

**SUSTAINING A RENTAL MARKET FOR ARABLE LAND IN
THE COMMUNAL AREAS OF KWAZULU-NATAL**

By

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Submitted in partial fulfilment of the requirements for the degree

MASTER OF AGRICULTURAL MANAGEMENT

in the

Discipline of Agricultural Economics
School of Agricultural Sciences and Agribusiness
Faculty of Science and Agriculture
University of Natal, Pietermaritzburg

March 2002

The financial assistance of the National Research Foundation (NRF) towards this research is acknowledged. Opinions expressed, and conclusions arrived at, are those of the author and are not necessarily to be attributed to the National Research Foundation.

I hereby certify that the work reported in this thesis is my own original work, except where specific acknowledgement is made.

T.J. Crookes

ABSTRACT

In the communal areas of KwaZulu-Natal (hereafter referred to as KwaZulu¹), most households have little incentive to farm and land is cultivated extensively as farms are uniformly small, and food and income can be acquired by wage workers at lower cost. Rental markets in KwaZulu are constrained and land remains idle as there is no opportunity cost to penalise idle or under-utilised land. An efficient rental market would improve allocative efficiency because households would rent out their idle or under-utilised land to more effective farmers rather than forgo rental income. Equity is also improved in a land rental market. Rental transactions are voluntary and land transfers from land 'rich' to land 'poor' households whilst rental income transfers to households who cannot or prefer not to farm. Land rentals are temporary and do not interfere with residential rights.

Land rental markets are constrained by high transaction costs and tenure insecurity. Between 1993 and 1996, Thomson made a concerted effort to stimulate a rental market for arable land in the Upper Tugela Catchment region of the former KwaZulu homeland. Small, incremental changes were made to customary institutions in order to improve tenure security and reduce risks and other transaction costs constraining the rental market. The number of rental transactions increased with associated gains in equity and efficiency.

This study re-visits the market and examines its performance in the year 2000. Two household surveys were completed in Thomson's original study area during 2000. First, a sample survey of

¹ Communal areas refer to the tribal wards of KwaZulu-Natal which are characterised by customary forms of land tenure. The terms communal and tribal are used interchangeably.

160 households, which included 23 percent of Thomson's original respondents, was conducted. This was followed by a census survey of 39 households participating in a total of 73 rental transactions. Data show that the number of rental transactions and market participants declined. A decrease in the number of lessees suggests that fixed transaction costs increased which prevented prospective participants from entering the market. However, the area of land transacted increased dramatically, suggesting that variable transaction costs declined. Lessees remaining in the market are participating in more rental transactions and are consolidating larger areas from several different lessors with gains in both equity and efficiency still evident. A discriminant analysis distinguishing lessors from lessees confirmed the claims of efficiency and equity. Land transfers from lessors who have a higher incidence of widowed household heads and larger, better quality land holdings to lessees who have greater agricultural training and who invest more in fixed improvements and implements.

Changes in variable transaction costs are explored by examining changes in the type of rental contracts observed over time. The data revealed growth in the variety and length of rental contracts, supporting other evidence of declining variable transaction costs. In particular, a linear regression model estimated to quantify the partial contribution of factors affecting contract length shows that the introduction of witnessed written lease agreements has facilitated longer-term rentals for a wide range of contract types, even in cases where the lessor and lessee are strangers.

Results of this study suggest that government should invest more in public goods such as physical infrastructure to reduce fixed transaction costs. Government extension staff could play

a key role in sustaining rental markets for cropland in communal areas by absorbing some transaction costs, training tribal councillors and disseminating information.

ACKNOWLEDGEMENTS

The author would like to thank the following individuals and organisations that made this research possible:

Professor Michael Lyne, Discipline of Agricultural Economics, University of Natal, for his expert guidance and encouragement throughout this study.

Doctor David Thomson and his wife, Bronwyn, for their hospitality and accommodation during field work. I would especially like to thank Dave for the valuable discussions we had regarding this study.

The staff at Lima Rural Development Foundation, especially Mr T. Buthelezi for his time and effort in assisting with field work.

Professor Nieuwoudt and staff, Discipline of Agricultural Economics, University of Natal, for their constructive input into this study.

The National Research Foundation and United States Agency for International Development for their financial support.

My colleagues and friends in the Discipline of Agricultural Economics for their friendship and support.

The households in the Upper Tugela Catchment region of KwaZulu that participated in the surveys.

Finally, I would like to thank my parents for their support and encouragement throughout my studies. I cannot express how grateful I am for all the opportunities they have given me.

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INTRODUCTION

Participatory research conducted by Thomson (1996) demonstrated the potential advantages of a rental market for arable land in the communal areas of KwaZulu-Natal (hereafter referred to as KwaZulu¹), where population pressure is high, farms are small and most households import food, yet large tracts of land are left unutilised. This land use anomaly is largely a result of the absence of an active rental market for arable land, which would impose an opportunity cost on idle and under-utilised land (Nieuwoudt, 1990; Lyne and Nieuwoudt, 1991). An efficient rental market would improve allocative efficiency because households would rent out their idle or under-utilised land to more effective farmers rather than forgo rental income. It is argued that, under conditions relevant in much of Southern Africa, land rental markets are a better indicator of allocative efficiency than land sale markets. Rental transactions are voluntary and land transfers from land 'rich' to land 'poor' households whilst rental income transfers to households who cannot or prefer not to farm. Equity is thus improved without creating a landless class or forcing lessors to relocate their homes.

Rental markets may be constrained by high transaction costs, uncertainty and tenure insecurity. According to Thomson and Lyne (1995), property rights in communal areas are limited and do not guarantee that individuals can fully internalise the benefits of their efforts or transact land to their advantage. On the other hand, Binswanger *et al.* (1992), argue that customary tenure is secure. This may be true when security of tenure is defined as the ability to use land for a certain period and for a defined purpose (Feder and Noronha, 1987). However, secure tenure requires breadth, duration and assurance of property rights to land (Place *et al.*, 1994), and is compromised if rights to land are not fully exclusive. Well-defined

¹ Communal areas refer to the tribal wards of KwaZulu-Natal which are characterised by customary forms of land tenure. The terms communal and tribal are used interchangeably.

and exclusive rights to land are necessary conditions for secure tenure and low transaction costs. Although exclusive rights to arable land are well defined during the summer growing season in KwaZulu, they are difficult to enforce, and crop damage by stray livestock is a serious problem (Thomson, 1996:92-93).

Uchendu (1970) and Ault and Rutman (1979), supporters of the Coasian transaction cost theory of institutional change, argue that communal institutions are dynamic, and that property rights evolve according to local conditions. They argue that factors such as technical innovation, better commercial agriculture opportunities, increased population pressure and improved knowledge encourage farmers to lobby for more exclusive land rights. However, this theory ignores problems associated with collective action (Bardhan, 1989) and possible opposition to the establishment of rental markets. Vested interests will influence both the direction and extent of institutional change in communal areas.

Technical innovation in agriculture alone does not necessarily produce more secure property rights to land (Thomson and Lyne, 1995). There is also a 'supply' side to institutional change. Bruce and Freudenberger (1992) argue that adaptive strategies that effect gradual but predictable changes in tribal customs and laws should be implemented. Thomson (1996) facilitated an 'adaptive process' in the Upper Tugela Catchment region of KwaZulu when trying to stimulate the land rental market. His efforts reinforced existing customary rules (such as the announcement of a 'planting date' and penalties for owners of livestock found in the arable lands after the planting date) that had been neglected. He also reduced transaction costs by ensuring that tribal courts would uphold rental contracts, providing *pro forma* lease contracts, an extension officer to identify potential participants, and transport to bring prospective lessors and lessees together. By adopting this approach, Thomson (1996)

achieved a dramatic increase in the number of rental transactions with both equity and allocative efficiency gains observed in the brief period of his study (1993/4-1995/6).

Since institutional change is a long-term process, more time and data were needed to establish the outcome of Thomson's institutional changes. This study builds on Thomson's work by: (a) revisiting his research sites to establish whether his efforts had sustained a rental market in arable land or not, (b) identifying reasons why the market may have expanded or contracted, and (c) producing a refined set of recommendations to sustain efficient rental markets for arable land in communal areas of KwaZulu-Natal. This study tests the hypothesis that a rental market for arable land in the communal areas of KwaZulu-Natal cannot be sustained unless the institutional changes needed to improve tenure security and to reduce transaction costs are facilitated by an outside agent.

The first chapter of this thesis considers theoretical relationships between institutions, property rights and tenure security. An understanding of New Institutional Economics is imperative as land rental markets are dependent on tenure institutions and the ability of these institutions to evolve. Two prevailing institutional innovation strategies are discussed. Chapter 2 describes how rental markets in communal areas may be constrained by tenure insecurity and high transaction costs. Chapter 3 describes the allocative efficiency and equity advantages in land rental markets. A case study of Thomson's (1996) institutional change in the Upper Tugela Catchment region of KwaZulu is examined.

Chapter 4 presents a brief description of the study area and research methodology. Descriptive statistics (computed from household sample surveys) are reported in Chapter 5. This chapter focuses on land rights and tenure security observed in the study area of the

Upper Tugela Catchment region of KwaZulu. Rental market activity and aspects of allocative efficiency and equity are presented and discussed in Chapter 6. A multivariate discriminant model is estimated to provide more information about gains in allocative efficiency and equity. Transaction costs are then discussed. A multivariate ordinary least squares regression is estimated to quantify the partial contribution of factors affecting contract length. Conclusions and the need for, and possible role of, government in promoting and sustaining rental markets for arable land in the communal areas of KwaZulu-Natal are considered in Chapter 7.

CHAPTER 1

INSTITUTIONS, PROPERTY RIGHTS AND TENURE SECURITY

This chapter examines theoretical relationships between institutions, property rights and tenure security.

1.1 Institutions Defined

New Institutional Economics extends the range of Neoclassical Economics by considering how institutions and transaction costs affect incentives and economic behaviour (Furubotn and Richter, 1991:1). Institutions comprise rules and conventions (Runge, 1984; North, 1990:5). These rules may be self-policing or policed by an outside agency (Schotter, 1981:11). Institutions may either be formal or informal. Formal institutions are governed by law and informal institutions consist of conventions and codes of behaviour. For the purposes of this study an institution is defined as a set of customs, constraints or rules which set precedents for transactional relations among individuals or groups (Thomson 1996:7). Beghin and Fafchamps (1994) state that ‘good’ institutions should promote exchange and market forces by securing property rights and future return on investment, through predictable rules of law.

1.2 Property Rights Defined

“Property rights specify the norms of behaviour with respect to economic goods that all persons must observe in their interactions with other people or bear the penalty cost of non-observance” (Pejovich, 1990:27). Property rights reduce uncertainty by providing individuals with information that allows them to form expectations that are more predictable in their

dealings with others (Demsetz, 1967; Runge, 1984). These property rights may be inclusive or exclusive rights. Inclusive rights ensure that many individuals have access to a particular resource, for example communal grazing, whilst exclusive rights may pertain to institutions such as private property where an individual can exclude others from benefit streams. Different property institutions are characterised by various combinations of exclusive and inclusive rights, which define the choices available to decision makers and result in varying penalty-reward structures (Furubotn and Pejovich, 1972). Communal areas, in particular, usually possess a combination of these basic rights.

Property rights in a given parcel of land can be ranked as:

- (i) Use rights – rights to grow perennial and/or annual crops, make permanent improvements, bury the dead, collect firewood, collect wild fruit and cut trees.
- (ii) Exclusion rights – rights to exclude others from using the land and benefit streams.
- (iii) Transfer rights – rights to give, sell, mortgage, lease, rent, bequeath or register land (Roth *et al.*, 1994).

Transfer rights are assumed to imply a greater number of rights and more tenure security than use rights. Transfer rights can further be divided into three mutually exclusive categories. Land with complete transfer rights is land that can be sold by the current holder. Land that has preferential transfer rights cannot be sold but may be given or bequeathed. The term ‘preferential’ indicates that gifts or bequests are normally directed to family or lineage members. Land that cannot be permanently transferred has limited transfer rights (Roth *et al.*, 1994).

1.3 Tenure Systems

A common feature of African indigenous tenure is that an individual is entitled to undisturbed possession of an allotted parcel of land as long as it is being used. The period of use varies according to the type of crops grown, so farmers can lengthen the period of use by planting trees (Feder and Noronha, 1987).

Households in KwaZulu do not possess title deeds to their land. A tribal authority assigns use rights to the household head in accordance with traditional laws and customs. Typically, the household has exclusive use rights to cultivated land and communal rights to grazing land (Thomson and Lyne, 1995). Exclusive use rights to arable land prevail only during the summer cropping months whereafter land becomes communal grazing. Any arable land not under cultivation becomes communal grazing. A land allocation can be revoked and reallocated if the household does not use the land, but evidence suggests that this is rarely the case. Customary law precludes the operation of a sale market for agricultural land in KwaZulu. A similar situation prevails in Nigeria where individuals have usufructuary rights to communal land and are not entitled to dispose of community land either by lease, loan, mortgage, sale or assignment to non-indigenes without ministerial approval (Alegwu Ega, 1979).

The distinguishing feature of different tenure regimes may thus be said to revolve around restrictions on the individual holder's ability to transfer land (Migot-Adholla *et al.*, 1991). Under these conditions, communal indigenous tenure systems encumber the emergence of market transactions in land in which access would be determined by supply and demand factors and entrepreneurial ability (Migot-Adholla *et al.*, 1991). This has led to debate over

the suitability of customary tenure for capital-intensive agriculture in Sub-Saharan Africa (Migot-Adholla and Bruce, 1994).

1.4 Tenure Evolution

Some authors (Dorner, 1972; Harrison, 1987) see indigenous tenure systems as static constraints on agricultural development, providing insufficient tenure security to induce farmers to make necessary land-improving investments. However, authors such as Demsetz (1967), Uchendu (1970) and Ault and Rutman (1979) contend that communal institutions are dynamic, and that property rights evolve according to local conditions. They argue that factors such as technical innovation, better knowledge, better prospects in commercial agriculture and population pressure encourage farmers to lobby for more exclusive land rights. This theory, although plausible, ignores problems associated with collective action and vested interest groups (Bardhan, 1989).

Hecht (1985) illustrates how tenure evolved from communal to private or individual tenure in the cocoa-growing regions of the Ivory Coast. Berry (1975) states that in south-western Nigeria the combined effects of profitable tree crop farming and immigration by 'strangers' lead to outright land sales by indigenes to immigrants. Baber and Nieuwoudt (1992) state that demand for institutional change toward more specific property rights arises from:

- (i) Demand for benefit streams emanating directly from a resource.
- (ii) A community's cultural and ideological attitudes towards fairness of the way in which these benefit streams are divided among economic agents.
- (iii) Demand for benefits provided by traditional communal structure, which owe their continued existence to a non-economic role of land as a means of ordering society.

However, Ault and Rutman (1979) state that increased population pressure and better commercial farming opportunities may not cause institutional change without the support of tribal authorities. Tribal authorities showing initiative may 'supply' institutional change by implementing new policies such as institutional innovation in dispute settlements (Bruce and Freudenberg, 1992). On the other hand, they may oppose rental markets. Lawry (1993) contends that increasing population pressure has hindered the supply of institutional change due to growing opposition from non-farmers who fear that the land market will jeopardise their social security. This, however, ignores mutual benefits afforded by land rental. Households who depend upon secondary use rights may feel that their security is threatened with a shift toward more exclusive use rights. Lyne and Nieuwoudt (1990) predicted resistance from stockowners because their grazing land is diminished when fallow land is leased out and cultivated. Tribal authorities oppose land markets where they rely on control over land allocation to prevent political opposition from settling in their areas (Lyne *et al.*, 1997). Tribal authorities may also empathise with households who rely on secondary use rights to land, or they may be predisposed to special interest groups, such as influential stockowners who keep cattle as a store of wealth.

In the Tugela Ferry region of KwaZulu-Natal where technological innovation (irrigation) was expected, according to the transaction cost theory, to induce a shift towards more exclusive rights to arable land, the anticipated changes did not occur. In Geita, Tanzania, Uchendu (1970) reported that the beginnings of an enclosure movement were visible, but there was no effective extension support for this. This comment illustrates that demand alone will not always result in institutional change and that government could play a role by providing an effective extension programme to stimulate or accelerate institutional change.

1.5 Tenure Security

Place *et al.* (1994:19) define tenure security as “the individual’s perception of his/her rights to a piece of land on a continuous basis, free from imposition or interference from outside sources, as well as his/her ability to reap the benefits of labour and capital invested in land, either in use or upon alienation”.

It is often argued that property rights are secure in the communal areas (Low, 1986; Cross, 1988:16-18; Binswanger *et al.*, 1992). This may be true when ‘security of tenure’ is defined as the ability to use land for a certain period and for a defined purpose (Feder and Noronha, 1987). These limited property rights do not guarantee that individuals can fully internalise benefit streams or transact land to their advantage. According to Place *et al.* (1994:20) tenure security comprises three components, namely breadth, duration and assurance of property rights. Breadth of rights refers to the bundle of property rights assigned to an individual, including the right to use, transfer and exclude others from the land. Duration is the length of time for which a given set of rights is legally valid, and assurance implies that rights are held with varying degrees of certainty in the present and future. If any of these conditions are lacking, tenure is not secure.

Johnson (1972) states that the land market is inefficient when property rights are not clearly defined. Property rights to land may well be clearly defined under customary law but the breadth of rights is often limited and some of these rights may be difficult to enforce. In KwaZulu, property rights to land are usually held in perpetuity and can be bequeathed to an heir. However, individuals seldom enjoy fully exclusive rights to arable land. In most cases the individual’s right to exclude others is a primary right that can only be exercised during the summer growing season. Other individuals can exercise secondary grazing rights or gather

natural resources on this land when it is fallow (Thomson, 1996:27). Tenure security is therefore constrained by inadequate breadth and duration of property rights to arable land.

Assurance depends largely upon compliance with customary laws, the certainty of laws governing property rights, and the extent to which these rights can be enforced. Customary laws and property rights in KwaZulu are not documented (Thomson, 1996:28). The absence of formal records makes property rights less certain. Conflict resolution becomes more subjective and land disputes settled by tribal councillors may well be influenced by the age, gender and social status of a plaintiff (Berry, 1993).

1.6 Supply of Institutional Innovation

In theory, the problems of insecure tenure and – to a lesser extent - high transaction costs could be countered by replacing customary forms of land tenure with title deeds that confer a broad range of property rights on land owners. However, attempts to replace customary tenure with title deeds have not been very successful. More recently, policy analysts have turned their attention to ways of facilitating an endogenous shift towards more secure tenure.

1.6.1 Land titling

In theory, land titling should increase tenure security, stimulate investment and allow the emergence of a land market (Barrows and Roth, 1990), but empirical evidence from several African case studies show that “registration can create rather than reduce uncertainty and conflict over land rights” (Atwood, 1990:663). In Kenya, Coldham (1979) found that customary law dominated national law in determining property rights. Judicial courts still settled claims to registered land in favour of those with customary use rights. Titling has resulted in conflicting claims to land due to poor legal support and information about existing

land rights. Over time, this problem is often exacerbated by the fact that changes in ownership are not registered, especially those due to inheritance (Migot-Adholla and Place, 1990). As a result land registers become moribund. Lyne (1994) mentions similar problems in New Zealand Maori land where heirs with only very small plots had little incentive to register their holdings. Kille and Lyne (1993), in a sample survey of black freehold farmers in KwaZulu, revealed that 41 percent of respondents did not have secure property rights because the land was registered to a deceased person, and 32 percent had non-exclusive property rights because the same land was registered to many different people.

The Somalia Land law of 1975 proclaimed state leasehold tenure as the only form of legal tenure. Even so, few of the farmers sampled by Roth (1993) had registered their land 12 years after the law was passed. Respondents cited high costs, complicated procedures, lack of familiarity with registration procedures, and the parcel of land being too small as reasons for non-registration. Roth *et al.* (1994) found the same results in Uganda but respondents also mentioned that they did not want to upset family and neighbours by registering land.

Empirical evidence from Africa suggests that investment in agriculture does not necessarily increase when title deeds replace customary tenure. Results obtained by Migot-Adholla *et al.* (1991) from Kenya, Ghana and Rwanda showed no statistically significant relationship between the possession of title and the use of formal credit. Title deeds only give land collateral value when they assist market transfers (Fenwick and Lyne, 1999). Evidence from Kenya suggests that titling did not activate the land market and that land sales seldom transferred land from less to more efficient individuals (Platteau, 1995). This could be due to wealthier individuals, possibly with greater off-farm income, purchasing land primarily for social security reasons. Migot-Adholla and Place (1990) state that land markets appear to be

weakening in Kenya, and that land parcel sizes are notably shrinking over time as inheritance and increased population pressure result in many subdivisions. Migot-Adholla *et al.* (1991) also found that the possession of land title was not significantly related to agricultural performance in Kenya. Place and Hazell (1993) drew similar conclusions from studies in Ghana and Rwanda.

Studies by Migot-Adholla and Place (1990) and Place and Hazell (1993) provide little support for ambitious land registration and titling programs. Kenyan data show that even in regions where all land has been titled, customary restrictions on land rights still prevail and it is not clear that new rights have been created. Land markets, which were considered a major advantage of tenure conversion, have yet to emerge 40 years after titling. Migot-Adholla *et al.* (1991) argue that the credit and investment objectives of registration have been nullified.

Bruce and Freudenberger (1992) state that tenure security can be accomplished at much lower cost and more equitably by enabling evolutionary changes in customary institutions. They recommend the implementation of 'adaptive' rather than 'replacement' strategies such as titling.

1.6.2 Adaptive strategies

Property institutions should be well adapted to the particular needs and resource constraints facing specific communities (Baber and Nieuwoudt, 1992). Adaptive policies facilitate gradual but predictable changes in tribal customs and laws. These policies recognise that indigenous legal systems are unique, therefore tenure reform programmes will be distinct, vary between regions, take different forms and progress at different paces. Adaptive strategies examine the rules of dispute resolution and place emphasis on legal frameworks

that support the evolving tenure system (Bruce and Freudenberger, 1992). Recording transactions, disputes and precedents is another important element of the adaptive approach.

Lyne *et al.* (1996) suggest that adaptive strategies may not be any cheaper than replacement strategies. When applied to large areas, adaptive strategies require substantial commitment from government to support research, compensation and negotiations with local authorities, to document transactions, disputes and precedents, to disseminate information, and to ensure that national laws sanction local precedents.

CHAPTER 2

EVIDENCE AND CAUSES OF CONSTRAINED RENTAL MARKETS IN AFRICA

This chapter discusses evidence and the causes of inactive rental markets for arable land in Africa despite the presence of willing market participants.

2.1 Evidence of Constrained Rental Markets

This section draws attention to evidence that rental markets are inactive despite the presence of willing lessors and lessees. A low incidence of renting may only reflect an abundance of land or that households have very similar resource endowments and economic opportunities. However, Thomson and Lyne (1991) state that land is not abundant in the former homelands of South Africa and, although farm sizes tend to be uniformly small, households face very different economic opportunities owing to the existence of a highly differentiated wage labour market. Although most rural households derive only a small fraction of their total earnings from farming, there are a significant number who are very dependent upon agriculture.

Thomson (1996:74) attempted to develop a rental market for arable land in the Amangwane and Amazizi tribal wards in the Upper Tugela Catchment area of KwaZulu-Natal during the period 1993 to 1996. He found that the rental market for arable land was severely constrained. Almost half of the households sampled wanted to hire land left idle by neighbours, yet only four percent did so. Of those respondents who indicated that they were willing to lease their land out, almost 40 percent claimed that transactions were 'too risky' (Thomson, 1996:19). In all six rental cases observed, the lessor was either a member of the

family or a close friend. Only 31 percent of the respondents felt that they required the tribal authority's approval for rental transactions between family members. In contrast, 81 percent indicated that approval is required for rental transactions with other households. Transfers between family members carry lower transaction costs and less risk, partly because moral hazard is reduced. Despite acknowledging the need for permission to engage in rental transactions, none of the lessees had consulted the tribal authority. Apparently they did not want to draw 'official' attention to their contracts (Thomson 1996:74).

Risk and high transaction costs raise the reservation price of potential lessors and tend to restrict the population of lessees to farmers who can cover the risk premiums charged by lessors. Empirical studies conducted in KwaZulu have revealed that renting is virtually synonymous with more intensive cropping and surplus production even though lessors attempt to reduce their chances of losing land by renting only to close friends and relatives (Nieuwoudt and Vink, 1989). A later study conducted by Thomson (1991:62) in KwaZulu revealed that 155 out of 308 households sampled in three districts wanted access to more land. However, only 19 households engaged in rental transactions, 16 of which hired land on government projects. In a study of the Vulindlela district in KwaZulu it was found that 86 percent of all surplus-producing farmers indicated that they needed more arable land (Lyster 1990:57). However, only 20 percent of these farmers hired unutilised land from neighbours. Kille and Lyne (1993) found that 23 of the 34 Trust tenants they interviewed in the Madadeni district of KwaZulu wanted to hire additional land, but only 12 did so.

Although some farmers admit to renting land in, there is no way of knowing precisely the extent of land transactions between families, neighbours and friends. Results from Somalia show that while none of the respondents said that they rented out land in 1986, four farmers

rented land in (Roth, 1993). Since land disputes and land grabbing often stem from rental arrangements, households, particularly those who rent land out, are generally reluctant to fully disclose themselves. Thomson's (1996:74) results show a similar outcome in KwaZulu where none of the respondents admitted to renting land out even though six rented land in.

In Lesotho, the principal source of income for Basothos is remitted wages but long-term opportunities in urban occupations are sufficiently insecure so as to discourage households from surrendering their land rights. Although share-cropping has been observed, Lawry (1993) states that emerging farmers were seeking greater control over farm operations and profits than share-cropping would permit. However, cash rentals required the chief's co-operation and involved unnecessary transaction costs due to a weak legal framework. The *de facto* situation is that land is often under-utilised even though it is not abundant and is sought by farmers.

2.2 Causes of Inefficient Land Rental Markets

An 'efficient' land rental market is defined by Thomson (1996:26) as one which accomplishes gains in agricultural performance and equity. Efficiency involves the neo-classical conditions of secure tenure and low transaction costs (Nieuwoudt, 1990). Transaction costs must be low relative to rental income. High transaction costs could shift the potential lessee's offer to a point where it no longer exceeds the reservation price of the lessor (Atwood, 1990). Conversely, insecure property rights could raise the lessor's reservation price above the lessees offer price, as a risk premium is built into the reservation price. If the land market is competitive, land will transfer to its most efficient use *i.e.* rents are maximised. The presence of an active rental market is therefore a good indicator of tenure security and allocative efficiency, both of which promote agricultural performance.

2.2.1 Tenure security

Tenure security is based on breadth, duration and assurance of property rights (Place *et al.*, 1994). Rental markets are often constrained due to one or more of these factors not being fulfilled. Breadth of rights is often inadequate. An efficient land market will not occur when governments or tribal authorities decree that land may not be sold or rented, or place restrictions on transactions. When legal systems impose such restrictions, law gets divorced from reality and land continues to be transferred through informal markets. This results in sales or rental contracts that are legally unenforceable, so land prices contain risk premiums that cause deviations between the social value of land and its market value (Feder and Noronha, 1987). Lyne (1996) argues that, in the virtual absence of a land rental market in KwaZulu, the opportunity cost of labour is high relative to that of land. This encourages extensive rather than intensive use of cropland, and the adoption of time-saving rather than labour-saving technology in a region characterised by severe land shortage.

Lyne *et al.* (1997) found that there is a strong inverse relationship between the incidence of renting and the proportion of respondents who perceived transactions to be risky or subject to customary restrictions. Feder and Noronha (1987) state that the rights of landowners to sell, mortgage or lease land in Kenya were restricted due to the precondition that consent be obtained from a land board before such transactions could take place. Place and Hazell (1993) found that restrictions on transfer rights existed in Rwanda, Kenya and Ghana, and that they were even greater when the need to obtain family approval was taken into account. In Lesotho, Lawry (1993) contends that progressive farmers willing and able to employ land and other factors at higher levels of production than subsistence are unable to secure land because of the general prohibition on sales and the absence of renting.

In much of KwaZulu, individuals are entitled to exercise exclusive rights to arable land only during the summer months, and only if the land is cultivated (Thomson, 1996:27). However, even these limited exclusive rights are difficult to enforce as many farmers suffer crop damage caused by stray cattle. Fenwick and Lyne (1999) also found that households were reluctant to lease land out for fear of losing it permanently, and unwilling to hire land that they were unable to police. More than one third of the respondents in their study area of KwaZulu suffered crop losses to stray livestock. Invading livestock are also problems in Uganda, Lesotho and Zimbabwe (Kigula, 1992; Lawry, 1993; Moor and Nieuwoudt, 1995).

Assurance of property rights may be compromised by renting. Assurance depends on the certainty of laws and compliance to these laws by others. In Somalia, Roth *et al.* (1994) found that people behave as if property law does not pertain to them, thus clouding issues of compliance and the effectiveness of legal enforcement. In KwaZulu, precedents set by tribal courts over land disputes are often unclear. Thomson and Lyne (1995) found that farmers whose crops are damaged by livestock have little incentive to take disputes to the tribal courts as litigation is expensive and compensation rules are unclear. Farmers are also unable to impound stray livestock. Land disputes sometimes arise from rental arrangements in which a renter refuses to hand back unregistered land to the rightful landowner at the end of the agreed term. Since idle land is perceived to be unproductive and/or not needed by the landowner, a provision that bans both transactions and leaving land idle increases the risk of renting land out. Farmers are particularly wary of renting out for periods longer than a year, believing that the risk of losing land increases with the rental term (Roth, 1993). This may be the reason why Thomson and Lyne (1991) discovered that 80 percent of the rental transactions that they observed in their survey in KwaZulu were between family and friends. The moral hazard, *i.e.* the risk of a breach in contract, is reduced.

The duration of rental agreements is also important for security of tenure. Several farmers in the Upper Tugela Catchment region of KwaZulu indicated a preference for lease agreements longer than three years, but were not convinced that long-term rental contracts would be upheld by tribal courts if lessors decided to terminate the contract early (Thomson 1996:91). Lawry (1993) mentions problems in Lesotho where landowners claim their land back from lessees prematurely when they see an increase in yield following the tenant's investment in fertiliser.

2.2.2 Transaction costs

Every trade agreement involves a contract that must be defined and enforced. Transaction costs are those costs of defining and enforcing contracts. Transaction costs are important as they determine which type of contracts will be entered into, or whether costs may preclude contracting (Thomson, 1996:12). Randall (1972) defines transaction costs as “the costs of making and enforcing decisions. Included are the costs of obtaining information, establishing one's bargaining position, bargaining and arriving at a group decision, and enforcing the decision made”.

Williamson (1985) states that transaction costs comprise *ex ante* and *ex post* costs. *Ex ante* costs are the costs of drafting, negotiating and safeguarding an agreement. Contracts are, however, often incomplete because it is not possible to cover all contingencies. Transactions must be monitored and policed because people are opportunistic and engage in rent seeking behaviour. Cheating, shirking and moral hazard are responsible for the *ex post* costs associated with contracts. These costs are manifest in formal legal action, renegotiation of contracts, monitoring and binding parties to the contract. Transaction costs are likely to increase when there are a large number of agents involved, the sophistication and level of

technology increases, or when there is a disintegration of communal, tribal, familial and cultural traditions that reduce risk (Datta and Nugent, 1989:42).

According to Platteau (1995:21), transaction costs in land markets are essentially cognitive costs of organising and monitoring market transfers. Due to ambiguity in property rights, willing buyers must incur significant search, enforcement and litigation costs. As a result, a wedge is driven between the land's value of the marginal product in the owner's use and the value of the marginal product if used by the most productive alternative user. Transaction costs do not only depend on objective conditions (such as growing land scarcity leading to increased ambiguity in land rights), but can also be influenced by subjective factors, namely an individual's feelings or preferences about alternative arrangements which are in turn shaped by prevailing standards of justice and notions of fairness (Platteau, 1995:21). Risk forms a transaction cost and increases when property rights are not secure and when there is uncertainty about the legal enforcement of contracts.

Transaction costs tend to be household specific due to differential access to assets and information (de Janvry *et al.*, 1991 cited by Goetz, 1992; Makhura, 2001:64). Transaction costs can also be divided into fixed and variable transaction costs (Goetz, 1992; Key *et al.*, 2000). Fixed transaction costs affect a household's decision to participate in the rental market, and are the same regardless of the quantity transacted. On the other hand, variable transaction costs vary with the quantity traded and affect the size of the transaction. Fixed transaction costs may be prohibitively high and preclude contracting. In this case transaction costs are, by definition, unobservable because no transaction takes place (Makhura, 2001:34). After a household has decided to participate in the market as either a lessor or lessee, both fixed and variable transaction costs affect the level of participation. According to Cuevas

(1988, cited by Makhura, 2001:34), transaction costs of 'observed' transactions are usually distinct from 'prohibitive' transaction costs. *Ex ante* and *ex post* transaction costs may comprise a combination of fixed and variable transaction costs. For example, search and travel costs incurred in negotiating a land rental contract are fixed *ex ante* transaction costs, whereas the risk associated with enforcing this contract is a variable *ex post* transaction cost as the level of risk increases with the area transacted.

When transactions must be enforced over time (e.g. a rental contract) and the legal environment is uncertain, they tend to be highly personalised arrangements. This attempt to reduce moral hazard does not mean that transaction costs are low in absolute terms (Fenwick and Lyne, 1999). In addition, personalised transactions impose different transaction costs on parties depending upon their social status. For example, Berry (1993) refers to the influence of gender and social standing on the outcome of disputes, with women facing greater uncertainty. Many farmers in rural KwaZulu are women, as adult men tend to migrate to urban jobs. Tenure insecurity for women could therefore result in considerable efficiency and equity losses in rural KwaZulu.

To facilitate a rental market in KwaZulu, perceived risks will have to be eliminated or reduced. For example, *pro forma* rental contracts between households could be endorsed by the local tribal authority, and held by an independent arbitrator. The contracts must also be enforceable. By setting legal precedents that uphold contracts, tenure security is reinforced and variable *ex post* transaction costs reduced. These legal precedents, as well as dispute procedures, should be widely advertised. Maintaining a register that advertises names of willing lessors and lessees may reduce fixed *ex ante* transaction costs. Investment in physical infrastructure such as roads will also help to reduce fixed transaction costs. Incentive to

promote rental transactions may increase if tribal authorities are permitted to tax part of rental income. This might provide tribal authorities with an opportunity to consolidate their support by funding local infrastructure (Thomson and Lyne, 1991).

CHAPTER 3

EFFICIENCY AND EQUITY IN RENTAL MARKETS

Two important benefits, drawn from neo-classical economic theory, are obtainable from improved tenure security:

- (i) Increased land investment as landholders perceive greater probability of reaping reward from their investments, and are better able to finance investments.
- (ii) Decreased uncertainties in land transfer, thereby lowering transaction costs and facilitating transfer of land from less to more efficient uses and users (Roth, 1993).

If farmers perceive that their tenure is secure on the land they operate, they have an incentive to invest in land improvements or maintain existing land improvements, which increase land productivity (Blarel, undated). Access to credit is often a binding constraint on investment. Feder and Onchan (1987) state that if credit is a binding constraint on investment demand, ownership security is likely to lead to increased investment due to better credit availability. When land ownership is insecure, land is not considered as reliable collateral by credit givers because it is difficult to foreclose and dispose of the land. However, when private land rights are well-established and legally protected, and when they can be freely exchanged, land acquires collateral value and the supply of credit increases, thereby stimulating a rural credit market (Platteau, 1995:7). Credit supply constraints may still arise from the strategies of lenders. Administration costs lead many banks to set minimum sizes of loans, which often exceed the capital needs of small farmers (Barrows and Roth, 1990). However, renting allows farmers to increase their scale and overcome these problems. Moor and Nieuwoudt (1995) contend that larger farmers are more credit-worthy by virtue of larger gross farm incomes. Kochar (1997) found that tenant-cum-borrower households in rural India leased an average of three hectares, which exceeded the average of all tenants of 2.46 hectares.

Results from several countries confirm that access to credit, particularly institutional credit, is improved with tenure security (Feder and Onchan, 1987; Migot-Adholla *et al.*, 1991; Kuhn *et al.*, 1997; Fenwick and Lyne, 1999, Lyne and Graham, 2001). With better access to credit, farmers can alleviate liquidity constraints and make investment in land improvements, complementary inputs and improved technology. Feder and Onchan (1987) found that land improvements were related to ownership security in Thailand. Kille and Lyne (1993) found a strong positive relationship between tenure security and investment in fixed improvements on freehold and trust farms in KwaZulu. Secure ownership leads to increased demand for land improvements as well as for complementary inputs (Migot-Adholla *et al.*, 1991; Place and Hazel, 1993). Also, Lyne and Graham (2001) found that tenure security was an important determinant of credit use, investment in fixed improvements and seasonal inputs, and agricultural performance on farmland acquired by previously disadvantaged people in KwaZulu-Natal. In summary, tenure security enhances both the incentive to invest and the ability to implement investments, which in turn leads to greater resource conservation and land productivity.

3.1 Efficiency From Rental Markets

Under conditions relevant in much of Southern Africa, land rental is a better indicator of allocative efficiency than land sale (Lyne *et al.*, 1996). Where farms are very small and households value land for the social security it provides, there is no guarantee that the offer price of productive farmers will exceed the reservation price of the owners that have few alternative forms of insurance. Consequently, land saleability may have little bearing on how efficiently land is farmed as it could reflect incentives other than those which tend to equalise the marginal product (less transaction costs) of the last unit of land across farmers (Lyne *et al.*, 1996).

A rental market imposes an opportunity cost on land. The rental value is the cost to the landholder for the non-use of land (Nieuwoudt, 1990). A rental market would therefore tend to bring unutilised land into production, as non-use would incur an opportunity cost in forgone rental income. When tenure and contracts are secured expected returns to potential renters of land increase, leading to an aggregate shift outwards in the demand curve for land and the emergence of an active rental market. As the market value of land increases, so too would the opportunity cost of under-utilising land. Use rights would tend to transfer to farmers with more skills, capital or family labour *i.e.* farmers who are better able to farm, leading to better resource allocation and greater productivity (Baber and Nieuwoudt, 1992).

Farmers may use a land rental market to carry out interlinked contracts. Interlinking offers farmers a way of partially circumventing imperfect or non-existent markets. Interlinked contracts are often the result of imperfect credit, insurance or labour markets. Rental markets for land offer landowners a way to access superior husbandry and managerial skills when there is no market for such skills (Bell and Zusman, undated). A land market may develop to compensate for the missing market – normally through a share-cropping arrangement, which is a form of rental transaction. Interlinking saves transaction costs and contract enforcement costs. The costs of dishonesty and shirking in one transaction increase for an agent due to the spillover effects threatening other transactions (Bardhan, 1989:239).

The level of investment is usually expected to be lower on rented land than on owner-operated land due to moral hazard and transaction costs (Kille and Lyne, 1993). Nevertheless, there are still strong incentives to invest when rental contracts are enforceable. The rental stream – and hence market value of land – increases with its expected productivity, creating incentives for landowners to conserve and improve their land regardless of who is

using it. This incentive shifts from the lessor to the lessee as the term of the rental contract lengthens.

An active rental market allows farmers to alter their scale of farming. Latt and Nieuwoudt (1988) suggest that it is not possible to determine optimal plot sizes without an indication of the intentions of households. Households are able to express their intentions through the market, making it possible for them to increase or decrease farm scale according to their objectives. Different crops impose different demands upon farm management, therefore optimising farmers who have different risk preferences and opportunity costs produce different crops and operate farms of different sizes (Bates, 1989:79). Share-cropping spreads the risk of uncertainty among the parties and may increase production if the contractual parties are highly risk averse (Sutinen, 1975).

There is much debate over whether Pricist or Structuralist policies are more suitable for promoting agricultural output in sub-Saharan Africa (Beynon, 1989). Pricists suggest that policies responsible for lowering farm product prices should be removed, while Structuralists argue that aggregate farm output is not responsive to price incentives in less developed countries. They contend that structural transformations (*e.g.* infrastructure and new technology) will alleviate constraints faced by small-scale farmers thereby raising output and improving output responses to price incentives. In essence, many of the programmes recommended by Structuralists serve merely to reduce unit production costs on farms (Lyne, 1991). Responses to structural programmes may therefore be no better than responses to higher farm product prices, since both approaches involve an increase in profit per unit output. Potential gains to farmers, generated either by higher product prices or lower unit production costs, are scale dependent. For this reason large-scale farmers are more

responsive to price incentives and farmer support programmes than small-scale farmers (Welch, 1978).

Empirical studies from KwaZulu suggest that both adoption of farm technology and production of surpluses are positively correlated with farm size and the renting or borrowing of land (Kleynhans and Lyne, 1984; Nieuwoudt and Vink, 1989; Thomson and Lyne, 1991). In Zimbabwe, there is evidence that highly intensive farming and the use of modern inputs sometimes take place on fields borrowed on a seasonal basis by 'strangers' from local lineages (Saul, 1988:265, 1993:85, 89-95 cited by Platteau, 1995:29).

Lyster (1990:59) found that 70 percent of all farmers known to sell produce in the Vulindlela district of KwaZulu rented or borrowed additional land. Likewise, Thomson's (1991:62) discriminant analysis of data gathered from 308 households in KwaZulu indicated that surplus producers rent in more land, invest more in farming assets, use more inputs and make greater use of credit facilities. He found that land rental and use of inputs were the most important variables discriminating between surplus and deficit producers.

It is apparent that land rental has many efficiency advantages. A view of one entrepreneur in Lesotho, given by Lawry (1993), is that only ten percent of the people holding land "farm it effectively or productively". Many tenant farmers offered examples of how they had increased yields dramatically over landholders. This is supported by Thomson's (1996:74-75) findings that lessees and prospective lessees tend to use their arable land more intensively than prospective lessors. They also invest more heavily in tractors and fixed improvements to land. Prospective lessors tend to be older, less liquid and, considering the relatively high proportion of widows in this group, less well endowed with family labour than willing

lessees. His findings support the argument that a more active rental market for arable land would improve allocative efficiency by promoting the transfer of land to those households best able to make use of it.

3.2 Equity in Rental Markets

A rental market has several equity advantages. Provided that transactions are voluntary, removing constraints to renting will create positive opportunities for many households, particularly the poor. Landholders who are unwilling or unable to use all of their land would gain extra income by renting out their unused land. On the other hand, households dependent on agriculture and short of land would be able to expand their farming operations. Although a land sale market would enable consolidation of farmland, it is argued that poorer households may be forced into distress sales and urban poverty. The consequences of distress sales would be particularly severe for households where social security is weak and expected off-farm earnings low (Lyne *et al.*, 1996). However, the rental market avoids the problem of a landless class as transfers are temporary and do not interfere with residential rights.

In practice, renting tends to equalise areas operated. Blarel (undated) found that in Rwanda, more than two thirds of the smallest farms (less than 0.37 hectares) lease in additional land, increasing scale of operation by an average of 67 percent. Conversely, on larger farms (above 1.5 hectares), the scale of operation reduces by about seven percent on average. Evidence from Lesotho also shows that 'land rich' households share out land to 'land poor' households (Lawry, 1993). Lawry (1993) contends that the growing class of returning migrant mineworkers who are landless will lend support to rental markets so as to gain access to land.

Thomson's evidence of efficiency and equity advantages in KwaZulu is discussed in Section 3.3.

Land offers social security against illness, unemployment and old age. Migot-Adholla *et al.* (1991) suggest that low formal sector wages and lack of job security perpetuate the need for urban labour migrants to maintain claims over rural land for social security reasons. Migrant labourer households would be able to rent out their land without losing permanent usufruct rights and avoid home relocation (Thomson and Lyne, 1991). Lawry (1993) found that five-year term leasing contracts appeared to be optimal – with longer terms seriously compromising the options of the family members returning to agriculture.

Renting can increase food production efficiency through better resource allocation and accelerated technology adoption. As a result food prices are lowered. Consumers therefore benefit from lower food prices, increased food security and greater real income (Nieuwoudt, 1990; Monde-Gwelata *et al.*, 1997).

Although renting poses many equity advantages, there are potential losers from renting. Possible losers would be stockowners whose access to common grazing is reduced when unutilised arable land is hired and cultivated (Lyne, 1991). Migot-Adholla *et al.* (1991) also recognise the possible overlapping of different individuals' rights to the same piece of land and state that the loss of rights without adequate compensation could prove economically disastrous for some vulnerable groups.

3.3 Case Study of Institutional Change in the Upper Tugela Catchment Area of KwaZulu.

The necessary conditions for an efficient land rental market are secure tenure and low transaction costs. Many households perceive renting to be risky as they believe that they could lose their land permanently (Lyne *et al.*, 1996). Risk increases transaction costs. As a result, the land rental market is constrained.

To develop a rental market in the Upper Tugela Catchment area, Thomson (1996) adapted institutional rules to improve tenure and contract security, and assumed many of the transaction costs that would otherwise have been borne by lessors and lessees. A series of 'adaptive' strategies involving small incremental changes to customary institutions was facilitated to encourage land rental transactions (Thomson, 1996:83-86). Initial strategies were aimed at reducing risk. Permission to promote a rental market for arable land was gained from the tribal authorities. Administrative and dispute procedures were established and clarified with the tribal councillors. The *Nkosi* (chief) then called a tribal *imbizo* (community mass meeting) to declare his approval and support of rental transactions and to explain procedures. The *imbizo* also gave members of the community an opportunity to pose questions.

To provide security for both lessor and lessee, simple one-page *pro forma* lease agreements were drawn up and signed in triplicate by lessor, lessee and endorsed by the tribal secretary. The copies were kept by lessor and lessee, and the original was filed by the tribal secretary. Rental transactions were facilitated by identifying potential lessors and lessees. An extension officer was employed to identify potential lessors and lessees and to host voluntary meetings, where small groups could discuss rental transactions and raise questions about rights and

obligations. The names of willing lessors and lessees were recorded after each meeting. Transaction costs were thus reduced by the extension officer's efforts to identify and match contractual parties. The radio station, Radio Zulu, was used extensively to promote the process, advertise workshops and communicate outcomes. As a result of these measures, the number of willing lessors increased significantly.

Unfortunately, these changes did little to encourage potential lessees. Thomson (1996:89) discovered that potential lessees had insufficient breadth of property rights to land, as they could not guarantee the exclusion of cattle. The workshops revealed that grazing rules were poorly enforced and there was a consequent need to protect cultivated lands from cattle invasion. Cattle invasion was ranked as a more serious constraint to crop production than imperfect credit markets and unreliable and costly contractor services. Thus, insecure tenure caused by cattle invasion discouraged farmers from hiring additional land.

Consequently, a specific date after which all livestock would be removed from arable land for the duration of the growing and harvesting season was negotiated and publicised (Thomson 1996:100-105). A system of fines and compensation was introduced to penalise offenders. Breadth of rights was extended thereby increasing tenure security.

The 1995 estimates in Table 3.1 relate to households that experienced problems with stray livestock before the grazing rules were introduced, while the 1996 estimates represent households that experienced problems with stray livestock after the grazing rules were introduced.

Table 3.1 Problems with stray cattle in the Upper Tugela Catchment, 1995 and 1996.

| | 1995 (%) | 1996 (%) | t-value |
|---|----------|----------|---------|
| Households experiencing problems with stray livestock | 71 | 31 | 2.32** |
| - Employed guards for fields | 0 | 6 | 1.00 |
| - Fenced in arable land | 29 | 50 | 1.19 |
| - Households with crops damaged by livestock | 70 | 80 | 0.40 |
| -Report stray livestock to tribal authority | 10 | 20 | 0.45 |
| -Stockowner fined by tribal authority | 10 | 20 | 0.45 |
| -Received out of court compensation | 20 | 0 | 1.50 |

Note: ** denotes statistical significance at the 5 percent level of probability

(Source: Thomson, 1996:105)

The results suggest an improvement in tenure security for crop farmers as evidenced by the much lower incidence of stray cattle invading arable lands. In addition, more participants exercised their rights to exclude livestock by fencing off arable lands and by employing guards to protect their crops and the vast majority of participants interviewed in 1996 knew the correct planting date.

3.3.1 Increased rental activity

The incidence of rental transactions in Thomson's study area (Amangwane) increased by 467 percent between 1993/94 and 1995/96 (Thomson, 1996:114). A major part of the observed growth in rental market activity was attributed to:

- (i) The lowering of risk perceptions by securing the support of the tribal authority.
- (ii) The lowering of transaction costs by facilitating rental transactions.
- (iii) An improvement in crop farmer tenure security by reinforcing grazing rules.

3.3.2 Evidence of efficiency and equity advantages of land rental in the Upper Tugela Catchment

Thomson's results (Table 3.2) suggest that efficiency of land use improved. Lessees farmed their land far more intensively than lessors did. Lessees applied variable inputs at more than

five times the rate that lessors did. Relative to lessors, lessees grossed much higher crop incomes per hectare. The incidence of investments in farm implements, tractors and fencing was also substantially higher amongst lessees. This explains why lessors spent more on contractor services than lessees did.

Table 3.2 Efficiency and equity advantages of land rental, Upper Tugela Catchment, 1994/5 and 1995/6.

| | Lessees | Lessors | t-value |
|-------------------------------|---------|---------|----------|
| Households | 36 | 24 | - |
| Farm Size (ha) | 0.85 | 2.11 | 3.73 *** |
| Area Operated (ha) | 2.02 | 1.21 | 1.99 ** |
| Input Expenditure (R/ha) | 606 | 113 | 3.93 *** |
| Contractor Expenditure (R/ha) | 141 | 190 | 1.37 |
| Crop Income (R/ha) | 494 | 105 | 2.02 ** |
| Rental Income (R/ha) | - | 80 | - |
| Own Tractors (%) | 50 | 0 | 4.92 *** |
| Implements (#) | 1.22 | 0.17 | 5.05 *** |
| Invest in Fencing (%) | 61 | 25 | 2.95 *** |
| Livestock (#) | 5.33 | 2.42 | 2.72 *** |
| Self-employed (%) | 61 | 25 | 2.95 *** |
| Off-farm Income (R/mth) | 861 | 764 | 0.28 |
| Pensioned Widows (%) | 0 | 17 | 2.14 ** |
| Age of Household Head (yrs) | 47 | 56 | 2.70 *** |

Note: ** and *** denote statistical significance at the 5 and 1 percent level of probability respectively.

(Source: Lyne and Thomson, 1998:126)

Thomson's work also achieved certain equity advantages. Households that negotiated cash lease agreements received a mean annual rental income of R80 per hectare from previously idle land. Rental transactions tended to equalise farm sizes by moving land from land 'rich' to land 'poor' households, and transferring income from households wealthy in cash and livestock to households strapped for cash but rich in land assets. Although lessors and lessees appeared to have similar off-farm incomes, the sample estimate for lessees (R861) was biased

downwards as many lessees were self-employed and did not declare household incomes (Thomson, 1996:117). The livestock numbers suggest that lessees earned more income as cattle are kept largely as a store of wealth (Doran *et al.*, 1979). These findings suggest that renting gives people who have little else but land (*e.g.* widows and elderly household heads) an opportunity to generate income.

CHAPTER 4

RESEARCH SITES AND DATA COLLECTION

Growth in the land rental market studied by Thomson (1996:112) was measured over a period of just two years and could, in part, be attributed to his presence in the area as he personally provided *pro forma* lease contracts, an extension officer to identify potential participants and transport to bring prospective lessors and lessees together. In addition, there were no rental disputes during this time to test the legal enforcement of contracts. Precedents set by the tribal councillors could strengthen or weaken the market. Thomson's efforts reinforced existing customary rules (such as the announcement of a 'planting date' and the removal of cattle from arable land after the planting date) that had been neglected. This meant that secondary users (*e.g.* cattle owners) were no worse off than they should have been in the past. However, if exclusive rights to arable land have been, or need to be, extended to sustain the rental market, compensation may be an issue as enclosure of land by crop farmers extinguishes the secondary rights of other households. Institutional change is a long-term process and more time and data were needed to establish the outcome of Thomson's institutional changes.

This chapter describes the survey techniques employed to gather data to gauge the impact of Thomson's institutional innovations. Two household surveys were conducted in the Upper Tugela Catchment between July and November 2000. First, a sample survey was conducted to gather socio-economic information on household welfare, allocation of farm resources and rental market activity. Second, a census survey of all known lessors and lessees was conducted to gather information about rental contracts and contract security.

4.1 Description of the Study Area

KwaZulu-Natal stretches along the eastern seaboard of South Africa and covers a total area of 9.2 million hectares. Prior to 1994 the province was split into two regions; Natal and the self-governing homeland of KwaZulu. Agriculture and property rights in these two regions were distinct. Natal was dominated by commercial agriculture and private land tenure, and KwaZulu by subsistence agriculture and communal land tenure. After South Africa's first democratic elections in 1994 the two regions were amalgamated under one provincial administration. However, this has had no effect on agriculture and property institutions in the province. Property rights to land in the rural areas of KwaZulu are still administered by tribal authorities.

This study was conducted in the Upper Tugela Catchment using Thomson's (1996:57) original sites to observe the longer-term effects of his initial innovations. The Upper Tugela Catchment lies within the Okhahlamba magisterial district of KwaZulu-Natal and borders the Drakensberg mountain range between the towns of Winterton and Bergville. The study area (Figure 4.1) comprises two tribal wards; the Betterment Planned ward of Amazizi and the larger, unplanned ward of Amangwane. Betterment Planning was a government programme that separated arable and residential allotments, and which relocated households to village settlements, while the remaining land was set aside for communal grazing (Davenport, 1987). Research was conducted in both the unplanned Amangwane and 'betterment planned' Amazizi tribal wards. This facilitated comparisons between the predominant tenure arrangements found in rural KwaZulu.

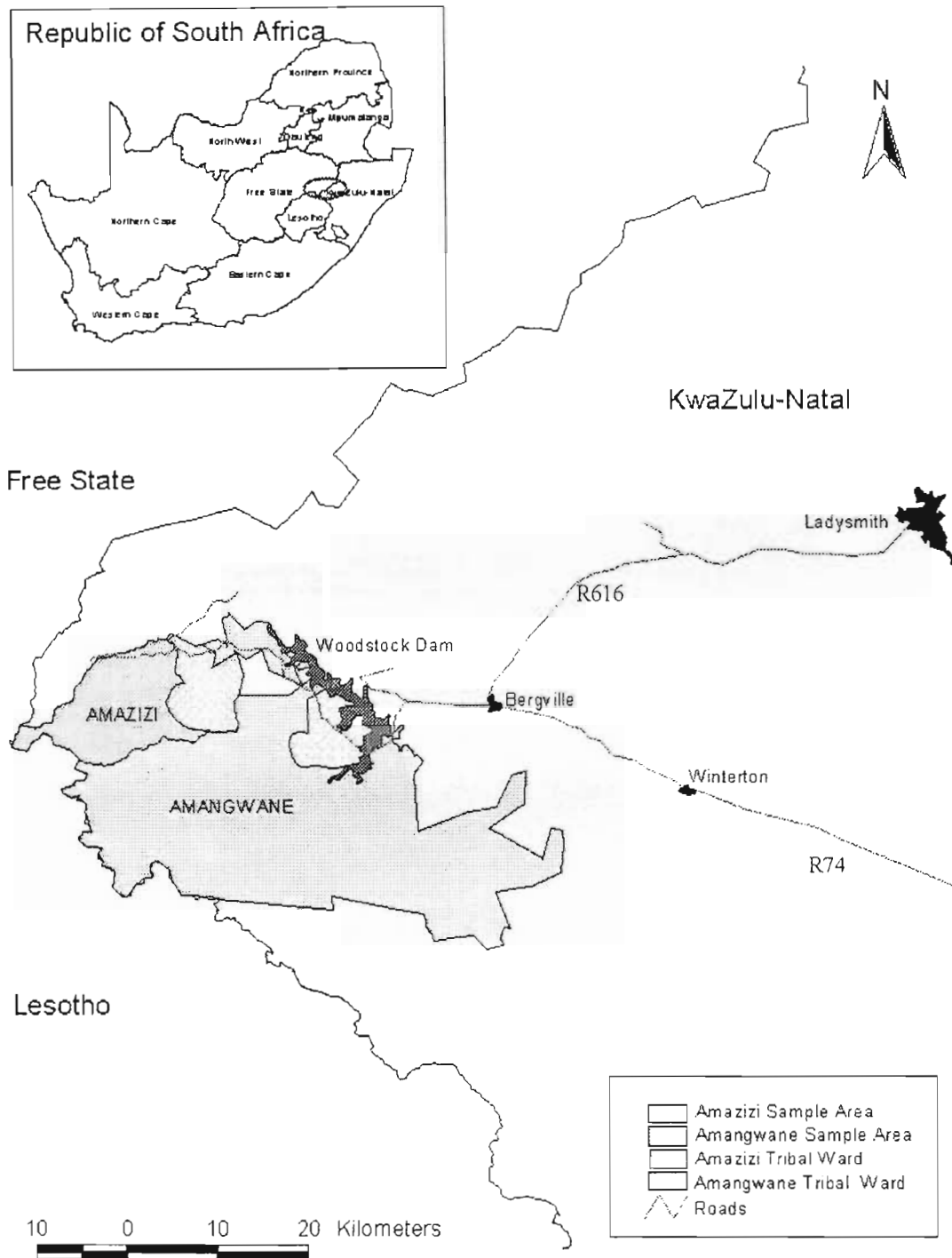


Figure 4.1 Map showing location of the study area in KwaZulu-Natal.

The Upper Tugela Catchment has good crop potential and is heavily stocked with cattle. According to Phillips' (1973) classification, most of the region falls within Bioclimatic Group 4 (Highland Sourveld) with the remaining north-east section located in Group 6 (Moist Tall Grass Veld). The region experiences summer rainfall with mean annual rainfall ranging from 800mm in Group 6 to 1500mm in Group 4. Mean annual temperatures range from 13°C in Group 4 to 18°C in Group 6. Prolonged periods of drought are rare. The mix of high cropping potential and abundant livestock presents an obvious test for institutional changes aimed at promoting and sustaining a rental market for arable land.

4.2 Sample Surveys

The specific objectives of the study conducted in the Amangwane and Amazizi tribal wards in the Upper Tugela Catchment of KwaZulu-Natal during 2000 were:

- (i) To measure change in the seasonal level of rental market activity since Thomson withdrew from the study area in 1996. This entailed a representative sample survey of households to estimate current levels of market participation.
- (ii) To determine what was responsible for any growth or contraction observed in the rental market in order to extend Thomson's list of policy recommendations about the type of support that government and other agents may have to provide to sustain the institutions needed for an efficient rental market. Case studies with previous, current and new participants in the market were undertaken to elicit this information.
- (iii) To identify linkages, if any, between the land market and other markets, particularly credit, input and product markets. A well-functioning rental market in land can help to overcome imperfections in other markets through inter-linked contracts. Linkages were explored during case studies and the sample survey.

4.2.1 Sampling technique and survey instruments

The most basic form of probability sampling is simple random sampling, whereby sample units are generated from the study population with equal probabilities (Barnett, 1974: 22-23). The basic aim is to draw a sample that is an honest representation of the target population. Simple random sampling requires that all sample units are listed and sampling is ideally carried out on homogeneous populations (Steel and Torrie, 1980:560). This lack of variation may, however, limit the sample's usefulness in further statistical analysis.

Stratified random sampling involves classifying the target population into non-overlapping subpopulations called strata, each of which is internally homogeneous (Cochran, 1953:65). Random samples are then drawn independently from each stratum. The target population is often divided into strata along geographical lines for administrative convenience. Stratification may result in a gain in precision of estimated population characteristics provided that within stratum variance is less than between strata variance (Barnett, 1974:83-84).

Thomson (1996:57) stratified the study area by tribal ward and drew a random sample of 80 households from each ward. This study used the same stratification and sampling technique as that employed by Thomson. A panel survey of Thomson's original respondents would have been ideal to reduce sampling error in differences observed across surveys, however this was not possible as the original respondents were guaranteed anonymity and no record was kept of their names. The approach used was to identify and panel as many of the original respondents as possible, and then to make up the balance of the sample ($n = 80$ in each tribal ward) by selecting a random sample of the remaining households. Only 34 percent of Thomson's original respondents in Amangwane, and 13 percent in Amazizi, were located and included in the sample.

Households in the strata were identified using a 1:10 000 orthophoto map. The sample (n = 160) represented approximately seven percent of the population of households in the study area. A structured questionnaire was applied to *de facto* household heads to elicit information on household demographics, rental market activity and constraints to farming in the area. This information was required to establish whether or not willing participants were still reluctant to engage in rental transactions, and reasons for them not participating. The survey aimed to establish possible changes in equity and land use efficiency by asking questions relating to farm size, area operated, crop sales, input expenditure, fixed improvements, machinery, assets/wealth, wage income, contract types, inter-linked contracts, land quality, land disputes, and indicators of transaction costs (*e.g.* vehicle ownership, travelling distances and gender). Questions relating to perceived and actual land rights were also included. Appendix A presents a copy of the questionnaire applied to *de facto* household heads in the sample survey.

Fieldwork was similar to that described by Lyne (1981) and Stewart (1986). Two local matriculated women, who could speak and read English, were employed to interview the sampled households. In addition, a tribal councillor was recruited to introduce the survey team to the households and to explain the aims of the survey. However, the tribal councillor was not present during the interviews. The household's arable land was measured using a calibrated measuring wheel while the interviews were in progress. Completed questionnaires were checked after each interview. The sample survey was conducted in July/August after the maize crops had been harvested. This enabled the enumerators to elicit information about agricultural income and expenditure on inputs, improvements, harvesting and marketing for the 1999/2000 cropping season to build on Thomson's 1993/94 and 1995/96 surveys.

4.2.2 Census survey

The sample survey was followed by case studies of all known lessors and lessees. The case studies were used to gather detailed information about tenure security, transaction costs, types of rental transactions, dispute procedures, legal precedents, and inter-linked contracts. Allocative efficiency and equity aspects of rental transactions were also explored. Groups targeted for case studies included past, continuing, and new tenant farmers; past, continuing and new lessors; parties whose contracts ended in dispute; and extension staff. The case studies were not confined to the study areas defined for the sample survey. A copy of the questionnaire applied to the case studies is presented in Appendix B. Twenty-three lessors and 18 lessees, participating in 73 rental transactions over the period 1996-2000 were identified and interviewed. These included ten of the households identified during the sample survey. Although the number of cases is small, the respondents had been exposed to the rental market and therefore represented a well-informed source of information.

CHAPTER 5

HOUSEHOLD DESCRIPTIVE RESULTS

This chapter provides descriptive information about households sampled in the Amangwane and Amazizi tribal wards (strata) in the Upper Tugela Catchment region of KwaZulu. Household demographics, farming enterprises and property rights to land were summarised using the Statistical Package for the Social Sciences (SPSS V9.0, 1999).

5.1 Characteristics of Sample Households and Farms in the Study Area.

5.1.1 Household demographics

The majority of household heads are male pensioners (Table 5.1). The mean age of these household heads is 58 years. Amazizi has a slightly higher proportion of widowed female household heads (33 percent) than Amangwane (28 percent). Family sizes are large, with an overall mean of 9.36 members, of which approximately 0.7 are pensioners and 4.18 are dependents under the age of 18.

The proportion of unemployed adults of working age is high at approximately 60 percent, and pensions account for 60 percent of household disposable income in Amangwane and 44 percent in Amazizi. Disposable income was defined as wage remittances plus pension income. Farm earnings were excluded as the average gross margin was negative (Table 5.5). Although wage earnings are slightly higher in Amangwane, a larger share (84 percent) is remitted in Amazizi.

Formal education levels in both tribal wards are low with the average household head having achieved just Standard 3 (Grade 5) at school. Only 24 percent of adult household members in Amangwane and 17 percent in Amazizi obtained Standard nine or matric (Grade 11 or 12).

Table 5.1 Household composition and income, Upper Tugela Catchment, KwaZulu, 1999/2000.

| | Amangwane (n = 80) | Amazizi (n = 80) |
|------------------------------|-----------------------|---------------------|
| Household composition | | |
| Female head (%) | 31 | 36 |
| Widows (%) | 28 | 33 |
| Age of household head (yrs) | 59 | 57 |
| Household size | 9.76 | 8.94 |
| Wage earners (%) | 5 | 10 |
| Self-employed (%) | 9 | 6 |
| Housekeepers (%) | (0.3) | (0.6) |
| Unemployed (%) | 26 | 28 |
| Pensioners (%) | 9 | 7 |
| Dependents (%) | 43 | 44 |
| Working age males (%) | 22 | 22 |
| Working age females (%) | 23 | 26 |
| Family on-farm labourers (%) | 38 | 37 |
| Off-farm income | | |
| Monthly wage income (R) | (503) | (464) |
| Amount of wage remitted (R) | 301 | 388 |
| Monthly pension income (R) | 471 | 296 |
| Have bank account (%) | 53 | 51 |

Note: Sample estimates in parenthesis have coefficients of variation greater than 20 percent.

5.1.2 Farm sizes and land use

Farm sizes are very small with household arable allotments averaging approximately 1.75 hectares in Amangwane and 0.85 hectares in Amazizi (Table 5.2). Only 43 percent of all sample households had arable allotments greater than one hectare. The largest arable

allotment in Amangwane measured 10.19 hectares and the largest in Amazizi measured 3.41 hectares. One respondent in Amangwane had no arable allotment. According to tribal custom, a single unmarried woman is not entitled to land, even if she is supporting a family (Buthelezi, 2000).

Table 5.2 Farm size and land use, Upper Tugela Catchment, KwaZulu, 1999/2000.

| | Amangwane (n = 80) | Amazizi (n = 80) |
|------------------------|-----------------------|---------------------|
| Arable allocation (ha) | 1.75 | 0.85 |
| Area operated (ha) | 1.63 | 0.86 |
| Area cropped (ha) | 1.06 | 0.39 |
| % left idle | 35 | 55 |

Households in the betterment planned Amazizi ward are allocated garden plots next to their homesteads, and arable fields in areas designated as suitable for cropping. Households in Amazizi appear to make better use of their garden plots, as they are easier to police than their arable allotments which are usually located some distance from the homestead. Almost one quarter of Amazizi respondents cited crop damage by livestock and theft as a reason for not planting (Table 5.3). This may explain why a greater proportion of households left land idle in Amazizi than in the unplanned Amangwane ward where arable fields usually surround the homestead.

Table 5.3 Reasons for leaving arable land idle in the Upper Tugela Catchment, KwaZulu, 1999/2000.

| | | Amangwane (n = 80) | Amazizi (n = 80) |
|--|-----|------------------------|---------------------|
| Households that did not plant their entire arable allocation | (%) | 54 | 64 |
| <i>Reasons:</i> | | | |
| - Lack of cash | (%) | 66 | 58 |
| - Livestock damage crops | (%) | (7) | 40 |
| - Too old to farm | (%) | (10) | (8) |
| - Theft of crops | (%) | (5) | (6) |

Note: Sample estimates in parenthesis have coefficients of variation greater than 20 percent.

5.1.3 Farm enterprises

Approximately 58 percent of sample households in Amangwane and 55 percent in Amazizi own cattle (Table 5.4). Mean herd sizes are similar for owners in both tribal wards, and cattle sales are negligible. Cattle appear to be kept largely as a store of wealth (Doran *et al.*, 1979). Low (1986:111) reports that stockowners tend to be more influential members of the community; however only 23 percent of sampled respondents perceived that livestock owners were more influential than crop farmers in the study area. Sixty-four percent of respondents perceived crop farmers as being more influential than stockowners, and 13 percent felt that stockowners and crop farmers were equally influential.

Table 5.4 Farm enterprises, Upper Tugela Catchment, 1999/2000.

| | | Amangwane (n = 80) | Amazizi (n = 80) |
|-------------------------------|-----|-----------------------|---------------------|
| Livestock | | | |
| Households possessing cattle | (%) | 58 | 55 |
| Draught cattle | (#) | (1.09) | 0.43 |
| Total cattle | (#) | 4.39 | (3.57) |
| Small stock | (#) | (3.05) | (2.08) |
| Crops | | | |
| Households growing maize | (%) | 88 | 86 |
| Households growing beans | (%) | 16 | 13 |
| Households growing potatoes | (%) | 9 | 11 |
| Households growing vegetables | (%) | 14 | 20 |
| Households growing fruit | (%) | 33 | 51 |

Note: Sample estimates in parenthesis have coefficients of variation greater than 20 percent.

Most households grow maize (Table 5.4), largely for subsistence purposes. Crop sales are insignificant, with only seven sample households in Amangwane and three in Amazizi reporting any sales. Consequently, crop revenue is less than input expenditure (Table 5.5) as the average household is a net consumer. The bulk of farm expenditure is spent on contractor services and fertilizer, with some households purchasing improved seed. Few households grow land intensive crops such as vegetables and potatoes, and those that grow more than one crop usually inter-crop, particularly maize and beans. In Amazizi, these crops are grown only in the garden plots where they can be protected against damage and theft. Fruit trees are grown close to the homesteads for the same reason.

Table 5.5 Farm revenues and expenditures, Upper Tugela Catchment, 1999/2000.

| | Amangwane (n = 80) | Amazizi (n = 80) |
|-----------------------|-----------------------|---------------------|
| Crop sales (R) | (15) | (20) |
| Livestock sales (R) | (135) | (43) |
| Crop expenditure: (R) | 591 | 287 |
| - Contractor services | 257 | 92 |
| - Fertilizer | 253 | 72 |
| - Seed | (23) | (111) |
| - Equipment hiring | (58) | (12) |
| Farm gross margin (R) | -441 | -224 |

Note: Estimates in parenthesis have coefficients of variation greater than 20 percent.

5.2 Property Rights and Tenure Security in the Study Area

The principal statute governing land in rural KwaZulu is the Ingonyama Trust Act, No. 3 of 1994. The Act established a statutory trust known as the Ingonyama Trust in whose name all land in the former homeland is registered. The beneficiaries of the trust are the members of the 249 tribes and communities listed in the schedule. The Act authorises the trustee to deal with land in accordance with Zulu indigenous law (Rutsch, 1994:5-6). Authority over the land is thus vested in the *Amakosi* (chiefs) who act on behalf of their tribes.

According to Zulu custom, each married man in the community is entitled to residential and arable land sufficient for his family's needs (Thomson, 1996:67). In practice, households are granted usufruct rights to land. The household head is assigned individual usufruct to arable land, and communal usufruct to grazing land. The household, therefore, has the right to cultivate its arable land and graze livestock on any unused land. Arable land that is not cultivated becomes communal grazing land. It follows that agricultural land can only be 'privatised' during the summer months when it can be cultivated. In winter all land becomes

communal, including stover on cropland (Thomson and Lyne, 1995). Households do not possess the right to permanently alienate their land, and are therefore unable to sell or mortgage their land. Despite this, three households encountered had ‘illegally’ sold some of their arable allocation as residential sites, thereby withdrawing agricultural land from production.

In 1995 Thomson (1996:69) found that only nine percent of respondents in Amangwane felt that they could crop their arable land without opening it for communal grazing once they had harvested their summer crops. In 2000, when this study was conducted, 44 percent of respondents in Amangwane and 28 percent in Amazizi felt that they could crop their arable land throughout the year (Table 5.6). Despite this apparent improvement in tenure security, the large majority of households perceive that they do not have fully exclusive rights to their arable allotments.

Moreover, perceptions of the enforceability of use rights are low (Table 5.6). Only 43 percent of Amangwane respondents perceived that they had the right to fence their arable land. In Amazizi, where betterment planning formally separated arable land from grazing land, this estimate was much higher at 93 percent. Even so, most households in Amazizi believe that they are not allowed to crop their land throughout the year. Fencing is used to exclude livestock during the summer growing season until harvest, thereafter a gate must be left open to allow livestock to enter and graze on stover. In practice, only 31 percent of households in both wards had ever fenced their arable allotments. Of these, 58 percent of households in Amangwane and 73 percent in Amazizi reported that their fences had been damaged or destroyed, mainly by livestock and members of the community. Sixty-seven percent of tenant farmers had attempted to privatise their land by fencing. Half of these households reported damage and theft of their fencing.

Table 5.6 Perceived exclusion rights, Upper Tugela Catchment, KwaZulu, 2000.

| | Amangwane (n = 80) (%) | Amazizi (n = 80) (%) |
|--|------------------------------|----------------------------|
| Crop land throughout the year: | 44 | 28 |
| - without authorization | 43 | 28 |
| - with household head's approval | (1) | 0 |
| Right to fence off land: | 43 | 93 |
| - without authorization | 42 | 78 |
| - with household head's approval | 0 | (3) |
| - with tribal authority approval | 0 | (4) |
| - with government approval | (1) | (8) |
| Right to exclude livestock during summer | 99 | 98 |
| Right to claim compensation for crops damaged | 82 | 69 |

Note: Estimates in parenthesis have coefficients of variation greater than 20 percent.

No significant differences were found when analysing male and female household heads' perceived rights. The only notable difference was that fewer female heads in Amazizi perceived the right to claim compensation for crops damaged by livestock (55 percent of females versus 96 percent of males). This finding supports the view that traditional institutions impose higher transaction costs and less secure tenure on women than on men (Berry, 1993; Delgado, 1996). Overall, 82 percent of Amangwane and 69 percent of Amazizi respondents felt that they could claim compensation for crops damaged by stray livestock. However, these promising estimates do not imply that compensation was claimed or awarded by the tribal courts.

Thomson attempted to strengthen tenure security in Amangwane by reintroducing grazing rules. A 'Grazing Rules Committee' was established with broad representation from the community. The committee recommended that ploughing should commence on the 1st

October every year. After this date stockowners must remove their livestock from neighbours' arable allotments and households are entitled to claim compensation for crops damaged. If damage occurs and parties are unable to settle out of court, the dispute should be taken to the tribal authority where, if found guilty, the stockowner would be fined R10 per plant damaged and pay a R20 court fee. The aggrieved crop farmer would receive R10 per plant damaged as compensation.

Despite Thomson's efforts to reintroduce grazing rules, crop damage by stray livestock is still a major issue (Table 5.7). Fifty-six percent of respondents in Amangwane and 58 percent in Amazizi experienced problems of stray livestock invading their cropland. Only 55 percent of Amangwane and 45 percent of Amazizi respondents claimed to know the recommended planting date, even though it was confirmed² that the planting date (1st October) was publicised by the tribal authority before each planting season. In addition, the customary law that all livestock should be removed from arable areas during summer is still not well enforced. Stockowners are reluctant to withdraw their livestock to the more distant summer grazing areas due to the risk of stock theft. During the sample survey, 32 head of cattle were stolen in one night from the mountain grazing camp in Okhombe, a sub-ward of Amazizi. As a result, many herds are kept close to homesteads and croplands. Of the respondents who experienced problems with stray livestock invading their crops (almost 60 percent), more than 90 percent suffered crop damage. Some resorted to hiring guards to police their fields and fences. The incidence of damage to crops and fencing is higher in Amazizi than in Amangwane where fields are located closer to homesteads and where the tribal court imposed fines on stockowners who breached the grazing rules.

² An *induna* in Dukuza, a sub-ward of Amangwane, confirmed that he and the other *indunas* did publicise the planting date of 1st October each season. Further, 89 percent of lessors and lessees interviewed in the census survey stated that the planting date of 1st October was announced by the tribal authority each season.

Table 5.7 Problems with stray livestock in Amangwane and Amazizi, Upper Tugela Catchment, KwaZulu, 2000.

| | Amangwane (n = 80) (%) | Amazizi (n = 80) (%) |
|---|------------------------------|----------------------------|
| Households experiencing problems with stray livestock | 56 | 58 |
| - Employed guards to police fields | 4 | 4 |
| - Fenced in arable land | 30 | 35 |
| - Households with crops damaged by livestock | 94 | 98 |
| -Stockowner fined by tribal authority | 7 | 0 |
| -Received out-of-court compensation | 26 | 18 |
| -Took no action against stockowner | 67 | 82 |

Tenure is insecure if legal procedures and precedents to settle disputes are vague or their outcomes uncertain. Of the sample households that suffered crop damage, 26 percent in Amangwane and 18 percent in Amazizi received out-of-court compensation, while only seven percent in Amangwane took the matter to the tribal authority (Table 5.7). All of these reported cases were settled in favour of the aggrieved crop farmers. None of the households that suffered crop damage in Amazizi took the matter to the tribal authority. It appears that the net benefits of approaching the tribal court are uncertain. A leading tenant farmer in Amangwane declared that he would not seek compensation in the tribal court because his time is too valuable to waste in court for uncertain compensation. Other possible reasons for not seeking compensation may be that damage was minimal or that the guilty party could not be identified, especially in Amazizi, as the impounding of stray livestock is not permitted. Not surprising, there is a lower perception in Amazizi of the ability to claim compensation for crops damaged by stray livestock (Table 5.6).

To strengthen tenure security, existing customary rules that assign exclusive rights to cropland have to be enforced with predictable penalties and compensation, and these rights should preferably be extended to include the winter months. Compensation of secondary users may become an issue if rights to cropland are made permanently exclusive. However, of all respondents, only five felt that they had been made worse off as a result of others fencing off their land *e.g.* loss of grazing or unable to collect thatch. When asked what compensation they would seek for the loss of their secondary rights, one household wanted cash and another wanted its land ploughed. Compensation was not an issue for the other three households. They felt that if other households wished to fence off their cropland they were entitled to do so.

Legal procedures and firm precedents must also be established for disputes involving land rental. Lessees interviewed in the census of all known market participants cited the problem of lessors reclaiming their land or disputing the rental payment after the tenant had improved fertility and increased yield as the most frequent source of disputes. Lessors expressed fears of losing their land to tenants. Thomson encouraged the tribal authorities to recognise rental transactions and introduced *pro forma* lease agreements to assist the councillors in upholding rental contracts. However, such cases have still not been tested in the tribal courts. This could explain why so many rental transactions take place between family members rather than between strangers as failure to uphold contracts heightens the moral hazard faced by lessors and lessees.

According to Roth (1993:316), land disputes are a good indicator of tenure security because inadequate property rights result in conflicts over land. Survey respondents were asked if they had been involved in a land ownership or boundary dispute in the past five years. Table 5.8 shows that only ten percent of Amangwane and 11 percent of Amazizi respondents

acknowledged such disputes. These estimates are similar to Thomson's (1996:97) earlier finding of nine percent in Amangwane. Most land disputes occurred between neighbours, followed by family members. Eighty-eight percent of the disputes in Amangwane and 67 percent in Amazizi had been resolved. In Amazizi, 83 percent of disputes were resolved by the parties themselves, with only one household approaching the magistrate. No disputes were settled by the tribal authority. The situation in Amangwane is quite different with 57 percent of the disputes being resolved by the tribal court and 43 percent by the parties themselves.

Table 5.8 Land disputes in the Upper Tugela Catchment, KwaZulu, 2000.

| | Amangwane 1996 (n = 68) (%) | Amangwane 2000 (n = 80) (%) | Amazizi 2000 (n = 80) (%) |
|--|--------------------------------------|--------------------------------------|------------------------------------|
| Households involved in a land ownership or boundary dispute | 9 | 10 | 11 |
| <i>Perceptions:</i> | | | |
| Land disputes more serious now than in the past | 15 | 4 | 4 |
| Land disputes not as serious as in the past | 29 | 19 | 13 |
| Land disputes not a problem | 56 | 78 | 84 |
| Respondent knows of a family that was dispossessed of its land after a dispute | 10 | 9 | 9 |

Almost nine percent of respondents knew of a household that had been dispossessed of land. However, it was not established whether the dispossessed household was in fact the legal holder of that land. It appears that ownership and boundaries of arable land are reasonably well defined, and that households do have legal recourse to tribal authorities and magistrates if they cannot resolve disputes out of court. Tenure insecurity therefore stems largely from the poor enforcement of grazing rules (which undermine the owner's exclusive rights to cropland) rather than from disputes over ownership or boundaries of arable fields.

5.2.1 Improvements in tenure security

The preceding section indicates that land rights are well defined in the study area, but that these rights are limited and some are difficult to enforce. As discussed in Section 1.5, tenure security comprises three components, namely breadth, duration and assurance of property rights. This section examines each of these aspects in order to establish whether or not Thomson's institutional innovations produced any lasting tenure improvements in the study area.

It would appear that Amangwane residents now perceive greater breadth and duration of rights to arable land as the proportion of respondents who perceived that they could crop their land throughout the year increased from nine to 44 percent following Thomson's efforts to promote rental transactions. Virtually all (98 percent) of the lessees interviewed in the census survey in 2000 believed that they could crop their land exclusively throughout the year, and many (67 percent) had erected fences around hired plots and invested in fertiliser (100 percent) or lime (22 percent). The benefit streams from liming soils endure for approximately three years. These long-term investments reflect an increase in the maturity period of rental contracts (Section 6.4) and hence an improvement in the duration component of tenure security. While the rental market for arable land is usually dependent on secure tenure and not *vice versa*, the causality can be bi-directional if lease agreements are viewed as a credible record of land rights. This also applies to the adoption of perennial crops such as timber or sugarcane where supply contracts between the miller and grower reinforce customary rights to land (Thomson and Lyne, 1993).

The improved perception of contract enforcement through the use of written contracts has reduced moral hazard and encouraged longer-term contracts (Section 6.4) despite the absence of firm legal precedents. However, these contracts offer lessees no protection against the risk

of crop damage caused by stray livestock. This requires publicising the planting date, enforcing penalties for owners of livestock found in arable lands after the planting date, and adequate compensation of farmers whose crops are damaged by livestock.

Thomson (1996:96) found that conflicts over boundaries separating arable fields and claims to land were rated as the most frequent sources of dispute. This problem appears to have diminished since 1996. Table 5.8 shows that only four percent of respondents in Amangwane and Amazizi claimed that land disputes had worsened over time compared with Thomson's 1996 estimate of 15 percent. Most households now believe that land disputes are not a problem.

In summary, the perceived breadth and duration of rights to cropland have shown some improvement since 1996, but enforceability of these rights remains weak. Crop damage by livestock continues to represent a major constraint to farming in the area even though the recommended planting date is publicised each year. Households do not take legal action against owners of stray livestock that cause crop damage because compensation is uncertain. In addition, there are no firm legal precedents reinforcing tenure security in the event of a land rental dispute. Nevertheless, written rental contracts are being used by lessors and lessees to reduce moral hazard and have encouraged medium- and long-term investments in agriculture.

To overcome problems of tenure insecurity and high transaction costs, some progressive farmers have purchased or rented land outside of the communal areas where they have more exclusive rights to larger plots of land. Although this action is an attempt by farmers to escape the problems of communal tenure, the fact that some emerging farmers are able to climb the 'agricultural ladder' is encouraging.

CHAPTER 6

LAND RENTAL IN THE UPPER TUGELA CATCHMENT

This chapter examines rental market activity and indicators of the market's land use efficiency and equity advantages in the Upper Tugela Catchment after Thomson's earlier efforts to promote rental transactions in arable land.

6.1 Rental Market Activity in the Upper Tugela Catchment

The total number of rental transactions observed in the household sample survey is one indicator of market activity. Respondents revealed a total of 20 rental transactions in the 1998/99 growing season and 26 rental transactions in the 1999/2000 growing season (Table 6.1). Three sample households in Amangwane were involved in rental contracts in both the 1998/99 and 1999/2000 seasons. All three were lessors with one household engaged in two contracts and the other two engaged in one each. In Amazizi, seven sample households participated in rental contracts in both seasons. Five were lessors and two were lessees. One of the lessees in Amazizi engaged in seven contracts in 1998/99 and 1999/2000.

Thomson conducted a baseline survey during 1993/94 in both Amazizi and Amangwane. However, his 1995/96 follow-up survey was conducted in Amangwane only. Only sixty-four of the original 80 baseline respondents were panelled. The 1995/96 estimates in Table 6.1 were therefore adjusted for the smaller sample size.

Table 6.1 Rental transactions observed in sample households, Amangwane and Amazizi, Upper Tugela Catchment, KwaZulu.

| | | Thomson's study | | This study | |
|---|-----------|-----------------|----------------------|------------|-----------|
| | | 1993/94 | 1995/96 ¹ | 1998/99 | 1999/2000 |
| Transactions | Amangwane | 3 | 21 | 7 | 8 |
| | Amazizi | 4 | - | 13 | 18 |
| | Total | 7 | - | 20 | 26 |
| | Lessees | 7 | - | 9 | 12 |
| Sample Households | Amangwane | 3 | 19 | 5 | 7 |
| | Amazizi | 3 | - | 7 | 10 |
| | Total | 6 | - | 12 | 17 |
| | Lessees | 6 | - | 3 | 5 |
| Average number of transactions per lessee | | 1.17 | - | - | 2.40 |
| Average area rented in by lessees (ha) | | 1.25 | - | - | 2.81 |
| Sample area transacted (ha) | | 7.5 | - | - | 25.69 |
| % of sample area transacted | | 6.3 | | | 12.4 |

Notes: ¹ A correction factor of 80/64 was applied to Thomson's observations to account for a smaller panel size.

- denotes no estimate available.

The number of rental transactions and market participants in Amangwane increased sharply in 1995/96 after Thomson's efforts to reduce transaction costs and to strengthen exclusive rights to arable land by re-introducing customary grazing rules. Although these numbers fell after he withdrew from the area, the overall trend has been strongly positive – particularly in Amazizi. In addition, the number of transactions per lessee increased. Table 6.1 shows that the average number of transactions per lessee increased from 1.17 in 1993/94 to 2.4 in 1999/2000 while the average area hired in increased from 1.25 to 2.81 hectares, resulting in a dramatic increase in the total sample area transacted. The proportion of the sample area transferred through rental transactions doubled over the period 1993/94-1999/2000. Clearly,

rental market activity should not be judged solely on the number of transactions. Lessees appear to be consolidating land by hiring from several different lessors, illustrating the emergence of a farmer class.

Viewed from the perspective of transaction costs, the data highlight an apparent anomaly. On the one hand, the number of market participants has declined suggesting an increase in transaction costs. On the other hand, the quantity of land traded has increased suggesting a decline in transaction costs as illustrated by Figure 6.1 where the quantity of land transacted increases from Q_1 to Q_2 when transaction costs fall from P_1 - P_4 to P_2 - P_3 . The explanation for this apparent anomaly lies in the distinction between fixed and variable transaction costs (Section 2.2.2). Transaction costs effectively increase the price paid by lessees and decrease the price received by lessors, creating a 'price band' within which some households find it unprofitable to continue transacting. The evidence presented in Section 6.4 suggests that variable *ex post* transaction costs associated with the risk of enforcing rental contracts declined for those successful participants who remained in the market. As a result, areas transacted increased despite the loss of lessees.

On the other hand, a declining number of lessees suggest that prospective participants were prevented from entering the rental market by rising fixed transaction costs. One of Thomson's (1996:85) methods of lowering these transaction costs was to provide transport to bring prospective lessors and lessees together. This service was discontinued after he withdrew from the area, leaving prospective market participants to bear travel cost themselves. These *ex ante* fixed costs do not vary directly with the area rented and therefore tend to preclude transactions involving small areas of land. As most rental agreements are

negotiated at the lessor's homestead (Section 6.4), high search and transport costs could seriously impair participation by emerging farmers.

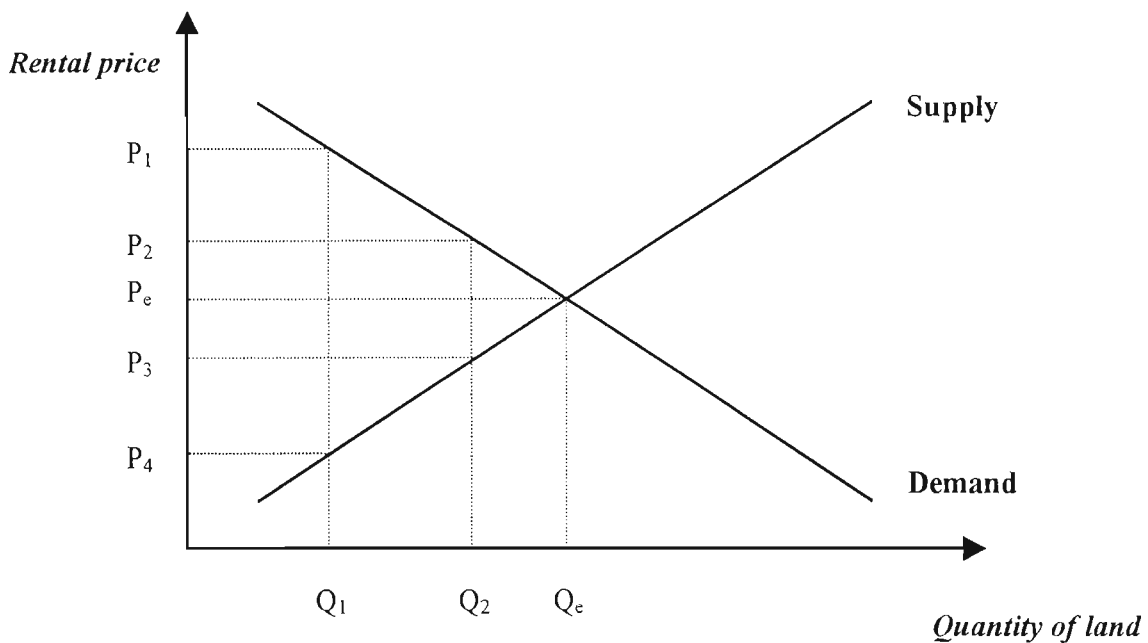


Figure 6.1 Diagram illustrating changes in the quantity of land traded as transaction costs decline.

It seems reasonable to conclude that although the absolute number of rental transactions has declined since 1995/1996, the market is allocating a larger area of land to a (smaller) group of successful farmers. These allocative efficiency and equity aspects of rental transactions are discussed in the following section.

6.2. Efficiency and Equity Advantages of Land Rental in the Upper Tugela Catchment

Thomson (1996:116) concluded that the rental market for arable land in the Upper Tugela Catchment yielded both efficiency and equity advantages. This section attempts to establish whether the efficiency and equity gains have been sustained or not. For the period 1996-2000

a total of 30 distinct³ transactions were identified in the sample survey, and a further 43 during the census survey.

In this section comparisons are made between a leading farmer in Amangwane, Farmer A⁴, and other lessees observed in 1996 and 2000. Farmer A is a member of the Upper Tugela Black Commercial Farmers Association, and farms for commercial reasons. He operates a total area of 50.25 hectares of which 48 hectares are hired through 11 rental contracts. Farmer A makes intensive use of inputs and has made substantial investments in agriculture.

Table 6.2 shows that both lessors and lessees are transacting, on average, more land per transaction in 2000 than in 1996. Areas leased out by lessors increased from 0.76 hectares per transaction in 1996 to 1.47 hectares in 2000. Areas hired by lessees have, however, shown a much more substantial increase from 0.71 hectares in 1996 to 2.01 hectares in 2000. Farmer A rents 4.36 hectares per transaction. The average number of transactions, and hence the average area transacted per household, have also increased since 1996. Lessee households, in particular, are engaging in more transactions and hiring larger areas of land, offering further evidence of an emerging farmer class.

³ This estimate is lower than the 46 transactions reported in Section 6.1 because it treats multi-year transactions as a single transaction.

⁴ For reasons of anonymity, the alias 'Farmer A' is used in place of the farmer's true name.

Table 6.2 Average areas transacted and the average number of transactions per household¹, Upper Tugela Catchment, KwaZulu, 2000.

| | 1996 | | 2000 | | |
|--|---------------------|---------------------|---------------------|----------------------------------|----------|
| | Lessors (n = 12) | Lessees (n = 19) | Lessors (n = 23) | Lessees ² (n = 17) | Farmer A |
| Average area rented per transaction | 0.76 | 0.71 | 1.47 | 2.01 | 4.36 |
| Average number of transactions per household | 1.0 | 1.6 | 1.13 | 2.13 | - |
| Average area rented per household | 0.76 | 0.81 | 1.57 | 2.35 | - |

Notes: ¹ The estimates presented in this table are calculated from census data of all known lessors and lessees in the Upper Tugela Catchment.

² The estimates presented in the last two rows of this column exclude Farmer A as he was considered to be an outlier.

The volume of land traded increases when transaction costs decline relative to rental income because the net benefits of transacting improve for both lessors and lessees. Lessees no longer have to be the very best farmers to cover transaction costs (including risks) involved in renting when these costs decline (Barrows and Roth, 1990). A narrowing gap between the intensity with which land is farmed by lessors and lessees therefore indicates declining transaction costs and a more efficient market. Table 6.3 presents differences in measures of land use intensity (input expenditure per hectare and crop income per hectare) between lessors and lessees observed in the Upper Tugela Catchment. These differences closed over the period 1996-2000 suggesting a reduction in transaction costs and hence an improvement in market efficiency. The fact that two farming households engaged in both leasing and hiring arrangements also signals a relatively efficient market. Although one of these lessees rented some land out largely for altruistic reasons, the other did so due to a liquidity

constraint. After entering into a hiring agreement, the tenant realised that he would face cash flow problems and decided to rent out a portion of his own allocated land.

On the other hand, differences in household characteristics between lessors and lessees (Table 6.3) show no clear trend. Some of these gaps (*e.g.* allocated farm size, herd size and the proportion of pensioned widows) widened over the period 1996-2000 suggesting an increase in transaction costs and hence a less efficient rental market. These findings are consistent with the argument in Section 6.1 that fixed *ex ante* transaction costs increased (reducing the number of lessees) while variable *ex post* transaction costs decreased (leading to marked growth in the total area transacted).

Tables 6.3, 6.4 and 6.5 compare indicators of allocative efficiency and equity resulting from land rental. The means for 2000 presented in Table 6.3 exclude two lessees who were considered to be outliers. These two farmers (Farmer A and another) are commercial growers who farm their land very intensively and gross substantial crop incomes on operated areas of more than 50 hectares. Unlike Farmer A who rented in 48 hectares, the other outlier had acquired an extraordinary land allocation from the *Nkosi* (chief) and hired an additional area of 3.5 hectares.

Input expenditure and crop income both dropped sharply in 2000 (Table 6.3). Lower variable transaction costs may have been responsible for part of this decline. However, the dramatic cut in input expenditure and crop income is largely the result of a poor crop season. Most planting usually occurs during November in the study area. During November 1999, the region experienced heavy rainfall which delayed planting until mid-December (Buthelezi, 2000; Nkosi, 2000), and resulted in a loss of approximately 20 percent of the maize growth

cycle. Hence, input usage and subsequent crop yields were reduced (Buthelezi, 2000; Nkosi, 2000).

Table 6.3 Efficiency and equity indicators of land rental, Upper Tugela Catchment, KwaZulu.

| | 1996 | | 2000 | | | 1996 | 2000 |
|---|---------|---------|---------|---------|----------|---|------|
| | Lessors | Lessees | Lessors | Lessees | Farmer A | Differences between lessors and lessees | |
| Households (#) | 12 | 19 | 23 | 16 | | | |
| Input expenditure (R/ha) ¹ | 146 | 782 | 87 | 284 | 503 | 636 | 197 |
| Machinery expenditure (R/ha) ² | - | - | 132 | 146 | 1045 | - | 14 |
| Crop income (R/ha) ¹ | 135 | 637 | 0 | 310 | 1353 | 502 | 310 |
| Allocated farm size (ha) | 2.11 | 0.85 | 2.99 | 1.19 | 2.25 | 1.26 | 1.8 |
| Area operated (ha) | 1.21 | 2.02 | 1.47 | 3.71 | 50.25 | 0.81 | 2.24 |
| Tractor ownership (%) | 0 | 50 | 9 | 20 | YES | 50 | 11 |
| Implements (#) | 0.17 | 1.22 | 0.39 | 1.07 | 12 | 1.05 | 0.68 |
| Invest in fencing (%) | 25 | 61 | 39 | 69 | YES | 36 | 30 |
| Livestock (#) | 2.42 | 5.33 | 2.48 | 6.67 | 51 | 2.91 | 4.18 |
| Self-employed (%) | 25 | 61 | 26 | 47 | YES | 36 | 21 |
| Off-farm income (R/mth) ¹ | 985 | 1110 | 945 | 989 | - | 125 | 44 |
| Pensioned Widows (%) | 17 | 0 | 50 | 0 | NO | 17 | 50 |
| Age of Household Head (yrs) | 56 | 47 | 58 | 49 | 55 | 9 | 9 |

Notes: ¹ Thomson's 1996 estimates of value were expressed in 2000 prices using the consumer price index (StatsSA, 2001).

² Mean price paid for contractor services was substituted as opportunity cost for owners of tractors and other cultivating equipment.

The contemporary data support Thomson's (1996:115) earlier claims of efficiency gains in land use. Lessees farm their land more intensively than lessors. They applied 226 percent more seasonal inputs (fertilizer, seed and chemicals) per hectare than lessors. Lessees produced surpluses for sale and grossed R310 per hectare in crop income, whereas lessors did not earn any crop income. Lessees spent more on machinery and contractor services than lessors. Twenty percent of lessees owned their own tractors compared to only nine percent of

lessors (two households). Farmer A owns five tractors and 12 implements. The incidence of fencing is also greater amongst lessees than lessors. Overall, lessees invest substantially more in agriculture than do lessors.

Table 6.4 illustrates that lessees make better use of agricultural extension services than lessors. Awareness of the extension officer's name was used as a proxy for regular contact with the extension officer and showed that lessees had much greater contact with the extension officer than lessors. Lessees received and made more visits to the extension officer than lessors. Several lessees complained that they did not get much attention from extension services if they were not part of a farmers' association. Nevertheless, 72 percent of lessees attended agricultural field days or agricultural training courses compared to only 17 percent of lessors.

Table 6.4 Agricultural extension and information use by lessors and lessees in the Upper Tugela Catchment, KwaZulu, 2000.

| | Lessors (n = 23) % | Lessees (n = 18) % | t-value |
|--|--------------------------|--------------------------|---------|
| Aware of extension officer's name | 39 | 78 | 2.62** |
| Attended agricultural field days | 9 | 61 | 4.21*** |
| Attended agricultural training courses | 13 | 67 | 4.14*** |
| Farmers' association membership | 9 | 56 | 3.71*** |
| Cooperative membership | 0 | 11 | 1.65*** |
| Acquire agricultural literature | 22 | 39 | 1.19** |
| Soil samples analysed | 30 | 72 | 2.85 |
| Number of visits by extension officer | 0.45 | 3.06 | 2.08*** |
| Number of visits to extension officer | 0.04 | 1.76 | 3.46*** |

Notes: ** and *** denote statistical significance at the 5 and 1 percent level of probability, respectively.

The incidence of soil analysis was also higher among lessees (72 percent) than lessors (30 percent). The estimate for lessors may be biased upwards as some lessors took credit for soil tests commissioned by their tenants. In general, lessees are more committed to agriculture and have more agricultural training than lessors.

From an equity perspective, lessees still have smaller allocated farm sizes than lessors (Table 6.3), but (by 2000) they operated farms some 25 percent larger than the mean area allocated to lessors. Real cash rentals rose from R103 in 1996 to R127 in 2000 (Table 6.5) even though the incidence of intra-family transactions increased from 28 percent in 1996 to 41 percent in 2000. This suggests growing competition for quality land amongst emerging farmers.

Table 6.5 Rental income in the Upper Tugela Catchment, KwaZulu, 1996 and 2000.

| | 1996 | | 2000 | | |
|--|---------|---------|---------|---------|----------|
| | Lessors | Lessees | Lessors | Lessees | Farmer A |
| Transactions (#) | 24 | 36 | 25 | 48 | 11 |
| Cash rental income (R/ha) ¹ | 103 | | 127 | | - |
| Crop rental income (R/ha) ² | - | | 153 | | 137 |
| Average rental income (R/ha) | - | | 147 | | - |

Notes: ¹ Thomson's 1996 estimates of value were expressed in 2000 prices using the consumer price index (StatsSA, 2001).

² Calculated as a fixed number of bags of maize with a market value of R60 per bag at the time of survey.

Lessors demand premiums if they perceive rentals to be risky. Those leasing land to reputable tenants such as Farmer A may perceive less risk and accept a lower rental. Premiums are also added to rental payments made in terms of a fixed quantity of crop because these payments are made after harvest, whereas cash rentals are usually paid at the time of planting. These time-value premiums are highlighted by the difference in price (R26/hectare) between fixed

crop rentals and cash rentals. On average, lessors received rental of R147 per hectare. Lessors are generating more income from their land as variable transaction costs (risk premiums) decline, and the volume of land transacted increases.

Land is transferring to households short of land but wealthy in non-land assets such as cattle (Table 6.3), and from households that have land but lack the complementary inputs needed to farm it. Although lessors and lessees appear to have similar off-farm incomes, the estimate for lessees (R989/month) is likely to be biased downwards as 47 percent of lessees were self-employed and were reluctant to declare household incomes. The lessor market continues to focus on pensioned widows, and income is transferring from wealthier tenants to these - often destitute - households. Ngqangweni (2000:147) estimated a growth multiplier of 1.63 for local non-farm goods and services in the former Ciskei homeland, suggesting that each extra Rand earned by lessors and lessees would generate 63 cents in value added by increased spending on these non-farm products. Overall, the results confirm Bells' (1990) view that voluntary rental transactions in arable land give people who have little else (*e.g.* widows and elderly household heads) an opportunity to generate income.

6.3 Discriminant Analysis of Lessors and Lessees

The aims of this multivariate analysis are; to identify variables that distinguish lessors from lessees, to detect changes in the set of discriminating variables identified by Thomson (1996:121) and to draw inferences about the market's equity and efficiency gains from the partial contribution estimated for each variable.

Discriminant analysis is used to statistically distinguish between two or more groups of cases based on several variables. The groups are forced to be as statistically distinct as possible by

forming a weighted linear combination of the discriminating variables (Klecka, 1975:435). Only one discriminant function can be extracted when there are just two groups. Information contained in the multiple independent variables is thus summarised in a single index.

A discriminant function can be represented by the following:

$$D_i = d_{i1}Z_1 + d_{i2}Z_2 + \dots + d_{ip}Z_p \quad (1)$$

where,

D_i is the i^{th} score of the discriminant function

d_{ip} are the weighted coefficients

Z_p are the standardised values of the discriminating variables

Groups can be effectively separated using discriminant analysis if the mean value of D_i is significantly different between groups and similar within groups. The coefficients or weights attached to each variable in the function are selected to maximise the F-ratio for a one-way analysis of variance (Manley, 1986:88). The standardised weighting coefficients (d_{ip}) reflect the relative importance of the discriminating variables (Z_p). Variables with relatively larger d_{ip} , regardless of the sign of the coefficient, contribute more to the discrimination between groups. The sign of the coefficient indicates whether the variable is positively or negatively related to the independent variable.

Discriminant analysis assumes that the within-groups covariance matrix is the same for all groups. If this is not true, tests of significance may be considered unreliable. Also, tests of significance require that the discriminating variables follow the multivariate normal distribution. However, the technique is very robust and tests of significance are usually

considered reliable if the estimated discriminant scores are univariately normally distributed for each group (Truett *et al.*, 1967:521; Manley, 1986:90).

Two statistics are commonly used to gauge the importance of a discriminant function. The first is the canonical correlation coefficient which is a measure of the association between the discriminant function and a dummy variable which defines group membership. The squared value of this coefficient can be interpreted as the proportion of variance in the discriminant function explained by the groups. The second is Wilk's Lambda which is an inverse measure of the function's discriminating power and follows the F-distribution. Wilk's Lambda can be expressed as $1/(1+B)$, where B is the eigen value extracted from the matrix of F-ratios (within groups variance/between groups variance) computed for the discriminating variables. Values close to zero occur when within-groups variability is small compared to the total variability – that is, when most of the total variability is attributable to differences between the means of the groups (SPSS, 1990:5). Thus, large values of Wilk's Lambda indicate that group means do not appear to be different, while small values indicate that group means do appear to be different. The closer the value of Wilk's Lambda to zero, the better the discriminating power of the function.

6.3.1 Variables considered in the discriminant model

The multivariate discriminant model is estimated to provide a more rigorous test of the rental market's allocative efficiency and equity outcomes than one based on univariate comparisons of means. Building on Thomson's (1996:120-122) work, the following model was proposed to discriminate between lessor and lessee households:

$$D = -\beta_1*LSZE + \beta_2*LABOUR + \beta_3*IMPL + \beta_4*FENCE + \beta_5*LIQUIDITY \\ -\beta_6*WDW - \beta_7*QUALITY + \beta_8*AGEDU \quad (2)$$

where:

| | | |
|-----------|---|--|
| D | = | 0 for lessors and 1 for lessees |
| LSZE | = | log of allocated land size, excluding land hired or rented out (ha) |
| LABOUR | = | number of adult equivalents ⁵ in the family available for on-farm work |
| IMPL | = | number of farm implements owned |
| FENCE | = | proxy for fixed improvements to land - dummy variable scoring 1 if the household fenced off its arable land, 0 otherwise |
| LIQUIDITY | = | non-farm income proxied by the number of household members engaged in wage employment or self-employed |
| WDW | = | marital status dummy variable scoring 1 if the household head was a widow, 0 otherwise |
| QUALITY | = | quality index of allocated land, excluding land hired in or rented out |
| AGEDU | = | agricultural education measured as a dummy variable scoring 1 if the household attended an agricultural training course or agricultural field day, 0 otherwise |

The last three variables listed were added to Thomson's (1996:120) model to better discriminate between lessors and lessees. The land quality index was calculated by combining land slope and aspect as follows: $QUALITY = ASPECT + 0.5(SLOPE)^3$ where; scores for ASPECT improved from one for flat land and two for a south-facing slope up to eight for a north-west facing slope, and nine for a north-facing slope. North-facing slopes are expected to be warmer than south-facing slopes and hence more productive. SLOPE was scored as follows: zero for flat land, one for gentle slope, two for moderate slope, -2.5 for steep slope, and -3 for very steep slope. Moderate slopes have better drainage than gentle or

⁵ Adult equivalents is calculated as adults - [self-employed + wage employees + 0.5(pensioners)]

flat slopes, while extreme slopes cannot be cultivated. The slope component was given a higher weighting than aspect because aspect does not affect yield unless the land has some slope. The resulting index scores for QUALITY ranged from -4.81 to 12. For example, a gentle north-east facing slope obtained a score of 7.5 while a steep south-west facing slope scored -3.81.

The model hypothesised that lessees would have more family farm labour available, larger investment in agricultural implements and fixed improvements, higher agricultural education, and more liquidity than lessors. Lessors, however, would have a higher incidence of widowed household heads, and their allocated arable lands would be larger and of better quality than those 'owned' by lessees.

6.3.2 Discriminant function results

Results of the discriminant analysis (using the data set shown in Appendix C) are presented in Table 6.6. Of a possible 41 cases, only 40 cases contained all relevant information. As a result, one lessee case was excluded from the analysis. Four of the coefficients estimated for the predictor variables were statistically significant at the one or five percent level of probability, and two at the 15 percent level. The signs of these coefficients were consistent with *a priori* expectations. The partial effects of these predictor variables support the equity and allocative efficiency advantages suggested by the descriptive statistics presented in Tables 6.3, 6.4 and 6.5. From an equity perspective land transfers from households who are well endowed with larger, better quality holdings to households who are less well endowed with land. Widows, who have few means of generating income, earn rental income or food by leasing out their land. Allocative efficiency is improved as households better equipped with the resources needed to farm bring quality land into production. The relatively high

incidence of agricultural education and investment in implements and fixed improvements among lessees also demonstrates their commitment and ability to farm.

Table 6.6 Standardised discriminant function distinguishing between lessors and lessees.

| Discriminating Variable | This study (2000) | | | Thomson's study (1996) | | |
|------------------------------------|--------------------------|-------------|---------|--------------------------|-------------|---------|
| | Standardised Coefficient | Group means | | Standardised Coefficient | Group means | |
| | | Lessors | Lessees | | Lessors | Lessees |
| AGEDU | 0.55 *** | 0.17 | 0.71 | | | |
| WDW | -0.54 ** | 0.39 | 0.00 | | | |
| LSZE | -0.53 *** | 0.83 | -0.08 | -1.19 *** | 0.39 | -0.68 |
| QUALITY | -0.48 * | 6.63 | 5.42 | | | |
| IMPL | 0.45 ** | 0.39 | 1.94 | 0.67 ** | 0.42 | 1.58 |
| FENCE | 0.29 * | 0.39 | 0.65 | 0.18 | 0.33 | 0.58 |
| LABOUR ¹ | | 2.67 | 2.71 | 0.09 | 2.67 | 4.42 |
| LIQUIDITY ¹ | | 2.00 | 1.82 | 0.68 ** | 1.50 | 2.16 |
| Number of cases | | 23 | 17 | | 12 | 19 |
| Correct classification (%) | | 91 | 82 | | 75 | 90 |
| Overall correct classification (%) | | 88 | | | 83 | |
| Wilk's Lambda | | 0.42 | | | 0.38 | |
| Canonical correlation | | 0.76 | | | 0.78 | |

Notes: *, **, *** denote statistical significance at the 15, 5 and 1 percent level of probability, respectively.

¹ The estimated coefficients are not presented for this study because they are not statistically significant (less than the 50 percent level of probability).

The most important variables distinguishing lessees from lessors are the presence of agricultural education and the absence of a widowed household head. The implication is that personal attributes such as gender, age and training now play an important role in distinguishing lessors from lessees, rather than the physical assets identified by Thomson.

This finding is consistent with most of the household data presented in Table 6.3 showing that differences in physical assets owned by lessors and lessees have diminished.

The inclusion of additional, relevant explanatory variables improved on the predictive power of Thomson's model. The contemporary model classified approximately 91 percent of lessors and 82 percent of lessees correctly. Two of the three lessees that were misclassified were tenant farmers who also leased land out. Due to the small sample size, a hold-out sample was not used to check the classification. Although the classification is good, the model was not intended to be a predictive tool, but rather a more rigorous test of the rental market's outcome.

Histograms showing the distribution of the discriminant scores computed for lessors and lessees are presented in Figures 6.1 and 6.2 respectively. Both groups display approximately normal distributions suggesting that the significance tests can be accepted with reasonable confidence.

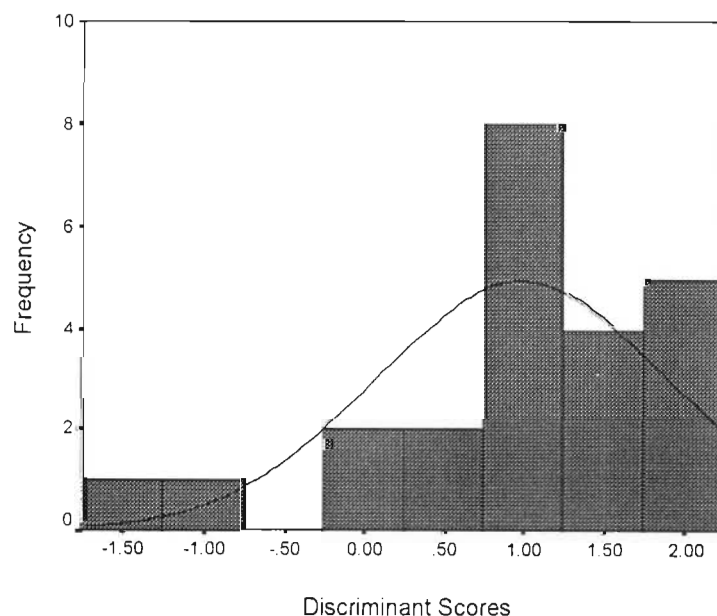


Figure 6.2 Distribution of discriminant scores estimated for lessors (n = 23).

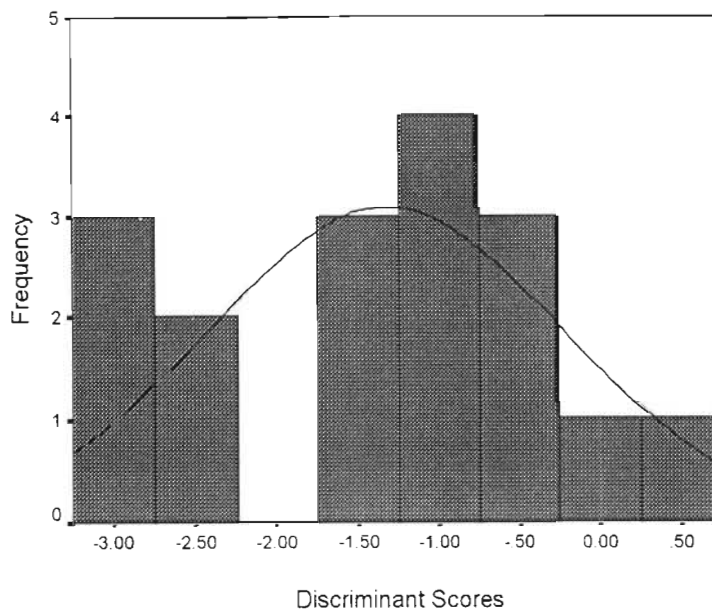


Figure 6.3 Distribution of discriminant scores estimated for lessees (n = 17).

6.4 Transaction Costs

Case studies indicated that some tenants were reluctant to disclose the full extent of areas hired in. These tenants tended to be those operating with verbal rather than written contracts. Lessors were more inclined to speak freely about their rental transactions. This contrasts with Thomson's (1996:73) experience in 1993/94 when no lessors admitted to leasing land out. It would seem that some of Thomson's efforts to reduce perceptions of risk in rental transactions were successful and their effects sustained. Table 6.7 presents more evidence that these variable *ex post* transaction costs declined over the period 1996-2000. Although the share of contracts between family relatives increased, there was a substantial reduction in lessors and lessees that associate together. This trend toward less personal transactions is also evident in the finding that an external agent (Lima Rural Development Foundation) facilitated two-thirds of the rental contracts identified in 1999/2000. A large proportion of these transactions were concluded between strangers. Clearly government extension officers

could act in the same capacity to reduce private transaction costs. Virtually all (98 percent) of the census respondents stated that they would like the local extension officer to keep a register of potential lessors and lessees as this would reduce their search costs.

The share of transactions initiated by lessors increased in 1999/2000. This suggests that Thomson's earlier efforts to ensure that lessees could not claim rented land as their own had succeeded in reducing lessors' risk perceptions. During an interview with a leading tenant farmer in Amangwane, two prospective lessors approached the farmer with offers of their land. Potential lessors are now willing to 'advertise' their land, reducing search costs and making it possible for an agent to broker deals between strangers.

Table 6.7 Indicators of transaction costs, Upper Tugela Catchment, KwaZulu.

| | 1995/1996 (n = 47) | 1999/2000 (n = 51) ¹ |
|---|-----------------------|------------------------------------|
| Lessor and lessee related (%) | 28 | 41 |
| Lessor and lessee associate together (%) | 89 | 39 |
| Lessor/lessee employed by a member of lessee/lessor's family (%) | 21 | 16 |
| No relationship between lessor and lessee (%) | 11 | 35 |
| Family introduced lessor and lessee (%) | 43 | 33 |
| Friend introduced lessor and lessee (%) | 38 | 0 |
| Agent introduced lessor and lessee (%) | 19 | 67 |
| Lessor approached lessee to lease land (%) | 32 | 50 |
| Lessee approached lessor to rent land (%) | 60 | 27 |
| Parties met in person to negotiate contract (%) | - | 96 |

Note: ¹ Fifty-one of the 73 observed rental transactions related to the 1999/2000 season.

Ninety-six percent of contractual parties met in person to negotiate rental transactions and, on average, these parties met 2.1 times to conclude the transaction with each visit entailing a trip, usually a walk, of 2.72 kilometres. Eighty-five percent of contracts were negotiated at

the lessor's homestead, but only 64 percent of lessees inspected the plots before entering into contracts. Most lessees stated that they already knew what the plots were like. These statistics emphasise the burden of transaction costs when contracts cannot be negotiated by telephone.

Thomson's first objective in 1993 was to gain tribal authority approval of a rental market in arable land. After gaining tribal authority approval, the *Nkosi* (chief) announced his support through a simple well-publicised tribal decree (Thomson, 1996:83-86). Thomson also established court procedures to settle disputes over rental contracts and trained tribal councillors and secretaries in the importance of upholding rental contracts. However, there were no cases to test the procedures and to establish legal precedents. As a result, market participants were still sceptical about the benefits of using the tribal court to settle rental disputes. In 1999/2000, only six percent of lessees were certain that the tribal court would uphold their rental contracts. A leading tenant farmer in Amangwane declared that he would not seek restitution in the tribal court because his time was too valuable to waste in court for an uncertain ruling. This might explain why only one-third of all market participants regarded written contracts as important, and why only 27 percent of transactions had been documented. Nevertheless, all but 12 respondents stated that they would document their transactions if *pro forma* lease agreements were readily available, and if the local extension officer helped them to complete the form and lodged a copy with the tribal secretary.

Although legal precedents that tribal courts will sanction defaulters regardless of their social status have yet to be established, 64 percent of lessors stated that they would be willing to enter into a rental agreement with someone from the community, who is not a friend or relative, if they were introduced by the local extension officer. By comparison, 93 percent of lessees were willing to enter into a rental agreement with such strangers if the extension

officer introduced them. Lessees appear to be less concerned about entering into rental agreements with strangers than lessors. For both parties, risk is reduced when they are introduced by an authoritative figure, such as the extension officer or tribal authority, who is prepared to witness the rental agreement. Indeed, most (69 percent) of the observed rental contracts had been witnessed. Contracts involving cash payments were all witnessed whether written or verbal.

Strangers tend to negotiate contracts that involve payment (cash lease, fixed crop rental or interlinked contracts) and make greater use of written lease agreements (Table 6.8). Seven long-term borrowing agreements were excluded from Table 6.8 as there was good reason to doubt claims that no payment was made. As expected, most borrowing agreements occurred between family members, but 42 percent were between strangers. This fuels suspicion that some households are still reluctant to admit to market transfers in land. No borrowing agreements had been formally signed. Family members and neighbours tend to negotiate risk-sharing (*i.e.* proportional sharecropping) contracts. However, interlinked contracts and fixed crop rentals are mostly negotiated between strangers. Proportional sharecropping normally involves higher transaction costs than fixed rent leases (Bell and Zusman, undated), whereas interlinking saves transaction costs as the costs of dishonesty and shirking in one transaction increase for an agent due to the spillover effects threatening other transactions (Bardhan, 1989:239).

Table 6.8 Characteristics of rental contracts observed in the Upper Tugela Catchment, 1999/2000 (n = 66).

| | n | Contracts entered into by strangers | | Witnessed | Written contracts | Mean term of contract |
|--------------------------|----|-------------------------------------|---|-----------|-------------------|-----------------------|
| | | % | % | % | % | (years) |
| All contracts: | 66 | 36 | | 65 | 30 | 3.3 |
| - Cash lease | 10 | 30 | | 100 | 50 | 3.0 |
| - Fixed crop payment | 23 | 52 | | 57 | 39 | 5.0 |
| - Proportional sharecrop | 5 | 0 | | 40 | 0 | 4.4 |
| - Interlink | 16 | 38 | | 56 | 38 | 2.5 |
| - Borrow/lend | 12 | 42 | | 75 | 0 | 1.0 |
| All written contracts | 20 | 50 | | 100 | | 4.8 |
| All verbal contracts | 46 | 35 | | 50 | | 2.7 |

The mean term of all contemporary contracts was 3.91 years which contrasts with Thomson's 1996 estimate of 2.53 years. Experience and diminishing risk perceptions could be responsible for participants negotiating longer lease periods than in 1996. Lessees indicated a preference for longer contracts (5.83 years on average) whereas lessors preferred shorter contracts (2.94 years on average). Lessors may still perceive some risk of claims on their land if they lease it out for long periods. Not surprising, contracts negotiated between strangers had slightly shorter lengths than those negotiated between friends or family members.

6.4.1 Regression analysis of factors affecting contract length

Witnessed written contracts decrease moral hazard as there is a perception of improved contract enforceability. In turn, a decrease (increase) in moral hazard is expected to lengthen (shorten) the contractual period. The following ordinary least squares regression model was proposed to quantify the partial contribution of factors affecting contract length.

$$\begin{aligned}
 \text{CONTERM} = & \beta_1 * \text{CASH} + \beta_2 * \text{FIXCROP} + \beta_3 * \text{SHARECROP} + \beta_4 * \text{INTERL} \\
 & + \beta_5 * \text{BORROW} + \beta_6 * \text{WRITTEN} - \beta_7 * \text{STRANGER} \quad (3)
 \end{aligned}$$

where:

| | | |
|-----------|---|---|
| CONTERM | = | Contract length (years). |
| CASH | = | Dummy variable scoring 1 if engaged in a cash lease, 0 otherwise. |
| FIXCROP | = | Dummy variable scoring 1 if engaged in a fixed crop rental, 0 otherwise. |
| SHARECROP | = | Dummy variable scoring 1 if engaged in a proportional crop-share agreement, 0 otherwise. |
| INTERL | = | Dummy variable scoring 1 if engaged in a interlinked contract, 0 otherwise. |
| BORROW | = | Dummy variable scoring 1 if engaged in a borrowing agreement, 0 otherwise. |
| WRITTEN | = | Dummy variable scoring 1 if there is a witnessed written agreement, 0 otherwise. |
| STRANGER | = | Dummy variable scoring 1 if the contract is between strangers, 0 otherwise. |

The first five explanatory variables describe the type of contract and are all expected to carry positive β_i coefficients as the regression has no intercept term. The intercept is omitted because the explanatory variables account for all of the contract types observed in the data, and the dependent variable must equal zero if there is no contract. It was expected that written contracts would reduce moral hazard and therefore span longer periods than verbal contracts, *ceteris paribus*. This implies a positive estimate for β_6 . Conversely, agreements between strangers are expected to heighten the risk of any contract, suggesting a negative estimate for β_7 . Data used in the analysis is given in Appendix D. The estimated regression equation is presented in equation (4).

$$\begin{aligned}
 \text{CONTERM} = & 2.23*\text{CASH} + 4.48*\text{FIXCROP} + 4.4*\text{SHARECROP} \\
 & (2.86^{***}) \quad (7.56^{***}) \quad (4.45^{***}) \\
 & + 1.99*\text{INTERL} + 1.18*\text{BORROW} + 1.8*\text{WRITTEN} \\
 & (3.15^{***}) \quad (1.73) \quad (2.76^{***}) \\
 & - 0.43*\text{STRANGER} \quad (4) \\
 & (-0.74)
 \end{aligned}$$

Adjusted R² = 0.73F = 26.40^{***}

Notes: t-values given in parentheses.

*** denotes statistical significance at the 1 percent level of probability.

The signs of the estimated regression coefficients are all consistent with *a priori* expectations and most of the coefficients are statistically significant at the one percent level of probability. The estimated model also has good predictive power with an adjusted R² value of 0.73. In this case, the R² statistic measures the proportion of the variability in the dependent variable about the **origin** explained by the regression. Contracts between strangers involve more risk and appear to have a slightly shorter term. However, the presence of a witnessed written agreement increases the length of a contract due to a greater perception of contract enforceability. For example, the predicted term of a verbal cash lease between non-strangers is 2.23 years (similar to the overall mean in 1996). By comparison, a written cash lease with a stranger is expected to span 2.23 - 0.43 + 1.8 = 3.6 years, and a written proportional sharecrop with a stranger has an estimated term of 5.77 years. Clearly the introduction of written lease agreements has facilitated longer-term rentals for a wide range of contract types, even in cases where the parties are strangers. Cash leases tend to be shorter than sharecrop agreements. This may indicate a perception that transactions involving cash are less likely to be condoned by a tribal court in the event of a breach by the tenant.

6.5 Types of Lease Arrangements

Table 6.9 summarises the different types of rental contracts observed from census data during 1994/95 and 1999/2000. Cash rentals remained constant at 14 percent of all rental transactions observed in 1994/95 and 1999/2000. Proportional sharecrop arrangements increased to seven percent in 1999/2000. However, fixed crop rentals, *e.g.* two bags of maize paid at harvest every year, showed a more marked increase to 32 percent. This trend suggests that lessees (mainly male farmers) are more willing to bear risk than lessors (mainly poor widows), lending some support to the argument that moral hazard poses greater risk for women than for men owing to gender bias in tribal court decisions (Berry, 1993).

Most lessees entered fixed crop payment or cash lease agreements so that problems valuing the sharecrop in good and bad seasons could be avoided. Half of the tenants who negotiated cash leases did so in order to keep the entire crop. This finding is consistent with Lawry's (1993) observation in Lesotho that fixed rentals are substituting for cropsharing arrangements.

Lessors and lessees interviewed in the census survey transacted a total of 132.7 hectares in 1999/2000. Fixed crop rentals were the dominant lease type accounting for 47 percent of this area. Although cash leases ranked fourth in terms of the number of rental transactions, they accounted for the second largest share (17 percent) of the area transacted along with interlinked contracts. The incidence of borrowing/lending transactions decreased from 36 percent in 1994/95 to 26 percent in 1999/2000 when they accounted for only 12 percent of the area transacted. This could be the result of the *Nkosi* (chief) publicly approving of rental transactions and households now feeling free to disclose market transfers. Proportional

sharecropping is rare. The five proportional sharecrops observed accounted for 9.95 hectares, with one of these transactions involving 6.48 hectares.

Table 6.9 Types of rental transactions, Upper Tugela Catchment, KwaZulu.

| | 1994/95 (n = 14) % | 1999/2000 (n = 73) % | 1999/2000 Proportion of transacted land % |
|------------------------|--------------------------|----------------------------|--|
| Cash lease | 14 | 14 | 17 |
| Fixed crop payment | 0 | 32 | 47 |
| Proportional sharecrop | 0 | 7 | 7 |
| Interlinked | 50 | 22 | 17 |
| Borrow/lend | 36 | 26 | 12 |

The interlinked contracts reported in Table 6.9 refer to transactions where land was hired in exchange for ploughing services. Sixteen interlinked contracts accounted for almost one-quarter (22 percent) of the transactions observed in 1999/2000 but only 17 percent of the area transferred. Interlinked contracts often reflect imperfections in related markets (Bell and Zusman, undated). In this case, interlinking would appear to suggest imperfections in the markets for contractor services and credit. Contractor services account for approximately 38 percent of household expenditure on farm inputs in the study area (Table 5.5). Lessors sought to enter into interlinked contracts mainly because contractor services are too costly, highlighting the liquidity problems experienced by women and possibly their relative disadvantage in obtaining credit. Table 6.10 presents information relating to the use of short-term agricultural credit during 1999/2000.

Table 6.10 Credit use, Upper Tugela Catchment, KwaZulu, 2000.

| | Lessors (n = 23) (%) | Lessees (n = 17) (%) |
|--------------------------------------|-----------------------------|----------------------------|
| Used agricultural credit | 30 | 35 |
| <i>Source of credit:</i> | | |
| - Formal lender | 0 | 50 |
| - Informal lender | 86 | 50 |
| - Tenant | 14 | - |
| Would like to use credit but did not | 44 | 53 |
| <i>Reasons for not using credit:</i> | | |
| - Not creditworthy | 50 | 44 |
| - Credit too risky | 40 | 33 |
| - High interest charges | 20 | 22 |
| - Cannot use land as collateral | 0 | 22 |
| - No information | 0 | 11 |

Lyne and Ortmann (1992) found that access to more land through renting was positively associated with lower default rates on loans for seasonal farm inputs in KwaZulu. Thomson (1996:124) found that only ten percent of lessees and no lessors used credit for agricultural inputs in 1995/96, and none of this credit was sourced from formal lenders. The contemporary data show a substantial increase in the incidence of formal borrowing by lessees, supporting the earlier conclusion that access to land has improved for emerging farmers in the study area. Although the incidence of borrowing also increased amongst lessors, this credit was sourced only from informal lenders and tenants. The implication is that women are still unable to access formal credit.

Credit rationing affected both lessors and lessees. Thomson (1996:125) observed that 42 percent of rental market participants who wanted agricultural credit claimed that they had no knowledge of formal sources. While this situation appears to have improved, many households who are willing to accept the risks associated with borrowing were unable to

access credit – partly because they lack collateral but mainly because they cannot service debt. One respondent was denied a R5600 production loan by a formal lending institution. Farmers and lessors therefore engage in interlinked contracts to cope with liquidity problems.

6.6 Rental Contract Renewal and Disputes

6.6.1 Rental contract renewal

Although more lessors and lessees are negotiating contracts with terms longer than one year, most of these long-term contracts are renewed prior to planting each season. Only 35 percent of lessors stated that full settlement of outstanding rental payments was necessary to renew a contract. On the other hand, 80 percent of lessees claimed that full payment was necessary for contract renewal.

Eight households, participating in 11 rental contracts, stated that they would not renew their contracts the following season. Of these, five were lessee households participating in eight rental contracts. Insufficient funds, lack of fencing to protect the rented plot, and low yields from hired land were given as some of the reasons for not renegotiating. Reasons given by lessors were that their lessees had decided not to renew. Non-renewal was an involuntary decision for these lessors.

6.6.2 Rental contract disputes

During Thomson's time in the study area, there were no disputes to test the legal enforceability of rental contracts. Precedents set by tribal authority rulings can strengthen or undermine the rental market. In this study, lessors and lessees disclosed only two disputes. The lessor was the aggrieved party in both cases.

In the first case, a three-year crop share agreement for 1.26 hectares was negotiated between neighbours. The lease agreement was not formalised in writing. According to the lessor, the lessee agreed to take full responsibility for the farming operation. At the end of each season the lessor would receive half of the crop. After the first harvest the lessor received eight 50-kilogram bags of maize. The lessor believed that the lessee was being selfish and had not given him his rightful share of the crop. A dispute ensued. The two parties discussed the problem with one another, resolving the dispute themselves, and reduced the contractual term from three years down to two years. After the second season the lessor received nine 50-kilogram bags of maize. The contract was terminated and the land was withdrawn from production.

The second dispute involved an indefinite, unwritten interlinked cash lease agreement between two friends. The lessor was an elderly widow. According to the tenant, she agreed to lease out a plot of 3.46 hectares. In return, the tenant would plough and plant a 0.15 hectare plot for the lessor, and pay R1000 in cash at the beginning of each season. A dispute occurred following a successful harvest when the lessor's sons argued that the agreed cash payment was insufficient. The lessee decided not to take any action and terminated the contract. As in the first case, no other parties were consulted in the dispute. Interestingly, when the widow was interviewed she did not admit to ever being involved in a dispute. Most of her land was lying idle because the new tenant could afford to rent only 0.82 hectares of the plot.

Although not observed, three respondents stated that they knew of another household that had been involved in a rental dispute. One of the disputing households took the matter to the *Nkosi* (chief) but was still waiting for a ruling by the tribal court. Fifty percent of lessees and

40 percent of lessors believed that the tribal court would uphold verbal rental agreements. Fifty percent of lessees and 21 percent of lessors stated that they would abandon their contracts if a dispute arose which they could not resolve themselves. Respondents cited the most frequent types of rental contract disputes as lessor jealousy when a lessee produces a large crop (31 percent) and non-payment of rental by lessees (24 percent).

Households appear uncertain whether the tribal court will uphold rental contracts. Firm precedents have yet to be established. Even so, the regression analysis in Section 6.4.1 indicates a perception that formal contracts are more likely to be enforced than are verbal contracts. Endorsement of these contracts by the tribal authority or extension officer could further improve these perceptions and assist the tribal court in handing down fair judgements.

CHAPTER 7

CONCLUSIONS AND POLICY IMPLICATIONS

In KwaZulu, most rural households have little incentive to farm and land is not cultivated intensively because farms are small, and food and income can be acquired elsewhere by wage workers at lower cost. Land remains idle, as there is no opportunity cost to penalise under-utilisation. This allocative inefficiency would diminish if there existed an efficient rental market in arable land. Many households in Southern Africa attach a high social security value to land. For these reasons, allocative efficiency is more likely to be improved in a land rental market than in a land sale market. Equity advantages can also be achieved through a rental market. Distress sales are avoided and households can retain their social security while earning rental income and allowing more effective farmers to utilise the land. Households renting out their land generate income thus sustaining many households that would otherwise be destitute. In addition, rental transactions generate information about existing property rights and the market value of arable land.

In Southern Africa land rental markets are often constrained due to customary tenure not being secure in the economic sense, and high transaction costs. These problems are largely the result of users not having exclusive rights to their land or the risk of losing land as a result of a transaction is too high. There is a perception that tenants may successfully claim land that they have rented. Rental markets are more active where local precedents and national laws reinforce a household's security of tenure. In theory, land titling would reduce risk and increase tenure security by extending the breadth of rights. However, titling faces enormous information and logistical costs and may aggravate tenure insecurity by creating conflicting claims to land. Titling is neither a necessary nor a sufficient condition for a rental market. A

more promising policy recommendation would be the encouragement of an endogenous shift toward exclusive land rights.

Policies based on the Coasian transaction cost theory stress the importance of support programmes (*e.g.* subsidised credit, information, rural infrastructure and new technology) that will induce institutional change. These policies are based on the view that individuals will lobby to acquire more exclusive rights to land. However, induced innovation strategies ignore collective action problems and vested interest groups that may be opposed to a move toward more exclusive property rights. Resistance is likely where households are very dependent upon secondary rights to land that primary users wish to enclose. As a result, the outcome of induced innovation is unpredictable, and could be highly undesirable. If these policies result in exclusive land rights, distress sales and land grabbing may occur. Conversely, if more exclusive land rights are not induced, land renting will be constrained with resultant losses in productivity and equity, and limited supply response to support programmes. Response will not improve because the potential benefits of support programmes are constrained by very small farm sizes and because farmers are unable to internalise these benefits when land rights are not fully exclusive.

Customary tenure systems will continue to be an important feature of the institutional framework in KwaZulu for the foreseeable future, though these systems should and can change to meet new needs. Adaptive policies emphasise strategies that make changes in customary tenure more predictable. Adaptive strategies may present the only acceptable way of accommodating demand by both farmers and potential lessors for more secure land tenure. These strategies seek to resolve conflicts, especially those arising from the loss of secondary use rights when individuals 'enclose' their land, and to disseminate information about legal

precedents that reinforce tenure security. Adaptive strategies may be no less costly than replacement strategies such as land tilting. When applied to large areas, adaptive strategies require substantial commitment from government to support research, compensation (for lost rights) and negotiations with local authorities, to document transactions, disputes and precedents, to disseminate information, and to ensure that national laws sanction local precedents.

Thomson (1996) applied adaptive strategies as part of his participatory research programme in the Upper Tugela Catchment area to stimulate the rental market for arable land. Between 1993 and 1996 he reintroduced customary laws that had been neglected (such as the announcement of a 'planting' date and the removal of cattle from arable land after the planting date) which strengthened households' exclusive rights to their arable land. He also reduced private transaction costs by creating more certainty in legal procedures, and by absorbing some of the search and negotiation costs facing prospective lessors and lessees. These efforts produced both efficiency and equity gains as the number of rental transactions increased. However, when Thomson withdrew from the area the number of rental transactions declined. Nevertheless, this study shows that despite the loss of lessees there was an increase in the area of land traded in Thomson's study area between 1996 and 2000, with remaining lessees consolidating land from several lessors as variable transaction costs declined. Lessee households, in particular, are participating in more transactions and hiring larger areas of land. Although rising fixed *ex ante* transaction costs have prevented prospective market participants from entering the rental market, a core of emerging farmers is being established with allocative efficiency and equity gains still evident.

From an efficiency perspective the rental market has enabled emerging farmers to increase the scale of their operations. Land has transferred from households who lack complementary inputs to those households better equipped to farm. The relatively high incidence of agricultural training and investment in moveable farm assets and fixed improvements among lessees also demonstrates their commitment and ability to farm. Equity improved because rental transactions continued to transfer land from land 'rich' to land 'poor' households, while households endowed with land and little else gained income or food produced on their land. Real cash rental incomes rose from R103 per hectare in 1996 to R127 per hectare in 2000 as variable transaction costs (including risk) continued to decline. Lessors received an average rental income of R147 per hectare in 2000. Rental rates now compare favourably with those observed in neighbouring commercial farmland suggesting that variable transaction costs in the study area have declined substantially. The increased incomes of lessors and lessees are expected to generate substantial benefits for local producers of demand constrained non-tradable goods and services. A discriminant analysis of lessors and lessees confirmed the univariate findings of allocative efficiency and equity. Further, the discriminant analysis revealed that personal attributes play a more important role than physical assets in distinguishing lessors from lessees, which concurs with the finding that differences in the ownership of physical assets between lessors and lessees have diminished.

This research shows that security of tenure has improved in Thomson's study area since 1996, but that enforceability of certain property rights remains weak. Tenure insecurity stems largely from the poor enforcement of grazing rules which undermine households' exclusive rights to cropland. Households do have legal recourse to the tribal authority if they cannot resolve disputes over crop damage caused by stray livestock. However, few households take legal action in the event of crop damage because compensation is uncertain.

In addition, no land rental disputes had been taken to the tribal court to test procedures and to establish legal precedents. Clear legal precedents that increase tenure assurance must be established. Crop farmers will thus be more assured of retaining the benefits from investments in crop production, leading to an outward shift in the demand for (rented) land. Most farmers (particularly women) struggle to access credit - partly because they lack collateral but mostly because they cannot service debt. Some lessors (mostly women) therefore negotiate interlinked contracts to overcome problems of access to credit or expensive contractor services.

Although the emergence of a farmer class and improved tenure security is extremely encouraging, the role of the private extension agent (Lima Rural Development Foundation) in sustaining the land rental market in the study area should not be overlooked. Results of this research lend support to the hypothesis that a rental market for arable land in the communal areas of KwaZulu-Natal cannot be sustained unless the institutional changes needed to improve tenure security and to reduce transaction costs are facilitated by an outside agent.

To facilitate an active rental market in KwaZulu, transaction costs have to be eliminated or reduced. Some transaction costs are independent of the area rented whereas rental income and farm earnings are directly proportional to the area transacted. Rental market efficiency is therefore expected to be extremely sensitive to fixed transaction costs where the areas of land transacted are small. Although variable transaction costs associated with risks perceived in enforcing rental contracts appear to have declined in the study area, fixed transaction costs rose when prospective lessors and lessees had to finance their own search and transport costs after Thomson withdrew from the area in 1996. Government should invest more in public goods such as physical infrastructure to help reduce fixed transaction costs. Investment in

roads and telecommunications will ease the burden of high search and transport costs thereby improving rental market participation in regions where farm sizes are very small.

Government should also invest in a dependable judicial and policing system to uphold rental contracts and to enforce penalties and compensation for crop damage caused by stray livestock. *Pro forma* lease agreements, endorsed by the tribal authority or extension officer, could be used to reduce risks perceived in contract enforcement. The regression analysis presented in this study highlights the benefit of written contracts in lowering risk and increasing contract length. Formal lease agreements have facilitated longer-term rentals for a wide variety of contract types and have encouraged medium- and long-term investments in agriculture. More important, they have encouraged contracts between strangers and have discouraged short-run opportunistic behaviour. Government should disseminate information about legal precedents that reinforce the integrity of contracts, and advertise the procedures for contracting and settling disputes. Extension officers could further reduce transaction costs by; identifying and maintaining lists of willing lessors and lessees; supplying copies of *pro forma* lease agreements; facilitating and witnessing transactions; and lodging copies of written contracts with the tribal secretary. The additional cost of these services would be low as government already employs extension staff in these areas. However, it should be noted that there is a need for dynamic extension staff. as some farmers complained that they did not get much attention from extension officers if they were not members of a farmers' association. Furthermore, women must be able to access extension services and enforce contracts in tribal courts without prejudice.

A land rental market in the communal areas of KwaZulu-Natal will give emerging farmers the opportunity to gain experience in farming without the burden of having to redeem debt

used to finance land purchase. Farmers who do not have sufficient capital to purchase land can gain access to land whilst avoiding the cash flow problems that many new entrants face. Further, a land rental market could serve as a valuable screening mechanism for the selection of capable emerging farmers for future land redistribution projects such as the Medium-Scale Sugarcane Farmer Project in KwaZulu-Natal (Mashatola, 2001).

One of government's primary objectives is to ensure food security for households in rural areas. A land rental market could accelerate the withdrawal of good quality land from agriculture if the demand for residential uses remains strong relative to the demand for agricultural uses. Decreased food production with subsequent increases in food prices could be viewed as externalities. This suggests that government intervention may be required to implement and enforce land zoning regulations in communal areas.

A rental market for arable land in communal areas could result in substantial local economic advantages, however experience has shown that its success depends largely on administrative arrangements for its implementation. It still remains to be seen what legal precedents are set in the case of land rental disputes as these precedents could either strengthen or undermine the market. Although a rental market may be argued as a second-best option to formal private tenure, it will generate a record of acknowledged property rights. This information could facilitate an evolutionary shift towards private property. With the experience gained by lessors and lessees this might ultimately result in an equitable land sale market.

SUMMARY

This study tests the hypothesis that a rental market for arable land in the communal areas of KwaZulu-Natal cannot be sustained unless the institutional changes needed to improve tenure security and to reduce transaction costs are facilitated by an outside agent.

In KwaZulu, most households have little incentive to farm and land is cultivated extensively as farms are uniformly small, and food and income can be acquired by wage workers at lower cost. Rental markets are constrained in KwaZulu and land remains idle as there is no opportunity cost to penalise idle or under-utilised land. An efficient rental market would improve allocative efficiency because households would rent out their idle or under-utilised land to more effective farmers rather than forgo rental income, leading to better resource allocation and greater productivity. It is argued that, under conditions relevant in much of Southern Africa, land rental markets are a better indicator of allocative efficiency than land sale markets. Rental transactions are voluntary and land transfers from land 'rich' to land 'poor' households whilst rental income transfers to households who cannot or prefer not to farm. Although a land sale market would enable consolidation of farmland, it is argued that poorer households may be forced into distress sales and urban poverty. Equity is thus improved in a land rental market without creating a landless class or forcing lessors to relocate their homes as transfers are temporary and do not interfere with residential rights.

In KwaZulu, property rights to land are limited and do not guarantee that individuals can fully internalise benefit streams or transact land to their advantage. Use rights to land are assigned to the household head by the tribal authority in accordance with traditional laws and customs. Households do not possess title deeds to their land and customary law precludes the operation of a sale market for agricultural land. According to economic theory, tenure

security requires three components, namely breadth, duration and assurance of property rights to land, and is compromised if rights to land are not fully exclusive. Typically, a household has exclusive use rights to cultivated land and communal rights to grazing land. However, the individual's right to exclude others from his/her land is a primary right that can only be exercised during the summer growing season. Other individuals can exercise secondary grazing rights or gather natural resources on this land when it is fallow. Although exclusive rights to land are clearly defined during the summer growing season, they are difficult to enforce and crop damage by stray livestock is a serious problem. Further, customary laws and property rights in KwaZulu are not documented making property rights less certain.

High transaction costs, uncertainty and insecure tenure have precluded active rental markets despite the presence of willing lessors and lessees. Rental transactions only occur where the risk of dispossession is greatly reduced *i.e.* transaction costs are low. The establishment of a legal structure that protects the land rights of lessors and lessees will reduce transaction costs. Tenure systems in communal areas are dynamic, but land rental will not necessarily emerge due to increased population pressure or better prospects in farming alone. Vested interest groups oppose changes in customary tenure toward more exclusive land rights. Adaptive strategies and policies designed to 'supply' institutional change are most likely to be more successful in bringing about an active land rental market. Adaptive strategies make small incremental endogenous changes to customary tenure, which makes it more predictable. Farmer support programmes are unlikely to achieve their full potential without the implementation of adaptive strategies which facilitate a land rental market that allows farmers to alter their scale of farming.

Between 1993 and 1996, Thomson (1996) attempted to stimulate a rental market for arable land in the Upper Tugela Catchment region of KwaZulu. He implemented an adaptive strategy which involved small, incremental changes to customary institutions affecting the security of land tenure. Thomson's efforts reinforced rules (such as the announcement of a 'planting date' and penalties for owners of livestock found in arable lands after the planting date) that had been neglected. He also reduced private transaction costs by ensuring that tribal courts would uphold rental contracts, providing *pro forma* lease agreements, an extension officer to identify potential participants, and transport to bring prospective lessors and lessees together. The number of rental transactions increased dramatically (467%) and gains in both equity and allocative efficiency were observed during the brief period of his study.

Since institutional change is a long-term process, more time and data were needed to establish the outcome of Thomson's institutional changes. The objective of this study is to build on Thomson's work by: (a) revisiting his research sites and establishing whether his efforts to establish a rental market for arable land continued to be successful or not, (b) identifying reasons why the market may have expanded or contracted, and (c) producing a refined set of recommendations to promote and sustain efficient rental markets for arable land in the communal areas of KwaZulu-Natal.

The research was conducted in the Upper Tugela Catchment using Thomson's original sites to observe the longer-term effects of his institutional innovations. The study area comprises of the Betterment Planned tribal ward of Amazizi and the larger, unplanned ward of Amangwane. Research was conducted in both the unplanned Amangwane and 'betterment

planned' Amazizi tribal wards as this facilitated comparisons between the predominant tenure arrangements found in rural KwaZulu.

Two household surveys were completed in the study area between July and November 2000. First, a sample survey was conducted to gather information on household welfare, allocation of farm resources and rental market activity. Second, a census survey of all known lessors and lessees was conducted to gather information about rental contracts and contract security. Perceived and actual rights to land were explored in both surveys.

Thomson stratified the study area by tribal ward and drew a random sample of 80 households from each ward. This study used the same stratification and sampling technique as that employed by Thomson, and panelled as many of his original respondents as possible. Twenty-three percent of Thomson's original respondents were located and included in the sample. The sample survey was followed by case studies of all known lessors and lessees. The case studies were not confined to the study areas defined for the sample survey. Twenty-three lessors and 18 lessees, participating in a total of 73 rental transactions over the period 1996-2000 were identified and interviewed.

Despite Thomson's efforts to reintroduce grazing rules, crop damage by stray livestock is still a major issue. Only 55 percent of Amangwane and 45 percent of Amazizi respondents claimed to know the recommended planting date, even though it was confirmed that the planting date was publicised by the tribal authority before each planting season. Further, the customary law that all livestock should be removed from arable areas during summer is still not well enforced. As a result, many herds are kept close to homesteads and croplands. Fifty-six percent of respondents in Amangwane and 58 percent in Amazizi experienced

problems of stray livestock invading their cropland. Of these households, more than 90 percent suffered crop damage. The incidence of damage to crops and fencing is higher in Amazizi than in Amangwane where fields are located closer to homesteads and where the tribal court imposed fines on stockowners who breached the grazing rules.

The perceived breadth and duration of rights to cropland have shown some improvement since 1996, but enforceability of these rights remains weak. Crop damage by livestock continues to represent a major constraint to farming in the area even though the recommended planting date is publicised each year. Households do not take legal action against owners of stray livestock that cause crop damage because compensation is uncertain. In addition, there are no firm legal precedents reinforcing tenure security in the event of a land rental dispute. Nevertheless, written rental contracts are being used by lessors and lessees to reduce moral hazard and have encouraged medium- and long-term investments in agriculture.

During the random sample of households, a total of 20 rental transactions in the 1998/99 growing season and 26 rental transactions in the 1999/2000 growing season were revealed. The number of rental transactions in Amangwane increased sharply from three in 1993/94 to 21 in 1995/96 after Thomson's efforts to reduce transaction costs and to strengthen exclusive rights to arable land by re-introducing customary grazing rules. However, the number of rental transactions observed in Amangwane declined to eight in the 1999/2000 growing season. Although the number of rental transactions and market participants fell sharply after Thomson withdrew from the area, the number of transactions per lessee increased from 1.17 in 1993/94 to 2.4 in 1999/2000. Despite the loss of lessees, average areas rented in increased from 1.25 to 2.81 hectares resulting in a 243 percent increase in the total sample area

transacted, suggesting a reduction in variable transaction costs. Lessee households, in particular, are consolidating land by participating in more transactions and hiring larger areas of land from several different lessors as variable transaction costs decline. A diminishing number of lessees suggest that prospective market participants were prevented from entering the rental market due to rising fixed transaction costs. Nevertheless, declining variable transaction costs have enabled the rental market to establish a core of emerging farmers with allocative efficiency and equity gains still evident.

From an efficiency perspective the market has enabled small farmers to increase the scale of their operations. Land has transferred from households who lack complementary inputs to those households better equipped to farm. Lessees applied 226 percent more seasonal inputs per hectare than lessors. The relatively high incidence of agricultural training and investment in moveable farm assets and fixed improvements among lessees also demonstrates their commitment and ability to farm. Lessees produced surpluses for sale and grossed R310 per hectare in crop income whereas lessors did not earn any crop income. Equity improved because rental transactions continued to transfer land from land 'rich' to land 'poor' households, while households endowed with land and little else gained income or food produced on their land. Real cash rental incomes rose over the period 1996-2000 as variable transaction costs continued to decline. Lessors received an average rental income of R147 per hectare in 2000. Rental rates are now comparable with those of neighbouring commercial farmland suggesting that variable transaction costs in the study area have declined substantially. The increased incomes of lessors and lessees are expected to generate substantial benefits for local producers of demand constrained non-tradable goods and services.

A discriminant analysis distinguishing between lessors and lessees confirmed the univariate findings of allocative efficiency and equity. Land transfers from lessors who have a higher incidence of widowed household heads and larger, better quality land holdings to lessees who have smaller allocated farm sizes, greater agricultural training, and who invest more in fixed improvements and implements. In addition, the discriminant analysis revealed that personal attributes such as age, gender and agricultural training play a more important role in distinguishing lessors from lessees than the physical assets identified by Thomson.

Data from the census survey of all known lessors and lessees revealed growth in the variety and length of rental contracts, supporting other evidence of declining variable transaction costs. In particular, a linear regression model estimated to quantify the partial contribution of factors affecting contract length shows that the introduction of witnessed written lease agreements has facilitated longer-term rentals for a wide range of contract types, even in cases where the lessor and lessee are strangers. This indicates a perception that formal contracts are more likely to be enforced than are verbal contracts. Endorsement of these contracts by the tribal authority or extension officer could further improve these perceptions and assist the tribal court in handing down fair judgements.

Census data also show that fixed rentals, such as cash leases and fixed crop payments, are substituting for crop-sharing arrangements, which suggests that lessees are more willing to bear risk than lessors. The contemporary data show a substantial increase in the incidence of formal credit use by lessees, supporting the claim that access to land has improved for emerging farmers in the study area. However, the data also suggest that women struggle to access credit and some therefore engage in interlinked contracts. Interlinked contracts have

offered households in the study area a way of overcoming imperfections in the markets for contractor services and credit.

To facilitate an active rental market in KwaZulu, transaction costs have to be eliminated or reduced. Some transaction costs are independent of the area rented whereas rental income and farm earnings are directly proportional to the area of land transacted. Rental market efficiency is therefore expected to be extremely sensitive to fixed transaction costs where the areas of land transacted are small. Although variable transaction costs associated with risks perceived in enforcing rental contracts appear to have declined in the study area, fixed transaction costs rose when prospective lessors and lessees had to finance their own search and transport costs after Thomson withdrew from the area in 1996. Government should invest more in public goods such as physical infrastructure to help reduce fixed transaction costs. Investment in roads and telecommunications would help to ease the burden of high search and transport costs thereby improving rental market participation in regions where farm sizes are very small.

Government should also invest in a dependable judicial and policing system to uphold rental contracts and to enforce penalties and compensation for crop damage caused by stray livestock. *Pro forma* lease agreements, endorsed by the tribal authority or extension officer, could be used to reduce risks perceived in contract enforcement. The regression analysis presented in this study highlights the benefit of written contracts in lowering risk and increasing contract length. Formal lease agreements have facilitated longer-term rentals for a wide variety of contract types and have encouraged medium- and long-term investments in agriculture. More important, they have encouraged contracts between strangers and have discouraged short-run opportunistic behaviour. Government should disseminate information

about legal precedents that reinforce the integrity of contracts, and advertise the procedures for contracting and settling disputes. Extension officers could further reduce transaction costs by; identifying and maintaining lists of willing lessors and lessees; supplying copies of *pro forma* lease agreements; facilitating and witnessing transactions; and lodging copies of written contracts with the tribal secretary. The additional cost of these services would be low as government already employs extension staff in these areas. Furthermore, women must be able to access extension services and enforce contracts in tribal courts without prejudice.

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APPENDIX A: HOUSEHOLD QUESTIONNAIRE 2000

Ward: _____

Interviewer: _____

Sub-ward: _____

Date: _____

The information obtained in this questionnaire is strictly confidential and will be used for research purposes by LIMA staff and researchers at the School of Agricultural Sciences and Agribusiness, University of Natal. The findings will inform government of ways in designing programmes aimed at improving farming efficiency and household welfare. Respondents do not have to answer questions – answers are voluntary. The respondent should be a male or female household head.

Respondent's Name: _____

Household No.: _____

1. FARM CHARACTERISTICS

| | Arable land | | | | | | |
|---|---------------------------|--------------------------------|--------------------------|-----------------|------------------|---|---|
| | Allocated land cultivated | Allocated land leased/lent out | Allocated land left idle | All arable land | Land rented in * | | |
| | | | | | 1 | 2 | 3 |
| No. of arable plots cultivated now and in the past | | | | | | | |
| Size (ha) | | | | | | | |
| Slope/Soil depth | | | | | | | |
| Aspect | | | | | | | |
| Waterlogging problems (Y or N) | | | | | | | |
| Distance to nearest irrigation water (specify units) | | | | | | | |
| Arable land quality ** | | | | | | | |
| Have the farm boundaries changed since acquisition?(Y or N) | | | | | | | |
| If YES, is the farm larger or smaller than before? | | | | | | | |
| * Record the lessee's 3 most important rental contracts | | | | | | | |
| ** 1 Poor; 2 Below Average; 3 Average; 4 Good; 5 Excellent | | | | | | | |
| Missing values score -1 | | | | | | | |

.....

2. HOUSEHOLD COMPOSITION

2.1

| Household member (note respondent) | Gender (M or F) | Age (years) | Occupation ¹ | Cash income (R/Month) | Cash remitted (R/month) | Disability and pension payments (R/month) | School standard passed |
|---------------------------------------|--------------------|----------------|-------------------------|--------------------------|----------------------------|---|------------------------------|
| 1. Male head | M | | | | | | |
| 2. Female head | F | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| | | | | | | | |

¹Occupation should be categorised as: Wage Employed (**WE**); Farmer (**F**); Self-employed (**SE** – e.g. taxi driver, shopkeeper etc); Housekeeper (**H**); Pensioner (**P**) if in receipt of pension; Disabled (**D**) if paid a disability grant; Unemployed (**U**) if seeking work; Scholar/student (**S**); Infant (**I**) if too young to attend school; or vagrant (**O**).

2.2 If the household head is female, is she widowed? (**Y** or **N**) _____

2.3 How many family members work on the farm at planting time? _____

2.4 Does any family member have a bank account? (**Y** or **N**) _____

If **YES**, where is the nearest account held? (town) _____

.....

3. LIVESTOCK:

| Livestock | No. possessed by all household members | Gross income from sales in past year (Rands) |
|----------------|--|--|
| Draught cattle | | |
| Other cattle | | |
| Small stock | | |

- 3.1 Did the household produce any dairy products over the past year? (Y or N) _____
 If YES, were any sold? (Y or N) _____
 If YES, what was the gross income from dairy sales over the past year? R _____

.....

4. CROPS GROWN DURING PAST YEAR

| Crop | Grown during past year (Yes or No) | Sold during past year (Yes or No) | Gross income (Rands) |
|------------|------------------------------------|-----------------------------------|----------------------|
| Maize | | | |
| Potatoes | | | |
| Beans | | | |
| Vegetables | | | |
| Fruit | | | |
| | | | |
| | | | |

- 4.1 Has the household planted all of its arable land this season? (Y or N) _____
 If NO, list (in order that the respondent mentions them) the main reasons for not cultivating all of their arable land (e.g. risk of drought, lack of cash to buy inputs, no ploughing services in the area, cattle damage crops etc.).

.....

5. FARMING EXPENSES

5.1 Agricultural inputs used this past season.

| Purchased Input | Used (Y or N) | Quantity used last season (specify unit) | Total cost (Rands) | Inputs provided by the landlord or sharecropper (Rands) | How much was the downpayment? (Rands) |
|----------------------|---------------|--|--------------------|---|---------------------------------------|
| Fertilizer | | | | | |
| Seed: Maize | | | | | |
| Potato | | | | | |
| Beans | | | | | |
| Vegetables | | | | | |
| Other | | | | | |
| Hired: Contractor | | | | | |
| Draught animals | | | | | |
| Farm equipment | | | | | |
| Farm labour | | | | | |
| Chemicals | | | | | |
| Veterinary medicines | | | | | |
| Transport services | | | | | |
| Livestock feed | | | | | |

6. ASSETS

6.1 Does the household own any of the following in working order?

| Type | Number | Type | Number |
|-------------------|--------|------------------|--------|
| Motor vehicle | | Knapsack sprayer | |
| Tractor | | Maize mill | |
| Plough | | Motorbike | |
| Planter | | Fridge/Freezer | |
| Harrow/cultivator | | Television | |

6.2 Have you ever borrowed/hired any farm implements and machinery for your farm? (Y or N) _____

If **YES**, which farm implements and machinery?

| Type | Hired in past year (Y or N) | Type | Hired in past year (Y or N) |
|-------------------|-----------------------------|------------------|-----------------------------|
| Tractor | | Knapsack sprayer | |
| Plough | | Other: (specify) | |
| Planter | | | |
| Harrow/cultivator | | | |

7. **ON-FARM IMPROVEMENTS**

Has the household invested in any of the following?

| Type | Y or N | Type | Y or N |
|---------------------|--------|-----------------|--------|
| Irrigation | | Pastures | |
| Arable land fencing | | Storage silo | |
| Water troughs | | Other (specify) | |
| Lime | | | |

8. **CREDIT USE**

8.1 Has the household **used** credit for agricultural inputs in the past two years?

(Y or N) _____

If **YES**, from whom did they get the credit? (tick where appropriate):

| | | | |
|------------|-------|-----------------------------------|-------|
| KFC/Ithala | _____ | Bank | _____ |
| Co-op | _____ | Informal lender (e.g. shopkeeper) | _____ |
| Relative | _____ | Friend/Neighbour | _____ |
| Tenant | _____ | Lessor | _____ |

8.2 If the household **does NOT** use credit for agricultural inputs, would it like to?

(Y or N) _____

If **YES**, what has prevented the household from using credit? (tick where appropriate):

| | | | |
|-------------------------------|-------|-------------------------------|-------|
| Not creditworthy | _____ | Interest charges are too high | _____ |
| Cannot use land as collateral | _____ | Credit is too risky | _____ |

- 8.3 Have any household items (e.g. furniture, fridges, TV's etc) been bought on credit in the past two years? (Y or N) _____

.....

9. LAND TRANSACTIONS

- 9.1 Does the household hire any additional cropland or lease land out to a farmer?
(Y or N) _____

If **YES**, ask the respondent if they are lessors or lessees and fill in the relevant sections for lessors and lessees that follow.

- 9.2 Rental contracts: (see next page)

| Cropping season | Contracts* | Rental transaction (Y or N) | Lessor or lessee | Other party** | Approx. area (ha) | Cash rent or sharecrop | Inputs provided to other party*** | Inputs received from other party*** | Net value of contract (R/season) | Length of lease | Signed lease (Y or N) | Dispute (Y or N) |
|-----------------|------------|-----------------------------|------------------|---------------|-------------------|------------------------|-----------------------------------|-------------------------------------|----------------------------------|-----------------|-----------------------|------------------|
| 1994/95 | 1 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| 1995/96 | 1 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| 1996/97 | 1 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| 1997/98 | 1 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| 1998/99 | 1 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |
| 1999/00 | 1 | | | | | | | | | | | |
| | 2 | | | | | | | | | | | |
| | 3 | | | | | | | | | | | |

* Record the 3 most important rental contracts

** **A** Present lessor/lessee; **B** Family member; **C** Neighbour; **D** Nkosi; **E** Other households

*** e.g. Labour, fertiliser, machinery

9.3 FOR LESSORS

9.3.1 Has the household leased out **ALL** or **PART** of its land? _____

9.3.2 If a cash lease is used, did the lessee pay all of the cash before planting started? (**Y** or **N**) _____

9.3.3 Why did you enter into a lease agreement? (tick where appropriate):

Not using the land _____ Too old to farm _____

Work in town _____ No cash _____

Labour shortage _____ Other (specify) _____

.....

9.4 FOR LESSEES

9.4.1 If a cash lease is used, did you pay all of the cash before planting started? (**Y** or **N**) _____

9.4.2 Why did you rent additional land? (tick where appropriate):

Landless _____

Own farm is too small _____

Own land is unsuitable for ploughing _____

(e.g. waterlogging)

Grow more crops for food _____

Grow more crops for income _____

Spread farming risk _____

Other (specify) _____

.....

Ask the following questions to all lessors and lessees (current and past).

9.5 Do you require family approval for rental transactions? (Y or N) _____

9.6 Were you willing to engage in a rental transaction because you were confident that (tick where appropriate):

A written lease agreement had been signed by the other party _____

The Nkosi approves of such transactions _____

The other party is a friend/relative _____

The tribal court will uphold the contract, so you will not lose your land/crop _____

As tenant, you will be able to farm the hired land without losing your crops to theft or stray livestock _____

9.7 If you rented land last season, will you renegotiate your contract next season? (Y or N) _____
 If **NO**, why not? (give reasons):



This section is only to be answered by respondents that are or were engaged in rental contracts.

10. CONTRACT SECURITY AND TRANSACTION COSTS

10.1 Did you have a written rental contract? (Y or N)

| Lessor | Lessee |
|--------|--------|
| | |

If **YES**, did you insist that the boundaries of the plot be described or sketched on the formal document? (Y or N)

| Lessor | Lessee |
|--------|--------|
| | |

Where did you obtain the document? _____

10.2 What is your preferred length of contract term?

| Lessor | Lessee |
|--------|--------|
| | |

If greater than 1 year, can the tenant use the land exclusively throughout the year? (Y or N) _____

10.3 Did someone else witness the contract? (Y or N) _____

If **YES**, whom? (tick where appropriate):

- | | | | |
|------------------|-------|-----------------|-------|
| Tribal secretary | _____ | Induna | _____ |
| Religious leader | _____ | Friend/relative | _____ |
| Neighbour | _____ | Other (specify) | _____ |
| | | | |

10.4 What would you do if you were unable to resolve a dispute with the other party?

10.5 Was the other party a family relation? (Y or N) _____

10.6 Do the lessor and lessee associate together? (Y or N) _____
(e.g. attend same church, family friends)

10.7 Who introduced the lessor and lessee to each other? _____
 (e.g. family, friend or agent)

10.8 For lessors only

(a) Has any member of the lessor's family worked
 for the lessee? (Y or N) _____

(b) How did the lessor find a tenant for his/her land? _____
 (e.g. word of mouth, approached by potential lessee)

10.9 For lessees only

(a) Has any member of the lessee's family worked
 for the lessor? (Y or N) _____

(b) How did the lessee get to know of the leased land? _____
 (e.g. word of mouth, approached by potential lessor)

10.10 Did the parties meet in person to negotiate the rental contract? (Y or N) _____

10.11 How far does the lessee live from the lessor? _____

10.12 How many times did the lessee visit the lessor
 to negotiate the contract? _____

.....

11. LAND RIGHTS TO ALLOCATED LAND

| Land Rights ¹ | Land Types | |
|---|------------|---------|
| | Arable | Grazing |
| Can the household crop this land throughout the year? | | |
| Can the household fence off this land? | | |
| Can the rest of the community use your unused land? (e.g. for planting or gathering thatch and firewood) | | |
| Can the household gather natural resources (e.g. thatch, firewood) on land that is not being cultivated by the community? | | |
| Are there any rules controlling this? (Yes or No) | | |
| Can the household exclude other peoples' livestock from grazing on the land during: Summer | | |
| Winter | | |
| ¹ Codes 0 No 1 Yes, without authorization 2 Yes, with Household head's approval 3 Yes, with Tribal Authority approval 4 Yes, with Government approval 5 Don't Know | | |

11.1 Are you able to claim compensation for crops damaged by livestock?

(Y or N) _____

11.2 Are there rules prohibiting people outside of the community using resources (e.g. grazing)? (Y or N) _____

11.3 After which date are cattle allowed to graze on arable land? _____

11.4 After which date do cattle have to be removed from arable land? _____

Where did you hear about this planting date? _____

(e.g. Radio Zulu, neighbour, tribal authority)

When did you hear about this planting date? (year) _____

11.5 Did livestock stray into your arable land after you had planted this past season? (Y or N) _____

If YES, what did you do to them? (tick where appropriate):

Leave them _____ Chase them _____

Impound them _____ Report them to the tribal court _____

11.6 Did the stray livestock damage your crops? (Y or N) _____

If YES, what happened? (tick where appropriate):

(a) Stockowner was fined by tribal authority _____
How much compensation did you receive? (Rands) _____

(b) Stockowner paid you compensation (settled out of court) _____
How much compensation did you receive? (Rands) _____

(c) Took no action against stockowner _____

11.7 Have you ever fenced in your arable allotment to protect it from stray livestock? (Y or N) _____

If NO, why not? (tick where appropriate):

Fencing too expensive _____ No need to fence _____

Community steals fencing _____ Forbidden _____

If YES, has the fence ever been damaged or destroyed? (Y or N) _____

By whom? (e.g. stockowners)

11.8 In your opinion, has there been more fencing in the past 2 years relative to the previous 4 years? (Y or N) _____

If YES, have you been made worse off by others fencing off their land? (e.g. loss of grazing, unable to collect thatch and firewood)

(Y or N) _____

If **YES**, what sort of compensation would you demand?

.....

11.9 Did you employ someone to protect your arable allotment
 against stock damage and theft this past season? (Y or N) _____

11.10 Do you know of anyone who was fined for utilising stover from their
 arable plots during winter instead of making it available for grazing?
 (Y or N) _____

.....

12. LAND DISPUTES

12.1 Have you or any member of your family ever had a dispute over land
 ownership or boundaries in the past 5 years? (Y or N) _____

If **YES**, with whom? (tick where appropriate):

Family _____ Neighbours _____

Tribal Authority _____ Government _____

Others (specify) _____

.....

If **YES**, has the dispute been resolved? (Y or N) _____

If the dispute **has been resolved**, who was involved in resolving it?

(tick where appropriate):

Resolved ourselves _____ Religious Leader _____

Tribal Authority _____ Witnesses _____

Magistrate _____ Other (specify) _____

.....

12.2 Are land disputes: (tick where appropriate):

More serious now than in the past _____

Not as serious as in the past _____

Not a problem _____

12.3 What are the most frequent types of land disputes farmers face in the area?

.....

.....

.....

.....

12.4 Do you know of a household that has been dispossessed of its land after a land dispute? (Y or N) _____

12.5 Who do you feel is more influential in the community – Livestock owners (L) or Crop Farmers (C)? _____

.....

13. EXTENSION AND INFORMATION

13.1 What is the name of your local extension officer? _____

13.2 How many times did the extension officer **visit you** this past growing season since planting? _____

13.3 How many times did **you visit** the extension officer this past growing season since planting? _____

13.4 Has any member of your family attended the following? (tick where appropriate):

Agricultural field days _____

Agricultural training courses _____

13.5 Are you a member of any of the following: (tick where appropriate)

Farming association _____ Cooperative _____

13.6 Does any member of your family purchase farming books
or magazines? (e.g. Farmers Weekly) (Y or N) _____

13.7 Have you had soil samples taken and analysed? (Y or N) _____

.....

THANK-YOU

APPENDIX B: CASE STUDY QUESTIONNAIRE 2000

Ward: _____

Interviewer: _____

Sub-ward: _____

Date: _____

The information obtained in this questionnaire is strictly confidential and will be used for research purposes by LIMA staff and researchers at the School of Agricultural Sciences and Agribusiness, University of Natal. The findings will inform government of ways to design programmes aimed at improving farming efficiency and household welfare. Respondents do not have to answer questions – answers are voluntary. The respondent should be a male or female household head.

Respondent's Name: _____ Household No.: _____

1. FARM CHARACTERISTICS

| | Arable land | | | | | | |
|---|---------------------------|--------------------------------|--------------------------|-----------------|------------------|---|---|
| | Allocated land cultivated | Allocated land leased/lent out | Allocated land left idle | All arable land | Land rented in * | | |
| | | | | | 1 | 2 | 3 |
| No. of arable plots cultivated now and in the past | | | | | | | |
| Size (ha) | | | | | | | |
| Slope/Soil depth | | | | | | | |
| Aspect | | | | | | | |
| Waterlogging problems (Y or N) | | | | | | | |
| Distance to nearest irrigation water (specify units) | | | | | | | |
| Arable land quality ** | | | | | | | |
| Have the farm boundaries changed since acquisition?(Y or N) | | | | | | | |
| If YES, is the farm larger or smaller than before? | | | | | | | |

* Record the lessee's 3 most important rental contracts

** 1 Poor; 2 Below Average; 3 Average; 4 Good; 5 Excellent

Missing values score -1

.....

2. HOUSEHOLD COMPOSITION

2.1

| Household member (note respondent) | Gender (M or F) | Age (years) | Occupation ¹ | Cash income (R/Month) | Cash remitted (R/month) | Disability and pension payments (R/month) | School standard passed |
|---------------------------------------|--------------------|----------------|-------------------------|--------------------------|----------------------------|---|------------------------------|
| 1. Male head | M | | | | | | |
| 2. Female head | F | | | | | | |
| 3 | | | | | | | |
| 4 | | | | | | | |
| 5 | | | | | | | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |
| 15 | | | | | | | |
| | | | | | | | |

¹Occupation should be categorised as: Wage Employed (**WE**); Farmer (**F**); Self-employed (**SE** – e.g. taxi driver, shopkeeper etc); Housekeeper (**H**); Pensioner (**P**) if in receipt of pension; Disabled (**D**) if paid a disability grant; Unemployed (**U**) if seeking work; Scholar/student (**S**); Infant (**I**) if too young to attend school; or vagrant (**O**).

2.2 If the household head is female, is she widowed? (**Y** or **N**) _____

2.3 How many family members work on the farm at planting time? _____

2.4 Does any family member have a bank account? (**Y** or **N**) _____

If **YES**, where is the nearest account held? (town) _____

.....

3. LIVESTOCK:

3.1 Number of cattle possessed by the household _____

4. CROP FARMING EXPENSES AND INCOME

4.1 Agricultural inputs used this past season.

| Purchased Input | Used (Y or N) | Quantity used last season (specify unit) | Total cost (Rands) | How much was the downpayment? (Rands) |
|-----------------|---------------|--|--------------------|---------------------------------------|
| Fertilizer | | | | |
| Seed | | | | |
| Contractor | | | | |
| Chemicals | | | | |

4.2 Total income from all crop sales in past season (Rands) _____

5. ASSETS

5.1 Does the household own any of the following in working order?

| Type | Number | Type | Number |
|-------------------|--------|------------------|--------|
| Motor vehicle | | Knapsack sprayer | |
| Tractor | | Maize mill | |
| Plough | | Motorbike | |
| Planter | | Fridge/Freezer | |
| Harrow/cultivator | | Television | |

6. ON-FARM IMPROVEMENTS

6.1 Has the household invested in any of the following?

| Type | Y or N | Type | Y or N |
|---------------------|--------|-----------------|--------|
| Irrigation | | Pastures | |
| Arable land fencing | | Storage silo | |
| Water troughs | | Other (specify) | |
| Lime | | | |

7. CREDIT USE

7.1 Has the household **used** credit for **agricultural** inputs in the past two years?

(Y or N) _____

If **YES**, from whom did they get the credit? (tick where appropriate):

| | | | |
|------------|-------|-----------------------------------|-------|
| KFC/Ithala | _____ | Bank | _____ |
| Co-op | _____ | Informal lender (e.g. shopkeeper) | _____ |
| Relative | _____ | Friend/Neighbour | _____ |
| Tenant | _____ | Lessor | _____ |

7.2 If the household **does NOT** use credit for agricultural inputs, would it like to?

(Y or N) _____

If **YES**, what has prevented the household from using credit? (tick where appropriate):

| | | | |
|-------------------------------|-------|-------------------------------|-------|
| Not creditworthy | _____ | Interest charges are too high | _____ |
| Cannot use land as collateral | _____ | Credit is too risky | _____ |

7.3 Have any household items (e.g. furniture, fridges, TV's etc) been bought on credit in the past two years? (Y or N) _____

8. LAND TRANSACTIONS

8.1 Is the household a lessor or lessee? _____

Fill in the relevant sections for lessors and lessees that follow.

8.2 LESSORS ONLY

8.2.1 Has the household leased out **ALL** or **PART** of its land? _____

8.2.2 If a cash lease is used, did the lessee pay all of the cash before planting started? (Y or N) _____

8.2.3 Why did you enter into a lease agreement? (tick where appropriate):

Not using the land _____ Too old to farm _____

Work in town _____ No cash _____

Labour shortage _____ Other (specify) _____

.....

.....

8.3 LESSEES ONLY

8.3.1 If a cash lease is used, did you pay all of the cash before planting started? (Y or N) _____

8.3.2 Why did you rent additional land? (tick where appropriate):

Landless _____

Own farm is too small _____

Own land is unsuitable for ploughing _____

(e.g. waterlogging)

Grow more crops for food _____

Grow more crops for income _____

Spread farming risk _____

Other (specify) _____

.....

Ask the following questions to all lessors and lessees (current and past).

- 8.4 Do you require family approval for rental transactions? (Y or N) _____
- 8.5 Were you willing to engage in a rental transaction because you were confident that (tick where appropriate):
- A written lease agreement had been signed by the other party _____
- The Nkosi approves of such transactions _____
- The other party is a friend/relative _____
- The tribal court will uphold the contract, so you will not lose your land/crop _____
- As lessee, you will be able to farm the hired land without losing your crops to theft or stray livestock _____

.....

This section is only to be answered by respondents that are engaged in rental contracts.

9. CONTRACT SECURITY AND TRANSACTION COSTS

- 9.1 With whom did the household engage in a transaction? (tick where appropriate)

Family member _____ Friend _____

Neighbour _____ Other _____

- 9.2 What is the type of rental transaction? (tick where appropriate)

Cash lease _____ Sharecrop _____

Interlink _____ Borrow/lend _____

- 9.3 What are the terms of payment/favours?

.....

.....

.....

.....

.....

9.4 What influenced your choice of contract type?

(e.g. lower risk, increased food security)

.....

.....

.....

.....

9.5 Do you have a written rental contract? (Y or N)

| Lessor | Lessee |
|--------|--------|
| | |

If **YES**, did you insist that the boundaries of the plot be described or sketched on the written document? (Y or N)

| Lessor | Lessee |
|--------|--------|
| | |

Where did you obtain the document? _____

9.6 If you **DO NOT** have a written rental contract, do you know of anyone else who is engaged in a transaction who does have a signed written contract? (Y or N) _____

If **YES**, where did they obtain the document? _____

9.7 Would you be willing to use a formal written rental contract if they were more easily obtainable? (Y or N) _____

9.8 Did someone else witness your contract? (Y or N) _____

If **YES**, whom? (tick where appropriate)

| | | | |
|------------------|-------|-----------------|-------|
| Tribal secretary | _____ | Induna | _____ |
| Religious leader | _____ | Friend/relative | _____ |
| Neighbour | _____ | Other (specify) | _____ |

.....

9.9 What is the length of the lease agreement? _____

9.10 What is your preferred length of contract term?

| Lessor | Lessee |
|--------|--------|
| | |

9.11 If the contract term is greater than 1 year, do you have to confirm your contract at the beginning of every season? (Y or N)

| Lessor | Lessee |
|--------|--------|
| | |

9.12 If you rented land last season, will you renegotiate your contract next season? (Y or N)

If **NO**, why not? (give reasons)

.....

.....

.....

.....

LESSORS ONLY

9.13 If the contract term is greater than 1 year, what obligations is the lessee required to meet in order to continue renting?

(e.g. full payment, proper use of the land, non-abuse of the land)

.....

.....

.....

.....

9.14 Has any member of the lessor's family worked for the lessee? (Y or N)

9.15 Did the lessee approach the lessor? (Y or N)

9.16 Would you be prepared to lease your land to: (Y or N)

| | |
|--------------------------|--|
| An outsider | |
| Nkosi | |
| Unknown community member | |

LESSEES ONLY

9.17 If the contract term is greater than 1 year, what obligations are you required to comply with in order to continue renting?

(e.g. full payment, proper use of the land, non-abuse of the land)

.....

.....

.....

.....

9.18 If the contract term is greater than 1 year, can you use the land exclusively throughout the year? (Y or N) _____

9.19 Has any member of the lessee’s family worked for the lessor? (Y or N) _____

9.20 Did the lessor approach the lessee? (Y or N) _____

LESSORS AND LESSEES

9.21 Was the other party a family relation? (Y or N) _____

9.22 Do the lessor and lessee associate together? (Y or N)
(e.g. attend same church, family friends) _____

9.23 Who introduced the lessor and lessee to each other? _____
(e.g. family, friend or agent)

9.24 Did the parties meet in person to negotiate the rental contract? (Y or N) _____

9.25 How far does the lessee live from the lessor? _____

How did you get there?
(e.g. walk, taxi, own transport) _____

9.26 How many times did the lessee visit the lessor
to negotiate the contract? _____

9.27 Did the lessee inspect the plot before entering into
the agreement? (Y or N) _____

9.28 Where did the parties meet to negotiate the agreement?
.....
.....



10. CONTRACT DISPUTES

10.1 Have you had a rental contract dispute in the past 5 years? (Y or N) _____
If YES, what were the reasons?

.....
.....
.....
.....
.....

If YES, what action did you take?
.....
.....
.....
.....
.....

If **YES**, what was the outcome?

(e.g. contract terminated, terms amended, compensation paid)

.....
.....
.....
.....
.....

Were any other parties consulted in this dispute? (Y or N) _____

If **YES**, whom? (tick where appropriate)

Tribal Authority _____ Religious Leader _____

Magistrate _____ Witnesses _____

Other (specify) _____

.....

10.2 Do you know of another household that has been involved in a contract dispute?

(Y or N) _____

If **YES**, what action did they take?

.....
.....
.....
.....

If **YES**, what was the outcome?

(e.g. contract terminated, terms amended, compensation paid)

.....
.....
.....
.....
.....

10.3 If you have **NOT** been involved in a contract dispute, what would you do if you were unable to resolve a dispute with the other party?

.....
.....
.....
.....

10.4 Are verbal rental agreements upheld by the tribal court? (**Y** or **N**) _____

10.5 What are the most frequent types of contract disputes?

.....
.....
.....
.....

10.6 Do you know of anyone who rents in/leases out land but is afraid to admit to it? (**Y** or **N**)

| Lessor | Lessee |
|--------|--------|
| | |

If **YES**, why? (give reasons)

.....
.....
.....
.....

.....
11. LAND RIGHTS

11.1 Does the tribal authority announce the planting date before every season? (**Y** or **N**) _____

11.2 After which date are cattle allowed to graze on arable land? _____

11.3 After which date do cattle have to be removed from arable land? _____

Where did you hear about this planting date? _____

(e.g. Radio Zulu, friend, neighbour, tribal authority)

When did you **last** hear about a planting date? (year) _____

11.4 Did livestock stray into your arable land after you had planted this past season? (Y or N) _____

If **YES**, what did you do to them? (tick where appropriate):

Leave them _____ Chase them _____

Impound them _____ Report them to the tribal court _____

11.5 Did the stray livestock damage your crops? (Y or N) _____

If **YES**, did you seek compensation? (Y or N) _____

If **YES**, did you approach the tribal court? (Y or N) _____

If **YES**, did the court find in your favour? (Y or N) _____

If **YES**, did you receive any compensation? (Y or N) _____

11.6 If you experience the same crop damage next season, would you go back to the tribal court to seek compensation? (Y or N) _____

If **NO**, would you approach the stockowner directly for compensation? (Y or N) _____

11.7 Who do you feel is more influential in the community – Livestock owners (L) or Crop Farmers (C)? _____

11.8 Have you ever fenced in your arable allotment to protect it from stray livestock? (Y or N) _____

If **NO**, why not? (tick where appropriate):

Fencing too expensive _____ No need to fence _____

Community steals fencing _____ Forbidden _____

If **YES**, has the fence ever been damaged or destroyed? (**Y** or **N**) _____

By whom? (e.g. stockowners)

11.9 Did you employ someone to protect your arable allotment against stock damage and theft this past season? (**Y** or **N**) _____

11.10 Do you know of anyone who was fined for utilising stover from their arable plots during winter instead of making it available for grazing? (**Y** or **N**) _____

11.11 In your opinion, has there been more fencing in the past 2 years relative to the previous 4 years? (**Y** or **N**) _____

If **YES**, have you been made worse off by others fencing off their land? (e.g. loss of grazing, unable to collect thatch and firewood) (**Y** or **N**) _____

.....

12. EXTENSION AND INFORMATION

12.1 What is the name of your local extension officer? _____

12.2 How many times did the extension officer **visit you** this past growing season since planting? _____

12.3 How many times did **you visit** the extension officer this past growing season since planting? _____

- 12.4 Has any member of your family attended the following?
 (tick where appropriate):
 Agricultural field days _____
 Agricultural training courses _____
- 12.5 Are you a member of any of the following: (tick where appropriate)
 Farming association _____ Cooperative _____
- 12.6 Does any member of your family purchase farming books
 or magazines? (e.g. Farmers Weekly) (Y or N) _____
- 12.7 Have you had soil samples taken and analysed? (Y or N) _____
- 12.8 Would you like the extension officer to provide information about willing
 lessors and willing lessees? (Y or N) _____
 If YES, where would you like this information to be available?

- 12.9 Would you be willing to enter into a rental agreement with someone from the
 community who is not a friend or relative if they were introduced to you by the
 extension officer? (Y or N) _____
- 12.10 Would you like the extension officer to keep formal lease
 agreement forms? (Y or N) _____
 If YES, would you like the extension officer to guide you in
 the filling in of these forms? (Y or N) _____
- 12.11 Would you like the extension officer to lodge a copy of the signed
 lease agreement with the tribal secretary for filing? (Y or N) _____

THANK-YOU

APPENDIX C.1: DISCRIMINANT ANALYSIS DATA SET (2000)

| CSNUM | TACTS | LSSR | LSSE | TALLO | TAREA | LSZE | LABOUR | IMPL | FENCE |
|-------|-------|------|------|-------|-------|-------|--------|------|-------|
| 1 | 1 | 1 | 0 | 10.19 | 6.73 | 2.32 | 1.5 | 2 | 1 |
| 2 | 2 | 1 | 0 | 4.46 | 0.86 | 1.5 | 0.5 | 0 | 0 |
| 3 | 1 | 1 | 0 | 2.55 | 1.61 | 0.94 | 1.5 | 0 | 0 |
| 4 | 1 | 1 | 0 | 1.59 | 0.89 | 0.46 | 3 | 0 | 0 |
| 5 | 1 | 1 | 0 | 1.84 | 0.34 | 0.61 | 6.5 | 0 | 0 |
| 6 | 1 | 1 | 0 | 1.1 | 0.1 | 0.1 | 2 | 0 | 1 |
| 7 | 1 | 1 | 0 | 1.72 | 1 | 0.54 | 2 | 1 | 1 |
| 8 | 1 | 1 | 0 | 4.95 | 3.7 | 1.6 | 3.5 | 0 | 0 |
| 9 | 1 | 1 | 0 | 6.48 | 0 | 1.87 | 5 | 0 | 0 |
| 10 | 1 | 1 | 0 | 1.4 | 1.12 | 0.34 | 3.5 | 0 | 1 |
| 11 | 1 | 1 | 0 | 1.73 | 0.47 | 0.55 | 2.5 | 0 | 0 |
| 12 | 2 | 0 | 1 | 1.83 | 5.29 | 0.6 | 2.5 | 1 | 1 |
| 13 | 1 | 1 | 0 | 6.05 | 1.05 | 1.8 | 0 | 1 | 0 |
| 14 | 1 | 0 | 1 | 0.28 | 5.28 | -1.27 | 5.5 | 0 | 0 |
| 15 | 1 | 0 | 1 | 0.47 | 1.37 | -0.76 | 3 | 0 | 1 |
| 16 | 3 | 0 | 1 | 0.07 | 4.07 | -2.66 | 3 | 0 | 1 |
| 17 | 2 | 0 | 1 | 0.12 | 1.9 | -2.12 | 2.5 | 0 | 1 |
| 18 | 2 | 0 | 1 | 1.79 | 4.8 | 0.58 | 0 | 7 | 1 |
| 19 | 11 | 0 | 1 | 2.25 | 50.25 | 0.81 | 10.5 | 12 | 1 |
| 20 | 3 | 0 | 1 | 3.28 | 8.68 | 1.19 | 3 | 5 | 0 |
| 21 | 3 | 0 | 1 | 50 | 53.5 | 3.91 | 3 | 5 | 0 |
| 22 | 2 | 1 | 0 | 5.94 | 5.47 | 1.78 | 1.5 | 1 | 0 |
| 23 | 2 | 0 | 1 | 1.33 | 2.57 | 0.29 | 1.5 | 0 | 0 |
| 24 | 2 | 0 | 1 | 3.28 | 5.22 | 1.19 | 0 | 0 | 1 |
| 25 | 1 | 0 | 1 | 0.42 | 0.86 | -0.87 | 3.5 | 0 | 1 |
| 26 | 2 | 1 | 0 | 1.01 | 0.71 | 0.01 | 1 | 0 | 0 |
| 26 | 2 | 0 | 1 | 1.01 | 0.71 | 0.01 | 1 | 0 | 0 |
| 27 | 4 | 0 | 1 | -1 | 7.89 | -1 | -1 | -1 | 1 |
| 28 | 1 | 1 | 0 | 1.53 | 2.15 | 0.43 | 2 | 1 | 1 |
| 28 | 1 | 0 | 1 | 1.53 | 2.15 | 0.43 | 2 | 1 | 1 |
| 29 | 1 | 1 | 0 | 2.7 | 1.9 | 0.99 | 5 | 0 | 0 |
| 30 | 1 | 0 | 1 | 0.14 | 0.47 | -1.97 | 0 | 0 | 0 |
| 31 | 1 | 1 | 0 | 5.07 | 2.85 | 1.62 | 2 | 3 | 0 |
| 32 | 1 | 1 | 0 | 1.01 | 0.12 | 0.01 | 0.5 | 0 | 1 |
| 33 | 1 | 1 | 0 | 1.08 | 0.18 | 0.08 | 5.5 | 0 | 0 |
| 34 | 1 | 1 | 0 | 2.15 | 1.74 | 0.77 | 1.5 | 0 | 1 |
| 35 | 1 | 1 | 0 | 0.91 | 0.23 | -0.09 | 5 | 0 | 0 |
| 36 | 1 | 1 | 0 | 1.34 | 0.32 | 0.29 | 4 | 0 | 1 |
| 37 | 1 | 1 | 0 | 2.01 | 0.35 | 0.7 | 2 | 0 | 1 |
| 38 | 1 | 0 | 1 | 0.21 | 1 | -1.56 | 2.5 | 1 | 1 |
| 39 | 7 | 0 | 1 | 2.14 | 7.08 | 0.76 | 2.5 | 1 | 1 |

| CSNUM | LIQUIDITY | WDW | SLOPE | ASPECT | QUALITY | AGEDU | FERTC | SEEDC | CHEMC |
|-------|-----------|-----|-------|--------|---------|-------|-------|-------|-------|
| 1 | 0 | 1 | 2 | 5 | 9 | 0 | 0 | 0 | 0 |
| 2 | 2 | 1 | 1 | 7 | 7.5 | 1 | -1 | 20 | 0 |
| 3 | 5 | 0 | 1 | 7 | 7.5 | 0 | 0 | 0 | 0 |
| 4 | 1 | 0 | 1 | 9 | 9.5 | 0 | 0 | 0 | 0 |
| 5 | 1 | 0 | 1 | 7 | 7.5 | 0 | 75 | 0 | 0 |
| 6 | 1 | 1 | 1 | 6 | 6.5 | 0 | 80 | 50 | 0 |
| 7 | 3 | 0 | 2 | 8 | 12 | 0 | 0 | 0 | 0 |
| 8 | 3 | 1 | 0 | 1 | 1 | 0 | 278 | 0 | 0 |
| 9 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 10 | 4 | 1 | 1 | 3 | 3.5 | 0 | 53 | 35 | 0 |
| 11 | 0 | 0 | 1 | 6 | 6.5 | 0 | 210 | 40 | 0 |
| 12 | 0 | 0 | 1 | 5 | 5.5 | 1 | 1590 | 180 | 340 |
| 13 | 2 | 1 | 1 | 3 | 3.5 | 0 | 265 | -1 | 0 |
| 14 | 1 | 0 | 1 | 7 | 7.5 | 1 | 286 | 23 | 0 |
| 15 | 1 | 0 | 1 | 7 | 7.5 | 0 | 500 | 23 | 0 |
| 16 | 1 | 0 | 1 | 7 | 7.5 | 1 | 570 | 400 | 150 |
| 17 | 2 | 0 | 1 | 3 | 3.5 | 1 | 115 | 30 | 0 |
| 18 | 2 | 0 | 1 | 5 | 5.5 | 1 | 3000 | 1200 | 0 |
| 19 | 2 | 0 | 1 | 2 | 2.5 | 1 | 20300 | 4000 | -1 |
| 20 | 1 | 0 | 1 | 5 | 5.5 | 1 | 160 | -1 | 0 |
| 21 | 1 | 0 | 1 | 4 | 4.5 | 1 | 5400 | 34000 | 2000 |
| 22 | 1 | 0 | 1 | 9 | 9.5 | 1 | 500 | -1 | 0 |
| 23 | 1 | 0 | 1 | 6 | 6.5 | 1 | 310 | 0 | 0 |
| 24 | 2 | 0 | 1 | 3 | 3.5 | 0 | 450 | 350 | 50 |
| 25 | 2 | 0 | 1 | 9 | 9.5 | 1 | 75 | -1 | 0 |
| 26 | 1 | 0 | 1 | 3 | 3.5 | 1 | 164 | 0 | 0 |
| 26 | 1 | 0 | 1 | 3 | 3.5 | 1 | 164 | 0 | 0 |
| 27 | -1 | -1 | -1 | -1 | -1 | 1 | -1 | -1 | -1 |
| 28 | 5 | 0 | 1 | 7 | 7.5 | 1 | 456 | 250 | 110 |
| 28 | 5 | 0 | 1 | 7 | 7.5 | 1 | 456 | 250 | 110 |
| 29 | 0 | 0 | 1 | 6 | 6.5 | 0 | -1 | -1 | 0 |
| 30 | 2 | 0 | 1 | 7 | 7.5 | 0 | -1 | -1 | 0 |
| 31 | 2 | 0 | 1 | 7 | 7.5 | 0 | 360 | 200 | -1 |
| 32 | 3 | 1 | 1 | 7 | 7.5 | 0 | 79 | -1 | 0 |
| 33 | 1 | 1 | 1 | 3 | 3.5 | 0 | 0 | 0 | 0 |
| 34 | 7 | 0 | 1 | 9 | 9.5 | 0 | 156 | 0 | 0 |
| 35 | 1 | 0 | 1 | 7 | 7.5 | 0 | 0 | 60 | 0 |
| 36 | 1 | 0 | 1 | 9 | 9.5 | 0 | 25 | 12 | 0 |
| 37 | 1 | 0 | 1 | 5 | 5.5 | 0 | -1 | -1 | 0 |
| 38 | 1 | 0 | -2.5 | 3 | -4.81 | 0 | -1 | -1 | 0 |
| 39 | 6 | 0 | 1 | 9 | 9.5 | 0 | -1 | 392 | -1 |

| CSNUM | CONTRC | EQUIPOC | MECHEXP | TRCTR | TRCTROC | PLOW | PLOWOC | PLNTR |
|-------|--------|---------|---------|-------|---------|------|--------|-------|
| 1 | 0 | 140 | 140 | 0 | 0 | 0 | 0 | 1 |
| 2 | 220 | 0 | 220 | 0 | 0 | 0 | 0 | 0 |
| 3 | 160 | 0 | 160 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 100 | 0 | 100 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 250 | 250 | 1 | 200 | 1 | 50 | 0 |
| 8 | 350 | 0 | 350 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 90 | 0 | 90 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 250 | 250 | 1 | 200 | 1 | 50 | 0 |
| 13 | 0 | 250 | 250 | 1 | 200 | 1 | 50 | 0 |
| 14 | 295 | 0 | 295 | 0 | 0 | 0 | 0 | 0 |
| 15 | 765 | 0 | 765 | 0 | 0 | 0 | 0 | 0 |
| 16 | 800 | 0 | 800 | 0 | 0 | 0 | 0 | 0 |
| 17 | 35 | 0 | 35 | 0 | 0 | 0 | 0 | 0 |
| 18 | 0 | 1515 | 1515 | 6 | 1200 | 2 | 100 | 2 |
| 19 | 0 | 1045 | 1045 | 3 | 600 | 2 | 100 | 2 |
| 20 | 0 | 705 | 705 | 2 | 400 | 2 | 100 | 1 |
| 21 | 0 | 640 | 640 | 2 | 400 | 2 | 100 | 1 |
| 22 | 780 | 75 | 855 | 0 | 0 | 0 | 0 | 1 |
| 23 | 950 | 0 | 950 | 0 | 0 | 0 | 0 | 0 |
| 24 | 460 | 0 | 460 | 0 | 0 | 0 | 0 | 0 |
| 25 | 150 | 0 | 150 | 0 | 0 | 0 | 0 | 0 |
| 26 | 300 | 0 | 300 | 0 | 0 | 0 | 0 | 0 |
| 26 | 300 | 0 | 300 | 0 | 0 | 0 | 0 | 0 |
| 27 | -1 | -1 | -1 | -1 | -1 | -1 | -1 | -1 |
| 28 | 500 | 65 | 565 | 0 | 0 | 0 | 0 | 0 |
| 28 | 500 | 65 | 565 | 0 | 0 | 0 | 0 | 0 |
| 29 | 200 | 0 | 200 | 0 | 0 | 0 | 0 | 0 |
| 30 | 160 | 0 | 160 | 0 | 0 | 0 | 0 | 0 |
| 31 | 360 | 190 | 550 | 0 | 0 | 1 | 50 | 1 |
| 32 | 80 | 0 | 80 | 0 | 0 | 0 | 0 | 0 |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 34 | 50 | 0 | 50 | 0 | 0 | 0 | 0 | 0 |
| 35 | 60 | 0 | 60 | 0 | 0 | 0 | 0 | 0 |
| 36 | 75 | 0 | 75 | 0 | 0 | 0 | 0 | 0 |
| 37 | 160 | 0 | 160 | 0 | 0 | 0 | 0 | 0 |
| 38 | 0 | 75 | 75 | 0 | 0 | 0 | 0 | 1 |
| 39 | 1070 | 50 | 1120 | 0 | 0 | 1 | 50 | 0 |

| CSNUM | PLNTROC | HRRW | HRRWOC | CROPINC | TRACOWN | CATTLE | SE1 | OFFINC | PEN1 | AGE1 |
|-------|---------|------|--------|---------|---------|--------|-----|--------|------|------|
| 1 | 75 | 1 | 65 | 0 | 0 | 4 | 0 | 540 | 1 | 70 |
| 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 610 | 1 | 62 |
| 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1340 | 1 | 62 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 920 | 1 | 68 |
| 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 910 | 1 | 67 |
| 6 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1500 | 1 | 65 |
| 7 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 43 |
| 8 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 1480 | 0 | 58 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 300 | 1 | 67 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 940 | 0 | 57 |
| 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 520 | 1 | 70 |
| 12 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 540 | 0 | 43 |
| 13 | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 700 | 1 | 61 |
| 14 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 810 | 1 | 61 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1240 | 0 | 52 |
| 16 | 0 | 0 | 0 | 1105 | 0 | 0 | 0 | 1020 | 0 | 47 |
| 17 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1040 | 0 | 65 |
| 18 | 150 | 1 | 65 | 15000 | 1 | 5 | 0 | 300 | 1 | 70 |
| 19 | 150 | 3 | 195 | 68000 | 1 | 51 | 0 | -1 | 1 | 70 |
| 20 | 75 | 2 | 130 | 0 | 1 | 15 | 0 | 800 | 1 | 70 |
| 21 | 75 | 1 | 65 | 38000 | 1 | 80 | 0 | 2500 | 0 | 35 |
| 22 | 75 | 0 | 0 | 0 | 0 | 8 | 0 | 1140 | 0 | 35 |
| 23 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 900 | 0 | 39 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | 0 | 39 |
| 25 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1050 | 0 | 55 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 400 | 0 | 55 |
| 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 400 | 0 | 55 |
| 27 | -1 | -1 | -1 | -1 | -1 | -1 | 0 | -1 | 0 | 55 |
| 28 | 0 | 1 | 65 | -1 | 0 | 2 | 0 | 3020 | 0 | 55 |
| 28 | 0 | 1 | 65 | -1 | 0 | 2 | 0 | 3020 | 0 | 55 |
| 29 | 0 | 0 | 0 | -1 | 0 | 4 | 0 | 1080 | 0 | 55 |
| 30 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 400 | 0 | 55 |
| 31 | 75 | 1 | 65 | 0 | 0 | 0 | 0 | 300 | 0 | 55 |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1040 | 0 | 55 |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 840 | 0 | 55 |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2210 | 0 | 47 |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | -1 | 0 | 47 |
| 36 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 800 | 0 | 47 |
| 37 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 200 | 0 | 48 |
| 38 | 75 | 0 | 0 | 0 | 0 | 9 | 0 | -1 | 0 | 48 |
| 39 | 0 | 0 | 0 | 0 | 0 | 44 | 0 | 1340 | 0 | 48 |

APPENDIX C.2: DISCRIMINANT ANALYSIS VARIABLE DEFINITIONS

| Variable | Variable description |
|-----------|---|
| CSNUM | Case Study household number. |
| TACTS | Number of rental transactions that household participates in. |
| LSSR | = 1 if household is a lessor, 0 if lessee. |
| LSSE | = 1 if household is a lessee, 0 if lessor. |
| TALLO | Total area allocated (ha). |
| TAREA | Total area operated (ha). |
| LSZE | Log of total allocated area. |
| LABOUR | Number of adult equivalents available on-farm work. |
| IMPL | Number of farm implements owned. |
| FENCE | = 1 if household has invested in arable land fencing, 0 otherwise. |
| LIQUIDITY | number of household members engaged in wage employment or self-employed. |
| WDW | = 1 if household head is widowed, 0 otherwise. |
| SLOPE | Index score of slope <i>e.g.</i> zero for flat land or -2.5 for steep slope. |
| ASPECT | Index score of aspect <i>e.g.</i> one for flat land or 9 for a north-facing slope. |
| QUALITY | Land quality index score combining SLOPE and ASPECT. |
| AGEDU | = 1 if respondent attended any agricultural field days or agricultural training courses, 0 otherwise. |
| FERTC | Expenditure on fertiliser during the past season (R). |
| SEEDC | Expenditure on seed during the past season (R). |
| CHEMC | Expenditure on chemicals during the past season (R). |

| | |
|-----------|---|
| CNTRC | Contractor expenditure during the past season (R). |
| EQUIPOC | Opportunity cost value assigned to agricultural equipment ownership. |
| MECHEXP | Machinery expenditure (combining CNTRC and EQUIPOC) during the past season (R). |
| TRCTR | Number of tractors possessed by the household. |
| TRCTROC | Opportunity cost value assigned to tractor ownership. |
| PLOW | Number of ploughs possessed by the household. |
| PLOWOC | Opportunity cost value assigned to plough ownership. |
| PLNTR | Number of planters possessed by the household. |
| PLNTROC | Opportunity cost value assigned to planter ownership. |
| HRRW | Number of harrows/cultivators possessed by the household. |
| HRRWOC | Opportunity cost value assigned to harrow ownership. |
| CROPINC | Gross income from crop sales during past year (R). |
| TRACOWN = | 1 if household owns a tractor, 0 otherwise. |
| CATTLE | Number of cattle possessed. |
| SE1 = | 1 if household head is self-employed, 0 otherwise. |
| OFFINC | Household off-farm income (monthly disposable income) (R). |
| PEN1 = | 1 if household head is in receipt of a pension income, 0 otherwise. |
| AGE1 | Age of household head (years). |

Missing Values score -1

APPENDIX D.1: REGRESSION ANALYSIS DATA SET

| CSNUM | RT | TACTS | LSSR | CASH | FIXCROP | SHARE | INTERL | BRRW | WRITTEN | STRANGER |
|-------|----|-------|------|------|---------|-------|--------|------|---------|----------|
| 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 2 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 3 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 4 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 5 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 6 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 7 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 8 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 9 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 10 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 11 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 12 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 13 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 14 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 15 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 16 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 16 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 16 | 3 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 17 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 17 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 18 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 18 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 19 | 1 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 19 | 2 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 19 | 3 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 19 | 4 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 19 | 5 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 19 | 6 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 19 | 7 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 19 | 8 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 19 | 9 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 19 | 10 | 11 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 19 | 11 | 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 20 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 20 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 20 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 21 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 21 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 21 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 22 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 22 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 23 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 23 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 24 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 24 | 2 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |

| CSNUM | RT | TACTS | LSSR | CASH | FIXCROP | SHARE | INTERL | BRRW | WRITTEN | STRANGER |
|-------|----|-------|------|------|---------|-------|--------|------|---------|----------|
| 25 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 26 | 1 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 |
| 26 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 27 | 1 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 27 | 2 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 27 | 3 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 27 | 4 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 28 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| 28 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 29 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 30 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 31 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 32 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 33 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 34 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 35 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 36 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 37 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 38 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 39 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 39 | 2 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 39 | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 39 | 4 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 39 | 5 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 39 | 6 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 39 | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

APPENDIX D.2: REGRESSION ANALYSIS VARIABLE DEFINITIONS

| Variable | Variable description |
|------------|---|
| CSNUM | Case study household number. |
| RT | Household rental transaction number. |
| TACTS | Number of rental transactions that the household participates in. |
| LSSR = | 1 if household is a lessor, 0 if lessee. |
| CASH = | 1 if entered into a cash rental contract, 0 otherwise. |
| FIXCROP = | 1 if entered into a constant payment sharecrop, 0 otherwise. |
| SHARE = | 1 if entered into a proportional sharecrop, 0 otherwise. |
| INTERL = | 1 if entered into an interlinked contract, 0 otherwise. |
| BRRW = | 1 if entered into a borrowing/lending agreement, 0 otherwise. |
| WRITTEN = | 1 if had written rental contract, 0 otherwise. |
| STRANGER = | 1 if engaged in a contract with a household that was not a family member, friend or neighbour, 0 otherwise. |

Missing Values score –1