the discussion on the cases above has shown that the costs of the behavioural problems may also partly spill over to others and with that become a social costs.
successfully. Although this is obviously also in MSEL’s private interests, it mitigates endowment problems of SHF’s which otherwise would have much difficulty lifting themselves out of poverty.

Table 4 Private and social costs of economic organisation in four cases

<table>
<thead>
<tr>
<th>Private costs</th>
<th>MSEL</th>
<th>KSCL</th>
<th>AOTL</th>
<th>TATEPA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSEL</strong></td>
<td>Moral hazard (fire accident, hold out for dry season)</td>
<td>Moral hazard (divert fertiliser)</td>
<td>Moral hazard (defaulting farmers)</td>
<td>Screening and monitoring costs of TRIT, FLO costs</td>
</tr>
<tr>
<td></td>
<td>Measurement problem generating mistrust (perceptions of favouritism and bribery)</td>
<td>Adverse selection (farmers attracted to fixed pricing, type C) Fixing on 9% and quota system generates mistrust (perceptions of favouritism and bribery)</td>
<td>Adverse selection (contracting farmers type A, B and C) Grading system and discarding at the factory creates mistrust (perceptions of favouritism and bribery)</td>
<td></td>
</tr>
<tr>
<td><strong>KSCL</strong></td>
<td>MSEL is guarantor of farmers’ debts (benefit)</td>
<td>KCT-costs covered by KSCL estate diminishes farmers’ opportunity to sell Community issue of KCT</td>
<td>AOTL provides credit to farmers (implicit guarantee; benefit) Free riders in a farmers’ debt group Defaulting behaviour diminishes value of contracting</td>
<td>Leaving out the RUTEICO farmers</td>
</tr>
<tr>
<td><strong>AOTL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TATEPA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For KSCL, as in MSEL the private costs are dependent on the behavioural problems discussed above, but show additional social costs due to the organisation of KCT. Its costs (community services and
farming services) are covered by allocating part of its own estate to KCT and guaranteeing it the right to sell sugarcane to the factory, while subtracting that amount from the quota of sugarcane SHFs are allowed to sell. Such a unilateral decision diminished the selling rights of SHFs and aggravated the tension between FO and SHFs. The second problem is associated with KCT itself and the way in which it is presented to the community. This has created suspicions among SHFs that KCT has a hidden agenda.

For AOTL the private costs generated by the behavioural problems partly spill over to social costs. Although AOTL implicitly guarantees the debt of farmers (a benefit, see also MSEL), the way in which the system is set up generates free riding. This free riding is at the expense of those farmers that do repay. A recent court decision has ended this form of group collateral. With this decision the costs of free riding for the other group members is eliminated. These costs now fall to AOTL. The defaulting behaviour increases the costs of the implicit guarantee to AOTL. This cost is private, but the social cost is also important in that it creates a cultural norm that defaulting on contractual obligations is normal.

For TATEPA higher (administrative) costs come up in screening and monitoring, but it has less behavioural problems (and thus lower private costs) than in the other cases. Part of the monitoring costs is born by outsiders (FLO). With the screening of farmers, TATEPA excludes farmers who are not able to practice good farming practices. Those farmers staying with RUTECO who cannot or do not want to benefit from the TATEPA system are left out. In the end, this might create social (and economic) inequality between the two groups of farmers.

Although the cases do not make it possible to assess the absolute efficiency of the agro-industry institutions definitively, from a private costs perspective 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 the type E category and eliminated or circumvented many behavioural problems. This result has not yet been reached in the other three cases. The help of FLO in organising the system cannot be overlooked. It is partly due to the willingness of customers, who are willing to pay premium prices, that the administrative costs are covered and transparency is forced upon participants. In the MSEL and AOTL cases, farmer opportunism emanates from lack of transparency. Whether or not the social cost in the case TATEPA is big enough to diminish efficiency, cannot be
decided upon the evidence presented here. What can be said, though, is
that the institutional setup in the case did not come at the expense of
the RUTECO farmers. They can still sell tealeaves (but not to
TATEPA) and farmers may still apply for RSTGA membership. For
TATEPA, from the perspective used in this book, no major economic
organisational problems seem to remain that need to be solved at the
moment. Such problems may come up in the (near) future, e.g. when
due to its success farmers may become independent of TATEPA. In
that situation, TATEPA might need to revisit the organisation of the
whole tea value chain as farmers themselves might integrate forward
(instead of TATEPA integrating backwards), or start selling to other
FLO tea processing companies.

For the other cases, as said above, no definitive efficiency assessment
can be provided here, but with their behavioural problems, efficiency
might increase if such problems can be (further) mitigated. 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
performance instead of absolute performance. However, it takes a rare
combination of real agronomic expertise, local knowledge and
economics in order to find a solution to this problem.93 In KSCL, it is
the combination of a fixed sucrose level, the quota system, the
scheduling and the abundance of 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. Either AOTL needs
to start screening, monitoring, and training SHFs extensively in order
to stop the process. TATEPA might actually stand as a model here for
AOTL; although it remains to be seen as to what extent that 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. The larger farmers are more knowledgeable and more easily
monitored than the smaller farmers are. As with forward integration,
these types of solutions will do less to lift poor farmers out of poverty.

93 An alternative for MSEL is to integrate forward in order to become less dependent
on (or fully independent from) SHFs. However, this will not stimulate
entrepreneurship and financial independence among SHFs.
9.6 Summary

The four cases show the challenges the FOs and SHFs face when it comes to contract negotiations, signing, and execution. In the cross-case analysis the contractual relationship between the SHFs and FOs has been analysed on pricing, quality measurement, organising of harvesting via operating board and credit services. Furthermore, the FBM model has been used as a tool to analyse and interpret the behavioural problems discussed in chapter 3. The last section is devoted to the governance instruments that are used in the cases for solving problems and an efficiency assessment has been performed of the specific solutions found in the four cases.

With regard to the contractual relations, the main findings concerning pricing are that pricing schemes are set nationally, that the schemes depend on the quality of the produce and are meant to provide an incentive to farmers to produce high quality.

Quality measurement is a problem in at least two cases, MSEL and AOTL. These two cases lean on prices as an incentive to increase quality, while two cases (KSCL and TATEPA) lean on extensive monitoring to either ensure a minimum level of quality (KSCL), or maintain high quality (TATEPA). In the cases MSEL and AOTL, the assessment of quality leads to inefficient behaviour of SHFs wanting to sell sugarcane only in the dry season (MSEL) and farmers ending up in debt and then trying to rig the system (AOTL). Overproduction in the case KSCL leads to the diversion of fertiliser and the relative neglect of the sugarcane. TATEPA solves the quality assessment by excluding lower quality tea from (non-RSTGA) farmers and intensively monitoring farmers. It solves the transparency problem with the digital weighing scale.

In the organisation of the harvesting, in two cases the respective operating boards have harvest planning responsibilities (MSEL and KSCL) and in two cases they have not (ATTT and TATEPA). Sugarcane needs planning due to the fluctuation in sucrose levels depending on the season and the limited processing capacity of the factory. Although tobacco is seasonal too (harvested in the dry season), once it is dried it can be stored waiting for processing elsewhere. Tea is harvested throughout the year and although it is interesting for the farmer to harvest in the rainy season, the case implicitly shows that the tea factories of TATEPA have not reached their limits (yet). In sugarcane, problems partly develop due to capacity limitations. Minimising these problems, the OB’s organisation is required. In doing
that, it has led to suspicions of favouritism by SHFs. Some of this may be addressed by more transparency (measuring sucrose levels of sugarcane of individual farmers) abating the asymmetry in information (or lack of information) and objective scheduling procedures to eliminate suspicions of favouritism.

With credit services, in all four cases credit is provided through the cooperative societies. In three cases, credit is provided via the FOs to the societies. Only in the case TATEPA provides the society RSTGA credit if farmers are in need. In MSEL, the credit provision actually contributes to a worsening of the scheduling problem, which stimulates the SHFs to choose selling in the dry season in order to be sure that they will be able to repay. In AOTL, some farmers opportunistically take out loans for fertiliser in order to sell it directly on the market. In KSCL, due to the quota system, farmers have diversified to other crops in order to be able to repay the loan. Although the way in which credit is provided in these cases helps in overcoming endowment problems with small farmers, it is not a full success as it interacts with other problems in the cases, especially the measurement of sucrose levels and grading of tobacco.

In discussing the governance problems, in all cases moral hazard is found. In the MSEL case, it is revealed through the opportunistic use of the fire clause. In the KSCL case, diverting fertiliser to other crops and drivers opportunistically increasing their load with sacks of sand are revealed. In the AOTL case, opportunistic SHFs directly sell subsidised fertiliser to other independent farmers. In the TATEPA case, opportunistic drivers cheat farmers on the price of their tealeaves before they are discovered. In the two cases of KSCL and AOTL, indications are found for adverse selection. In KSCL, farmers might be attracted because of its favourable contractual terms to opportunistic farmers and in AOTL in that all members of the cooperative society are contracted. A form of hold out is found in the MSEL case where farmers did not want to sell in the rainy season but only in the dry season. Collective action problems came up in MSEL, where the fire accidents could not be controlled by the operating board, and AOTL, where farmers free ride on the members of the group when they need to repay debts. With respect to the Farmers Behaviour Model, it is found that AOTL contracts all types of farmers, KSCL type C and D, MSEL type D and E and TATEPA type E farmers.

With respect to the governance instruments that are used in the four cases, MSEL and AOTL use the instruments in a similar manner. They rely on prices dependent on quality (via measuring sucrose levels or
grading), do not monitor farmers in that it is possible to decide whether to discard prior to harvesting, and have no bonding mechanism. The cases KSCL and TATEPA have in common that those prices are not dependent on grades and that they monitor farmers so that they can decide to discard sugarcane or tea. On top of that, TATEPA screens farmers and employs a bonding mechanism. Although the cases do not make it possible to assess the absolute efficiency of the agro-industry institutions definitively, from a private costs perspective TATEPA seems to perform best. Although it has higher administrative costs due to its extensive monitoring effort, the set up of the system lifts tea leaves farmers to the type E category and eliminates or circumvents many behavioural problems. Whether or not the social cost in the case TATEPA is big enough to diminish this efficiency, cannot be decided upon the evidence presented here. What can be said, though, is that the institutional setup in the case does not come at the expense of the RUTECO farmers. Such a result has not yet been reached in the other three cases. In these cases, farmer opportunism coupled with a lack of transparency is at the root of all behavioural problems. On top of these private costs, social costs have to be added. In the three cases, these social costs seem to be larger than in the TATEPA case.