

Chapter Five: Case Studies in the South African and Swaziland Sugar Industries

5.1 Introduction

The objective of this chapter is to test the research questions stated in Chapter One, by using a case study in the Southern African sugar industry. A further objective of this chapter is to incorporate the results of this chapter in the design of small-holder contracting models. The conceptual framework, developed in Chapter Four, contributes to the selection, assembly and analysis of the data. The case study combines a sugar producer in Swaziland, namely Mhlume Sugar Company (MSCo) and the Transvaal Sugar Company (TSB) situated in Mpumalanga, South Africa. The MSCo company is located in the north-east of Swaziland approximately ten kilometres south of the South African border. It is bordered by the Lebombo mountains to the east and the Komati river to the west. By contrast, the Transvaal Sugar Company (TSB) is located in South Africa in the province of Mpumalanga. The factory operation consists of two sugar mills. The first mill is located at Malelane, south of the Crocodile river and the second mill south of Komatipoort. Figures 5.1 and 5.2 illustrate the location and layout of the two sugar producing operations.

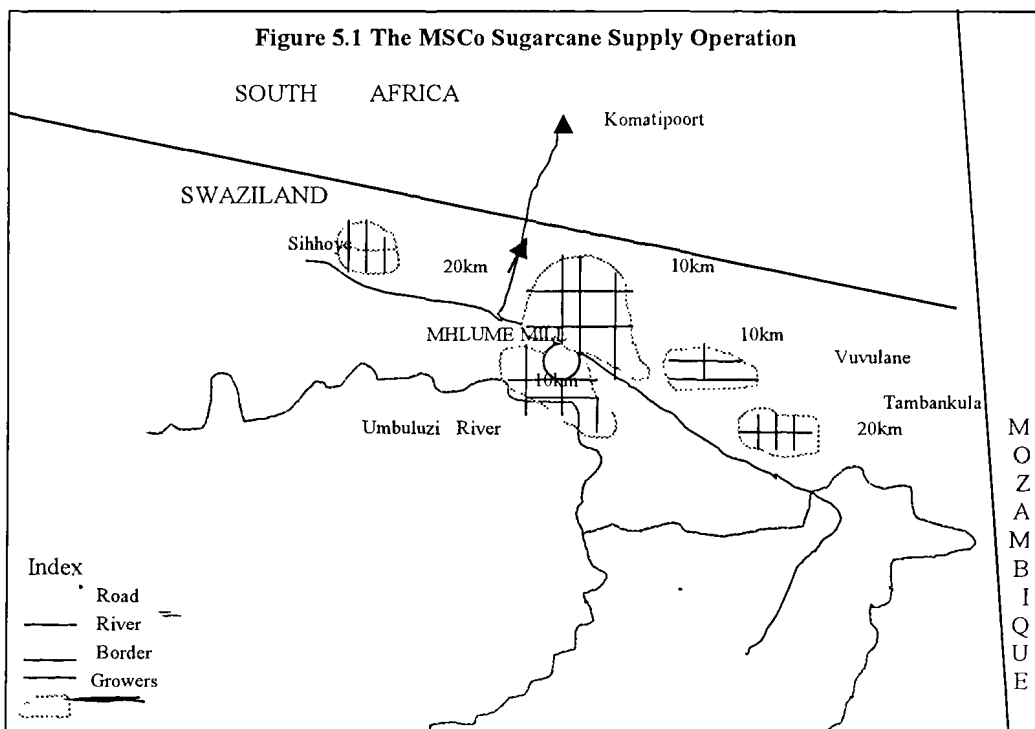
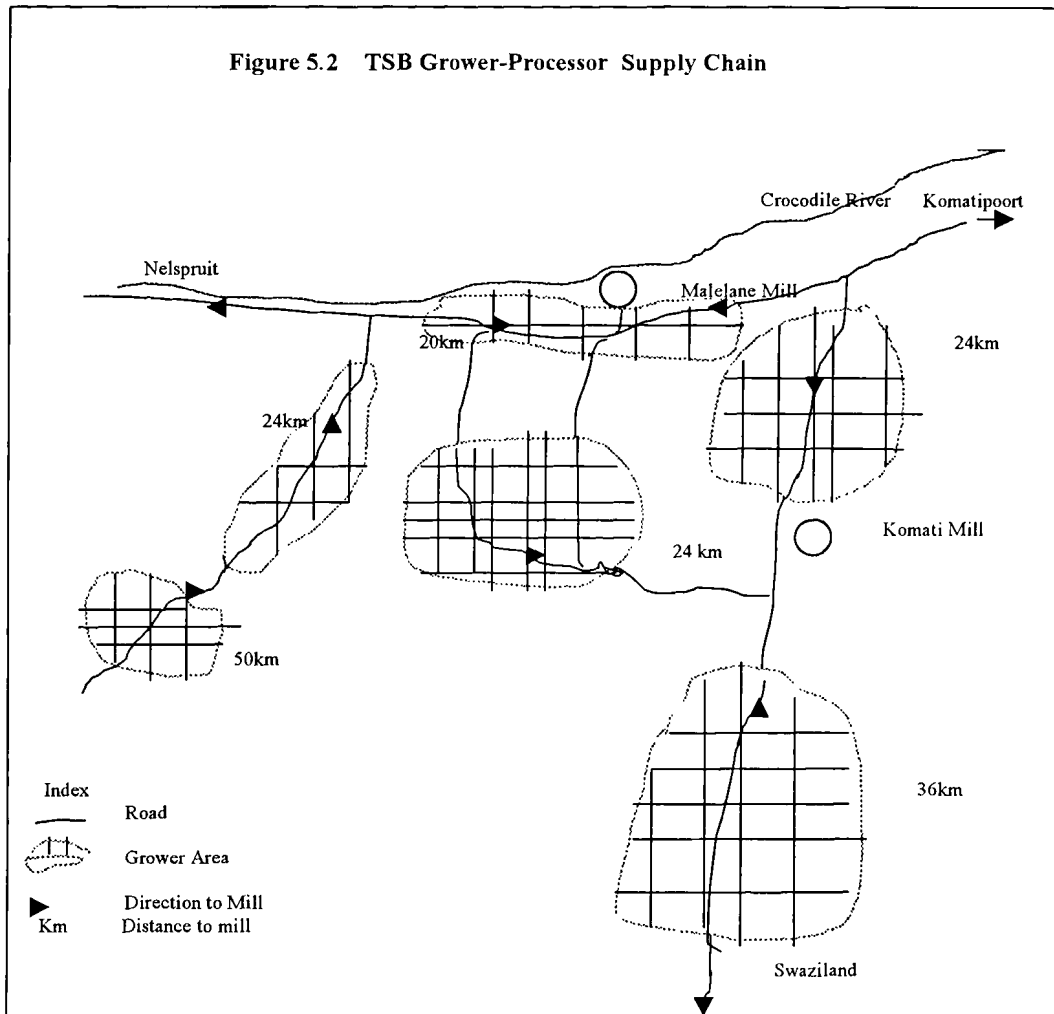


Figure 5.2 TSB Grower-Processor Supply Chain



The chapter commences with a description of the background and institutions that have influenced the sugar industry in Southern Africa. This description emphasises some of the historical legacies and the macro-environment that have shaped the sugar industry. The two companies are then introduced including the data, history, performance, logistics and economics of the two sugarcane supply-processing operations. The five research questions are separately examined and tested before a summary and conclusion are developed.

5.2 Background (Courtesy of the Swaziland Sugar Association and Mhlume Sugar Company)

5.2.1 The Swaziland Sugar Industry

The Swaziland Sugar Industry is regulated by the Sugar Act of 1967. Under this Act, the control of the industry is vested in the Swaziland Sugar Association (SSA), with production controlled by a quota system. The SSA owns certain assets, like warehousing, and also markets all the sugar produced in Swaziland. The SSA has two members, the Swaziland Cane Growers Association (SCGA) and the Swaziland Millers Association (SSMA). These members have an equal number of votes in the SSA council and collectively control the sugar industry. The sugarcane growing industry is a major player in the Swaziland economy accounting for 60 % of the agricultural gross domestic product and 12 % of the total gross domestic product. Furthermore, the sugar production contributes 25% of the manufacturing sector in Swaziland and, in total, including both growers and millers, accounts for 20% of the total gross domestic product. The sugar industry generated between 11.1% and 17.5% of total export earnings between 1996 and 1999 and employs in excess of 20 000 people, illustrating its importance in the Swaziland economy.

5.2.2 The South African Sugar Industry

The South African sugar industry is regulated by the Sugar Act (1978), which grants statutory powers of self government to this sector of the economy. The affairs of the sugar industry are controlled by the South African Sugar Association (SASA) who administer the production and supply of sugar cane to the millers, in addition to the production, marketing and distribution of sugar. SASA is made up by the SA Cane Growers Association (SACA) and the South African Sugar Millers Association (SAMA) who are equal partners and each elect eleven councillors to sit on the governing body.

The South African sugar industry produces an average of 2.5 million tons of sugar per season, of which 50% is exported. These exports contributed R 1.9 billion to the country's foreign exchange earnings in 2000/1. The sugar growing areas of South Africa primarily include Kwazulu-Natal, Mpumalanga and the Eastern Cape, where

the climatic conditions are more favourable for the growing of sugarcane. In 2000/1 the sugarcane industry directly employed 85 000 workers and indirectly an additional 265 000 people in other related industries. The number of growers and area under sugar cane are illustrated in Table 5.1

Table 5.1: Area and Number of Sugar Growers

Growers	1999/2000		1999/2000		2000/1		2000/1	
	Numbers	%	Area (ha)	%	Numbers	%	Area (ha)	%
Small Scale	51 439	96.7	82 831	19.6	50 561	96.6	83 482	19.6
Large Scale	1744	3.3	338 806	80.4	1799	3.4	343 116	80.4
Total	53 183	100.0	421 637	100.0	52 360	100.0	426 598	100.0

5.2.3 The Sugar Markets

The Swaziland sugar industry sells to five main markets. These are the European Union (EU), the United States (US), the Southern African Customs Union (SACU), the Local Region (principally Mozambique), and the world market. Swaziland benefits from preferential access to the European Union market as a result of the Cotonou Agreement and receives a special variable annual tariff quota for this category of sales. Swaziland also has preferential access to the United States market for a variable quota with a fixed minimum annual quantity. Sales to SACU mostly include South Africa and the local Swaziland market and are subject to the joint price regulations imposed by the South African Sugar Association and the Swaziland Sugar Association respectively. Both South Africa and Swaziland are bound by a sugar agreement to regulate the industry in Southern Africa (SADC). The other countries include Malawi, Zambia, Zimbabwe, Mozambique, Tanzania and Namibia and, collectively, this agreement regulates sales to the world market and to SACU. Sales to the world market are only concluded once Swaziland has fulfilled its quota allocations to the European Union, the United States and SACU. In the period 1999/2000, Swaziland sold 526 046 tons of sugar of which 31 % was sold to the EU, 3 % to the US, 48 % to SACU and 18 % on World regional and overseas markets

The export of sugar from South Africa has increased steadily from 1996/7 to 2000/1 where exports made up more than 50% of total disposals. Exports from South Africa include markets in Africa, the Middle East, North America and Asia. The disposal of sugar occurs in two principal markets, the South African Customs Union (SACU) and the world-sugar market. South Africa is a party to a regional co-operation agreement

to facilitate the optimal development of the sugar industry in Southern Africa. South African sales to SACU have recently increased due to Swaziland's inability to supply its quota, whilst the decline of the Rand against the dollar, combined with a recovery in world sugar prices, contributed to a 25% increase in export revenue in 2000/1.

5.2.4 Industry Competitiveness

The irrigated sugar industry in Southern Africa is highly competitive with both regional and international players. Between 1995 and 2000, Swaziland growers produced a yield per hectare of between 95 and 100 metric tons with an average sucrose content of 14 %. By comparison the irrigated sugar industry in South Africa produced a yield of 98 metric tons per hectare with an average sucrose yield of 13.8 %. This level of productivity compares well with the irrigated cane sectors in Southern Africa where Zimbabwe, historically (at least until 2001), produced a yield of 115 metric tons per hectare and a sucrose yield of 14%, whilst Malawi has produced a yield of 95 metric tons per hectare and a sucrose yield of 14%.

Swaziland sugar production, including factory performance and recovery rates, ranks amongst the most efficient in the world, including Columbia and Australia. South Africa's production cost per metric ton of sugar is somewhat higher than many regional and international competitors. In this respect, South Africa produces sugar at a cost of US \$ 350 per metric ton, compared to Malawi at US \$ 200, Zambia US \$220, Zimbabwe US \$ 220 Australia US \$ 245, Swaziland US \$ 250, Kenya US \$ 270, Ethiopia US \$ 300 and India \$ 330. The South African sugar milling sector, however, ranks amongst the most efficient in the world, where the factory performance in terms of recovery rate has been around 97% for the period 1995-2001. South Africa's transport costs per ton (US \$ 10) are also the lowest in Southern Africa compared to Swaziland (US \$ 30 per metric ton), Zimbabwe (US \$ 40) and Malawi (US \$ 70). Swaziland's transport costs, however, remain high in relation to South Africa but compare favourably to Zimbabwe at US \$ 40 (historical cost) and Malawi at US \$ 70. Finally, the long-term deterioration in the real exchange rate of the South African Rand has also provided the industry with an added competitive export advantage.

5.3 The Companies

The two agribusiness companies consist of the Mhlume Sugar Company in Swaziland and the Transvaal Sugar Company in Mpumalanga, South Africa.

5.3.1 The Mhlume (Swaziland) Sugar Company

The Mhlume (Swaziland) Sugar Company (MSCo) was founded in 1958 and is fifty percent owned by the Commonwealth Development Corporation and fifty percent by the Swaziland Nation, in the form of the institution, Ingwenyana. MSCo produces a number of sugar products including raw brown sugar, refined sugar and molasses. The company currently employs in the order of 1865 permanent staff and contracted 314 seasonal staff in 2000/1. Permanent staff have remained relatively constant over an eighteen year period from 1983/4. The company has achieved an average return on capital employed (ROCE) of 82% between 1986/87 and 2000/1. The ROCE climbed relatively steadily from 52% in 1986/87 to a peak of 147 % in 1996/7. Thereafter, ROCE has declined to the current level of 88 %. ROCE calculations have all been adjusted by the inflation index to 1992/3. Turnover has increased from R 45 million in 1981/2 to R 351 million in 2000/1 and profit before interest and tax (PBIT) from R 6.8 million in 1981/2 to R 107.8 million in 2000/1.

The mill operations generate larger profits than the agricultural division and the ratio between the mill and the agricultural operating margins is approximately 2:1. In the same period capital employed has increased from R 36.3 million to R 122.6 million, whilst cash on hand has declined from an overdraft of R 4.3 million to an overdraft of R 20.4 million. The factory performance indicates that the mill operations processed an average annual tonnage of 1.25 million tons between 1982/3 to 2000/1 with a minimum tonnage of 1.07 million tons in 1985/6 and a maximum of 1.37 million tons in 1986/7. These operations have yielded a minimum of 131 000 tons of sucrose in 1985/6 and a maximum of 193 000 tons in 1991/2. Plant utilisation has increased from 83 % in 1981/2 to 95% in 2000/1 but, in this period, has ranged between 74% and 97 %. Finally, MSCo increased mill capacity by 12 % in the period 1990 to 2001.

5.3.2 The Transvaal Sugar Company

Transvaal Sugar Limited (TSB) was founded in 1965 and operates in the province of Mpumalanga with offices in Johannesburg and Durban. TSB is a 100% owned subsidiary of Hunt Leuchars and Hepburn (HL & H) which, in turn, forms part of the Rembrandt Group of companies. TSB has five divisions that report directly to the managing director. They are Finance, Sugarcane, Citrus, Human Resources and the Malelane and Komati Mills. The company's main activity is the production of sugar, however, the company is also involved in the cultivation of citrus, subtropical fruit and tea. Apart from the production of these products, the company produces a range of products like animal feed from the by-products of sugar cane. TSB employs 4000 people and contributes substantially to the economy of Mpumalanga. The company has the capacity to produce 350 000 metric tons of sugar annually from its two factories near Malelane and Komatipoort. The sugar is sold under the Selati brand name. Sugar production has increased from 109 500 metric tons in 1975/76 to the current level of approximately 300 000 metric tons in 2000/1. Total tons of cane crushed in the same period have increased from 1 million tons to 2.5 million tons. Sugar production contributes towards 83 % of TSB turnover, followed by animal feed (8%), tea (3%), transport (3%), citrus (2%) and litchis (1%). Assets employed have increased from R 80.5 million in 1986 to R 586 million in 1995 and the current estimated replacement value of total company assets is R 2.3 billion.

5.3.3 The Data

The data consists of the historical records of the Mhlume Sugar Company (MSCo) of Swaziland and the Transvaal Sugar Company in Mpumalanga. The MSCo case study data includes two sets of data from small-scale farmer associations that are contracted to the company to supply sugarcane, namely, the Nyakafto Farmers Association, Swaziland and the Vuvulane Farmers Association, Swaziland. The data from these organisations consists primarily of the historical records of the MSCo company and its contracted growers between 1981 and 2001. Although the data are largely of a qualitative nature some quantitative data have been developed. This data includes a questionnaire survey of satisfaction level of small-scale growers supplying sugarcane

to the MSCo mill. The MSCo data is located at the company operation in Mhlume, Swaziland. The TSB data consist of the historical records of the company located at the head office, namely Transvaal Sugar Company (TSB), Malelane, South Africa. In addition a sample of small-scale cost data were developed by the TSB company (Madadeni Project 1998-2001) and the South African Cane-growers Association (SACA), Kwazulu-Natal, South Africa (Figtree Project 1996-2001). The selection of data in the case studies has been largely guided by Chapters Two and Three. The data were collected on a number of field trips between June and December 2001. The limitations of the data are primarily the incomplete nature of the financial records of the small-scale farmer associations with respect to the overhead cost structure, in addition to the non standard treatment of development costs. Furthermore, the South African Cane Growers Association has omitted certain overhead expenditure like depreciation. In order to assess and compare the records of the company versus the small-scale farmer associations, estimates have been established in line with general accounting practices. The financial records of small-scale grower associations have been adjusted to exclude both interest received and paid, in order to compare their performance with the agribusiness companies. The limitations of the data also include the arbitrary apportionment of TSB company overheads to the company estates. The cost data for the agricultural division, in this respect, includes overhead costs that relate to the production of other crop types like citrus and litchis. Because these additional crops represent less than 4% of total production cost, the original total overhead cost structure has been maintained. The overhead cost of the TSB agricultural division has thus been marginally overstated. Finally, the researcher obtained permission to access the respective data of the two companies and the completed case study has been reviewed by the management of both the MSCo and TSB companies.

5.4 The Growers

A summary of the cane growers in the two case studies is illustrated in Table 5.2. The major categories of grower include the company estates, contracted small-scale farmers and contracted medium to large growers. Whilst the MSCo estates currently grow 67 % of sugarcane processed and contracted growers 33 %, the TSB estates produce only 18 % of sugarcane deliveries to its mills with 82 % supplied by

contracted farmers. In both instances, contracted small-holders operating as farmers associations or managed small-holder schemes, supply 18 % of sugarcane

Table 5.2: Sugarcane Production for 1999-2000

Growers	MCo		TSB	
	Area Ha	%	Area Ha	%
Company Estate	8791	67	7932	18
Contract Small	2329	18	7473	18
Contract Large	2042	15	27605	64
Total	13162	100	43010	100

5.4.1 The Supplier Contract

The contrasting contract conditions of the two companies are listed in Table 5.3. All contracted growers who supply the Mhlume Sugar Company, except for the agricultural division of the company, are required to sign an annual supplier agreement with the company. All new applicants must conform with a list of requirements to obtain a sugar quota from the Swaziland Sugar Association and the Mhlume Mill Group. Firstly, the applicants need to ensure that they have the legal status to act as suppliers. The applicant is required to provide proof of being a registered supplier and, in the case of growers operating on traditional land, a letter of authority is required from the tribal authority with respect to the use of the land. Alternatively, growers need to supply proof of permanent land tenure rights. Furthermore, the applicant is required to provide proof of water rights, as well as details of the geographical location of the farm and the respective soil conditions as identified by a Swazi Sugar Association agronomist. The application for a sugar quota requires a letter indicating the mill group's agreement to accept him/her as a supplier. On receipt of the sugar quota, the new supplier becomes a member of the Swaziland Growers Association and becomes eligible to enter into an annual supply agreement with the company. At the start of each season, the company mill group committee secretary will issue each grower with a new mandate form for the year. The grower will fill in the form giving all the required information such as the date, address and the daily tonnage that can be supplied. These forms must be signed before the first mill group meeting of each season at which all the growers must provide estimates of their total tonnage for the season. The supplier thus undertakes to deliver a fixed daily tonnage of cane to the mill. This quota is strictly enforced by the mill which allows a daily tolerance of 5% above or below the estimated daily

tonnage. These records become the official supply records and constitute the basis of the MSCo grower contract arrangement for the season.

Table 5.3: The Contract Conditions

Contract Conditions	MSCo	TSB
Contract	Annual Supply Agreement	Formal Contract
Contract Enforcement	Mutual interest, complex	Legal, Complex
Managed Control	Medium.	High.
Ability to Walk Away	Low but possible. Interlocking factors.	Limited. Long term contract. Interlocking conditions
Available Substitutes	None	None
Parties have own identity	Yes	Yes
Duration	One year	Many years
Ex ante control	Low	Low
Ex post importance	High	High
Information shared	High	High

The contractual arrangement between farmers and the Transvaal Sugar Company Limited (TSB) is controlled by a Cane Delivery Agreement. All growers must adhere to the conditions and obligations that are specified in a comprehensive specification contract that binds the respective parties over long periods of time. The contract contains twenty clauses that form the main body of the agreement, together with a series of appendices. The contract identifies the parties, together with a list of definitions in clauses one and two. Clause three outlines the interpretation of the contract, whilst clause four and five specify the basis of the agreement and the period of the contract. Clause six outlines the growers' obligations in a comprehensive fashion and allows the TSB company access to the property of the grower to assess the supply of extension services and to co-ordinate the delivery of cane to the company mill. The company, in turn, outlines its undertakings in clause seven and specifies how the contracted grower will be paid in clause eight. The price paid to out-growers is determined by the specifications of the South African Sugar Association, which determines the grower-miller split from the proceeds of sugar sales. Clauses nine to twelve cover transfers of areas, rights and amendments to the contract and clause thirteen stipulates the terms of the contract as a result of a *force majeure*. Clauses fourteen to seventeen outline the

conditions of termination, default, jurisdiction and arbitration respectively. Finally, clauses eighteen to twenty outline the procedure of notification, cession and miscellaneous issues.

The principal difference between the sugarcane supply contractual arrangements of the two companies is that TSB relies on a long term formal contract whereas MSCo employs a more informal annual agreement. TSB, therefore, relies more heavily on legal enforcement of the conditions than MSCo. MSCo, for instance simply does not renew the annual agreement if a contract farmer does not fulfil their obligations. Both companies, however, rely on interlocking factors to ensure contract enforcement. These factors include a lack of alternate opportunities, heavy social investment in the contracted suppliers and local communities, the development of trust and the administration of suppliers affairs combined with the role of facilitating loans and access to institutions.

5.4.2 Land Tenure

Swaziland still retains a dual structure of land tenure, dating back to the 1907 Land Act and Swazi nation land (SNL), operating under traditional land rights, has been allocated to the Swazis. Title Deed Land (TDL) in Swaziland was originally allocated to European owners on the basis of freehold title. Land has also been allocated on a long term lease basis to agribusiness in Swaziland. The land, allocated on an SNL basis, has risen from 39% in 1907 to almost 70 % by the mid 1980s (Levin, 1988; Atkins & Terry, 1995). Whilst MSCo, larger growers and the managed smallholder operation of Vuvulane operate on the basis of long term lease-freehold title, a majority of small-scale farmers operate on Swazi Nation Land where traditional land rights operate (Atkins & Terry, 1995).

South African land tenure arrangements are regulated by a number of acts and growers in the TSB supply chain farm under a number of conditions. TSB holds freehold title-long term lease facilities to the company estates, as do the majority of the contracted medium-large growers. The conversion of previously owned company estates to small-scale farmer operations has resulted in an increasing number of small-scale growers also obtaining freehold title to their land. The land tenure

arrangements of many small-scale farmers, however, are still defined by Proclamation R188 of 1969, that outlines the conditions pertaining to traditional or communal land. This proclamation bestows a range of rights and access to land. Land access is usually by virtue of membership to a community and not through sale, lease or rent. In many instances, traditional regulation only permits men to inherit land rights. Individuals, moreover, do not own their residential and arable allotments but, rather, are allowed the right of occupation and cultivation as stipulated by the tribal authorities. According to some surveys, approximately 15% of land in the former homelands is held on freehold or conditional title. African freehold rarely belongs to a single person but rather to the extended family or a syndicate. Several of the Native Lands Acts, however, that specifically segregated land on a racial basis and restricted Africans to certain types of land tenure, were set aside in the 1990's (Klug, 1996).

5.5 The economics of Sugarcane Supply

5.5.1 The Organisation Structure of the Sugarcane Supply Chain

The sugarcane producing areas in both case studies are, mostly, located within a thirty kilometre radius of the company mills. The growers' infrastructure include a network of secondary dirt and tar roads. The logistics of sugarcane supply are centrally controlled by the management of the company factories. The companies maintain records of the spatial and agronomic qualities of all the growers and a co-ordinated planting and harvesting schedule is developed on an annual basis by the factory sugarcane supply departments. The planting-harvesting schedule of the company estates is also developed and jointly co-ordinated by the agricultural and processing operations of the MSCO and TSB operations. The estimated planting-harvesting schedules form the basis of an annual supply contract that is co-ordinated by the factories. Both the company estates and the contracted growers are required to adhere to a pre-determined delivery schedule that stipulates the exact dates and quantities that must be delivered. The transport of sugarcane occurs in five to thirty ton loads. The company estates largely employ their own transport fleet, whilst contracted growers engage local transport companies for their haulage requirements. The supply of sugarcane to the company mill occurs in an annual thirty week cycle, that is extended if necessary to thirty six weeks, between December and July each year. The

harvesting-delivery schedule, developed and managed by the sugarcane supply department, ensures that the logistics of delivery extend to a twenty four hour cycle in the growing season. The trucks are queued in the cane supply yards after passing over the company weigh-bridges. The loaded trucks are offloaded by overhead cranes or tipped directly onto the cane crusher conveyer belts. The unloaded trucks are then re-weighed before exiting the company premises. Finally, the delivery quantities are captured on the daily delivery schedules that are the basis of ensuring capacity is maintained, as well as the basis for remunerating suppliers.

Farmers in both the case study areas produce sugarcane. A supplier contract controls part of the production and delivery of sugarcane and allows the MSCo and TSB management a measure of control over the growing operations of the contracted farmers. According to the method Petersen and Wysocki (1997; 1998) use to classify different governance forms, as described in Chapter Three, the level of managed control afforded by the contracts of the farmers could be described as the governance form of specification contracting. This structure falls to the left of the vertical co-ordination continuum in Table 5.4. In this type of governance structure the level of managed control is higher than the spot market, but lower than that of joint alliances, formal partnerships and full vertical integration. Conversely, the agricultural estates of both companies are fully vertically integrated into the company hierarchy. This governance form is found on the right hand of the same vertical co-ordination continuum and incorporates a structure that is 100 % controlled within the hierarchy of the company. The actual organisation structure of the two sugarcane supply operations therefore displays a combination of two types of governance structure.

Table 5.4 : Organisation structure: Sugarcane Supply

	Spot Market	Specification Contracting	Strategic Alliance	Formal Co-operation	Full Vertical Integration
Level of managed co-ordination	0%	Low	Intermediate	Int. high	High
Actual Governance Structure		1.MSCo Contract Growers 33 % 425 000 tons 2.TSB Contract Growers 82 % 3 114 000 tons			1. MSCo Company Estates 67 % 864 000 tons 2. TSB Company Estates 18 % 684 000 tons

Based on Chapter Three: Petersen and Wysocki (1997; 1998)

This combination of structures demonstrates that specification contracting is employed to procure 33 % and 82 % of sugarcane supply in the case of MSCo and TSB respectively, whilst full vertical integration (own estates) is employed to procure 67 % and 18 % respectively. The weighted structure of both companies would suggest that the MSCo Company has higher levels of managed control over sugarcane supply than the TSB Company.

5.5.2 Transaction Characteristics of Sugarcane Supply

The delivery and processing of large volumes of a perishable commodity requires the co-ordination of the activities of the growers to ensure the optimum use of high fixed cost processing facilities that are unique to the sugar industry. The volume of supply, the nature of the suppliers and the industry specific nature of the processing plant and equipment, in turn, influence the dynamics of the firm's transactions. The transaction characteristics of the cane supply operations are illustrated in Table 5.5. The conceptual framework, developed in Chapter Four, has been used to identify and classify the transaction characteristics of the respective supply chains. The annual number of sugarcane deliveries to the mill was used as a basis to determine the transaction characteristic of frequency, whilst the value and co-ordination requirements of company fixed assets were used as a basis to determine asset specificity. The transaction characteristic of uncertainty has been evaluated on the basis of a qualitative analysis of the conditions of supply.

Table 5.5 : Supply Chain Transaction Characteristics for 2000/1

	Mhlume Sugar Co (MSCo)	Transvaal Sugar Co (TSB)
	13162 Hectares	42268 Hectares
Transaction Characteristics		
1. Frequency		
Tonnage Crushed	1 288 799 (1 mill)	3 800 000 (2 mills)
Number of Deliveries	52 350	136 000
Administration	582 tons/transaction	246 tons/transaction
2. Asset Specificity		
Co-ordination Level	Very High	Very High
Value of Estates	R 630 million	R 1 billion
Value of Plant	> R 2 billion	R 2 billion
3. Uncertainty		
Supply-Current	Low	Low-Intermediate
Supply-Projected	Low-Intermediate	Intermediate
Processing Costs	High Degree of leverage	High Degree of leverage

5.5.2.1 Transaction Frequency

The results suggest that the continuous nature of both processing operations, combined with the large volumes of sugarcane processed, influence high levels of transaction frequency. For the period 2000/1, thirty nine different supplier groups delivered 1.27 tons of sugarcane in 52 350 deliveries to the MSCo company mill. TSB displayed a similar high level of transaction frequency in the grower processor supply chain for the same period, where some 136 000 deliveries resulted in the supply of 3.8 million tons of cane to two separate mills. Both companies, moreover, generate a high number of administrative transactions with respect to the supply of sugarcane.

5.5.2.2 Asset Specificity

Asset specificity relates to the degree to which the assets of the processor or the grower are locked into sugar specific transactions. High levels of asset specificity for the processor exist in both of the grower-processor supply chains. The MSCo mill group employed some R 2 billion of fixed assets at current cost in 2001. Moreover, the level of fixed assets is projected to increase as a result of a R 200 million mill expansion program to accommodate the production of an additional 6 000 hectares of sugarcane from a new small-scale farm project that is due to come on line in 2002/3. Similarly, TSB factory assets have been valued at R 2.3 billion. In both instances, the assets of these companies are highly specific and have a low opportunity cost outside the sugar industry. The assets, moreover, are relatively immovable and are also site specific as they have been centralised in relation to the company estates and out-grower suppliers. Conversely, the assets of the contracted growers consist largely of irrigation and general farming equipment that can be applied relatively easily outside the sugar industry. The factory assets further demonstrate asset specificity as a result of the need for high levels of co-ordination in order to maximise the use of capacity. The delivery of sugarcane is co-ordinated by a delivery schedule that operates seven days a week on a twenty four hour basis over a 30-36 week harvesting cycle. Every supplier contracts to deliver a specified tonnage of cane every twenty-four hours on a five, six or seven day a week basis as specified by the annual agreement. The cane receiving yards of MSCo and TSB are, therefore, required to co-ordinate and process

the continuous delivery stream of a perishable product, involving 1.29 million tons and 3.6 million tons respectively. The high levels of co-ordination are further influenced by the perishable nature of sugarcane that begins to lose sucrose content 48 hours after harvesting. Both the MSCo and TSB milling groups, therefore, display significantly higher levels of asset specificity than their contracted growers and higher levels of asset specificity than their own agricultural estates.

5.5.2.3 Uncertainty of Supply

Despite the high level of fixed cost of both of the processing operations, combined with a similar need to maintain mill capacity, the important issue of supply uncertainty appears to be different for the two companies. In the case of MSCo, supply uncertainty, historically, has been relatively low, due to the fact that the company estates have produced more than 60 % of the sugarcane processed (The company, however, is in the process of expanding smallholder supply). Further factors influencing lower levels of supply uncertainty are: Firstly, sugarcane has traditionally been considered as the best cash crop opportunity in Swaziland where few substitute opportunities exist. Secondly, Swaziland growers have received higher prices than their South African counterparts because of the preferential prices received from the European Union and the United States. Thirdly, the historical development of South Africa and Swaziland has created commodity specific assets, infrastructures and institutions that have promoted the development of the case study industry sector. Other factors influencing the uncertainty of sugarcane supply include the production practices of the growers, sugar prices and agronomic, biological and climatic variables.

Conversely, it can be argued that sugarcane supply in the case of the TSB supply chain has experienced moderately higher levels of uncertainty due to the fact that the company estates only supply 18% of mill capacity. The company has relied on contracted medium to large scale growers to supply 64 % of sugarcane processed and contracted small-scale growers to supply 18 % of mill capacity. The reliance on small-scale growers is set to increase when an additional 240 farmers, occupying 1800 hectares, start supplying the Komati mill when the Nkomazi Project comes on

stream. The company is also in the process of a land reform program that will result in the unbundling of a portion of its estates by way of a small-scale grower project.

A number of factors could increase supply uncertainty in both operations. The different time horizons of contracted farmers and the company operations with respect to their involvement in the sugar industry could increase supply uncertainty. The growers' time horizon would normally extend to an approximate ten year ratoon cycle, after which the farmer will re-evaluate his/her opportunity cost of re-investing in sugarcane production for a further ten year cycle. Conversely, both the company operations are geared to a minimum twenty five year time horizon. On the basis of the current contract arrangement, both agribusiness processors have no guarantee that their contracted growers will remain in the sugar industry for this period. Furthermore, mutual asset specificity is reduced by the fact that contracted growers can utilise their plant and equipment, largely irrigation facilities, to produce substitute crops like bananas, pineapples, citrus and litchis. The uncertainty of this re-investment decision is increased by the current volatility-over supply on world markets, the chances that preferential tariffs will be rescinded, the possibility of increased water tariffs and alternative high value cash crops.

A number of interlocking factors, however, contribute towards the reduction of supply uncertainty in both case studies. Supply uncertainty is reduced by the fact that the production practices, technologies and quality employed by the contracted growers are monitored-enforced by the processor in a joint quest to optimise the sucrose content of the sugarcane. Both companies exert high levels of managed control over the growers in a supply arrangement that is complex, difficult to enforce legally and relies on the mutual interests of the two parties. The contracted growers are locked into the supply relationship because there are no better opportunities, as well as because of a range of both monetary and non monetary benefits that can be associated with the relationship. Firstly, the agribusiness partner provides inputs, credits, technical advice and government grants on a far less costly basis than external suppliers, as well as absorbs the related administration costs. In certain instances, moreover, financial institutions will only lend to the grower on the basis of an agribusiness supply agreement. Some sugar companies in Swaziland and South Africa have attempted to further reduce supply uncertainty by investing a portion of

the growers' revenues in a trust account to ensure the continuity of small-scale supplier operations and the broader welfare objectives of the farm family. The contracted grower would lose many of these benefits as a result of the cessation of the contract. Secondly, company programs to provide education, health, communication and recreational facilities in local company related communities implies a withdrawal of these facilities in the event of the termination of the contractual relationship. Thirdly, the location of growers land and farming assets increases the mutual asset specificity between the parties and delivery to another processor would incur incremental delivery and spoilage costs. Mutual asset specificity is increased by the fact that many contracted farmers have been in the sugar industry their whole lives and their skills and knowledge are industry specific. Finally, the important issue of trust between the parties has influenced lower levels of supply uncertainty.

Trust

Trust reduces supply uncertainty as a result of a reduction of moral hazard and opportunism in the supply arrangement (Ring & Van den Ven, 1992; Foss, 1995, Tregurtha & Vink, 1999; Gow et al, 2000). A quantitative study of the MSCo small-holder sugarcane supply operation was used to estimate the level of trust these farmers had with regard to their agribusiness partner and the sugarcane supply arrangement (Sartorius et al, 2003). Two aspects of contractual relationships were isolated in this study, namely, the satisfaction of both the company and the cane growers, as a measure of the chain performance, and the level of trust as an important antecedent to performance. To measure satisfaction, farmers responded to a Likert scale that ranked their response about the price paid for their sugarcane, the suitability of the present payment system, the suitability of the procedure used to test their sugarcane for sucrose content and the level of technical assistance received from the industry. The Likert scale measurement 1 indicates high levels of trust and 5 indicates high levels of distrust. According to results of the survey, illustrated in Table 5.6, small-scale cane growers are presently marginally dissatisfied with the price paid for sugarcane, though there was a wide variation in the response. However, they appear to be satisfied with the payment system, the procedure for testing cane and the level of technical assistance. The aggregated results, moreover, reveal that

small-scale cane growers are satisfied with the general performance of the MSCo supply chain.

Table 5.6 : MSCo Small-Scale Farmer Perceptions of Supply Relations

Item	Mean	Std Deviation
Price paid for cane	2.6486	1.0127
Payment system	2.1067	1.0600
Procedure for testing cane	2.4865	0.8639
Technical assistance	1.9730	0.8436
Average	2.3037	

*1 Very Happy, 2.5 Satisfied, 5 Unhappy Source: (Masuku, 2002)
Source: Masuku, 2003

Trust between small-scale cane growers and MSCo, was also measured by a Likert scale with the same parameters. Table 5.7 indicates that small-scale cane growers have a reasonable level of trust in the mill, when it comes to their relationship. This implies that cane growers do not suspect any opportunistic behaviour by the mill. These results contradict the findings of Milford (2001) in the Australian Sugar Industry. Milford attributed the lack of trust between growers and the mills to poor performance in the past, individualism on the growers' part and perceived power and information imbalances. In the case of MSCo, the presence of trust could be attributed to the well co-ordinated activities of MSCo, the growers and the Swaziland Sugar industry. The growers are represented in the Swaziland Sugar Association (SSA) who are, in turn, involved in the contractual process of establishing supply contracts, as well as the determination of grower revenues. MSCo, moreover, employs local company officers who understand and interface with the farmers in their own language.

Table 5.7: Small Scale Cane growers' trust of their relationship with MSCo

Item	Mean	Std Dev
Decisions by millers are meant to benefit both millers and cane growers	2.3944	0.6862
The miller does not cheat farmers	2.6000	0.9231
The mill is concerned about the welfare of cane growers	2.0137	0.7359
There is mutual understanding between millers and cane growers	1.7568	0.7189
Millers are generous with information	2.6986	1.499
The mill is reliable	2.0571	0.8145
Farmers have to scrutinise information given by millers.	2.7808	0.7801
Average	2.3288	

Source: (Masuku, 2003)

The company is extensively involved in the community and maintains both schooling and medical facilities for a large number of its workers who, in many cases, also interact with small-scale farm suppliers. On the basis of the results of the case study, including the survey of trust, this study has concluded that the level of supply uncertainty can be graded as low to intermediate for the MSCo and TSB sugarcane supply operations respectively. The results suggest a low level of uncertainty of supply can be allocated to the company estates and a low-intermediate level to the contracted growers. The projected increase of small-holder supply of 6 000 hectares (Komati Project) in the case of MSCo and 1 800 hectares (TSB-Nkomazi project) is expected to increase supply uncertainty in the future.

5.6 Do Transaction Characteristics Influence Governance Structure?

The relationship between a set of transaction characteristics and a range of governance forms was illustrated in Chapter Three that demonstrated that organisation structure is a function of the transaction characteristics of frequency, asset specificity and uncertainty. Alternatively, the matching of transaction characteristics and organisation structure can also be approached from a contracting theory perspective that suggests that certain levels of frequency, asset specificity and uncertainty are best accommodated by certain types of contracting conditions that, in turn, are best accommodated in specific kinds of governance structures. Contract conditions that influence the choice of control structure include the ability of the parties to walk away from the contract, the availability of substitutes, the degree of identification of the parties, the duration of the contract, the level of ex ante control and ex post importance, the level of shared information and the ability to enforce the contract (Coase, 1937; Williamson, 1981;1996; 2000; Mahoney, 1992; Petersen & Wysocki, 1997;1998).

The process of matching the actual transaction and contract characteristics of a firm with an optimal governance structure was illustrated in Chapter Three and refined in the conceptual framework of Chapter Four. The selection of an optimum governance form for the MSCo and TSB cane supply operations is illustrated in Table 5.8. The conceptual framework has been structured to reflect five different governance forms (Columns 2-6) that are matched with each of the different transaction and contract

characteristics (Rows 2-16). Each of these characteristics, in turn can be graded in terms of five levels and each graded characteristic can be matched with one of the governance forms in the columns.

Table 5.8 : Matching Transaction Characteristics with the Level of Managed Control

Vertical Co-ordination Continuum	1. Spot Market	2. Specification Contracting	3 Strategic Alliance	4 Formal Co Operation	5 Full Vertical Integration
Variables					
a) Actual MSCo Structure		33 %			67 %
Actual TSB Structure		82 %			18 %
b) Transaction Characteristics	1. Low	2. Low-Int.	3 Intern.	4 Int -high	5 High
Frequency	Low	Low-Medium	Medium	Med-High	High MSCo 52350 TSB 136000
Asset Specificity	Low	Low-Medium	Medium	Med-high	High MSCo- R 2 b TSB - R 2 3 b
Uncertainty	Low	Higher MSCo	Medium TSB	Med-high	High
c) Contract Characteristics	1. Classical	2. Classical- neo classical	3. Neo- classical	4 Neo- class Relational	5. Relational
Level of Control	Low external	Low internal MSCo = 33% TSB = 82 %	Medium-internal	Hierarchy	High MSCo 67 % TSB 18 %
Ability to walk away	Yes	Yes/lower MSCo = 33% TSB - 82 %	Less	Low	None MSCo 67 % TSB 18 %
Substitutes	Yes	No	Less	No	No MSCo & TSB
Parties have own identity	Yes	Yes MSCo = 33% TSB = 82%	Yes	No	No MSCo 67 % TSB - 18 %
Duration	Short	Longer	Long 10years MSCo- 37% TSB = 82 %	Long	Long 25 years MSCo 60% TSB 18 %
Ex ante control	High	Lower	Low	No MSCo& TSB	No
Ex Post Importance	Low	Higher	High	High MSCo& TSB	High
Information Shared	Low	Higher	High	High MSCo& TSB	Extensive
Enforcement	Legal	Legal-complex MSCo =37 % TSB = 82 %	Legal-complex	Hierarchy	Hierarchy MSCo 67 % TSB 18 %

Based on Chapter Four: (Williamson, 1975; 1981; 1986; Mahoney, 1992. Petersen & Wysocki, 1997, 1998 Sartorius & Kirsten, 2002)

The actual governance forms (a) of the cane supply operations, described in Section 5.5.1, demonstrate that both companies co-ordinate the sugarcane supply operations with a combination of full vertical integration (5) and specification contracting (2). The actual transaction characteristics (b) of both the MSCo and TSB sugarcane supply operations, indicate a high level of frequency (5), a high level of asset specificity (5) and a low-intermediate level of uncertainty (2). The high level of transaction frequency has been based on the annual volume of sugarcane deliveries to the sugar

mills of the two companies. High levels of asset specificity, in both companies, are the result of high cost sugar industry assets (R2bn) that have been accumulated over time. The level of supply chain uncertainty, as discussed in Section 4.5.2.3, indicates a low-intermediate level of uncertainty for MSCo and a medium level of uncertainty for TSB largely because TSB company estates only supply 18 % of sugarcane requirements whilst MSCo company estates supply 67 %. According to transaction cost theory, the actual transaction characteristics of high levels of transaction frequency (5), asset specificity (5) and low to intermediate levels of uncertainty (2) would appear to be best accommodated in a governance structure ranging between specification contracting and full vertical integration (Coase, 1937; Williamson, 1981;1996; 2000; Mahoney, 1992; Petersen & Wysocki, 1997;1998).

A summary of the actual contract conditions (c) of the two supply chains, indicates that control is complex-internalised (2-5). In the case of the MSCo company, 67% of supply (the company estates) has no ability to walk away from the contract (5) whilst in the case of TSB only 18 % of supply is fully internalised in the company estates. On this basis, 82 % of TSB supply has the ability to walk away (2) from the agreement in the long term, significantly increasing the level of supply uncertainty over that of the MSCo company. In the case of both companies, there are no substitutes (5), the duration of the arrangement is ten years or more (3-5), there is a low level of ex ante control (4), a high level of ex post importance (4) and a high level of information (4) shared between the processor and the growers. There also appears to be a limited ability to legally enforce the contractual conditions of sugar supply (2-5). Collectively, the actual contract conditions appear to be best co-ordinated in a more relational type of contract structure that would be optimally accommodated by a governance structure that ranges between specification contracting and full vertical integration.

The actual governance forms (a) of both MSCo and TSB do not contradict the suggested optimal governance structures proposed by the actual transaction and contract characteristics of the supply chains. The actual MSCo governance form, however, leans more towards full vertical integration than the governance form of TSB, that is more weighted towards specification contracting. The results, however, appear to suggest that the actual transaction and contracting characteristics of the

sugarcane supply operation influence the minimum level of managed co-ordination rather than the maximum level of managed co-ordination. This being the case, the question needs to be asked whether sugarcane could be acquired by way of a governance structure with lower levels of managed co-ordination than specification contracting.

The open market purchase and delivery of 1.3 million tons and 3.6 million of sugarcane, by MSCo and TSB respectively, would result in a multiple classical contracting situation. The companies would be required to significantly expand both the procurement department and the quality control function, resulting in an increase in fixed overheads. The high cost asset specificity of the processing operations, moreover, could result in undue supplier opportunism in open market conditions that would place the processor in an untenable bargaining position. The presence of other mill groups competing in an open market situation could, further, act as a negative influence on supplier opportunism. The harvesters, the market, the buyers and the transport companies would also have to operate on a real time basis due to the perishable nature of the product, combined with the need by MSCo and TSB to service company capacity of 7000 and 19 000 tons of sugarcane per day respectively, on a continuous basis. The purchase price on an open market basis would also operate on a supply and demand basis, with a glut occurring in the peak harvesting period between April and May and supply shortfalls occurring between May and June. The need to make constant use of high fixed cost processing assets, requires a higher level of security of supply and delivery than the open market system can guarantee. Given the co-ordination requirement, the volume of supply, the perishability of the raw commodity, the nature of the suppliers, the need for consistent quality and the high cost of the processing facilities, the level of contracting costs and supply uncertainty would be excessive if sugarcane were to be acquired by an organisation structure with lower levels of managed control than the governance structure of specification contracting.

The study agrees with the literature and concludes that the spot market is unlikely to be as synchronised as contracting with respect to ensuring the continuous supply of a uniform quality raw commodity (Glover, 1984; Kilmer, 198). Glover, 1994; Mahoney, 1992; Hennessy, 1996; Azzam, 1996) On the basis of the results.

both the MSCo and TSB operations appear to employ a suitable governance structure to co-ordinate the transaction and contract characteristics of the sugarcane supply operations. Because TSB company estates only produce 18% of supply requirements, however, it may be appropriate to increase the level of managed control of contracted supply by some means. In conclusion, the results of the study suggest that the transaction characteristics of the grower-processor supply chain do indeed influence the minimum level of managed co-ordination, namely, specification contracting, in order to co-ordinate the activities of the sugarcane supply-processing operations. These results support the conceptual framework that has been developed in Chapter Four and concur with the overwhelming empirical evidence of the relationship between the transaction characteristics of the firm and governance structure (Masten, 1996; Williamson, 2000).

5.7 Is Transaction Cost Influenced by the Prevailing Institutional Framework ?

This section seeks to demonstrate that a range of social-historical variables have influenced the prevailing institutional framework of the sugar industries in South Africa and Swaziland and that, the transaction cost of the sugar industry is constrained within this framework. This section also seeks to demonstrate that firm-industry level cost reduction can be extended to include the benefits of favourably influencing the prevailing institutional framework including property rights economics, human behaviour and government policy.

5.7.1 The Institutional Framework

The institutional framework confronting the sugar industries of South Africa and Swaziland have been evaluated with respect a range of social-historic influences, macro-economic forces and the natural resources of the countries

5.7.1.1 Social-Historical Influences

Swaziland's colonial history, in conjunction with a long ruling monarchy system and the country's natural resources, have fundamentally influenced the cognitive, cultural, political and structural dimensions of society. South Africa's colonial history,

combined with effects of apartheid and the country's natural resources, have also profoundly influenced the institutional framework and property rights economics of society. Since the earliest times, agriculture in South Africa has concentrated in areas that are rich in natural resources (Bundy, 1979; Schirmer, 2000) and a history of South African Government policy, from the 19th century until the 1980s, reveals that black agriculture was systematically depressed whilst, simultaneously, providing artificial support for the white commercial farm sector. (Bundy, 1979; Kirsten & Van Zyl, 1996). Conversely, Swaziland, a former British colony, has been ruled by a monarchy that has a major investment in the control of the sugar industry (Daniel, 1982; Kerr & McDonald, 1994). MSCo, for instance, is 50% owned by the Swaziland Nation and 50% owned by the Commonwealth Development Corporation. The monarchy, as a partner, is thought to have influenced the transaction cost of the sugar industry as a result of having broader equity objectives (EQU) than a normal commercial partner. The cost of contract enforcement over amongst, for instance, farmers on traditional land, has been influenced by the pervasive presence of the monarchy, tribal law and colonial legacies. The Commonwealth Development Corporation, for instance, has influenced the equity objectives of MSCo which has a high level of investment in local communities including a village, a school and a hospital. The maintenance of these facilities, in turn, has constrained the ability of the company to reduce transaction cost. These factors illustrate how the norms, customs and traditions of society, explained by social theory, exercise a pervasive influence over the long term characteristics of an economic system (Williamson, 2000) The impact of these historical legacy variables has influenced the prevailing institutional framework and property rights economics of the two countries as follows:

Swaziland's colonial history and the patriarchal Commonwealth Development Corporation (CDC) management style have influenced human behavioural variables (BEH) in the sugar industry that incorporate work ethics, organisation culture, absenteeism and service condition (Atkins & Terry, 1995). Conversely, black-white human relationships in South Africa have been influenced by colonialism and apartheid and, combined with the perceived exploitation of farm workers, have created certain tensions that, in many instances, have resulted in a long history of resentment, exploitation, marginalisation and distrust in the farm sector (Bundy, 1979, Fenyes et al, 1988; Porter & Phillips-Howard, 1997a; 1997b; Schirmer, 2000)

Historical investment patterns in the Swaziland sugar industry have created barriers of entry (BARR) to the industry and determined the distribution of infrastructure and services. The original investment in MSCo in the 1950s has largely contributed to the current asset value of plant and equipment that is in excess of R 2 billion. Swaziland also benefited from the pariah status of South Africa before 1994, when economic sanctions were applied to that country. High levels of inward investment in this period contributed towards the growth of the manufacturing sector, including agricultural processing. Swaziland, in this period, was open to domestic and foreign investment and readily offered cheap resources like land and labour. The establishment of irrigation projects, some jointly with South Africa (Funnell, 1988), has specifically provided the sugar industry with the ability to grow irrigated sugarcane. The sugar industry in South Africa was also established at a time when government policy and special subsidies were freely available (Kirsten & Van Zyl, 1996). The South African government provided vital infrastructure and services in support of the development of the sugar industry including roads, communication, irrigation and power. South African transport costs of US\$ 10 per ton, for instance, are the lowest in Southern Africa and stem from the original government investment in infrastructure in support of agriculture. Barriers of entry to new entrants, therefore, exist because of the increasingly marginal potential of the remaining areas that are suitable for sugarcane, the differential logistics cost and lower levels of government and NGO support.

Local-National government services in both countries (LGS) are often costly and ineffective. The inefficiency of both local and central government in South Africa has delayed the authorisation-funding of small-scale farming projects in the sugar industry. The bureaucracy costs of dealing with government and local government are a function of the political agenda of the current incumbent civil servants, combined with the effects of inheriting certain structures from the previous government and a pre-occupation with legislation to correct the legacies of the past (Van Zyl & Kirsten, 1999).

Preferential trading prices (PTA), which make up in excess of 50% of MSCo revenue, have created a competitive advantage for MSCo in the Southern Africa region. As a

result of the 1975 Lome Protocol, MSCO is paid a preferential price by both the European Union and the United States (Atkins & Terry, 1995). The Swaziland sugar industry is also a member of the Southern African Customs Union and domestic prices are therefore influenced by this relationship (Strathdee, 1990; Economist Intelligence Unit, 1994).

Swaziland has a dual structure of land tenure dating back to the 1907 Land Act (REG). A majority of sugar producer companies and white commercial farmers hold title deed land, whilst Swazi farmers operate under a system of traditional land rights (Levin, 1986; Coppens, 1988; Funnell, 1988; Russell, 1993). Swaziland's land tenure policies, in conjunction with rural authority structures, have profoundly affected the structure and cost of rural farmer associations (Levin, 1986). Similarly, South African agriculture operates under a number of land tenure arrangements. Whilst agribusiness and white commercial farmers mostly hold freehold title or long term leases, a large proportion of emerging farmers still occupy land under Proclamation R 188 of 1969 that pertain to areas that were formerly classified as traditional homelands. For many decades, the skewed pattern of land ownership in South Africa has created tension and the cost of farming for new entrants is likely to be influenced (Van Zyl & Kirsten, 1999).

The sugar industry in Swaziland is influenced by government regulation (REG), incorporated in the 1976 Sugar Act. Similarly, the South African sugar industry is regulated by the 1978 Sugar Act. This regulation has a fundamental influence on the performance of the industry and its players and controls the miller-grower split, the conditions that govern new entrants and the research and development of new technologies. Regulation in these two countries includes legislation influencing labour, water, power, agricultural policy and all the key variables influencing inputs to the sugar industry. Low cost labour, in particular, has been a key feature of government policy in Swaziland (Atkins & Terry, 1995) whilst recent labour legislation in South Africa has elevated labour cost. Government regulation in South Africa from 1994, including the development of the constitution, has been developed to redress past injustice. Whilst it can be confidently stated that current regulation supports the interests of the majority of the population, it has been suggested that the

current government has created unworkable legislation in certain areas (Van Zyl & Kirsten, 1999).

5.7.1.2 Macro Economic Factors

Macro-economic factors that have influenced the Southern African sugar industry include the exchange rate of the South African Rand and the effects of inflation. The exchange-inflation rate of the Rand is, in effect, a function of a wide range of economic indicators, combined with investor sentiment, that are both rooted and based on a plethora of local-international events and indices. The sugar industry has also been influenced by overproduction and world markets are currently volatile, with the possibility of further deregulation. The sugar industry, moreover is also one of the most regulated sectors of agriculture and sugar producers, in countries like the United States, are often effectively shielded from competition by subsidies. The Southern African sugar industry reflects the uncertainty of this sector with multinational companies like Rembrandt and Anglo American reconsidering their involvement. Macro-economic factors (ME) influencing the economy of Swaziland, including the transaction cost of the sugar industry, include the influence of the South African economy, the volatility of world markets and restructuring within the industry. Swaziland is part of a common monetary area that is dominated by South Africa and its currency is pegged to the SA Rand. The monetary and fiscal policy of Swaziland has, therefore, been influenced by South Africa (Funnell, 1988,1991)

A world wide trend in recent decades has witnessed a reduction in government funding of research and development (RES). This trend is thought to be the result of the changing structure of the agricultural sector, deregulation and the industrialisation of agriculture. The declining levels of research and development have, largely, been absorbed by the modern agribusiness supply chains (Pasour, 1998). In South Africa, however, some research and development in the sugar industry is still conducted by the statutory South African sugar bodies. Finally, the impact of AIDS, a human immune deficiency disorder (DIS), that is rooted in a historic evolutionary pattern of emerging pathogens, is a further environmental variable that could particularly influence the sugar industry, which directly employs some 100 000 individuals and indirectly a further 300, 000 people.

5.7.1.3 Natural Resources

The natural resources (NR) of certain regions in Swaziland have also contributed to the competitive nature of the Swaziland sugar industry. Water is a critical variable in sugarcane production and the future cost of this resource will influence the cost structure of the industry. MSCO sugarcane is 100% irrigated and the mean annual rainfall of 500-700 mm per annum is insufficient to sustain high yield levels (Atkins & Terry, 1995). Other physical factors in the environment that have influenced sugarcane production, include soil quality and topography, heat-humidity, insects and disease. In South Africa, the natural resources (NR) of Mpumalanga have long attracted farming activity to the region. This region is one of the few areas in South Africa that can support the irrigated production of sugarcane. The rainfall, the temperature, the topography and the soil conditions are, therefore, a fundamental set of variables that restricts the location, size and transaction cost of the sugar industry. The future cost of water will have a major influence on the cost structure of the industry. The establishment of irrigation projects, some jointly with Swaziland, namely, the damming of the Komati River (Funnell, 1988) has resulted in an expansion of irrigated sugarcane. TSB sugarcane is 100% irrigated although the area receives a mean annual rainfall of 500-700 mm (Atkins & Terry, 1995). Other physical factors in the environment that have influenced TSB sugarcane production include moderate to good soil quality.

5.7.2 Transaction Cost and the Prevailing Institutional Framework

The impact of historical-social variables on the transaction cost of the MSCO and TSB sugarcane supply chains, is illustrated in Table 5.9. The economics of these transaction costs are explained by the Williamson (2000) three stage economising model developed in Chapter Three. This model proposes that the long term history of a country (100- 1000 years), as explained by social theory, establishes the property rights economics and institutional framework for a period of ten to a hundred years. The institutional framework of a country, partially explained by positive political theory and institutional economics, in turn, influences property rights, the judiciary and bureaucracy costs. Transaction cost, moreover, is a function of the prevailing institutional framework and can only be minimised within these constraints

Transaction cost, therefore, can only be optimised once the prevailing institutional environment has been economised. This proposal suggests that the firm can influence the institutional framework by taking the necessary action to influence bureaucracy cost, the formal rules that prevail, legislation, property rights and social attitude

The transaction costs of the sugar industry in Southern Africa have been influenced by human behaviour. The common colonial history of the two countries, the monarchy in Swaziland, education and apartheid in South Africa have influenced the culture, religion and society norms of the region. These factors have influenced black-white perceptions, work ethics and opportunism.

Table 5.9 Social-Historical Variables Influencing Transaction Cost in Southern Africa

The Prevailing Institutional Environment	Transaction Cost
1. Behavioural costs (BEH) as a result of colonial past, the presence of a monarchy (Swaziland) and apartheid (South Africa).	1. Transaction cost affected by culture, norms, work ethics that influence principal-agent cost including uncertainty, moral hazard, supervision cost, training costs, education, absenteeism
2. Historic Establishment (BARR) of MSCo and TSB, infrastructure concentration of sugar Industry, Barriers of entry Patterns of Ownership. Monarchy partner. Development of Local Government Structures (LGS). Preferential trade agreement (PTA) Lome Accord (MSCo)	2. *High start-up cost for new entrants Lack of infrastructure for new entrants High levels of asset specificity concentrated *Monopoly advantages accrue to first movers *Influence availability, efficiency and cost of essential structures and services *Preferential tariffs received for Swaziland sugar sales to EU and US markets Influences
3. Role of government (EQU), Commonwealth Development Corporation, Industrial Development Corporation as partners	3. Transaction cost influenced by high level of equity Objectives.TSB and MSCo heavily invested in community including school, village and medical care
4. Government Regulation (REG) including Land Tenure Act of 1907. Sugarcane Act of 1976 in Swaziland and Land Act R 188 (1969) and Sugar Act 1978 in South Africa	4. Cost of power, water, tax, labour. Split of grower miller proceeds Economics of property rights
5. Decreased levels of Government funding For Research (RES)	5. Research internalised in agribusiness supply chains Transaction cost of technology acquisition has shifted to private sector
6. Macro-economic influences (ME) including proximity to South Africa, behaviour of world markets, restructuring in sugar industry eg Rembrandt-Anglo American). Over supply in world market, increasing number of producers. Behaviour of Brazil. AIDS Pandemic	6. Exchange rate of SA Rand, Inflation, cost of Finance, insurance, transport, other institutions Cost, availability and productivity of labour in Southern Africa to be influenced by AIDS
7. Natural resources (NR) of sugar growing areas.	7. Favourable climate, topography, soil influences cost structure of local sugar growers and needs for contracted goods-services

Based on Chapter Three and Williamson (2000)

The influence on transaction cost is reflected in South Africa labour relations, the constitution, the labour acts, the presence of the unions and the high cost of labour generally (Atkins & Terry, 1995; Porter & Phillips-Howard, 1997a, 1997b) Behavioural variables, on the basis of social and positive political theory (Williamson, 2000).

affect the levels of transaction cost and uncertainty in contracting relationships. These variables have specifically influenced principal-agent cost, labour productivity, the structure of the labour market, supervision cost, labour turnover costs, absenteeism and worker sabotage. The constitution, the judiciary and the extent of labour unionisation in South Africa have all been profoundly influenced by the historical legacies of the country.

The historic establishment and concentration of the sugar industries in both countries has influenced the transaction cost of the respective players. The early concentration and expansion of the sugar industry were backed by the governments of both countries, that proceeded to develop communication and infrastructure facilities in order to promote economic development. The current transaction cost of the sugar industry in Southern Africa, including high levels of asset specificity, has therefore been influenced as a result of being a “first mover” combined with extensive government support. The future demographics of the sugar industry have been irrevocably influenced by these historical legacies and the current structure constitutes a major barrier of entry to new entrants. The cost of entry, furthermore, is maybe aggravated because of a lack of infrastructure in other areas, the limited availability of suitable land and locations, as well as the quasi monopoly position of the established sugar companies.

Property rights economics, including the land tenure arrangements in both Swaziland and South Africa, have influenced the transaction costs of the industry. In many instances the engagement of emerging farmers requires high levels of transactions because of the need to satisfy both local and traditional authority structures. The sugar industry, moreover, is heavily regulated in South Africa (Sugar Act 1978) and Swaziland (Sugar Act 1976), influencing the cost of transacting for all inputs, pricing policies, the rights of the players, contract enforcement cost, subsidies and taxation liability. Legislation regarding the use of water and labour have specifically influenced the transaction costs of the sugar industry. In certain instances, the inflexibility of the labour market in South Africa has contributed towards a changing structure in the sugar industry, with higher levels of contracted costs and lower levels of direct labour.

The social and equity objectives that were associated with the establishment of the sugar industries in Swaziland and South Africa, have resulted in high level of agribusiness investment in the local communities. The transaction cost of labour has been increased as a result of the social cost of providing certain facilities for employees and local communities. The sugar industry in Southern Africa often supports local medical facilities, schools and sporting facilities.

Wide ranging macro-economic influence on the transaction costs of the Southern African sugar industry includes preferential trade agreements (Swaziland), the economics of world sugar markets, international restructuring in the sugar industry, inflation and the oil price amongst many more factors. The incidence of AIDS, largely in the black population, is projected to have a serious impact on productivity, medical costs and the cost of labour. The transaction cost of acquiring technology has increasingly become the responsibility of the agribusiness sector, as a result of a general withdrawal of governments around the world. The macro-economic influence on the transaction cost of the sugar industry is, therefore, both widespread and pervasive. Finally, the natural conditions of the sugarcane growing areas have also influenced the transaction costs of the sugar companies and rainfall, soil fertility and topography have a major influence on transaction cost (Rouse & Putterill, 2000)

5.7.3 The Transaction Cost Function

Despite the qualitative nature of the argument, combined with the fact that the prevailing institutional framework influences the transaction cost of all industry, the two case studies demonstrate the impact of the institutional environment in Swaziland and South Africa on the prevailing transactions costs of the sugar industry. The results therefore support the second hypothesis, namely, that the transaction cost (characteristics) of the firm are a function of a range of exogenous social-historical variables. This conclusion supports the transaction cost function developed in Chapter Three and operationalised in Chapter Four.

5.7.4 Economising the Prevailing Institutional Framework

The Southern African sugar industry has the ability to influence certain aspects of the prevailing institutional framework. The industry exerts a wide influence in the economies of both Swaziland and South Africa. The Swaziland sugar industry employs in excess of 12 000 Swazis and is the largest employer in the country (Swaziland Sugar Association Annual Review, 1993). Between 1996 and 1999 sugar contributed around 11% to 15% of total export earnings of commodities and 20 % of GDP (Central Bank of Swaziland, 1989). On the basis of positive political theory (Williamson, 2000), the sugar industry has the size and importance to secure political economy objectives and favourable government policy to reduce transaction cost. The South African sugar industry directly employs in excess of 85 000 and generates R 1.9 billion in foreign exchange. The Southern African sugar industry is clearly in a position to lobby government for favourable economic policy. In particular, these industries can lobby for amendment to both land tenure and labour regulation in order to reduce cost. Other legislation that could be favourably influenced includes government policy re water, power, development subsidies and taxation regimes

5.8 Do Small Growers Generate Incremental Transaction Cost?

Agribusiness transactions in the cane supply chain include start-up costs, technical advice, the contracted growers use of inputs, cane supply-delivery transactions and the administration of the growers affairs.

5.8.1 Start-up and Establishment Costs

The start-up costs incurred by agribusiness with respect to small-scale farm supply projects, in both case studies, appears to have been considerable. In many instances these costs have been incurred over a number of years before the smallholder projects began supplying. By comparison, larger suppliers incur their own start-up costs with respect to establishing production capacity, as well as complying with all the necessary steps to establish a supply contract. Both MSCo and TSB employ a full time development officer to establish small-scale suppliers. In the case of the Nyakafto Farmers Association, the Swaziland Government and MSCo provided inputs between 1994 to 1998 that included finances, management, technical skills and administrative facilities. Currently, the MSCo has allocated a development officer to support the development of the new Komati small-scale farm project (6000 hectares) that will commence supply in 2003-2005. Small-scale farmer start-up transactions, leading to a mill supply agreement for small-scale farmers, are also greater than those relating to larger growers. This is because larger commercial growers are capable of obtaining-preparing the documentation, whilst MSCo and TSB assist small-scale farmers through the various steps. These transactions include providing proof that the applicant is a registered supplier, that permission from tribal authorities has been received, demonstrating proof of water rights and supplying the details of the geographical location and soil conditions of the farming area. Both the companies, moreover, act as a banking intermediary by initiating bank loan facilities. This differential level of small-scale farmer start-up transaction cost is especially reflected in the records of TSB, where a separate small-scale farm division with an annual budget of R 3 million facilitates the development and guidance of these projects.

5.8.2 Harvesting-Delivery Transactions

A large volume of grower transactions occur in the cane supply and delivery system. Larger growers, like the company estates, deliver sugarcane to the company mills every day of the week whilst smaller growers operate on a five day week or less. The MSCo estates supply in the region of 2700 tons per day to the company mill whilst large growers deliver between 250 and 800 tons per day. Medium growers supply in the region of a 50 to 250 tons per day and small growers from 5 tons to 50 tons per day. The total volume of deliveries to the MSCo mill is in excess of 52 000 truck

loads per year. Similarly, the TSB estates and contracted growers deliver in excess of 136 000 loads per year to the company mills. The delivery system in both operations has been standardised to specific bundle sizes and tonnage so that small suppliers generate no additional transactions compared to larger suppliers. Rig loads are standardised to around twenty five tons for all growers. There is, thus, no differential cost to the company for dealing with small farmers in the cane supply system although the company interaction time and administration, for instance, at daily sugarcane supply meetings with small-scale growers, is probably disproportionately higher than larger growers.

5.8.3 Administrative Transactions

The administration of suppliers accounts reveals that small-scale grower transaction cost per ton of sugarcane delivered, is greater than larger growers. The administration of growers affairs-payments is effected in the company creditors system that generates a weekly payment, in cheque form, for the weekly tons delivered to the mill. The creditors system also adjusts this payment for bank loan repayments and items drawn from stores, use of garage facilities and chain maintenance. A sample of administration transactions is illustrated in Table 5.10 and summarises the tonnage delivered, in conjunction with the number of administration transactions generated by the accounting system for the period 2001. The table indicates that, the higher the level of accounting transactions in relation to the tonnage delivered, the higher the transaction cost will be.

Table 5.10 : Volume of Accounting Transactions for 2000/1

Supplier	Annual Tonnage	Cheques Issued	Other Accounting Transactions	Total Accounting Transactions	Tons per Transaction
MSCo					
Supplier 1 Small	10429	20	71	91	114.6
Supplier 2 Small	9717	20	71	91	106.7
Supplier 3 Small	7252	17	79	96	75.5
Supplier 4 Large	217098	32	110	142	1528.8
TSB					
Supplier 1 Small	978	N A	N A	26	37
Supplier 2 Medium	10624	N A	N A	139	76.4
Supplier 3 Large	47845	N A	N A	76	613.3

The administrative costs include the issuing of cheques, issues from stores and direct debit facilities with banks for outstanding loans. Larger sugar suppliers in the MSCo and TSB supply chains delivered 1528.8 tons and 613.3 tons respectively per

transaction. Conversely small-scale to medium suppliers in the MSCo supply chain only delivered between 75.5 tons and 114.6 tons per transaction. The higher cost of small-scale supplier administration is also reflected in the TSB supply chain, where between 37.6 and 76.4 tons per transaction were incurred. The differential administration cost of small-scale suppliers is often further exacerbated by the bank's insistence that the company administers smallholder loan agreements through the company accounting system. Furthermore, this category of grower makes increased use of company services and inputs that are administered through the accounting system.

5.8.4 Differential Smallholder Transaction Cost

The results of this section suggest small-scale growers generate higher levels of transactions cost than larger suppliers. The primary reason for the incremental level of transaction cost is caused by differential levels of start-up cost and the administration of growers affairs. Medium to large contracted growers, largely, self develop their capacity to operate as sugar growers, whereas small-scale growers appear to be supported throughout this phase of operations by both the MSCo and TSB companies. The duration, moreover, of this start-up phase can extend to a number of years during which time certain company resources are allocated for the development of this category of grower. Smaller growers also generate differential levels of administration transaction cost because they deliver smaller volumes per week and make more use of company facilities per ton of sugarcane delivered. The results of this section appear to support the contention that contracted small-scale farmers generate incremental levels of transaction cost in supply relationships with agribusiness (Glover, 1984, 1987; Barry et al, 1992; Runsten & Key, 1996; Coulter et al, 1999).

5.9 Small-Scale Farmers in Contract Relationships: Performance and Costs

Small-scale farmers compete with medium to large growers in both the MSCo and TSB sugarcane supply operations. Currently, 18 % of the sugarcane processed by both of the agribusiness companies is grown by contracted small-scale growers. Both companies have a long standing relationship with this category of grower. The question remains, however, as to whether this category of grower is as efficient as the company estates and the other medium-large scale contracted farmers. The

performance of growers, at 1999 prices, of the growers between 1996-2001 is reflected in Table 5.11. The first row lists the growers. Small-scale grower associations supplying MSCo are listed as Nyakafto (M-SF1), Vuvulane 1 (M-SF2) and Vuvulane 2 (M-SF3). Small-scale growers supplying TSB are listed as Madadeni (T-SF1), Figtree (T-SF2) and Malelane (T-SF3). MSCo and TSB appear to compete effectively with small farmers with respect to operating cost at R71 and R86 per ton respectively. In support of this, the cultivating cost per ton of both the company estates is less than the six selected small-scale farmer samples, suggesting higher levels of efficiency on the company estates than small-scale grower farms. This is especially surprising since the small-scale farms would be presumed to have higher levels of labour incentives than the plantation type system of the company estates. As a counter argument, the relatively capital intensive nature of the sugarcane growing operation would suggest that the small-scale farmers might be at a disadvantage.

Table 5.11: Grower Performance

	MSCo Estate	MSCo M-SF 1	MSCo M-SF2	MSCo M-SF3	TSB Estate	TSB T-SF1	TSB T-SF2	TSB T-SF3
Area (hectares)	8302	203	1277	47	7250	38	857	N/A
Production								
Cane (Mt)	3 343 675	74744	372232	5875	696583	4124	84942	N/A
Sucrose	484 247	10305	N/A	793.1	87401	567	11790	N/A
Sucrose %	14.48	13.8	N/A	13.5	12.5	13.8	13.9	N/A
Yield	100.7	122.7	97.2	125.0	96	109	99	N/A
	R/Mt	R/Mt	R/Mt	R/Mt	R/Mt	R/Mt	R/Mt	R/Mt
Sucrose Sales	179	169	169	164	140	145	132	131
Cultivating	30	38	26	41	46	51	59	55
Harvesting	29	25	27	31	34	38	31	32
Replanting	12	5	0	0	5	8	8	9
Operating Costs	71	68	53	72	86	97	97	96
Overheads	31	12	23	14	27	13	13	13
Total Cost	102	80	76	86	113	110	110	110
Agricultural Margin	77	89	93	78	27	35	22	51
Net Income/ha	7754	10920	9040	9750	2594	3815	218	N/A

Small-scale growers appear to incur much lower levels of overheads than the company estates of both MSCo and TSB who display a similar overhead cost per ton at R31 and R27 respectively compared to an average cost of between R12-14 per ton for smallholder production. Only M-SF2 displays higher levels of overhead at R23 per ton. The reason for the high level of MSCo overheads is because the company incorporates numerous support facilities in its agricultural division. These facilities include a laboratory, harvesting services, garage facilities, a transport fleet and an irrigation department. By contrast, small-scale farmers appear to contract for these facilities more cost effectively. In terms of total cost, the Swaziland small-scale

farmers appear to have grown sugarcane at a lower cost per ton than MSCo and their South African counterparts who are, at least, competitive with the TSB estates. Small-scale farmer total costs for MSCo range from R76 to R86 compared to R102 for the company estate whilst for TSB small farmer costs are R110 compared to R113 for the company estate. In this respect, it would appear that the TSB estates are more competitive with their contracted small-scale farm suppliers than the MSCo agricultural division.

The performance of MSCo small-scale growers is especially impressive when considering the limited fixed assets employed. MSCo, for instance, has generated an average of R0.60 per R1.00 of the current net book value of fixed assets between 1998-2001, whilst the Nyakafto Farmers Association has generated R2.37 per R1 00 of assets. A source of concern in this instance is the low level of land preparation and replanting cost reflected in the small-scale farm accounts. This could signify a lack of strategic planning by the small-scale farmer organisations, however, in defence of small-scale farm strategy, the Vuvulane Farmers' Association has been in operation for a number of decades. Conversely, the Nyakafto Farmers' Association has only been operational for three years and the financial results, as yet, are unable to demonstrate the long term efficiency of this sample of small-scale farmers.

The cumulative evidence, at this stage, would suggest that the sample of Swaziland small-scale farm associations can operate as, or more, efficiently than the MSCo company estates. The principal reason for this competitive advantage appears to be because the smallholder operations contract more efficiently for a range of overhead facilities costs than the internally managed facilities costs of the company estates. The results, in general, appear to confirm the contention that small-scale farmers are often more efficient than plantation type operations (Van Zyl, 1996). At worst, and taking into account the fact that the accounting treatment of the smallholder projects may have been incorrect, smallholders appear to at least operate as viable economic entities. In support of this conclusion, 18% of both MSCo and TSB sugarcane requirements have been supplied by contracted small scale farmer associations over long periods of time. These groups appear to operate as viable entities and have adhered to all the contractual conditions as stipulated in the supply contract. On the basis of MSCo satisfaction with this category of grower, the company is in the

process of expanding small-scale farmer supply by 6 000 hectares or 46%. Similarly, TSB is expanding small-holder contracting by 1 800 hectares together with unbundling certain company estates. On the basis of these results, agribusiness cannot exclude smallholder suppliers because of lower levels of production efficiency.

5.10 Has Contracting Lowered the Barriers of Entry ?

This section discusses whether the institution of contracting has acted as a mechanism to allow small-scale growers to overcome the barriers of entry to the sugar industry. The surveyed small farmer organisations supplying MSCo and TSB both appeared to be established commercial farming operations. In the case of two Swaziland small-scale farmer associations, namely, Nyakafto and Vuvulane, the associations appeared well integrated into the modern agricultural sector in Swaziland. These organisations act as significant employers of labour, utilise modern management technologies, interact with harvesting, transport, banking and insurance institutions and maintain audited financial records. It is also clear that, without MSCo, combined with the institution of contracting, these associations would not have been able to overcome the barriers of entry into the sugar industry in Swaziland. Firstly, the economies of scale of processing would be insufficient to establish a separate sugar mill for small-scale farmers that could require in excess of R 1 billion to establish. Secondly, often only farmers with a mill agreement are eligible for financial assistance. Moreover, both MCSo and TSB have invested considerable time and expense in the form of start-up costs to ensure the viability of small farm operations and related community structures. MSCo managed the administration of the Nyakafto Farmers Association for three years before it was able to exist as a separate entity.

In conclusion, the results of this case study suggest that both MSCo and TSB have acted as institutions that have allowed large numbers of contracted small-scale farmers to overcome the barriers of entry to the sugar industry and become commercial farmers. In both instances, the surveyed smallholder suppliers would not have overcome the barriers of entry to the sugar industry without the assistance of the agribusiness partner. This finding has, generally, been widely demonstrated in many developing countries where contracting has been cited as an institution to promote

rural development and transformation of the agricultural sector (Glover, 1984; 1987, 1994; Little & Watts, 1994).

5.11 Summary and Conclusion

The case study has been developed to test the research questions, as well as to evaluate the lessons developed in Chapter Two and the economic and conceptual arguments developed in Chapters Three and Four. This chapter summarised key issues in the history of the Southern African sugar industry and the performance and logistics of the MSCo and TSB companies. The economics of the sugarcane supply operations were then developed in more detail to include the categories of grower, the nature of the contractual relationship, land tenure issues and the transaction characteristics of sugarcane supply. The data were then discussed before using the results of the case study to separately address each of the five research questions.

The results of the case study, with respect to the first research question, suggested that the transaction characteristics of the sugarcane supply-processing operation influenced the choice of governance structure. These results support the conceptual framework of Section Three and clearly indicate that the MSCo and TSB processing operations require high levels of managed co-ordination to synchronise the sugarcane supply-processing chain. The results also demonstrate that the open market would not be able to support the logistics of the input-output function. Although it can be demonstrated that the transaction characteristics influence the minimum level of managed co-ordination, it is more difficult to assess the same relationship with respect to the maximum level of managed co-ordination. The reason for this is that fully integrated structures, whilst being capable of co-ordinating the respective activities, might incur higher levels of bureaucracy cost that could contribute towards the unsuitability of the governance structure. The results have demonstrated that an understanding of transaction cost theory can be employed to design suitable governance structures or alternatively, to check the suitability of existing structures. More specifically, an understanding of transaction cost economics can allow the integrator to determine the minimum level of managed co-ordination that is required to co-ordinate a given set of transaction and contract characteristics. Agribusiness companies, moreover can compare the actual level of managed control that they

exercise over their raw commodity supply structures with the optimum level as dictated by the actual transaction characteristics and contract conditions.

The case study tested the second research question by using the Williamson (2000) three stage economising model to demonstrate that a wide range of social-historical variables, including natural resources-physical constraints, have influenced the transaction costs of the Southern African sugar industry. The usefulness of this finding is that management can consider alternate ways of reducing transaction cost as a result of a better understanding of causality. Williamson (2000) suggests that the firm should attempt to shape institutional costs before matching organisation structure with the prevailing transaction characteristics. Southern African agribusiness has the necessary influence to persuade the government to introduce policy that could reduce transaction cost.

The results of the case study, with respect to the third research question, demonstrated that small-scale farmers generate higher levels of transaction cost than larger growers. This is mainly demonstrated in the start-up phase of grower activities and the administration of growers affairs. The extensive support and start-up cost of small-scale operations is demonstrated by the high level of inputs of the MSCo and TSB companies, the Commonwealth Development Corporation and the Swaziland and South African governments. By contrast, the agribusiness companies do not assist medium-large suppliers to establish production facilities and this category of grower self finances all contract establishment costs. The results also demonstrated a high differential level of transaction cost occurs in the administration of small-scale farmers' affairs because of the smaller volumes of delivery and the higher level of use of company inputs and facilities. The results of testing this research question can be usefully employed in not only identifying the different cost elements of transaction cost, but also the reasons for the differential level of small-scale farmer cost. These results can be used to form the basis of a series of proposals to reduce small-scale farmer transaction cost, as well as a basis to design a small-holder contracting model and suitable control systems. Differential transaction cost, by being clearly identified, can form the basis of redesigning contracting arrangements with small-scale growers or, alternatively, be used as a basis to influence government policy to introduce special relief for agribusiness start-up costs that support contracted small-scale

suppliers. The use of farmer associations in particular, has allowed both MSCo and TSB to reduce smallholder transaction cost. The results also suggested that agribusiness can employ control systems like activity based costing to identify the transaction costs of different categories of suppliers. The incremental cost of small-scale growers, in turn, can either be charged back or, alternatively, used as a basis to organise smallholder operations into larger business units.

The results of the case study, with respect to the fourth research question, suggest that smaller growers can effectively compete with the company estates on a long term basis. These findings, which are widely supported empirically (Van Zyl, 1996), can be used as a basis to convince government, donors and agribusiness that, although smallholders generate incremental transaction cost, they should not be excluded on the basis of production efficiency. This finding could also be used as a basis to promote the unbundling of company estates in order to promote the transformation of the agricultural sector. Furthermore, the results can be used as a basis to identify why there are cost differentials with respect to the same cost elements of the different farmer categories. The company estates could seriously consider contracting for support facilities instead of incorporating them in the company hierarchy. Finally, the results can also be employed to identify areas where small-scale performance can improve, as well as a basis for suggesting the optimum level of capitalisation.

The results of the case study, with respect to the fifth question, suggest that contracting can be used as an institution to overcome the barriers of entry to high value cash crops for small-scale operators. The results of the case study can be used by agribusiness as a basis to better understand the costs agribusiness incurs in order to provide this institution for smallholders. This cost, by being clearly identified, can form the basis of influencing government policy or, alternatively, as a basis to identify and charge back these costs to the respective growers. The principal benefit of the case study is a better understanding of the pitfalls and costs that agribusiness integrators can incur when embarking on small-scale contracting projects. The case study specifically demonstrates that permanent growers in the supply chain need to operate as viable business entities. Whilst support in the start-up phase is a necessary pre-requisite to overcoming the barriers of entry, the contracted farmers need to be weaned off the company structure on a long term basis. The case study is useful

because it can be used as a basis to estimate the agribusiness cost of ensuring that small-scale farmers overcome the barriers of entry. Finally, the results of this chapter are used in Chapter Seven as a basis to design a small-holder agribusiness contracting model.

5. 12 The Future

The South African Sugar industry is currently confronted with increasing levels of uncertainty. At present, some forty eight developing countries, excluding Brazil, produce 2.14 million tons of raw sugar. Seven of these countries produce around 79 % of total production. World exports represent a small proportion of this production which inherently relies on domestic consumption in the respective countries. There appears to be an increasing probability that world sugar markets could become oversupplied. A change in use of Brazil's sugar output, for instance, could fundamentally influence world sugar prices. Brazil currently produces some 20 million tons of sugar per annum with exports of around 10 million tons. Currently, this country uses the bulk of its sugarcane production to manufacture alcohol. Should Brazil decide to convert its energy source to oil, the world's largest sugar producer could force an oversupply on world markets. A downward pressure on prices in the future is also expected to occur as a result of the further liberalisation of world markets. Sugar prices, moreover, have vacillated in recent times with the premium between white and raw sugar dropping to a low of US \$ 27.5 per ton in October 2000. Factors contributing towards price instability are assumed to be a series of new sugar refineries in Dubai, Jeddah, Taiwan and Nigeria with a combined refining capacity of 2 million tons. These countries, traditional buyers of sugar, are increasingly becoming self sufficient. Brazil and Thailand, moreover, have built new factories that could be converted to producing white sugar. Southern Africa could, therefore, find itself in a position of increasing output in the face of reduced regional-international demand. Many countries still impose an import tariff on white sugar in order to protect the local industry and sugar prices are projected to become increasingly volatile over the next decade. A major shift in sugar prices could force the growers' prices down and small-scale farmers could conceivably switch to other agricultural opportunities. Other threats to the industry include a major increase in energy costs and changes in the ownership structures of the sugar industry in Southern Africa.