

CHAPTER SIX

SUMMARY AND CONCLUSIONS

The previous chapters introduced the problem and the objectives of the study, as well as the theoretical framework underpinning the role of transaction costs in its relationship to market participation. Elaborate econometric analysis was undertaken to provide empirical evidence of the effect of transaction costs on commercialisation of smallholder farmers.

This chapter provides the summary and conclusions of the study. It is presented in four sections. The study is summarised in section 6.1, while section 6.2 presents the conclusions and policy recommendations of the study. Section 6.3 discusses the general policy implications, and section 6.4 makes recommendations for further studies.

6.1 SUMMARY

The main objective of the study is to investigate the extent to which transaction costs affect the market participation behaviour of smallholder farmers in the Northern Province of South Africa. In particular the study attempts to investigate factors contributing to different levels of transaction costs among households. Identification of such factors might support efforts to create the appropriate environment for smallholder farmers for integration into the mainstream agriculture market. After all, it is in the interest of the government to remove dualism in agriculture by promoting smallholder farmers, which hinges on greater participation in the market.

These farmers are generally poor and contribute inadequately to the mainstream market because of a low production and poor access to other options for obtaining a livelihood. It is found, however, that these farmers can survive economically when given a set of opportunities to transform them from subsistence to commercial operators. When smallholder farmers do participate in the market this might result in

strong multiplier effects. Very few smallholder farmers participate in the market. This is caused by a number of constraints, some of which have to do with transaction costs barriers.

The study applies the New Institutional Economics (NIE) paradigm, and in particular transaction costs economics (TCE). TCE asserts that market exchange does not take place in a frictionless environment; as a result all transactions are costly. Transaction costs facing smallholder farmers are generally unobservable but do inhibit possible participation in market exchanges, that is, when the costs of transaction are higher than the value (or utility) derived from such transaction, farmers will not participate in the market. Transaction costs emanate from differential access to assets and information, and these factors vary across households. The general view in the literature is that the presence of high transaction costs will affect the pattern and/or level of participation in the market.

A handful of researchers have attempted to provide a theoretical framework of smallholder farmers' market participation under transaction costs. Generally, they built upon the pioneering work of De Janvry *et al* (1991), who formalised the notions that had been around for some time and applied them to peasant agriculture. Goetz (1992), building on Strauss (1984) determined that fixed transaction costs discourage market participation. Some years later Omamo (1999) established that variable transaction costs (such as transport costs) will influence the pattern of market participation. Perhaps a more subtle framework for our purpose was proposed by Key *et al* (2000) who found that the decision to participate in markets is affected by fixed transaction costs, while the level of participation is affected by both variable and fixed transaction costs. These studies form the basis for the theoretical model of market participation under transaction costs used in this study. The model is designed to determine household's utility decision by choosing level of consumption of agricultural goods as well as the level of consumption of other goods acquired with the sales revenue. Furthermore, the model attempts to determine the factors influencing the household's decisions on how much to produce, as well as how much to sell (which enters the utility function as revenue).

In the presence of transaction costs, the level of market participation is conditional on the decision to participate in the market. It is hypothesised that such a decision to participate is affected by factors contributing to fixed transaction costs. Once the household has decided to participate, the level of participation will depend on factors contributing to both fixed and variable transaction costs.

There is consensus in the literature that the very existence of transaction costs tends to discourage commercialisation. Also, theoretical concepts confirm that alleviation of transaction costs will stimulate commercialisation of smallholder farmers. In order to operationalise the concept of transaction costs in this study, a range of variables was defined. The first set of variables represented access to assets. They included the size of the household's arable land, livestock ownership, transport assets and liquid assets. Other variables indicated access to information, such as distance and condition of the roads to market centres as well as direct access to market information. The rest of the variables reflected the socio-economic status of the household.

To measure these variables the study employs data from a 1997 survey of farming households in five regions of the Northern Province. This survey was held over a period of about four months. The data collection process involved interaction with approximately 158 individual farmers in elaborate face-to-face interviews, which were followed by 15 group discussions. It was found that particularly in the chosen study area, which is in the Northern Province, high transaction costs are in evidence.

Most households in the selected sample consisted of seven members, and most of them were headed by men. These households have access to a relatively small area of arable lands (about 3 ha), with livestock thriving on communal grazing. The households use different sources of livelihood, both in the form of farm and non-farm activities. The success of such livelihoods is constrained by lack of institutional support, such as appropriate ownership titles to land.

Farmers in the study area participated in markets focusing on high value commodities as well as on markets focusing on food crops. High value commodities

included horticultural crops and livestock. Food crops included maize and other field crops. Generally, few farmers were involved in the selling of any of these commodities. Only 19%, 17%, 21% and 22% of the households sold horticultural crops, livestock, maize and other field crops respectively.

The central question is "What will influence farmers' decisions to sell and what will stimulate them to sell more?" It was hypothesised that households with more endowment and better access to information will be more likely to sell and be encouraged to sell more.

In order to test the above hypothesis, different methods were followed. The selectivity models encompass two steps to estimate the effects of socio-economic and transaction costs factors on market participation. Firstly, probit models were estimated to determine (fixed transaction costs) factors affecting the decision to participate in markets focusing on horticultural crops, livestock, maize and other field crops. The results of the probit models were considered in the estimation of the determinants of the level of participation, namely the variable transaction costs. To find these, heckit models were applied, or, in other words, the second stage of the Heckman procedure. Tobit models were also estimated to account for both the decision to participate and the level of participation (or fixed and variable transaction costs).

Visits of extension officers, the size of the arable land, and the age of the head of the household increased the likelihood of households selling horticulture crop. The household size, the value of livestock owned and income from pensions reduced the likelihood of households selling horticultural crops. The size of arable land, proximity to the nearest town and non-farm earnings positively increased the level of participation in horticultural markets. The age of the head of the household, the household size, livestock ownership, road conditions, being educated, and earning a non-farm income negatively affected the level of horticultural sales. The results imply that factors alleviating transaction costs in horticultural markets have to do with access to information and to production assets, while a large-sized household and pensions exacerbated the costs. The age of the head of the household shows

ambiguous results; older farmers are more willing to sell in general, but younger farmers tend to sell more horticultural crops.

The likelihood of selling livestock was significantly decreased by the increase in household size and pension earnings. On the other hand, being a female head of the household, the value of livestock owned and proximity to nearest town increase the likelihood of selling livestock. An increase in livestock sales took place when the value of livestock increased, when the head of the household was female, when the area of arable land increased, when the household had access to good roads, and when it was located in relative close proximity to the nearest town with good access roads. An increase in the household size reduced the level of livestock sales. These findings provide a clearer pattern of factors responsible for transaction costs in livestock markets. Production assets and market accessibility, as well as a commercial objective to own more livestock tend to alleviate the transaction costs related to livestock marketing. An increase in the size of the household contributed to a growth in inhibiting transaction costs. The reason for this is that lengthy negotiations would be required involving each additional member of the household in order to come to a decision whether to sell some livestock.

The pattern of participation in the maize market is simple. There are basically only two factors influencing the maize market. Firstly, an increased size of the household tended to discourage selling of maize since there is a need to meet the consumption requirements of the household. Secondly, an increased area of the arable land stimulated participation in the market because this would allow for an increased production extending beyond the consumption requirements of the household. In other words, participation in the maize market depends on production and consumption factors. However, ownership of livestock positively increased the level of maize sales. It seems that owning livestock evens out the risk of loss of food security when selling maize.

Participation in the field crops market is slightly complicated by the heterogeneous nature of these crops. Some field crops, such as wheat and coriander, are commercialised, but others are not, such as grain sorghum. The findings show that

good road conditions and an increased area of arable land positively affected the sales of other field crops. However, the ownership of a vehicle or tractor, proximity to nearest town, non-farm earnings, and contacts with extension services discouraged sales of other field crops. These factors did, however, encourage market participation in other commodities.

6.2 CONCLUSIONS AND POLICY IMPLICATIONS

The conclusions and policy implications from the selectivity models are presented under the following headings: 'Access to information', 'Access to assets and endowments', 'Household size, age and gender effects', and 'Interactive effects'. Originally it was hypothesised that households with better access to information and possessing more endowments would be in a better position to participate in markets.

6.2.1 Access to information

Differential access to information is one of the major explanations for the existence of transaction costs. In this study access to information is proxied by the average education of the household, contact with extension services, proximity to and the road conditions to the nearest town. The first set of models (probit) compared households participating in one commodity market with those not participating at all. They sought to identify the effect of access to information on the decision to participate in markets, which would then be reflected in fixed transaction costs. Proximity to the nearest town stimulated horticultural sales, but discouraged a positive decision to participate in markets for other field crops. Proximity was not significant for decision to participate in livestock and maize market. Proximity is important for horticultural crops, though, since farmers need to make decisions about selling their produce timely. Another aspect is that a location closer to the markets facilitates access to information. Contact with extension officers also facilitated the decision to sell horticultural products, but did not do so for the other commodities. This implies that for households to participate in the horticulture market they need specialised advice (information). Good road conditions were only an important factor

in the decision to sell other field crops, but did not play that role with respect to other commodities. Average education does not influence the decision to participate in any of the markets.

These results suggest that farmers who are presently not participating in the markets might respond positively if they could have reasonable access to information about markets. Access to information is possible when farmers are located closer to the markets, and have appropriate contacts with the extension service. These conditions are particularly relevant for high value commodities such as horticultural crops (though limited in other commodities). Information systems for promoting market access have not been very clear and accessible in South Africa. To encourage smallholder farmers to participate in high value markets, it is definitely needed to create information sources that are within farmers' reach. It is pertinent that extension systems should be able to supply the farmers with adequate marketing information. Thus it is recommended that government, in particular, consider introducing into the extension system extension officers who are specialised in marketing. Naturally this would require the training of these officers through formal college education and in the in-service context. With extension officers gathering and dispersing market information the benefit of such investments would be an increased market participation of smallholder farmers.

Somehow, average education of the household appears unimportant as an information-gathering instrument for stimulating the decision to participate in markets. This may have two implications. Firstly, average education as considered in the study, assumes that all household members are involved in the decision making on market participation. In high value commodities, however, only one member of the household might be involved in marketing decisions due to its intensity. On reflection, it might have been useful to assess the role of the level of the individual household members' education in the marketing decision. Unfortunately, individual members' level of education could not be assessed for reason that there were not enough observations for that variable.

The second implication is the need to customise education and training to market access. This relates to the idea of making extension officers knowledgeable about marketing. These officers could then provide training to farmers about markets. Formal education would need to get involved in this and introduce topics relating to marketing management as elementary school subjects and as part of adult literacy and numeracy classes. Introducing such a focus fits well with the process of restructuring education to outcome-based education.

The other role of information pertains to the increased level of market participation. This is reflected in the existence of variable transaction costs. Proximity to the nearest town was statistically significant for increasing the level of participation in horticulture markets. In this respect it was also significant for increased participation in the markets for other field crops, but not for the livestock and maize markets. Good road conditions positively affected the sales of livestock, but negatively affected the sales of horticulture. The negative effect on horticulture sellers is attributable to the data gathered from the banana farmers in Homo near Giyani, in the Lowveld Region. The road conditions used by these farmers are relatively bad, yet they manage to market their crop, which is a high value crop. Good road conditions were also positive factors for marketing other field crops among sellers, but negative with respect to these crops when all households are considered. The road condition was not an important factor for maize sales. Contact with extension officers and average education were not statistically significant in affecting the levels of sales.

The heckit results suggest that information variables belong to the fixed transaction costs, which may not significantly affect the level of market participation. For example, contact with the extension service and education will not affect the level of sales. The role of access to information through extension officers and the ability to interpret information is limited to influencing the decision of farmers whether to participate in the market. What the farmer knows about the market is not pivotal in determining the level of sales. Other factors, such as location factors tend to be important in the determination of sales. For example, for every kilometre closer to the nearest town the level of horticultural sales increases by about R152. The

findings also indicate that some major contributing horticultural farmers are faced with very bad road conditions. An implication for policy making might be that investment in a good physical infrastructure is of the essence if smallholder participation in the markets is to be encouraged. Markets should be brought closer to the farmers in order to address the problem of proximity to markets. This can be done by establishing market infrastructure that includes collection points and/or a transport system. Farmers could so deliver their products to the nearby distribution points, from which the buyers or agents can collect the products. Possibly this initiative could be left in the hands of the private sector, but the public sector could play a role in supporting the information transfer to farmers. There is therefore a clear need for better managing of marketing, such that it can cater for market information centres.

6.2.2 Access to assets and endowment

The concept of access to assets is operationalised by five variables, namely size of arable land, value of livestock, ownership of transport equipment, non-farm income and pension earnings. Access to assets ameliorates transaction costs by making production possible; facilitate market information and carrying out, or investing in, the exchange. Some assets such as land is used to produce, vehicles are used to reach out to the market centres, and provide alternative and supplementary income from non-farm sources when transporting commodities to the market.

The size of arable land was a significantly positive factor in the probit models for horticulture, maize and other field crops, but not for livestock. On the other hand, as expected, the value of livestock is positively significant for the probability of selling livestock and negatively significant for the selling of horticulture. This was not significantly so for maize and other field crops. Access to non-farm income is a significantly negative factor for market participation in other field crops, and not significant for livestock and maize. Access to pensions was a significantly negative factor for participation in the livestock and horticulture market, but was not significant

for maize and other field crops. Ownership of vehicles and/or tractors was not a significant factor in influencing the probability of market participation.

The Heckit models show that arable land is positively associated with sales value for livestock, horticulture and maize, but negative with the sales value of other field crops. The value of livestock is positively associated with the sales value for livestock and maize, but negatively for horticulture, and not significant for other field crops. Non-farm income was positively associated with horticulture sales, negatively with other field crops sales, and not significant for livestock and maize. Ownership of vehicle and tractor is significantly negatively associated with sales of other field crops, but is not significant with respect to other commodities. Access to pensions was not a significant factor in determining the value of sales.

The results suggest that farmers will not participate in the markets when they experience a lack of access to productive assets such as land and livestock, and a lack of precautionary assets such as non-farm income. These findings pose a challenge to the policy making process in South Africa, as this currently attempts to provide greater access to land and improve the conditions of earning a livelihood. At present the land reform process is not moving as fast as was expected. As the land reform process is being reviewed, greater consideration should be placed on mechanisms to fast-track this process and design it in such a way that it will motivate high value commodity production. Also, by increasing the area of grazing land and associated property rights smallholder livestock production could well improve. It is hoped that the Integrated Programme of Land Redistribution and Agricultural Development (ILRAD) will lead to such greater access to productive resources. The importance of non-farm income reflects the need for liquidity in market participation. Since not all farmers have access to non-farm income, it is pertinent to make provisions for credit as an alternative. Access to pensions provides an alternative livelihood strategy such that farmers have less need for cash through market participation. As a result pensions have a negative impact on market participation. The fact that ownership of a vehicle or tractor does not encourage decision to participate in the market implies that farmers may be using these assets mainly for other purposes, rather than for marketing activities.

6.2.3 Household size, age and gender effects

The structure of the household is broken down in the household size, and age and gender of the head of the household. The household size negatively affects the chance of participating in the markets for horticulture, livestock and maize, but positively in the market for other field crops. Age of the head of the household was a significantly positive factor for the likelihood to participate in the horticulture market, while being a female head of the household was a significantly positive factor for participation in the livestock market. Furthermore, the size of the household was significantly negatively related to the value of sales for all commodities. However, the size of household was positively related to maize sales for all observations (total effect). Being a female head of the household was positively related with livestock sales, while age of the head of the household was negatively related with levels of horticulture sales.

The results suggest that households generally participate in the markets when they have most of the members involved in production activities rather than being mere dependants. Female farmers generally participate in livestock markets more than male farmers do. Older farmers are more likely to participate in the horticulture market, but tend to sell significantly less compared to younger farmers. These findings bring to the fore the importance of a demographic policy which takes into account the composition of the households. For a commercialisation process to be successful it is pertinent to determine the role of different household members in household's market participation. For example, consideration should be made on how to make youth to contribute to market participation process (in contrast to being dependent). It appears that female farmers are more involved in livestock markets and less in horticulture markets. This shows the need to enhance opportunities for women to participate in livestock enterprises. Factors limiting the participation of women in horticultural enterprises should be identified and where possible removed. For example, the status of women as contractual partners should be elevated. Older farmers are normally experienced in market participation, but often they have to few

resources to handle large quantities of horticulture produce for the market. Programmes for market access should identify the needs of farmers from different age groups.

6.2.4 Interactive effects

Two interaction factors were included in the study to measure the reinforcing effects between two variables. These variables were the interaction of proximity to the nearest town with the road conditions to this town, and the average education with access to non-farm income. It was found that these interaction factors were not significant in determining the probability of market participation. The interaction of proximity and road conditions was, however, significantly positive with the level of livestock sales. The interaction of education and non-farm income was negatively associated with the sales of horticultural crops.

The findings suggest that livestock farmers would be willing to sell more livestock when markets are closer by with good road conditions to reach them. That is, where roads are good, for every kilometre closer to the market the value of livestock sales increases by R46 among livestock sellers. This is the case in situations where the buyers collect the livestock themselves. This conclusion reinforces the need for an appropriate market infrastructure if market access is to be enhanced. This would involve the establishment of collection points as well as investment in the physical infrastructure, the roads. The results further suggest that educated households receiving non-farm income will normally participate less in markets. Such households would either have other, and possibly more, responsibilities, or they have enough income to substitute the need for participation in high value markets.

6.3 GENERAL POLICY IMPLICATIONS

6.3.1 General overview

This study has provided primarily two types of information pertaining to market participation behaviour of smallholder farmers in the Northern Province (South Africa). The first type of information identified factors contributing to fixed transaction costs, which determine whether the household will participate in the market for each of the four commodities produced by the smallholder farmers in the province. The second type of information identified factors contributing to variable transaction costs, which determine the level of market participation in these commodities.

Smallholders in the Northern Province produce a range of products, but only half of the households in the sample participate in markets. Some households are involved in high value commodities such as horticulture and livestock, but only about 19 and 17% of the households participate in markets. These households have a foothold in the process of market participation. Other households are involved in food crops such as maize, and other field crops, but only about 20 and 21% of the households sell maize and other field crops respectively. These relatively low participation rates are a reflection of the existence of transaction costs.

Transaction costs are reflected in the differential access to assets and information asymmetries as a result of different household characteristics and location factors. The results of the two-stage selectivity model suggested that these factors are important in the market participation behaviour of smallholder farmers. As expected, households who had better access to information through contacts with extension services and proximity to markets showed a positive tendency to participate in the markets. The level of education of the household did not make any difference in marketing behaviour. The reason for this could be ascribed to the fact that formal training and education in South Africa does not cater for entrepreneurship. Similarly, access to assets stimulated households to participate in the markets.

Surprisingly, ownership of a vehicle and/or a tractor did not make any positive difference in the participation behaviour. Seemingly, these assets are used in other activities rather than employ them for the marketing process. The household structure reflecting particular risk behaviour provided the expected pattern. For example, the household size negatively affected participation in markets since every additional member exacerbates the pressure of risk in market failures.

Being a female head of the household tended to be associated with participation in livestock markets, while most of male household heads were involved in horticulture markets. Three possible explanations could be that women prefer to sell most of their livestock, mainly small stock and poultry, while men prefer to keep it, that is large stock, as a store of wealth and social status. Secondly, horticultural production requires access to irrigated land. Here female farmers may have a problem of access since policies on land and water are still biased against women. Thirdly, livestock markets are generally more stable than the horticulture market system, which requires high risk taking. As such, it is easier for women to participate in livestock market than horticulture market. The age of the head of the household seemed to give inconclusive results pertaining to market participation behaviour.

Next we will discuss some policy and strategy recommendations as suggested by these findings.

6.3.2 Policy recommendations

Due to the way variables have been defined in this study the policy recommendations discussed below must be viewed with some caution. For example, variables such as arable land and livestock indicated the size of the asset owned. The study does not explore why some farmers would have less land (or livestock) and others have more. Were some farmers restricted in one way or another to access such assets? The policy recommendations proposed below presume that some farmers are restricted to asset access.

The policy required to stimulate market participation needs to be tailored to the requirements for participation of the four categories of commodities. It must also formulate and implement measures to remove fixed transaction costs and reduce the variable transaction costs. The horticulture farmers are generally market oriented, but for them to be in a position to cross the threshold inhibiting participation in horticulture markets, they require access to irrigated land and extension service to identify market information. Improving participation in horticultural markets should take account of women's constraints to access these markets. In order to improve the level of participation in horticulture would require better access to production facilities such as land, credit and other appropriate inputs for increased production. Furthermore, facilities such as transport networks, including more accessible roads and vehicles, would ease the problem of access to horticultural markets. Horticulture as a perishable commodity requires fast access to markets and thus the distance needs to be reduced and the infrastructure needs to be improved. This study has shown that some horticultural farmers continue to sell considerable quantities even though they face poor road conditions. Indeed these farmers could participate more and more effectively if they are served with a better infrastructure.

Since livestock is also a high value commodity, participation in the livestock market requires similar policy measures as horticulture does. There are, however, other special features needed in a program catering for livestock market participants. For example, to overcome fixed transaction costs livestock farmers require better access to grazing land and up to date training in the workings of the livestock marketing system. This would be a task for the extension service. The extension service should further be reoriented from a mainly technical focus to one that focuses on serving the marketing needs for livestock owners. To increase the level of participation in livestock markets farmers require better access to grazing land as well as an improved marketing infrastructure.

Those households selling maize and other field crops are normally viewed as not very commercially oriented since these are food crops. The primary policy objective is to use these commodities as a strategy to food security. The farmers' decision to

participate in the market is normally driven by the availability of surplus produce. Policy efforts should enhance the production capacity through the provision of land. Another factor is that for market participation it should be possible for these commodities to be stored until better market conditions prevail. In other words, the development of storage facilities or processing technology would make a big difference in the economics of the marketing behaviour of these farmers. Such developments can provide great opportunities for private sector development in the rural areas.

Based on the policy measures suggested above and specifically pertaining to farmers in the Northern Province, a marketing strategy could be developed for the other smallholder farmers in South Africa. Part of this **marketing strategy** to improve market access for smallholders would entail the following:

- **The development of an information system** involving market search, prices, and transaction conditions. The system should address questions of who requires information, what type of information, how, by whom and when should the information be made available. Agricultural Marketing Officers (extension officers), who can link with the market information centres at district or service centre level, could facilitate this. These officers can also assist in the application of print and electronic media to provide digestible market information. The link between extension services and farmers could be enhanced by improving the farmers' access to and the use of cellular phones. This could be instrumental for farmers to contact information centres. Farmers could be supported in this by providing them with better cellular reception and/or negotiating on their behalf for a discounted price of the cellular phone and subscription rates. Access to this system should make a farmer into an informed decision-maker.
- **An adequate and appropriate transport system** is a prerequisite to transactions. Transport is related to the distance to the markets, the

conditions of the roads, and transport facilities such as vehicles and tractors. A well thought out transport strategy should address what is being transported, by whom, with what and where to. This strategy should cater for the emergence of transport contractors, the opening of road networks, the development of collection points, and investment in road infrastructure. As such the role of both public and private sector is imminent here. The government should open new roads and ensure the maintenance of existing ones. Members of local communities should be encouraged to provide transport services to ferry products to market centres or collection points.

- **Asset accumulation** will enable production and marketing of commodities. Policy guidelines encouraging appropriate procedures to acquire, own and transfer production assets are called for. Different assets tend to have different procedures. For example, livestock and vehicles are easily handled by private procedures without government intervention. However, government should streamline livestock policies to allow better access to smallholder farmers. This may further hinge on access to grazing land. Thus, government should clarify its programs on land access, which encompass ownership rights. For example, land reform should address both acquisition and ownership rights of land by smallholder farmers. Guidelines should be made clear as how such acquisition should take place. ILRAD should clarify alternative means of farmers getting access to land.
- **Marketing institutions** involve marketing organisations and marketing rules and systems. Marketing institutions should promote diversity in market access in order to provide farmers with options and alternative marketing channels. Farmers should have access to a directory of marketing channels and organisations as well as conditions and rules pertaining to marketing. Existing or new co-operatives should be encouraged to provide marketing services. Local co-operatives could serve as collection points for farmers' products.

- Other elements include **short courses** to train farmers in marketing management and the interpretation of market information. Also the development of **financial support (credit) system** for marketing activities is important. This involves extending credit to farmers when they need to send or transport their produce to the markets. This is a variant on the traditional production credit, but it provides much better repayments possibilities since the credit is used to finance the product that is actually and tangibly there.

6.4 RECOMMENDATIONS FOR FURTHER RESEARCH

The main objective of the study was to determine the role of transaction costs factors influencing the participation of smallholder farming systems in output markets in Northern Province. The main goal was to contribute to the knowledge base regarding economic development based on the encouragement of market participation by smallholder farmers. The study suggests some ways to assist the further examination of market participation issues.

The study concluded that improving access to information by contacts with extension services and proximity to markets, promoting of access to assets such as land, livestock, and non-farm income, as well as targeting specific age and gender groups of farmers, and improving road conditions will stimulate market participation of smallholder farmers. Several pertinent issues were not covered in this study and thus require additional investigation. For example, it is not so clear what kind of information system would work best for the Northern Province Department of Agriculture to encourage market participation. In this regard, the location and design of information institutions should be some of the concerns facing policy makers. Improved access to assets as a major factor in overcoming variable transaction costs was shown to improve the level of market participation. Packaging such assets to stimulate market participation is another policy issue that requires further investigation.

The study also shows that households who have access to non-farm income, which can be invested in transactions, tend to sell more horticulture commodities. However, it is not established in the study as to what factors encourage farmers and their household members to be involved in non-farm activities. Related to this is that there seems to be simultaneity between the set of transaction cost factors and non-farm income activities. It might be interesting to examine how non-farm factors and transaction costs factors are related to non-farm and other issues of market participation.

Furthermore, the study has shown that access to land stimulates participation in markets. In the study, arable land was defined as the size of land owned. The measurement did not take into account land quality and tenure systems. It is suspected that the condition of the land may have different effects on different commodities. It follows that it might be useful for future research to determine the role of tenure systems and land quality in ameliorating the transaction costs for market participation.

Other factors such as education and ownership of a tractor and/or vehicle were generally not showing significance for market participation. This is probably caused by the way the variables are measured. In this study, the education indicator was based on average education of the household, which included household members not involved in farming. Presumably that the education of the head of the household and the second responsible member could play a major role in information access. Similarly, in this study it was not ascertained whether the tractor or vehicle was used specifically for market participation. In future studies, a variable reflecting whether the vehicle or tractor is used for market participation would be useful. In addition, a transportation index may be constructed to reflect the level and pattern of access to transport for marketing purposes.

There are other issues not addressed in this study that could be interesting to investigate. These include the role that livestock and horticulture play in securing the livelihood of the poor. And the question would be why women keep and/ or sell

more livestock than men? What can be done to help men so that they will sell more small livestock, or the women so that they will sell more large stock? Furthermore, the interaction between non-farm income earning and the existence of transaction costs and liquidity constraints on farm output are well-worn but still important issues that could profitably be investigated in a study addressing income sources.

In the spirit of the previous paragraphs, it must be stated that the study has made an attempt to measure factors affecting (or as proxies of) the transaction costs in market participation. Some direct measurement of transaction costs may be pertinent although most of the direct transaction costs would create an endogeneity problem in the market participation model. It could be shown, however, how the various factors affect direct transaction costs.

This study is based on a 1997 (synchronic) survey, and the farmers' behaviour over time (diachronic) was not taken into account. Market participation, however, is a dynamic behaviour, which reflects change in farmers' behaviour over time. For example, when farmers are exposed to low transaction costs or can see the advantages of market participation, they are likely to participate more in the markets. The data collected and the manner in which they were gathered are not sufficient to substantiate this hypothesis. It would be interesting to examine how the same farmers used as informants in this study differ in market participation behaviour in the next five or six years. Some issues to pursue would be whether farmers not participating at present are participating then, whether farmers from one group (say maize sellers) move to another group (such as horticulture or livestock sellers). A related issue would be whether the levels of sales are changing or not. Another focus of interest could be to identify transaction costs factors explaining differential market participation over time.

The study also attempted to disaggregate the commodities. Only maize was specified into a single commodity. Others such as horticulture, livestock and other field crops were treated as aggregated commodities. As such, it is not clear whether the role of gender in livestock market participation pertains to a particular livestock category or whether these gender effects are more generally significant. Another

issue for investigation could be whether the different horticulture commodities face different transaction costs. For example, access to a vegetables market might differ from that to a fruit market. Therefore one recommendation for future study is to look at these issues by using disaggregated data.

Further, the study has approached the marketing process from an individual farmer perspective. In practice, some farmers may market their produce collectively, which would affect the transaction costs differently. In this study, collective action of farmers was considered with an indicator of whether a household was a member of a group. This indicator seemed to capture too many aspects hence it was correlated with other factors. Perhaps for future research, a more refined indicator of collective versus individual market access should be considered.

The findings of this study are specifically relevant to the Northern Province's smallholder farmers. The agricultural setting of the Northern Province may differ from other areas in South Africa, from Africa and from other developing countries. The smallholder farmers, as a group, however, tend to face similar constraints for participation in mainstream agriculture markets. It is possible, though, to generalise these results for areas elsewhere, but it requires some adjustments for the local agricultural settings. Thus generalised policy guidelines for a smaller or larger, even international, region can be recommended. Such a multi-country view will be important:

- (i) for national agricultural policy makers in order to understand the limitations related to strategies from other countries,
- (ii) for donor agencies in order to effectively allocate limited aid funds to targeted projects, and
- (iii) for international agricultural research centres in order to understand the constraints operating on market participation across national or regional boundaries. This would assist in tailoring research designs focusing on the promotion of market participation that suit local needs.