ECONOMIC ANALYSIS OF CASH CROP PRODUCTION AND MARKETING IN TANZANIA UNDER A LIBERALISED MARKET ECONOMY: A CASE STUDY OF TOBACCO IN SONGEA DISTRICT

BY

DENNIS CHRISTIAN RWEYEMAMU

A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN AGRICULTURAL ECONOMICS OF SOKOINE UNIVERSITY OF AGRICULTURE

2001

ABSTRACT

This study analyses the efficiency of production, degree of distortion in the markets and the pattern of incentives for smallholder tobacco growers in Songea district under liberalization. A survey was conducted on a sample of 120 tobacco growers in the district, and secondary data collected from key organizations in the industry. Because patterns of resource utilization change with shifts in prices of products and inputs whereby producers tend to allocate more resources to enterprises giving higher returns per unit of resource, gross margin analysis was conducted for the two competing crop enterprises in the area, tobacco and maize, so as to establish the relative economic profitability of the crops. Since tobacco is a tradable crop using tradable inputs, a policy analysis matrix for its production system was constructed so as to determine the private and social profitability of the crop, distortions in the markets and efficiency of resource use. Since PAM is a static model, sensitivity analysis was also conducted so as to explore the effect of potential changes in various factors that influence profitability of the enterprise. The analysis revealed that although tobacco production is potentially a profitable enterprise relative to the international market, smallholders are not protected and are paid less than the potential value of their product. The overall effect is a net taxation of tobacco production system at the farm level. Thus, the existing marketing arrangements under liberalization have made the enterprise appear uncompetitive with low resource allocation efficiency. There is therefore a net disincentive to produce the crop. Gross margin analysis indicated that tobacco was more profitable compared to maize but considering labour requirements, the former is a highly labour demanding crop with low returns to labour. Sensitivity analysis indicated that an increase in producer prices for tobacco would result into a sharp increase in producer incentives

and smallholders will be more protected with profits realized in excess of normal returns to domestic resources increasing. With a decrease in the parity price of the product, indicators depict that production of the crop becomes undesirable from the social point of view. However, efficiency indicators were insensitive to an increase in parity prices of tradable inputs implying that tobacco production will still be a desirable enterprise from the social point of view. The study concludes that although liberalization opened up markets by formally allowing private leaf dealers to invest in marketing of tobacco, operational arrangements have not provided adequate incentives to growers in terms of pre-harvest services and marketing efficiency in general. Many problems have been noted which indicated gross inefficiency in the entire production and marketing system. These problems alter costs and revenues in the input/output markets and prevent realization of potential income gains by tobacco growers.

DECLARATION

I, DENNIS CHRISTIAN RWEYEMAMU, do hereby declare to the Senate of Sokoine University of Agriculture that, this dissertation has not been submitted for a degree award to any other University and that it is my own original work.

Signature .....

Date 16/07/2001

COPYRIGHT

DEDICATION

This work is dedicated to my father, the late Nestor R. Rweyemamu and my mother, Mary C. Rweyemamu for their immense contribution to my education.

Last but not least, I pay tribute to members of my family, for their encouragement and patience throughout the period of my study.

3.3.2 Secondary data 41
3.4 Analytical techniques 42
3.4.1 Gross Margin Analysis (GMA) 42
3.4.2 The Policy Analysis Matrix (PAM) 43
3.4.2.1 Advantages of the PAM 44
3.4.2.2 Limitations of the PAM 45
3.4.2.3 The structure of PAM 46
3.4.2.4 Estimation of private costs and revenues 48
3.4.2.5 Estimation of social costs and revenues 49
3.4.2.6 Important policy parameters from PAM 50
3.5 Limitations of data collection 53
CHAPTER IV 55
RESULTS AND DISCUSSION 55
4.1 Introduction 55
4.2 Household variables and farm activities 55
4.2.1 Household gender and education levels 55
4.2.2 Farm activities 57
4.2.3 Crop production calendar for tobacco and maize 58
4.2.4 Problems encountered in tobacco production 59
4.2.5 Credit and financial requirements 61
4.2.6 Farm resource availability and use, investment and equipments 62
4.2.6.1 Land 62
4.2.6.2 Labour 63
4.2.6.3 Farm inputs 64
4.2.6.4 Farm equipments 66
4.2.7 Problems encountered in tobacco marketing 67
4.2.8 Other sources of income 70
4.3 Institutions/ organizations and their effect on the marketing system 71

4.3.1 The Primary Co-operative Societies (PCSs) 72
4.3.2 Tobacco commercial companies or private leaf dealers 73
4.3.3 The Co-operative Union (SAMCU) 74
4.3.4 Tanzania Tobacco Board (TTB) 75
4.4 Institutional free market arrangements and limitations 76
4.4.1 Interlocking contracts 76
4.4.2 Price setting mechanism 76
4.4.3 Tobacco classification 77
4.4.4 Input loan repayments 78
4.5 Crop enterprise competition 79
4.6 The PAM results 81
4.6.1 Interpretation of PAM results 81
4.6.2 Efficiency indicators of the tobacco production system 83
4.6.2.1 Nominal Protection Coefficient on Tradable Output (NPCO) 84
4.6.2.2 Nominal Protection Coefficient on Tradable Inputs (NPI) 84
4.6.2.3 Effective Protection Coefficient (EPC) 84
4.6.2.4 Private Cost Ratio (PCR) 84
4.7 Sensitivity analysis 85
4.7.1 Effects of an increase in producer prices. 86
4.7.2 Effects of a decrease in parity prices of products 87
4.7.3 Effects of an increase in parity prices of inputs 87
CHAPTER V 89
SUMMARY, CONCLUSION AND RECOMMENDATIONS 89
5.1 Introduction 89
5.2 Summary of major findings 89
5.3 Conclusion 92
5.4 Recommendations 93
REFERENCES 98
APPENDICES 107

LIST OF TABLES

Table 2.1: Tobacco production and yield trends, 1993-1999 28

Table 2.2: Farmer income from tobacco for the 1996/97 season 29

Table 2.3: Crop quality for Flue Cured Virginia (FCV), 1993-1999 30

Table 2.4: Crop quality for Dark Fire Cured (DFC), 1995-1999 31

Table 2.5: Tobacco production trends in Songea district, 1991/92 -1998/99 34

Table 3.1: Type of information gathered from secondary sources 42

Table 3.2: Structure of the Policy Analysis Matrix (PAM) 47

Table 4.1: Gender of household head of sample farmers 56

Table 4.2: Education level of sample farmers 56

Table 4.3: Most important crop enterprise for sample farmers 57

Table 4.4: Criteria used by sample farmers for ranking crops 58

Table 4.5: Problems encountered by farmers in tobacco production 59

Table 4.6: Provision of extension services to sample farmers 60

Table 4.7: Reasons for failure to repay loans by sample farmers 61

Table 4.8: Mode of land acquisition by tobacco farmers 63

Table 4.9: Source of fertilizer to sample tobacco farmers 65

Table 4.10: Problems encountered by farmers in marketing the crop 67

Table 4.11: Views on improving the classification system 69

Table 4.12: Other sources of income 71

Table 4.13: Gross margins for tobacco and maize, 1997/98 season 80

Table 4.14: Results of PAM for the 1997/98 season for tobacco 81

Table 4.15: Efficiency indicators of the tobacco production system 83

LIST OF FIGURES

Fig 1.1: Location of Songea Rural district within Ruvuma region 3

Fig 3.1: Conceptual framework for analyzing impact of market liberalization on cash crop production and marketing 37

LIST OF APPENDICES

Appendix 1: Farmer's questionnaire 107

Appendix 2: Check list for tobacco companies 113

Appendix 3: Costs and returns of maize per hectare, 1997/98 season 115

Appendix 4: Costs and returns of tobacco per hectare, 1997/98 season 116

Appendix 5: Derivation of social price for fertilizer 117

Appendix 6: Social price for pesticide (Thiodan dust) 1997/98 season 118

Appendix 7: Parity price for tobacco in Songea district, 1997/98 season 119

Appendix 8: PAM and efficiency indicators after sensitivity analysis 120

Appendix 9: Revenues, costs and profits of tobacco per hectare, ... 1997/98 season 121

LIST OF ABBREVIATIONS AND ACRONYMS

c.i.f	-	cost, insurance, freight
CRDB	-	Co-operative and Rural Development Bank
CRF	-	Capital Recovery Factor
DALDO	-	District Agriculture and Livestock Development Officer
DIMON	-	Diamon Leaf Commercial Company
DMTPL	-	Dimond Morogoro Tobacco Processors Ltd.,
DRC	-	Domestic Resource Cost
DFC	-	Dark Fire Cured
EPC	-	Effective Protection Coefficient
FCV	-	Flue Cured Virginia
f.o.b	-	freight on board
FSU	-	Food Security Unit
GM	-	Gross Margin
ITGA	-	International Tobacco Growers Association
MDB	-	Marketing Development Bureau
MOA	-	Ministry of Agriculture
NBC	-	National Bank of Commerce
NIC	-	National Insurance Corporation
NPCI	-	Nominal Protection Coefficient on Tradable Inputs

NPCO	-	Nominal Protection Coefficient on Tradable Outputs
PAM	-	Policy Analysis Matrix
PCS	-	Primary Co-operative Society
PCR	-	Private Cost Ratio
RALDO	-	Regional Agriculture and Livestock Development Officer
SAMCU		Songea and Mbinga Co-operative Union
SONTOP	-	Songea Tobacco Processors Ltd.,
STANCOM	-	Standard Commercial Leaf Company
TCC	-	Tanzania Cigarette Company
THB	-	Tanzania Housing Bank
TLTC	-	Tanzania Leaf Tobacco Company
Tshs	-	Tanzania shillings
TTB	-	Tanzania Tobacco Board
TTPL	-	Tanzania Tobacco Processors Ltd
ULT	-	Universal Leaf Tobacco
URT	-	United Republic of Tanzania.

CHAPTER 1
INTRODUCTION

1.1 Background information

In most of the Sub-Saharan African countries, there appears little immediate rural industrialization or other non-farm engines of growth. This implies that small holder agriculture is likely to remain the major source of rural growth and livelihood improvement for some time (World Bank, 1997; Platteau, 1996). Within this context, export crops have a key role to play. Export crops are defined as those cash crops, which are often traded on international commodity markets and/or are grown primarily for export markets (Shepherd and Farolfi, 1999). Development of smallholder export crop production has the potential to bring direct benefits to a large number of farm households. Even households that do not benefit directly, may reap indirect benefits through the increased demand for hired labour, often a valuable source of income for the poorest. Export crops are high value commodities, which are handled through reasonably concentrated marketing systems. Production usually relies on the use of some purchased inputs such as improved seeds, fertilizers and chemicals. They are internationally tradable, such that under ideal conditions, their domestic prices are closely linked to world market prices.

Tobacco is a cash crop grown worldwide in more than 120 countries in all continents, and most climates except the very coldest (ITGA, 1998). Farmers choose it because it is a profitable cash crop that can be grown in a wide range of soils and climatic conditions. In some countries, it is the only crop that thrives on lower fertility lands. Of recent, tobacco in Tanzania, has become one of the major agricultural export crops and

is the third largest foreign exchange earner after coffee and cashewnuts (BOT, 1999). Tobacco is the main source of income to 72,000 small holders and offers employment opportunities in both tobacco farms and in two tobacco processing factories in Morogoro and Songea. In addition, the crop provides raw material for cigarette manufacturing factories, thus offering further employment opportunities in the country (MDB, 1994). However, there is no doubt that tobacco production is a highly contentious issue in which critics hold sway, often on health and environmental grounds. Besides these concerns, however, tobacco growers play an important role by providing the necessary agricultural material on which the world's governments have built a substantial revenue base.

Before liberalization, tobacco (and other export crops) industry in Tanzania particularly at farm level, was found to be constrained by several factors. These included inefficient and untimely supply of inputs, over-reliance of farmers on loans for procurement of inputs, frequent changes influenced by political decisions, lack of technical packages, lack of storage facilities for inputs and crop produce, transport problems and competition with other crops such as maize for land, labour and inputs. Liberalization aimed at providing competition and promoting efficiency. This study examines some of the challenges facing smallholder tobacco production in Songea district under the current policies of market liberalization. It looks not just at activities in the crop output market but also at the performance of liberalized markets for seasonal inputs.

1.2 Description of study area

1.2.1 Geographical location

Songea Rural district is one of the four districts of Ruvuma region located in southern Tanzania. It lies between longitudes 35°15 - 36°45E and latitudes 9°15 - 11°45S. Altitude is between 600m-1500m a.s.l. (DALDO, 1999). The district borders Mozambique in the south, Mbinga district in the west and Iringa region in the north-west, Tunduru district in the east, Lindi region in the north-east and Morogoro region in the north (Fig. 1.1).

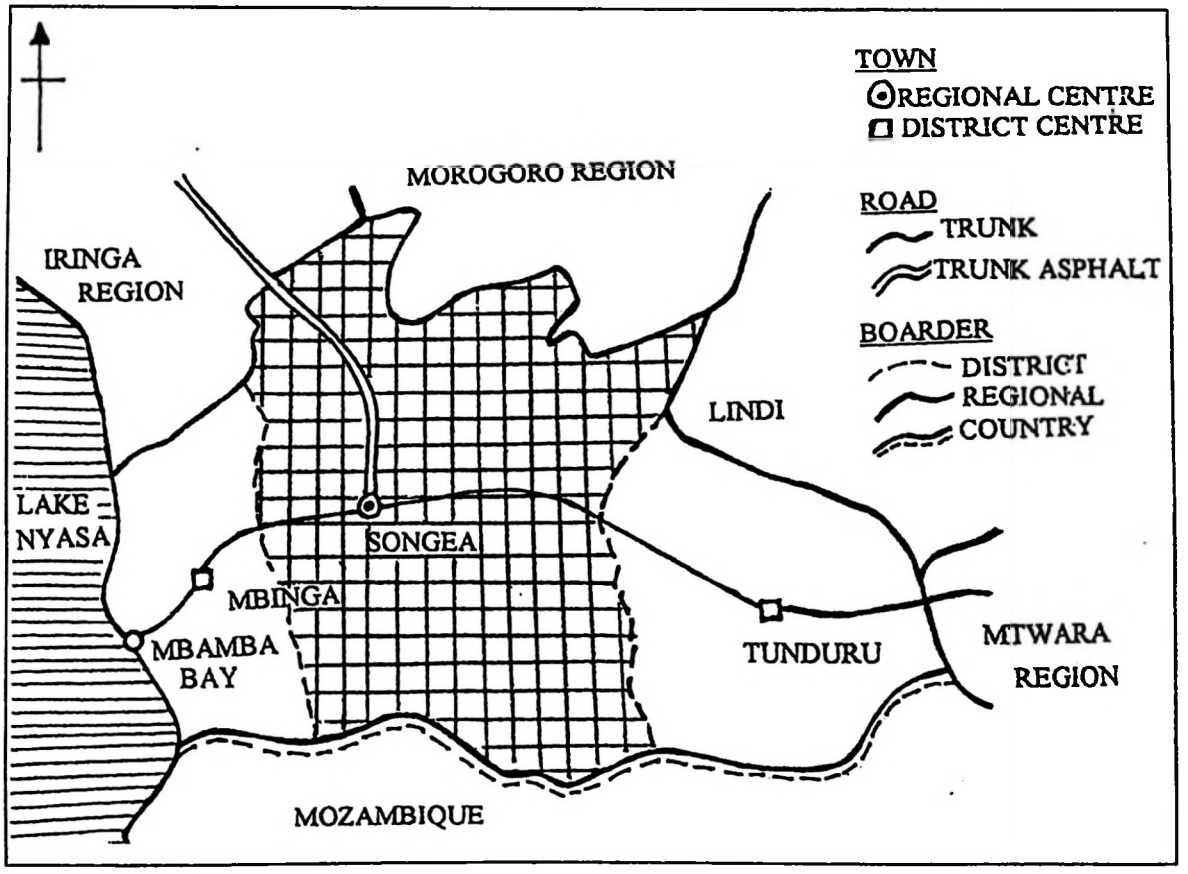

Fig 1.1: Location of Songea Rural district within Ruvuma region

Source: Samki and Harrop (1982)

1.2.2 Agro-ecological zones

Songea Rural district is divided into four main agro-ecological zones (Croon et. al., 1984). These are, (i) the low altitude zone in the south, (ii) the medium altitude zone conjoined with Mbinga district to the east (iii) another low altitude zone found in the north but receiving relatively less rainfall than the one in the south, and (iv) low-medium altitude in the north western parts of the district.

1.2.3 Climate

The climate of Songea district is predominantly sub-humid. The district has a mean annual temperature of 15° - 26° C. Rainfall is uni-modal, usually from December to April or May. Average annual rainfall lies between 1,000-1,500 mm (DALDO, 1999). Variability in rainfall plays a significant role in determining both annual and seasonal crop production patterns in the district.

1.2.4 Human population, land area and use

Songea district covers a land area of 35,058 km^2 of which about 32,000 km^2 is arable land (DALDO, 1999). The remaining area is not suitable for agriculture as it is either dry land, water logged, forest and/or mountainous.

Based on the 1988 population census, Songea district has a total population of 254,367 people of which about 124,181 were male and 130,186 were female. The district has about 138 villages contained in 37 wards and 7 divisions. The district currently has

about 95,785 farmers out of which only 40% are reached by extension staff (DALDO, 1999).

The household economy in Songea district is broadly grouped into agriculture and non-farm activity sectors. However, agriculture is the main and most reliable source of household income with about 90% of the district residents depending on it while the remaining 10% depend on non-agricultural activities.

1.2.5 Agricultural enterprises

Farmers in Songea district cultivate both cash and food crops, where tobacco and maize are the main cash and food crops respectively. While 99% of all the tobacco produced is sold, only 20% of the maize is sold and the remaining 80% is consumed at household level (DALDO, 1999). Other cash crops grown include; coffee and sunflower and small amounts of soybeans, cashewnuts and simsim. Other food crops include paddy, cassava, beans, finger millet, potatoes, and bambaranuts. Crops are either intercropped or grown in pure stand, but most farmers grow tobacco, paddy, cassava and potatoes in pure-stand while maize and beans are intercropped.

1.3 Problem statement and justification of the study

The importance of agriculture for economic growth in Tanzania is self evident. More than 80% of the economically active population is employed in agriculture. Agriculture production, which is dominated by smallholders, contributes more than 60% of the

GDP and agriculture exports make up about 60% of Tanzania's total exports (Ponte, 1996).

A move by the Tanzanian government to nationalize private property started soon after independence in 1961. For about 25 years, Tanzanian agriculture market organizations (i.e. co-operatives, crop authorities and parastatals) were mainly government entities. All facilitating functions such as provision of credit, insurance and legal protection, were also under the control of the government. These government organs were repeatedly restructured but failed to bring about satisfactory market performance. However, in the mid-1980s, it was argued that past inefficiencies on the part of state organs to provide quality services necessitated greater involvement of the private sector in agricultural marketing. State intervention was viewed as having led to non-competitive and high cost markets (Amani et.al., 1987). Withdrawal of state intervention was expected to allow entry of private firms, restore competition and lower transaction costs in the marketing system.

However, relatively little attention was given to the capacity of the private sector to operate in place of state organs or to the likely nature of service provision by this sector under the existing economic, social and political conditions. There have been concerns that the removal of state organizations although necessary, might not be a sufficient condition to guarantee effective marketing. Issues of actual forms, which competitive markets and private enterprises might take, constraints, speed and direction of their development are rarely examined (Jaffee and Morton, 1995).

Market liberalization policy has opened agricultural markets by formally allowing private investment. However, organizations providing legal, financial, information and related services are needed to support efficient operations of liberalized markets. In Tanzania, a few foreign companies have been engaged in the tobacco marketing system after liberalization. It is not known whether these companies have provided adequate incentives to farmers in terms of pre-harvest services and marketing efficiency in general.

As for input supply, a number of problems have come up after liberalisation. For example, input diversion of different forms, has been practiced by farmers. Prominent examples include, diversion of inputs meant for cash or export crops to food crops, sale of inputs to other farmers and sale of inputs to traders (Simon, 1998). Companies have gone into inter-locking contracts with farmers through primary cooperative societies, and since these contracts are binding farmers to specific companies in the input-output markets, they do not enhance real competition. Still, these contracts are not always abided to and there have been incidences of produce diversion whereby despite some farmers obtaining inputs from one company with which they have inter-locking contracts, they sell their produce to other companies. Many small holder farmers find themselves in an annual cycle of debt whereby year in year out they fail to repay their loans, while others practice strategic default by deliberately seeking to avoid loan repayment. In some cases when companies formed a cartel in response to the defaults, farmers and politicians perceived the move as a strategy of undermining competition and exploiting the farmers by offering low prices.

There is also a rising concern as for the trade off between tobacco and other crops particularly maize in terms of resource allocation. Farmers usually adjust to relative market opportunities facing different crop enterprises (Ellis, 1988). The sensitivity is highest for annual crops, which can be easily substituted for each other in the same area of land. If producer prices for a certain crop go up (all other factors remaining constant) farmers can shift some or all of their production resources from another crop/activity to produce more of that crop and earn higher income (Fones, 1987).

In the light of arguments presented above, it is evident therefore that the production response as far as tobacco is concerned is somehow disappointing to the more enthusiastic proponents of market liberalization. Problems noted might be an indication of market failure or gross inefficiency in the marketing system, which could be a result of a number of reasons (Shapiro and Staal, 1992). First, market failure could be due to imperfect competition in which a small number of buyers is able to influence aggregate demand and therefore affect market prices. Secondly, failure may result from externalities in which producers are unable to capture the full benefits for the tobacco they produce. Finally, "institutional" market failures can be experienced in a situation where markets do not function efficiently because of inadequate development due to lack of infrastructure and institutions. Market failure alters costs and revenues and prevents the realization of potential income gains. Prices that farmers come across are altered and this affects their income and welfare. Price incentives are captured in commodity, domestic factor and input markets. It is therefore important to examine the effects of liberalization on the economic incentives of tobacco growers and identify

institutional forms of market failure. This study will try to identify patterns of incentives and analyze the efficiency and comparative advantage of smallholder tobacco production under the liberalized market economy.

1.4 Objectives of the study

1.4.1 General objective

The general objective of the study is to undertake an economic analysis of smallholder tobacco production and marketing in Songea district under a liberalized market economy.

1.4.2 Specific objectives

(1) To trace the role of institutions and organizations and identify institutional forms of market failure and their effects in the system following liberalization.

(2) To analyze the economic efficiency of tobacco production and the degree of distortion in the input/output markets under the liberalized market economy.

(3) To examine the relative profitability of maize, the most important alternative crop enterprise, that competes with tobacco under the new market environment.

1.5 Hypotheses

The study will be governed by the following hypotheses

(1) Under market liberalization policy, there is a net taxation of tobacco production at the farm level.

(2) Under market liberalization policy, the alternative crop enterprise (maize production) is more desirable compared to tobacco, from the economic point of view.

1.6 Organization of the dissertation

The dissertation is organized into five chapters including this introduction. Chapter two presents a review of literature and an overview of tobacco industry in Tanzania in general, and in the study area in particular. Chapter three presents and discusses the methodology employed in the study. Empirical results of the case study are presented and discussed in chapter four. The summary of major findings, conclusion and recommendations are presented in chapter five.

CHAPTER II
LITERATURE REVIEW

2.1 Introduction

This review provides a basis for considering the market as a system of integrated institutions and organizations within the available infrastructure and within the policy framework in the history of agricultural markets in Tanzania. The first part looks at the major constraints or factors affecting smallholder production and marketing of agricultural crops both before and after liberalization and farmers response to policy changes. The second part reviews the current state of tobacco industry in the country and in the study area.

2.2 Market institutions and organizations

Market organizations are entities such as firms, individual agents and co-operatives that perform marketing functions such as collecting, transporting, processing, retailing and exporting of agricultural commodities (Temu, 1999). Basically the objective of these entities is to maximize their net income subject to institutional and infrastructure constraints. Institutions are tools sometimes referred to as "rules of the game". These are used to co-ordinate organizations. Since the existence of a market depends on the institutional rules that influence exchange, organizations undertake strategies to optimize institutional structure. Institutions change when fundamental conflicts between organizations might be altered internally and boundaries redefined to minimize transaction costs, including the cost of acquiring market information, the cost of negotiating a deal for each transaction, and the cost of uncertainty (Williamson, 1993).

Identification of alternative institutions and organizations is therefore important in improving the performance of the market and communicating these results to market participants.

2.3 Marketing agricultural commodities

Agricultural marketing has been defined in various ways by different authors depending on the school of thought. Kohl and Uhl (1990) defined agricultural marketing as the performance of all business activities involved in the flow of goods and services from the point of initial agricultural production until the same goods are in the hands of ultimate consumers. More recently, marketing has been defined as the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create and maintain exchanges that satisfy individual, organizational, and societal goals, in the systematic context of global environment (Czinkota, Katobe and Mercer, 1997). These definitions imply that, the performance of a marketing system will depend very much on the efficiency by which marketing functions are undertaken.

Changes in the policy framework of markets will alter the prices which economic agents such as farmers, traders, processors, wholesalers, retailers and consumers face and hence affect their income and welfare. Thus any intervention in commodity markets usually alters economic incentives to producers and consumers. Analysis of intervention of commodity markets usually concentrates on price and macro-economic factors. However, in the context of developing countries, non-price factors that affect elements

of sectoral policies and services are equally important (Shapiro and Staal, 1995). These include, sectoral policies on institutions, infrastructure, investment, rural development, labour, land and capital together with services such as credit, research, extension and market information.

2.4 Smallholder cash crop production

The rural economy of many African countries is based on cash crop production. As noted earlier, cash crops are grown primarily for marketing with only a small proportion of the produce being kept back for home consumption/use. This definition encompasses a wide range of crops. Most cash crops share some common characteristics. First, they are high value commodities handled through reasonably concentrated marketing systems. Secondly, production even by smallholders, relies on the use of some purchased inputs. Finally, they are also internationally tradable, such that their domestic price is closely linked to a world market price mediated through the domestic exchange rate (Dorward et. al., 1998).

The World Bank (1981) recognized a number of contributions that cash crops can make to agricultural development at household level. Cash crops are the nucleus around which extension, input supply and marketing are built. Food crops often benefit from residual fertilizers in the soil when they follow cash crops in rotation. Cash crops also allow the purchase of productivity - enhancing equipment and the accumulation of capital for other investments. At the aggregate level, if cash crop producers have a food

crop deficit, this creates a reliable additional demand for the surpluses of food crop producers.

It should be noted that critical issues facing cash crop production under market liberalization are somewhat different from those facing food crops. Many staple food crops in Sub-Saharan Africa are essentially non-tradable internationally, as low value-to-weight ratios preclude profitable trade and/or because they are not widely consumed outside the continent (e.g. white maize). Even where international trade might exist (as for example with rice and maize) intra-country transport costs may insulate prices within producing regions from movements in the world market price. Some of the core requirements of the reform policies including real exchange rate depreciation coupled with the removal of subsidies on purchased inputs have dramatically reduced profitability of input use of most major food crops. Indeed such cases of reduced profitability have been reported in Tanzania (Hawassi et al., 1998). Changes in relative input-output price ratios have been less adverse for cash crops than for food crops. In general therefore, use of purchased inputs remains profitable for cash crops as compared to food crops.

2.5 Production response to changes in commodity markets

Markets can potentially contribute to the development process of crops or any other commodity in two ways. First, they can provide a way to allocate resources ensuring the highest value production, and secondly they may stimulate growth by promoting technological innovation. However, where research is particularly concerned with the

nature and implications of the relationship between markets and production, a systematic approach is required.

Theory suggests that there is no single factor, which determines farmer's decision in the production and resource allocation process (Jones and Muthura, 1989). Under similar arguments, Ellis (1982) contends that, it is not price policy alone that should be considered in explaining marketed output trends in Tanzania. In addition, Ellis denies the use of purely quantitative price relationships in explaining the trends, even though he concedes that the evolution of marketed output in Tanzania broadly followed trends in relative producer prices. Minde (1991) indicated that produce prices were among the most important and effective tools for influencing agricultural output. His analysis on the factors affecting agricultural marketable surplus in Tanzania concluded that a complex web of economic, social, institutional, structural and environmental factors interact to determine the amount of marketable output. Lipumba (1977) in his study on price responsiveness in Tanzania argues that, although peasant farmers should respond efficiently to price changes, the cultural and institutional frameworks in which these farmers are working are limited to the extent that there is no significant response.

Mwamfupe (1987) studied the factors, which affect agricultural decision-making and observed that, the choice of a crop was to a greater extent influenced by the "quest for security" and hence risk aversion took precedence over profit maximization. He further noted that, farmers view production for the market as a source of additional risk due to low producer prices, poor supply of inputs and the inefficient marketing and transport

systems. He then concluded that, these in total had made farmers abandon or lower cash crop production in favour of food crop production. These findings concur with predications by Ellis (1982) that under various farm production constraints, it would not be surprising if Tanzanian peasants were observed to retreat into subsistence economy where at least their interaction with the state is minimized.

More recently Ashimogo (1997) in a study on marketed surplus in Sumbawanga district, reported that price did not seem to be an important factor determining the level and timing of marketed surplus, especially for large farmers. Relative to large farmers, price was observed to be a significant factor for small-scale farmers. The study notes that price is an inefficient instrument to motivate agricultural producers in increasing production if there is no congruence between increases in prices of farm inputs and increases in producer prices, and if there is no mechanism to ensure that the surplus accrued from producer prices benefits all producers. The study further highlights that market liberalization policies instituted since the mid-1980s down played the role of structural constraints such as poor roads, lack of market information and inadequate extension services in promoting productivity.

In summary we note that, although price can be the main machinery which accounts for the production trends of agricultural products, much needs to be noted on non-price attributes. It is because of this, that apart from dealing with price factors like relationships of production costs, producer prices and returns per hectare, special attention should also be paid on effects of non-price factors on smallholder cash crop

production. Using the production and marketing of tobacco in Songea district, this study attempts to address this objective.

2.6 Crop enterprise competition

Farmers usually adjust to relative market opportunities facing different crop enterprises (Ellis, 1988). The sensitivity is highest for annual crops, which can easily be substituted for each other. However, Adesimi (1990) reports that farmers could not proportionately devote more of their land to those crops, which resulted in the highest gross margin. His analysis indicated that, crop enterprises, which had the highest gross returns and gross margins, were the ones, which had the highest fixed and variable cost outlays. In some areas therefore, farmers opted to plant crops (such as maize) which gave lower gross margins per hectare. He thus concluded that other considerations such as food security, availability and costs of inputs played a significant role in production decisions and hence on the general levels of output.

Simon (1998) in his study on tobacco based farming systems of Tabora district, observed that despite the fact that tobacco is a high labour demanding crop, it has had a positive effect on maize production. There are some farmers who take advantage of institutional and other benefits that accrue to maize through tobacco production. For example, tobacco producers are allowed to take maize inputs on credit from tobacco buying agents. Labour employed in tobacco production is also used in maize production. The study therefore found out that maize production increases with tobacco production, although the latter gives a higher gross margin.

2.7 Agricultural markets in Tanzania before liberalization

2.7.1 Market organization

Prior to Liberalization, co-operatives and parastatals were the major marketing organizations in farm-input distribution and farm produce marketing in Tanzania. Before independence, co-operatives were formed at the initiative of members while the government provided information, education and training, inspection and supervision (MoA, 1999). Direct government intervention in agricultural marketing became pronounced following the 1962 Agricultural Product Act (Mlay, 1988). By the mid-1970s co-operatives became fully dependent on the government budget, which resulted into a severe financial burden on the government and the economy in general. In 1976, co-operatives were abolished and crop authorities instituted to assume marketing functions. Increasing overhead costs and marketing inefficiency of crop authorities led to the re-establishment of co-operatives in 1982. However, the revived co-operatives could not resolve the inherent problems of inefficiencies due to rent seeking behavior, political interference and lack of necessary infrastructure. This resulted into high financial losses to the whole system, as the huge amounts of credit advanced to agriculture input suppliers, marketing co-operatives and crop authorities under government directives could not be recovered. In addition, farmers were dissatisfied by the performance of these organizations. This was reflected by the growth of parallel markets, and through the use of illegal means such as bribes and other informal deals, which led to high transaction costs.

2.7.2 Facilitating services

The problem of seasonal financing for smallholder cash crop production is not new. Indeed, providing seasonal credit to smallholders has been a major concern of the government since independence. It is well known that the rural sector is disadvantaged for being extremely vulnerable to the risks of nature and for the high intermediation costs which results from the small size of operators and their remoteness from the location of financial institutions.

Prior to financial sector reforms that took place in the early 1990's, the National Bank of Commerce (NBC), the Tanzania Housing Bank (THB), and the Co-operative and Rural Development Bank (CRDB) were the sole formal credit organizations in Tanzania. In order to solve some of the rural development problems, the government through the Bank of Tanzania, also established special funds such as the Rural Finance Fund. Since the primary marketing functions were for some time handled by co-operatives and crop authorities, these organizations were the beneficiaries of the lending programs and they provided seasonal credit to smallholders for the purchase of inputs. However, credit organizations and special funds did not achieve the intended results of supporting rural financing. Rural marketing organizations such as co-operatives were frequent loan defaulters. Political interference and/or poor management are among the major contributing factors, which led to low loan recovery rates.

Insurance and legal services in any country can play a substantial role in agricultural production and marketing systems. Insurance services in Tanzania have always been

monopolized by the National Insurance Corporation (NIC) which, up until now is a government parastatal. However, the role of NIC in supporting agriculture production and marketing has always been limited. As for legal services, the major role of the government was in developing a legal framework for the establishment of co-operatives and other supporting organizations. However, informal transactions cannot be enforced easily by the formal legal system. Customary laws and regulations are used for enforcement and as a result smallholder farmers usually performed exchanges based on trust rather than on formal documentation.

Market information systems in Tanzania became active in the mid 1980's following the establishment of the Marketing Development Bureau (MDB) and the Food Security Unit (FSU). These entities were partially independent, but ran under the umbrella of the Ministry of Agriculture (MoA). The MDB had the responsibility of reporting open market prices for food crops in various regions, reviewing agricultural commodity markets and market surveillance. FSU acts as an early warning unit of food security situations in the country. Both the MDB and FSU have recently been restructured under the auspices of the Agricultural Sector Management Program (ASMP).

2.8 Agricultural marketing reforms in Tanzania

Tanzania's agricultural market reforms have been similar to reforms in other developing countries. The aim was to unleash the creative forces of private entrepreneurship, in particular within smallholder agriculture and indigenous trading systems. With respect

to agricultural marketing systems, state marketing organizations were to be reformed, so as to operate on a sounder commercial basis and the private sector permitted to enter marketing systems to provide competition and encourage efficiency. The World Bank (1994) focusing particularly in Sub-Saharan Africa argued that "a top priority for reforms in Africa is to increase competition through domestic deregulation, trade reform and the privatization of public enterprises". The framework for the reforms to be implemented in the agriculture sector was provided by the World Bank recommendations included in the 1983 Tanzania Agriculture Sector Report (World Bank, 1983). Most of the recommendations were included in the Agriculture Policy of Tanzania (URT, 1983). One of the items of the core requirements listed in the World Bank document was legalization of the private sector in agricultural input and output marketing and transport (World Bank, 1993).

The 1991 Co-operative Act established the policy and legal framework for co-operatives after liberalization. The act gives total control of co-operatives to the members following the withdrawal of the government from operating them (Launder, 1998). Co-operatives are now supposed to compete at equal footing with private traders. Currently co-operative unions no longer receive government protection, nor do they have credit guarantees for inputs and crop purchases or government help in enforcing their financial accountability to member Primary Cooperative Societies (PCS). PCS have the autonomy to act as independent organizations and have the option to sell produce to either the co-operative union or to private traders.

With regard to cash crops, state control remained in place until 1993 when private marketing agents were legally allowed to compete with public marketing organizations in marketing of export crops (MDB, 1994). The institutional reforms for export crops concentrated on the single channel marketing system. Arguably, this was due to the structure of export crop marketing, which required some type of vertical integration and offered few opportunities to the producers for alternative selling arrangements. The reluctance of the government for full liberalization hinged heavily on the lack of control of the foreign exchange earned from the exported crops. However, where a large scale private sector was involved in the production of an export crop, the government continued to enhance the role of the private sector in the marketing of the produce. In most cases where the private sector was involved in crop exporting, it was allowed to retain part of the foreign exchange earned (Turuka, 1995).

Despite the significance of fertilizer in obtaining higher crop yields, fertilizer use per unit area in Tanzania is low, ranging between 4 and 9 kg/ha of cropped land (Mahundaza et.al., 1992). This was the situation before complete removal of fertilizer subsidies in the 1994/95 cropping season. The government phased out subsidy in fertilizer from 78% in 1990/91 to 0% in 1994/95 cropping season (Hawassi et.al., 1998). Although there are a number of reasons for rationalizing reforms in the fertilizer pricing policy, the most frequently cited justification for the removal of fertilizer subsidy has been related to distribution inequity, budgetary burden, resource misallocation and failure of the government to supply adequate amounts of fertilizer to meet demand at subsidized prices (Ellis, 1992; Turuka, 1995).

An increase in fertilizer prices as a result of fertilizer subsidy removal reduced fertilizer use by smallholder farmers. Moreover an increase in the fertilizer price relative to crop prices is likely to change the level at which efficiency in smallholder production is attained. Assuming a competitive market environment, optimal efficiency in the production process is achieved if the value of marginal product of fertilizer input equals the marginal factor cost of the fertilizer input. The importation and distribution of inputs (especially fertilizer) was now open to the private sector, and the aim was to make inputs more available and encourage the development of alternative input distribution channels.

As for facilitating services after reforms, not much can be commended as far as smallholder farmers are concerned. Several private banks have been established in urban areas that cater mainly to off-farm big business. The new banks are not yet ready to provide services to smallholder farmers. The Cooperative and Rural Development Bank (CRDB) and the National Bank of Commerce (NBC) have been privatized. The changes aim at having the banks attain full commercial status. Still even these banks have not been effective in providing credit to smallholders. Changes in insurance and legal services have also not impacted smallholder farmers.

2.9 Tanzania's experience with cash crop market liberalization

Up to the early 1990's, institutional reforms for export crops had not diverted from the single channel marketing system. Amani (1992) argued that, this is because of the

structure of export crop marketing, which requires some vertical integration and offers few opportunities to producers for alternative selling arrangements. For example, unlike food crops, export crops require further processing before exporting and this requires a close link between the production, processing and exporting functions.

A study conducted by Poulton *et al* (1997) in Mtwara region, Tanzania, found out that after liberalization of procurement and export of cashewnuts, a total of 40 companies participated in cashewnut export. These companies were reported to be either foreign owned, or owned by Tanzania-Asian businessmen with good international trading contacts. They were able to mobilize large sums of short-term finance, to fund the purchase of nuts and make contracts with cashew processors or commission agents in India. Although there was a largely held perception that a small group of traders are colluding to fix the price paid to farmers for their cashewnuts, the study did not confirm this; instead, it was found that a fair degree of price competition between buyers at the village level existed. Producers not only had they to decide whether or not to sell at the prices offered, but also had to reach decisions without knowing (f.o.b) prices or traders legitimate marketing costs and were therefore wary of the information supplied to them by cashewnut buyers. The study concluded that, there were serious imperfections in the competitive market model.

A study by Kakwemeire and Mbiha (1999) on cotton marketing in Kahama district found that pricing of seed cotton is not fully liberalized. An indicative price is set jointly between cotton buyers and board officials. This is intended to be a guide to buyers for

setting their prices. Buyers may vary the price, but are not allowed to pay below the minimum price agreed upon by the joint meeting. An implication of this price setting procedure is that farmers who are not cooperative society members are not represented and one could not rule out the possibility of collusion between buyers with regard to price setting. Another setback is that farmers make their production decisions before knowing the possible price at which they are likely going to sell their produce. Given the vagaries in the international market price, one may be inclined to argue that farmers are not producing in response to market situations.

The study also found that, the various requirements and fees which cotton buyers are subjected to, are effectively increasing the marketing transaction costs which in turn contribute to depressing the prices offered to farmers. A conclusive remark in the study is that, cotton farmers are not positively protected. The current market policy renders the cotton farming activity unprofitable and therefore less competitive although it is potentially profitable, and has a long run comparative advantage.

Temu (1999) in a study on coffee marketing after liberalization, found that the industry in Tanzania, has responded much more successfully since liberalization. The market has become much more competitive and significant developments have taken place. Producer prices are higher than before and marketing margins have decreased mainly due to better processing technology and competition between traders. There has been improvement in both physical and human capital in the sector. The success is mainly due to development of organizations and institutions that solved some of the

"immediate" structural problems that existed prior to liberalization. However, Temu argues that, there is still untapped potential for further decrease in marketing costs through better co-ordination in assembling coffee from farmers.

2.10 A review of the current state of tobacco industry in Tanzania

The tobacco industry in Tanzania is comprised of the following key players; the producers, traders, primary crop processors, leaf dealers and the cigarette manufacturers. Before 1993, tobacco production and marketing activities were state controlled, with a parastatal organization, the Tanzania Tobacco Board (TTB) having the monopoly as the sole buyer, processor and seller of all tobacco in Tanzania. Following the inception of the liberalization policy, the tobacco industry's commercial activities became subsequently open for the participation of the private sector. The government retained its regulatory role, entrusting it upon the TTB.

2.10.1 Tobacco production

There are two major types of tobacco being produced in Tanzania. First, there is the Flue Cured Virginia (FCV) grown mostly in the western area of the country (Tabora, Rukwa, Shinyanga, Singida and Kigoma regions) and the southern highlands (Iringa, and Mbeya regions). FCV tobacco contributes an average of 82% of all tobacco output in the country (TTB, 1999). The other type is the Dark Fire Cured (DFC) grown in the south-western part of the country (Ruvuma region) which contributes an average of 18% of the total production in the country. An insignificant small volume of Air

Cured/Barley tobacco is produced on the eastern part of Tanzania (Tanga and Morogoro regions) although the area has a high potential for tobacco production.

Production is mainly by small-scale growers who are now about 140,000 (TTB, 1999). A few large-scale growers are found in Iringa region. Small-scale growers are organised into primary co-operative societies, which in turn are affiliated to co-operative unions. The large-scale growers in Iringa are affiliated into an association called Southern Highlands Tobacco Growers Association.

Input supply to growers is mostly effected through interlocking contracts between growers, co-operatives societies and private tobacco leaf dealers. Leaf dealers engaged in the contract farming arrangements with growers include;

(1) Tanzania Leaf Tobacco Company (TLTC)

(2) Dimon Leaf Commercial Company (DIMON)

(3) STANCOM Tobacco Services (Tanzania) Limited, and

(4) Woodslide Company Limited

Field tobacco prices are negotiated and agreed upon between growers (through their apex body) and leaf dealers in the Tanzania Tobacco Council and such prices are minimum indicative, because no leaf dealer is allowed to pay less than the agreed prices.

Total Tobacco production by volume (FCV + DFC) more than doubled from 25.431 million kgs in 1993 to 51.227 million kgs in 1997 but then dropped by 52.5% (from the 1997 level) to 24.345 million kgs in 1999 (Table 2.1). FVC's yields per hectare increased by 12.8% from 812 kgs produced in 1993 to 916 kgs in 1996 but then dropped by 38.2% (from the 1996 level) to 566 kgs in 1999. DFC's yield per hectare also increased by 54% from 432 kgs in 1993 to 666 kgs in 1996.

Table 2.1: Tobacco production and yield trends, 1993-1999

Year	Area planted (ha)			Quantity sold (10^6kg)			Yield (kg/ha)	
	FCV	DFC	Total	FCV	DFC	Total	FCV	DFC
1993	26,905	8,312	35,217	21.838	3.593	25.431	812	432
1994	26,862	8,242	35,104	18.270	4.360	22.630	680	529
1995	27,157	10,100	37,257	23.415	5.183	28.598	862	513
1996	29,573	12,430	42,003	27.101	8.279	35.380	916	666
1997	49,580	22,146	71,726	41.274	9.953	51.227	832	449
1998	55,549	23,105	78,654	32.499	5.482	37.981	585	237
1999	31,565	19,237	50,802	16.11	8.235	24.345	510	428

Source: Tanzania Tobacco Board, (1999)

The sudden surge in both, area planted and quantity of tobacco sold in the year 1997, coincides with the period when leaf dealers were actively involved in the marketing system including the provision of pre-harvest services following the inception of market liberalization. Tobacco growers therefore could have shifted resources towards the crop. However, following escalating conflicts between stakeholders in the industry,

huge outstanding debts, poor sales and net-profits realized, growers have become highly demoralized and this could account for the downward trends observed during 1998 and 1999.

Cross country comparison of farmer's income from tobacco leaf for the 1996/97 season shows that after India, farmers in Tanzania followed in earning the least income of US $ 1.15 (Table 2.2). These low prices do not compare commercially with costs of production. This could be a result of a number of factors including inefficiency in the input/output marketing system.

Table 2.2: Farmer income from tobacco for the 1996/97 season

Country	Income (US $/kg)
Argentina	1.74
Brazil	1.74
Canada	2.95
India	1.10
Malawi	1.56
Tanzania	1.15
United States	3.67
Zimbabwe	2.33

Source, ITGA (1998)

FCV quality dropped over the period of evaluation. Production of top and medium grades went down at an average annual rate of 1.2% and 1.1% respectively while low grades increased by an average annual rate of 2.2% (Table 2.3).

Table 2.3: Crop quality for Flue Cured Virginia (FCV), 1993-1999

Year	Top grades		Medium grades		Low grades		Total Production
	(10^6 kg)	(%)	(10^6 kg)	(%)	(10^6 kg)	%	(10^6 kg)
1993	5.415	24.84	8.842	40.56	7.543	34.60	21.800
1994	4.202	23.00	7.125	39.00	6.943	38.00	18.270
1995	3.512	15.00	8.897	38.00	11.005	47.00	23.414
1996	6.321	23.30	10.443	38.50	10.363	38.20	27.127
1997	10.608	25.70	15.09	36.60	15.577	37.70	41.275
1998	5.377	16.54	11.494	35.36	15.632	48.10	32.503
1999	2.828	17.55	5.475	33.99	7.807	48.46	16.110
Total	38.263	21.20	67.366	37.30	74.870	41.50	180.499

Source: Tanzania Tobacco Board, (1999)

DFC tobacco quality increased at fluctuating rates from 1995 to 1997 with an abnormally high out-turn of top grades when tobacco classification was being undertaken by the Songea union classifiers. According to TTB, union classifiers deviated from the normal classification standards, hence when TTB resumed classification in 1998 and rectified the standards, the real quality out-turn realised in 1998 indicated a decline of top grades from 72% in 1997 to 60% in 1998 whereas,

medium and low grades increased from 12% to 13% and 16% to 27% respectively (Table 2.4). In 1999 the crop quality increased compared to the 1998 levels. While top and medium grades increased by 3% and 4.5% respectively, low grades went down by 7.6%.

Table 2.4: Crop quality for Dark Fire Cured (DFC), 1995-1999

Year	Top grades		Medium grades		Low grades		Production
	(10^6 kgs)	(%)	(10^6 kgs)	(%)	(10^6 kgs)	(%)	(10^6 kg)
1995	3.161	60.99	0.570	11.00	1.452	28.01	5.183
1996	6.043	73.00	0.827	10.00	1.409	17.00	8.279
1997	7.166	72.00	1.194	12.00	1.593	16.00	9.953
1998	3.289	60.00	0.712	13.00	1.482	27.00	5.483
1999	5.196	63.10	1.441	17.50	1.598	19.40	8.235
Total	24.855	66.93	4.744	12.78	7.534	20.29	37.133

Source: Tanzania Tobacco Board, (1999)

2.8.2 Tobacco marketing arrangements

Farmers sell their crop by a "Private Treaty" system in which tobacco is sold in field standard grades fixed by the Tanzania Tobacco Board (TTB). TTB's classifiers conduct the classification. Field grade prices used are not below those negotiated and agreed upon by growers (through their Apex body) and buyers or leaf dealers in the Tanzania Tobacco Council. Each leaf buyer, after processing his tobacco, also sells the crop by private treaty system to cigarette manufactures in the domestic and/or export markets.

2.8.3 Primary processing and cigarette manufacturing

The government's policy directs that all tobacco produced in Tanzania must be processed in the country (TTB, 1999). Currently, there are three primary processing plants. First, Tanzania Tobacco Processors Ltd (TTPL), which is situated at Morogoro, with a processing capacity of 40 million kgs, in an eight months processing period. Second, Dimon Morogoro Tobacco Processors Ltd (DMTPL), also situated in Morogoro, with a processing capacity of about 20 million kgs in an eight months processing period. Finally, Songea Tobacco Processors Ltd (SONTOP) situated in Songea district, Ruvuma region, with a capacity of 12 million kgs per eight months processing period. As far as cigarette manufacturing is concerned, there are two manufacturers in Tanzania, namely Tanzania Cigarette Company (TCC) and Zanzibar Cigarette Company (ZCC).

2.8.4 Current overall industry performance

Tobacco industry in Tanzania is now in a situation whereby production is falling in both volume and quality. Tobacco growers are heavily indebted to tobacco companies as a result of accumulated input debts over years. This situation has led to imposition of harsh repayment programs (e.g. 50% retention of tobacco sales to repay past and current debts in the 1999 crop season), which has caused a lot of complaints from farmers. Input sources and supply to growers for future seasons is very uncertain. It is not yet clear if Tobacco companies will undertake the activity as they did previously. Due to low levels of sales and the corresponding low earnings, growers don't seem to be financially capable to discharge this requirement on their own. Growers are highly

demoralized to grow tobacco, following the effects of outstanding debt repayment measures that have been instituted.

Comparing the available processing capacities of over 80 million kgs to the present production level of 26 million kgs, there is an idle capacity of over 50 million kgs. The situation will be worse if production falls further in the future seasons.

2.11 Tobacco industry in Songea district

The type of tobacco grown in Songea district is the Dark Fire Cured (DFC). Key players in the industry (since liberalization until the 1998/99 season) were smallholder farmers, primary co-operative societies, the Songea and Mbinga Co-operative Union (SAMCU) and private leaf dealers. In the 1998/1999 season, leaf dealer's withdrew from the district after failing to enter into contractual arrangements with growers through primary co-operative societies (PCS) and therefore SAMCU is currently the sole dealer in the district, working through PCS.

Input supply to growers is through interlocking contracts. Leaf dealers that were engaged in contract farming arrangements with growers in the district (before the 1998/1999 season) were, TLTC, DMTPL, STANCOM, UNIAFRICO, WOODSLIDE, and SAMCU. Minimum indicative field tobacco prices were those negotiated in the Tanzania Tobacco Council. Marketing arrangements are similar to elsewhere in the

country whereby tobacco is sold in field standard grades fixed by TTB, and where TTB's classifiers conduct the classification.

Total production increased steadily from 3,375 tonnes in the 1992/93 season to 9,190 tonnes in the 96/97 season and then dropped in the 97/98 season to 7,105 tonnes. In the 1998/99 season 8,312 tonnes were produced (Table 2.5). Again this sudden surge in production in the 1996/97 season could be a result of active involvement of private leaf dealers in the marketing system, which increased incentives to growers in the early seasons of liberalization.

Table 2.5: Tobacco production trends in Songea district, 1991/92 -1998/99

Season	91/92	92/93	93/94	94/95	95/96	96/97	97/98	98/99
Area (ha)	6,800	6,750	7,801	8,175	8,550	8,760	9,135	12,750
Production (t)	3,400	3,375	4,276	4,794	8,000	9,190	7,105	8,312

Source: DALDO Songea (1999)

Songea Tobacco Processors Ltd (SONTOP) is a processing plant found in Songea district. Up until the 1996/97 season, the plant was capable of processing all the tobacco produced in Ruvuma region. Currently, the plant is owned on a joint venture basis with 60% of the shares belonging to SAMCU and 40% to a private leaf dealer - Woodslide Company Ltd.

The overall industry performance in Songea district in terms of production and marketing is also not satisfactory. There are a number of institutional and infrastructure constraints that contribute to the poor performance. The critical issue has been that of growers being heavily indebted to the leaf dealers (tobacco companies) as a result of accumulated input debts over years. Up to the 1997/98 farming season, primary societies in Songea district were indebted a total of Tshs. 2,003,714,795.00 (equivalent to US$ 3,010,841) in respect of tobacco production inputs advanced to them by tobacco companies. The debt balances for each individual company were as follows:

- TLTC (Tshs. 878,850,570 or US$ 1,320,587).
- DIMON (Tshs. 502,196,987 or US$ 754,616).
- STANCOM (Tshs. 622,667,238 or US$ 935,638).

CHAPTER III
METHODOLOGY

3.1 Introduction

This chapter presents the methodology on which the analytical part of the study is based. It starts by presenting the conceptual framework of the study, followed by a section on sources of data that describes the procedures used to collect data and the analytical techniques employed. The last section highlights the limitations encountered during data collection.

3.2 Conceptual framework

The objective of this study is to analyze the efficiency of production, degree of distortions in the markets, and patterns of incentives for smallholder tobacco growers under liberalization policy. A conceptual framework for analyzing the impact of market liberalization on cash crop production and marketing was developed (fig 3.1).

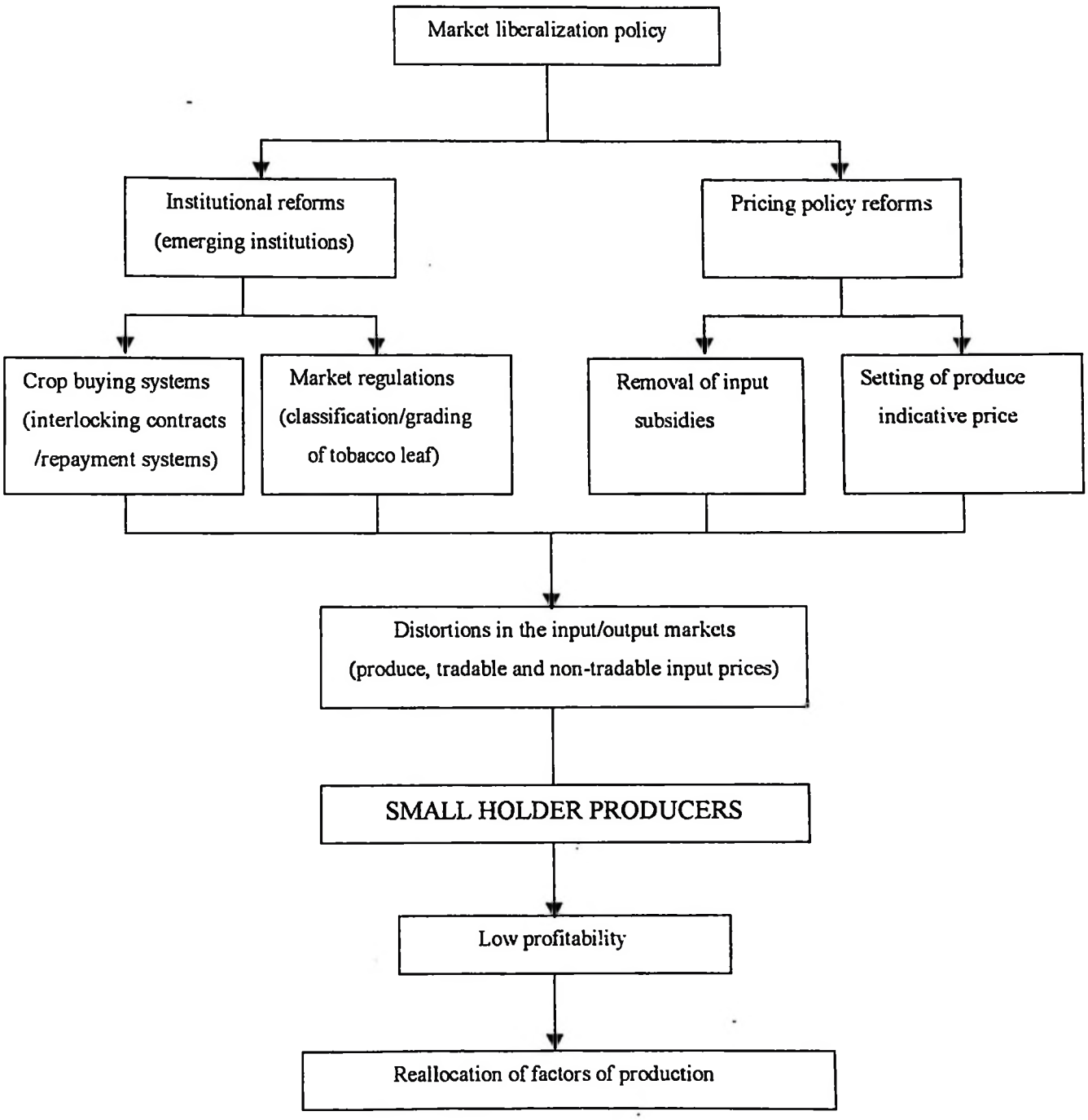

Fig 3.1: Conceptual framework for analyzing impact of market liberalization on cash crop production and marketing

Policy in the context of production and marketing of agricultural commodities can be defined as, those interventions, which alter the prices farmers face and affect their income and welfare (Shapiro and Staal, 1992). Thus these interventions alter economic incentives to the producers. With market liberalization policy, new institutions and free marketing arrangements emerged, with the aim of enhancing competition in both input and output markets. However, institutional market failure could result into a situation in which markets do not function efficiently because of inadequate development or lack of appropriate regulations. Identifying institutional forms of market failure and their effect is therefore important in evaluating policy impact.

The effects of divergence (distorting policies and market failure) as a result of policy intervention can be measured in the markets. Profitability of production systems (defined as the difference between revenues and costs) is a key issue affected by changes in commodity, factor and input markets. Distortion in the input/output markets would result into a net taxation of the production system hence lower profitability. This could lead to changes in cropping patterns and resource allocation among the alternative crop enterprises (shifting towards the more desirable enterprise). Changes in profitability as a result of policy intervention can also be measured in production systems.

An evaluation of the impact of policy comes from an understanding of how it affects profits. Marketing policies therefore, create incentives or disincentives for production systems and the long-term environment for the development and sustainability of the

markets. On the basis of this conceptual framework, data necessary for the economic analysis of the tobacco industry in the district was collected.

3.3 Sources of data

Data for the study were obtained from both secondary and primary sources during a field survey carried out between December 1999 and February 2000.

3.3.1 Primary data

Primary data collection involved questionnaire design, pre-survey, sampling and administration of the questionnaire to farmers (with reference to the 1997/98 cropping season). Additional primary data were collected through informal discussions with agricultural field officers, primary co-operative societies, key informants and private tobacco companies.

3.3.1.1 Questionnaire design

A questionnaire (Appendix 1) was developed to elicit information required in accomplishing the objectives of the study. The questionnaire was designed to capture both quantitative and qualitative data on smallholder tobacco production and the competing crop enterprise (maize). The questionnaire was divided into seven modules designed to elicit the following information.

Module 1: Household identification variables

- Module 2: Farming activities
- Module 3: Farm resources and inputs availability and use
- Module 4: Investment and equipment costs
- Module 5: Enterprise output, consumption and marketing
- Module 6: Credit and selected financial data

Module 7: Miscellaneous information, such as extension services, taxes paid and subsidies received and opinions on production and marketing problems.

3.3.1.2 Pre-survey

Prior to the main survey, a pre-survey was conducted in mid-December 1999. This was essential as it enabled the researcher to pre-test the questionnaire and to ascertain the feasibility of conducting the major survey in the intended area of study, Songea district. Questionnaire pre-testing was conducted using a small sample of 10 farmers from Hanga and Kitanda villages. From the pre-survey, it was discovered that while some of the questions were not correctly designed, others were irrelevant. Thus necessary adjustments were made accordingly.

3.3.1.3 Sampling techniques

The research covered all seven divisions within Songea district. From each division, one ward was chosen randomly to get a total of seven wards and from each ward at least one village was selected randomly to get a total of ten villages. From a list of farmers

linked to leaf-dealers (tobacco companies) through primary co-operative societies, the researcher randomly selected a total of 12 farmers from each village. Sample farmers were identified primarily from the tobacco production point of view. Farmers who did not grow tobacco in the 1997/98 season were excluded from the sample. The remaining were assumed to be homogenous, thus justifying the random selection. In total, the sample size was 120 tobacco-growing farmers.

3.3.1.4 Questionnaire administration

The main method used to collect data was formal survey using the questionnaire. The questionnaire was administered between mid-December and March 2000. The questionnaire was administered by the researcher, with the help of village extension officers (VEO) responsible for each village. Individual farmers were interviewed in their homes or village offices, following an earlier appointment made through village leaders and/or extension agents. Kiswahili was the language used in the interviews. The majority of farmers responded positively to the interviews. Informal discussions were also held with extension agents employed by leaf-dealers, primary co-operative society leaders and other traders in the localities involved with input supply.

3.3.2 Secondary data

Secondary data were collected to complement the information obtained from the sample farmers. The type of information gathered from various secondary sources is summarized in Table 3.1.

Table 3.1: Type of information gathered from secondary sources

Source	Information gathered
T.T.B, BOT	Data on production, processing, marketing and producer prices, and exports.
I.T.G.A.	Data on tobacco world production and marketing trends
RALDO, DALDO, SAMCU	Description of the study area, data on tobacco production and marketing trends in Songea district.
LEAF DEALERS, PCSs	Marketing cost structure, import cost structure for inputs and data on input - loans to farmers

3.4 Analytical techniques

A substantial part of the analysis is based on descriptive statistics to describe the response, characteristics and trends of some of the data and information. An attempt was made to assess the presence and role of institutions and organizations and the identification of institutional forms of market failure. Gross margin analysis and the Policy Analysis Matrix (PAM), were also employed as quantitative analytical tools.

3.4.1 Gross Margin Analysis (GMA)

It was found useful to study the gross margins of the two competing crops (tobacco and maize) in the area, so as to establish the relative economic profitability of these crops. As noted earlier, patterns of resource utilization change with shifts in prices of both products and inputs. Producers usually tend to allocate more resources to enterprises giving higher returns per unit resource. Thus high returns will warrant future

production of a more competitive crop, as transferable resources are switched from the low paying enterprise to it.

For both crops, gross margins were calculated based on the formula:-

$$GM = TR - TVC$$

Where GM = Gross margin of a reference crop (T.shs/ha)

TR = Total revenue from sale of the crop (T.shs/ha)

TVC = Total variable costs spent on production of the crop (T.shs/ha)

3.4.2 The Policy Analysis Matrix (PAM)

The Policy Analysis Matrix (PAM) developed by Monke and Person (1989), provides an organizational framework, which identifies patterns of incentives for economic actors at each level of the commodity chain, and analyzes the impact of direct policy on these patterns at each level as well as their effects on different production technologies and/or marketing channels (Staal and Shapiro, 1994). The impact of specific commodity and macro-economic policies is gauged by comparing results in the presence and absence of the policy (Scarborough and Kydd, 1992). According to Shapiro and Staal (1995), policy in the context of marketing of agricultural commodities is defined as those government decisions (market interventions) which alter the prices economic agents (such as farmers, traders, processors, wholesalers, retailers and consumers) face and which affect their incomes and welfare.

3.4.2.3 The structure of PAM

According to Monke and Pearson (1989), the structure of a PAM can be described as a product of two accounting identities, one defining profit as the difference between revenues and costs and the other measuring the effects of divergence (distorting policies and/or market failure) as the difference between observed parameters and parameters that would exist if the divergences were removed. By completing a PAM for a production system, one can simultaneously determine the existing economic efficiency of the system, the degree of distortion on the input/output markets, and the extent to which resources are transferred among agents.

A theoretical PAM is presented in Table 3.2 which has two distinct characteristics: (a) the classification or disaggregation of the cost of inputs into their tradable and non-tradable components and (b) the valuation of revenues, costs and benefits using both the market (private) and the social prices. Tradable inputs include those inputs, which can be traded in the world market, e.g. imported fertilizers and pesticides. Non-tradable inputs are mainly domestic factors that are not traded internationally, e.g. land, labour and local capital.

Table 3.2: Structure of the Policy Analysis Matrix (PAM)

Accounts	Revenues	Tradable input cost	Domestic factor cost	Profits
Private accounts	A	B	C	D
Social Accounts	E	F	G	H
Divergence	I	J	K	L

Source: Monke and Peason (1989).

Most inputs, however, come in as a mixture of some tradable and non-tradable components. For example, the input cost of using fertilizer at the farm level would consist of the costs of some tradable components (such as the c.i.f value of fertilizer and some cost components of the fuel used in transporting the fertilizer from the border to the farm) and some non-tradable components (such as the labour cost used in unloading the goods and the warehousing cost used in storing the products).

The valuation of revenues, costs and profits by their private and social prices allows PAM to determine the extent of divergences caused by policy intervention and/or market failure in both the input and output markets. In this context, the private prices are simply the open market prices faced by all agents. For consistency, the values presented in Table 3.2 have to be calculated on a per land unit basis. The first row of the table defines revenues, costs (both tradable and non-tradable inputs) and profit in private prices. The second row defines revenues, costs and profits in social prices. The third row records the differences between the elements of the first two rows. If there

were no differences between private and social prices (no market distortions), the elements of the first two rows would be identical.

3.4.2.4 Estimation of private costs and revenues

Using the survey data, simple means were computed to obtain estimations of costs and revenues of tobacco production at observed market prices. The average cost of hired labour was used to represent the private cost of labour. Mutual aid and family labour were valued at the prevailing market wage for hired labour. In the study area, the average cost for hired labour for Tobacco production was found to be Tshs 224,000 per hectare (280 mandays/ha * Tshs 800/manday). As for land, all the sample farmers acquired land free of charge either through being offered by village authorities or though inheritance. The observed market price zero, was therefore used as the private price for land.

The average costs used for the variable inputs in budgets were based on the prices reported by the farmers. Annual depreciation costs on fixed inputs were estimated using the straight-line method of calculating annual depreciation costs on fixed inputs. However, in cases where farmers had own car/bicycle and used it for transportation of tobacco and/or inputs, transport charges by similar modes of transport in a particular area were used. Hence investment costs and depreciation on those assets were not calculated.

3.4.2.5 Estimation of social costs and revenues

The social costs of inputs have to be decomposed into their tradable and non-tradable components. Small farm tools, land and labour were treated as totally non-tradable. Land and labour, which are domestic factors of production, had their social prices estimated based on domestic opportunity cost and market wage rate respectively.

(i) Social price of tobacco

The valuation of social price of tobacco was primarily done by taking the export parity price of the crop, which is its f.o.b price, minus the marketing and processing costs of moving the unit of crop to the border for export. The average rates for foreign exchange bureaus were used (to calculate the tobacco value in domestic currency) as a more accurate measure of the socially efficient value of the local currencies than the official exchange rate of Tanzania shillings. The export parity price for tobacco was therefore estimated at Tshs 727.6 per kg. Detailed calculations of the costs of exported tobacco are shown in Appendix 7.

(ii) Social price of tradable inputs

Valuation of social price of fertilizers and chemicals was done by taking the import parity prices of the inputs used at the farm, which are the c.i.f prices plus the marketing costs of moving the goods to the farm. Small farm tools are treated as totally non-tradable and their social prices were assumed to be equal to the observed prices.

(iii) Social price of labour

The social price of labour is output foregone in other parts of the economic activity as a result of employment in the activity in question. In a competitive and undistorted labour market, the social price would equal the wage rate. However, since the government does not have any legislation on agricultural wage rates, the market wage rate for daily agricultural labour in the district was assumed to reflect the social value of labour. The private and social costs of labour for Tobacco production were thus considered to be the same (Tshs 224,000 per hectare).

(iv) Social value of land

In order to determine the social value of land, we estimated the opportunity costs of land for tobacco production, which is taken as the highest net return to land (per hectare) of its competitive crop. The primary alternative agricultural enterprise was maize production and the net returns of land under that enterprise was Tshs 155,876 which is taken as the opportunity cost of land for tobacco enterprise and hence the social value of land.

3.4.2.6 Important policy parameters from PAM

The primary objective of constructing a PAM is to derive a few important policy parameters for analysis. The most commonly used parameters are Nominal Protection Coefficient on Tradable Output (NPCO), Nominal Protection Coefficient on Tradable Inputs (NPI), Effective Protection Coefficient (EPC), Private Cost Ratio (PCR) and

Domestic Resource Cost (DRC). These parameters are closely related and are implicit in the PAM and hence can be calculated directly from the matrix. Since these are ratios, they can be used as a basis for comparison between different production activities.

(i) Nominal Protection Coefficient on Tradable Outputs (NPCO)

NPCO is the ratio between private and social revenue of the output (i.e. the ratio of domestic market price of product to its parity price at the farm-gate). In Table 3.2, NPC = A/E. If NPC >1, it indicates that the private price of output is greater than its parity price and hence producers are positively protected for the product. If NPC < 1, it indicates that producers are implicitly taxed on the product. If NPC = 1, it indicates a neutral situation.

(ii) Nominal Protection Coefficient on Tradable Inputs (NPI)

NPI is the ratio of private to social cost of tradable inputs (i.e. the ratio of the private to the social values of all the tradable inputs). In Table 3.2, NPI = B/F. If NPI >1, it indicates that producers are taxed when they buy tradable inputs. If NPI <1, it indicates that they are subsidized. NPI = 1 represents a neutral situation.

(iii) Effective Protection Coefficient (EPC)

EPC measures the total effects of intervention in both input and output markets. It is defined as the ratio of value-added measured at private prices to that at social prices. From Table 3.2, EPC = (A-B) /(E-F). If EPC > 1, it implies that the overall impact of

the existing policy results in a net positive incentive to produce the commodity. EPC < 1 represents a net disincentive. EPC = 1 implies either no intervention or the net impact of various distortions in both the input and product markets results in a neutral effect on value added.

(iv) Private Cost Ratio (PCR)

The PCR is the ratio of domestic resource costs to value added in private prices. In Table 3.2, PCR = C/ (A-B). The ratio is an indication of how much a system can afford to pay domestic resources, including a normal return to capital, and still remain competitive. Any PCR less than one is an indicator of positive incentives for a given system.

(v) Domestic Resource Cost (DRC)

This is the ratio of domestic factor cost, valued at social prices to the value-added created by the same resources at social prices. In Table 3.2, DRC = G/(E-F). It is, in fact a social cost-benefit ratio, which helps determine the desirability of certain domestic production system relative to the international market in terms of economic efficiency. The social cost is the opportunity cost of domestic resources involved in the production process. The social benefit is the value - added generated by the resources measured at social prices. If the cost is greater than the benefit (DRC>1), the production of the product is not desirable from the social point of view. On the other hand, if the cost is less than the benefit (DRC<1,) the production of that product is socially desirable. If the cost is equal to the benefit (DRC = 1), it is just worthwhile to

produce the commodity. It also implies that in regard to the commodity in question, the allocation of productive resources has reached an optimal point in the sense that, with the given economic regime, further reallocation of domestic resources would reduce welfare.

3.5 Limitations of data collection

Due to lack of proper record keeping, collection of primary data depended mostly on respondent's ability to recall past events. There was a notable difficulty on the part of the respondents to give a correct account of household production and marketing data such as actual area cultivated, quantity of input used and yields. Extension agents and PCS's had to be consulted in areas where records of farmers were available, and a lot of cross check questions employed so as to assess and confirm the given information.

Convention of units was also a problem since some farmers use local units (e.g. bags, "debe" e.t.c.), which are not standardized. Estimations had therefore been made to convert local units into conventional ones such as kilograms.

Some of the data from secondary sources (particularly those associated with the cost structure of product and inputs from the farm gate to the port) were not available and therefore, for some items, estimations had to be made which might have reduced the accuracy of the results.

However, inspite of the above limitations, the researcher is confident that the data collected was reliable and adequate to address the objectives set forth for the study.

CHAPTER IV
RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents analytical results for the data obtained from the formal, informal and key informant surveys. It first presents descriptive statistics showing characteristics and trends of data obtained from the sample growers. It then describes and assesses the functioning of marketing institutions and organizations including the identification of institutional forms of market failure in the entire tobacco marketing system. This is followed by results of enterprise budgets in which gross margins for tobacco and maize enterprises are computed. Lastly, results of the policy analysis matrix and sensitivity analysis are presented.

4.2 Household variables and farm activities

4.2.1 Household gender and education levels

As far as gender is concerned, 95% of the sample farmer's households, were headed by males (Table 4.1). Only 5% were female-headed households.

Table 4.1: Gender of household head of sample farmers

Gender	Frequency	Percentage
Male	114	95.0
Female	6	5.0
Total	120	100

Source : Survey data, 1999

Table 4.2 presents the frequency of sample tobacco farmers against their education levels. The majority of the farmers (80%), reported to have attained primary education. Only 2.5% attained secondary education while 10% attended adult education classes. About 6.7% had not attained any formal education.

Table 4.2: Education level of sample farmers

Level of education	Frequency	Percentage
Primary	96	80.8
Adult	12	10.0
None	8	6.7
Secondary	3	2.5
Total	120	100

Source: Survey data, 1999

4.2.2 Farm activities

The household economy in Songea district depends mostly on agriculture. Farmers in Songea cultivate both cash and food crops. Tobacco and maize are the main cash and food crops respectively and these enterprises compete for resources. From Table 4.3, it is evident that the majority of sample farmers (67%) regard tobacco as the most important crop enterprise with only 33% in favour of maize enterprise.

Table 4.3: Most important crop enterprise for sample farmers

Crop enterprise	Frequency	Percentage
Tobacco	80	66.7
Maize	40	33.3
Total	120	100

Source: Survey data, 1999

Results shown in Table 4.4 are very much in agreement with those of Table 4.3. It is obvious therefore that two-thirds of the farmers rank tobacco as their most important crop enterprise because of the cash earnings realised through its sales. However, the remaining one-third of the sample farmers still believes that maize is the most important crop for food security reasons. In terms of land allocation to the different crop enterprises during the season under study, maize had the biggest share (46% of the mean) while tobacco and all other remaining crops occupied 31% and 23% respectively.

Table 4.4: Criteria used by sample farmers for ranking crops

Ranking criteria	Frequency	Percentage
Cash earnings	81	67.5
Food security	39	32.5
Total	120	100

Source: Survey data, 1999

4.2.3 Crop production calendar for tobacco and maize

As far as tobacco is concerned, the crop production season begins from mid-September. The first activity marking the beginning of the season is firewood collection to be used for tobacco curing. Nurseries are prepared sometime between October and November. Bush clearing and ploughing activities are undertaken between November and December before planting, which is usually done in January. Other pre-harvest activities like weeding and fertilizer application are carried out between January and March and harvesting is usually done between March and April. Post harvest activities of curing, sorting and grading are undertaken between April and July after which the crop is marketed.

As for maize, farmers cultivate this crop on the land area used for tobacco during the previous season. Planting usually takes advantage of the first rains and is therefore done between December and January. Pre-harvesting activities like weeding, fertilizer

application and earthing up take place between January and July after which the crop is harvested and stored for future consumption or selling.

4.2.4 Problems encountered in tobacco production

A number of problems, in as far as tobacco production is concerned were raised by the sample farmers. Table 4.5 shows a summary of these problems.

Table 4.5: Problems encountered by farmers in tobacco production

Problem	Frequency (N = 120)	Percentage
Pests and diseases	66	55.0
Lack of adequate capital	27	22.5
Unavailability of inputs	26	22.0
Delayed delivery/supply of inputs	16	13.0
Poor extension services	6	5.0
High production costs	4	3.0

Source: Survey data, 1999.

Note: Totals add up to more than 120 farmers or 100% due to multiple answers.

From Table 4.5, it is evident that the major problem encountered in production of tobacco is pests and diseases, which was mentioned by 55% of all respondents. This problem is mostly severe at the nursery stage. This could be resulting from either lack

of the necessary chemicals or lack of expertise in dealing with pests and diseases. In as far as input supply by leaf dealers is concerned, emphasis has always been on fertilizers. Seedbed packs, which contained chemicals to be used in nurseries, were not made available to most farmers during the 1997/98 cropping season. Lack of adequate capital and un-availability of inputs were each reported by 22% of the respondents whereas delay in delivery of inputs was mentioned by 13% of the sample farmers. A few farmers complained on poor extension services (5%) and high production costs (3%).

Table 4.6 indicates that extension services do reach the majority of farmers. From the sample tobacco growers, 90% acknowledged receiving extension services while only 10% did not. Extension services can either be those offered by the government through village extension officers or those offered by extensionists employed by leaf-dealers in the respective areas. However, this study did not investigate the quality of the extension services offered which could also have an impact on tobacco production.

Table 4.6: Provision of extension services to sample farmers

Extension services	Frequency	Percentage
Receive	108	90.0
Do not receive	12	10.0
Total	120	100

Source: Survey data, 1999.

4.2.5 Credit and financial requirements

As far as the cropping season under study (1997/98) is concerned, survey data revealed that 89% of the sample tobacco growers took input loans from leaf-dealers through primary co-operative societies (PCS). The remaining 11% claimed not to have taken loans. The average value of loan secured by sample farmers for the 1997/98 season was Tshs. 87,000. The interest rate was 22% for a repayment period of 12 months. However, since leaf-dealers commenced providing input loans to farmers in Songea district, repayment has been extremely poor and therefore tobacco growers are heavily indebted to these companies as a result of accumulated debt over years.

Table 4.7: Reasons for failure to repay loans by sample farmers

Reason	Frequency (N = 40)	Percentage
Poor/unfair classification	24	60.0
Poor yields	12	30.0
Misallocation of funds	12	30.0
Low tobacco prices	6	15.0
Delayed payments	6	15.0

Source : survey data, 1999

Note: Totals add up to more than 40 farmers or 100% due to multiple answers.

Although the majority of the sample farmers interviewed claimed not to have any outstanding debts, this was not true since data from PCS's revealed otherwise. However, for the farmers who acknowledged being indebted, a number of reasons were put forwards as being the cause for failure to repay loans. Table 4.7 shows that 60% of this group of sample farmers believed that "unfair" classification which is translated into low earnings was the major reason for failure to repay the loans. Misallocation of funds and poor yields were other reasons that were each mentioned by 30% of the respondents, while some farmers (15%), believed that even if classification was perfect, prices offered were still low. Another 15% of the farmers complained on delayed payments and thought that this could account for the poor repayment rates.

4.2.6 Farm resource availability and use, investment and equipments

4.2.6.1 Land

The average total land area owned by a family for the 1997/98 season from the sample tobacco farmers was 4.7ha. Table 4.8 presents the various modes of land acquisition from the sample tobacco farmers in Songea district. It should be noted that some of the farmers had used a combination of means to acquire land. However, the field data reveal that 56% of respondents were offered land by village authorities, 46% inherited it, and only a small portion of 2% acquired land through purchasing.

Table 4.8: Mode of land acquisition by tobacco farmers

Mode of acquisition	Frequency (N = 120)	Percentage
Offered by village authorities	67	56.0
Inherited	55	46.0
Bought	2	2.0

Source: Survey data, 1999

Note: Totals add up to more than 120 farmers or 100% due to multiple answers.

The average land area owned by a family from the sample farmers and under cultivation was 2.6 ha. This implies that out of the average total land area owned by a family, only about one half of it was under cultivation.

4.2.6.2 Labour

According to the survey, tobacco enterprise is highly demanding in terms of labour. However, from the sample farmers interviewed it was found that a higher percentage of labour employed in the enterprise comprised mostly of family labour. Recalling that in terms of land allocation by the sample farmers, tobacco had an average of 0.8 ha, it was also found that for farmers having less than this area, family labour comprised up to 100% of the labour expended in tobacco production. However, there was a small proportion (5%) of the sample farmers who hired labour during the 1997/98 cropping season. Most of the family labour became fully occupied during the crop production

periods and it is not surprising that 34% of farmers who reported undertaking any form of off farm activity, do so mostly during the off season.

4.2.6.3 Farm inputs

a) Fertilizer

Inputs for both tobacco and maize are obtained from leaf-dealers on credit through PCS's. Each farm household is linked to one leaf-dealer in what is known as "interlocking contracts". Fertilizer is the most important input in the study area. From Table 4.9, it is clear that STANCOM was the dominant leaf-dealer in the study area accounting for about 40% of all interlocking contracts from the sample farmers. This was followed by TLTC with about 23% of the share, DIMON with 22%, SAMCU 8% and UNIAFRICO with 5%. About 2% of the sample farmers obtained their fertilizer from other traders and hence were not linked to any company.

Table 4.9: Source of fertilizer to sample tobacco farmers

Source	Frequency	Percentage
STANCOM	48	40.0
TLTC	28	23.0
DIMON	26	22.0
SAMCU	10	8.0
UNIAFRICO	6	5.0
Other traders	2	2.0
Total	120	100

Source: Survey data, 1999

b) Seedbed packs

These are important inputs that contain tobacco seeds and chemicals all of which are meant to be used during the nursery stage of tobacco production. During the earlier seasons following liberalization, seedbed packs were always part and parcel of the input loan package. However, it seems that emphasis is now on fertilizer only. During the cropping season under study, only 5% of the sample farmers received seedbed packs on credit from leaf-dealers. This could be a possible explanation of the major problem cited by farmers during production, which was prevalence of pests and diseases, especially at the nursery stage. However, Thiodan dust is now used by most of the farmers as an alternative chemical for the control of pests.

c) Packing materials

Packing materials include tarlined paper, hessian cloth and jute twine. These materials are being supplied by leaf-dealers as part of the input loan package. However, they are not always available and farmers therefore sometimes have to find alternative ways of handling their crop produce.

d) Firewood

This is an essential input since fuel wood provides the only source of heat necessary for tobacco curing. Almost all farmers interviewed revealed that they obtain firewood from the forest and this practice is linked to the environmental problems associated with tobacco production.

4.2.6.4 Farm equipments

Simple farm tools were a characteristic of almost all households interviewed. All farmers used hand hoes in farm operations. None of the sample farmers used tractors. Other simple farm tools used included, wheelbarrows and axes. A burn is also a structure necessary for tobacco curing. Burns differ in sizes and mode of construction ranging from very simple ones that can last for only one or two seasons to the more complex and robust ones that can survive for 10 years or more.

4.2.7 Problems encountered in tobacco marketing

The sample farmers raised a number of problems as far as marketing of the crop is concerned. Table 4.10 shows a summary of the problems that were reported.

Table 4.10: Problems encountered by farmers in marketing the crop

Problem	Frequency (N = 120)	Percentage
Poor classification	107	89.0
Low prices	39	32.5
Delayed payments	38	32.0
Delayed/late procurement of tobacco	24	20.0
Inadequate extension services	6	5.0
Inadequate grading material	3	2.5
Transportation problems	3	2.5
Theft of tobacco bales in godowns	2	2.0

Source: Survey data, 1999.

Note: Totals add up to more than 120 farmers or 100% due to multiple answers.

From Table 4.10, it is clear that the major problem pointed out by the majority of the sample farmers (89%) is that of poor classification undertaken by TTB classifiers. Farmers complained on their tobacco being classified into lower grades hence obtaining lower income from their sales. Low prices offered and delayed payments were each reported by 32% of the sample farmers interviewed. While 20% of the sample farmers complained on delay in the procurement of tobacco, smaller groups (2.5% each) cited transportation and inadequate grading materials as being major problems. Other

problems mentioned by a few farmers include, theft of tobacco bales in godowns (2%) and inadequate extension services (5%).

As far as information on market prices is concerned, the sample farmers revealed that co-operative societies are the main source of information. Because most of the PCS's are within close proximity to member farmers, market information is not a big problem. For sample farmers interviewed, the average distance from the homesteads to selling points for tobacco was 3.5 km while for maize it was 4.5 km. This is an indication that on average, selling points for both tobacco and maize, crops are in close proximity to the farmers. Data collected from sample farmers also indicate that all the tobacco that is grown is sold while in the case of maize 60% is sold and the remaining 40% is consumed at household level. As far as prices of tobacco for the (1996/97) cropping season is concerned, 80% of the sample farmers commented that prices were unfair/low while 20% said they were fair/good. For the 1997/98 season, 85% commented that prices were unfair/low while only 15% said they were fair/good. This is an indication that the majority of the farmers are still not satisfied with prices offered by leaf dealers.

Earlier on we found that poor classification was viewed as being the major problem encountered by the sample tobacco farmers interviewed. Table 4.11 presents a summary of the views given by farmers on how they think the classification system can be improved. It is clear that most of the respondents (55.5%) believe that farmer's full participation in the exercise was necessary to ensure fairness in classification. What this means is that farmers representatives should be included amongst the classifiers.

However, from the survey conducted, it was revealed that farmers do have representatives during classification but most of the respondents seem to believe that the representatives aren't knowledgeable enough on the different grades and they don't have any influence on the final decisions reached. They believed that this situation should be rectified so that representation is realistic.

Table 4.11: Views on improving the classification system

Views	Frequency (N =120)	Percentage
Farmers should participate fully in the exercise	66	55.5
Reduce number of grades	48	40.0
Training of farmers on proper grading	46	38.3
The government should monitor the exercise	8	6.6
Prices of some grades be revisited	4	3.3

Source: Survey data, 1999

Note: Totals add up to more than 120 farmers or 100% due to multiple answers.

Tobacco is a crop with many grades, which are not easily understood by farmers. While 38% of the respondents suggested that farmers should be trained on proper grading and be shown samples of the different grades, another 40% suggested that grades should be reduced. The latter idea may not be feasible since tobacco grades are recognized at international markets and therefore reducing them might imply combining some of the

grades. Combining leaves of different grades will downgrade the high quality tobacco and this will not be of any advantage to the farmers.

Another 7% of the sample farmers suggested that the government should monitor the exercise to ensure fairness. However, these farmers might not have been aware that TTB, which provides the classifiers, is undertaking a regulatory role in tobacco marketing system in the country on behalf of the government. Thus the government's role has been entrusted upon the board. If farmer's allegations about being given low grades are true, then it will be important to find out why TTB classifiers (who are supposed to be working on behalf of the government) do not take a neutral and fair position in the process. A small proportion (3%) of the respondents suggested that the prices of the different grades should be revisited since they are too low.

4.2.8 Other sources of income

Besides income received from crop production, 33% of sample tobacco farmers had other sources. Table 4.12 shows activities providing other sources of income to some of the tobacco farmers. It is clear that 45% of sample farmers receiving extra income besides crop production are practicing livestock keeping. Shop keeping was carried out by 18% of the respondents earning income from other sources. Other activities undertaken include; milling 10%, masonry, handicraft, tailoring and petty trade each 8% of the respondents, carpentry 5%, gardening and local brew making each 2%.

Table 4.12: Other sources of income

Source	Frequency (N = 40)	Percentage
Livestock keeping	18	45.0
Shop keeping	7	17.5
Milling machine	4	10.0
Tailoring	3	7.5
Petty trading	3	7.5
Masonry	3	7.5
Handicraft	3	7.5
Carpentry	2	5.0
Gardening	1	2.5
Local brew	1	2.5

Source: Survey data, 1999

The average income received by the sample farmers from other sources of income was Tshs 166,150 per year. This is about 61% of the average income of Tshs 271,920 per season earned through the sale of tobacco, and falls slightly above the average of Tshs 160,500 per season, earned through the sale of maize by the sample farmers.

4.3 Institutions/ organizations and their effect on the marketing system

The very existence of a market depends on the institutional rules and arrangements that govern and/or influence exchange. The efficiency of marketing operations will therefore depend very much on market institutions and organizations and their operations. Free tobacco markets in Songea district became fully operational in the 1996/97 season. Several tobacco leaf dealers became engaged in marketing of the crop although they operated through primary co-operative societies (PCS's) and in a way competed with

SAMCU. The regulatory role had been entrusted upon the Tanzania Tobacco Board (TTB).

4.3.1 The Primary Co-operative Societies (PCSs)

The PCSs are the major links between tobacco farmers and leaf-dealers. The marketing functions of purchasing cured tobacco, cash payments, supply of inputs to tobacco farmers etc. are done by the leaf dealers through the PCSs. Each PCS is therefore linked to a commercial company with which they have contracts.

Each PCS is under the leadership of the chairman, vice chairman and secretary. Farmers involved in tobacco production register themselves to the ward or village PCS. A registered farmer is given a registration number for identification when assessing services provided in tobacco production and marketing.

The PCS's have the following responsibilities: -

(i) They are required to make projections of the input needs for member farmers for the next production season. The projected type and amount of inputs for both maize and tobacco is sent to the leaf dealers to which the society is affiliated.

(ii) They distribute inputs to the society members and keep records for each member, including the hectares cultivated.

(iii) They identify production problems encountered by farmers (particularly those that could affect loan repayment) and report them to the respective leaf dealer.

(iv) They effect payments to farmers after tobacco sales and subtract the amounts of loan offered.

(v) They sanction limited amounts of money in form of loans to the needy farmers following special requests in case of trouble.

The PCS's are usually paid by the leaf dealers for the services offered to farmers on their behalf. PCS's are at liberty to choose whichever dealer they want to work with.

4.3.2 Tobacco commercial companies or private leaf dealers

As far as market liberalization is concerned, leaf dealers were the key players expected to enter the marketing system to provide competition and encourage efficiency. The leaf dealers provide seasonal inputs on credit to farmers and after harvest, farmers are expected to sell tobacco to their respective dealers against which loans will be subtracted from the payments.

Different leaf dealers compete for the PCS's and to be able to attract them, there are certain cash offers made by the dealers. Amounts paid depend on the PCS services provided to the farmers. Items for which leaf dealers pay PCS include; loading and unloading of bales in and off lorries in order to transport them to the marketing area, cash offers to PCS's for each kilogram sent to the dealer and allowances for PCS

leaders. Leaf dealers also provide extension services to tobacco growers within their areas of influence.

However, in the 1998/1999 cropping season, leaf dealers withdrew from Songea district after failing to enter into contractual arrangements with farmers through PCS's. This was a result of conflicts between regional and district government authorities and the co-operative union on one side and commercial companies on the other side. Tobacco growers and their societies found themselves caught up in the tug of war, and since the former were heavily indebted to the companies as a result of accumulated input debts over year, the companies took efforts to reduce the instances of bad debt by forming an association known as Association of Tanzania Tobacco Traders (ATTT). This association was given the task of co-coordinating contractual arrangements between growers and leaf-dealers so as to stop incidences of strategic default. Growers supported by government authorities perceived this as a move to collude and undermine the interests of the growers. PCS's therefore cancelled their contracts with the companies and sold their crop to SAMCU.

4.3.3 The Co-operative Union (SAMCU)

After liberalization, SAMCU begun to compete at an equal footing with other leaf dealers in buying cured tobacco leaves from farmers. The union also entered into contract farming arrangements with tobacco growers through PCS's. Regional and district government authorities were always in favour of the union as opposed to the private leaf dealers and as a result of escalating conflicts between key players in the

1997/98 season, all PCS's cancelled their contracts with private leaf dealers and sold their crop to the cooperative union during the 1998/99 saeson. Currently therefore, SAMCU is the sole dealer in supplying inputs and purchasing tobacco in Songea district.

4.3.4 Tanzania Tobacco Board (TTB)

As an aftermath of the liberalization policies that started in the mid-1980s, the government stopped undertaking all direct production and marketing activities. The issuing of inputs to growers and crop purchase became the responsibility of the private sector. Hence in June 1997, Tanzania Tobacco Processing and Marketing Board shed its commercial activities and officially started to be known as Tanzania Tobacco Board (TTB) upon which the responsibility of regulating the tobacco industry was vested.

Basic functions of TTB include: promotion of qualitative and quantitative tobacco production through ensuring that production is carried only in regions specified by the Commissioner of Agriculture in the regulations (by laws); ensuring that only growers registered by the body carry out production; ensuring that the plant protection rules concerning varieties to be grown, importation, breeding and multiplication of tobacco seeds, hygiene in the field and factory, sowing dates, inter cropping aspects and agro-chemical are adhered to. TTB also ensures that farming contract modalities are upheld, and that tobacco purchase is conducted only in authorized centres, which meet the required specifications. It also issues export permits. Other functions include, collection, synthesisation and dissemination of market information to growers

concerning the status of the world market on procurement, supply and demand of tobacco. It also issues licenses to tobacco traders after thoroughly ascertaining that the licensee has the capacity to conduct the business. Another responsibility is the promotion of crop research. TTB is collaborating with various institutions within and outside the country and exchanging research information related to tobacco in order to promote and develop production both in terms of quantity and quality.

4.4 Institutional free market arrangements and limitations

4.4.1 Interlocking contracts

Contract farming arrangements between leaf dealers and tobacco growers take place before the announcement of seasonal prices for inputs and produce. After entering the agreement, a farmer has to abide to the contract and therefore has no choice as to where to sell his product. Despite the fact that there can be price differences among leaf dealers (in both input and output markets), contracts pin down the farmers to one specific dealer. Farmers enter into these contracts unguided, partly because of desperation caused by lack of alternative marketing arrangements.

4.4.2 Price setting mechanism

Field tobacco prices are negotiated and agreed upon in the Tanzania Tobacco Council. The council is made up of the representatives from the Ministry of Agriculture, TTB, farmers association and leaf dealers (buyers). The prices reached are referred to as minimum indicative. A number of factors are considered before reaching this price,

which include the previous season's world market price. The price is then announced by the TTB just before marketing of cured tobacco leaves commences. After the indicative price has been announced, leaf dealers are allowed to top up any amount above it. The added amount is called the top up price. The actual prices offered per kilogram of tobacco sold will therefore include the minimum indicative amount plus the top up.

For the cropping season under study, average tobacco prices, offered by different leaf dealers in Songea district, were almost the same. Hence the top up price did not bring about significant income difference between farmers serviced by different leaf dealers. Given the small number of buyers available, the set price is therefore more monopolistic, and does not reflect the competition expected to be instituted through liberalization. On the other hand, if buying firms were many, lack of price difference may have reflected the presence of competition. This in turn could have led the firms to adopt non-price competitive measures, in order to maintain or increase their market shares. However, evidence from this study did not reveal any significant non-price competitive measures adopted by firms and one could suspect the possibility of collusion on the part of the buyers.

4.4.3 Tobacco classification

According to respondents, authorized classifiers from TTB are closer to leaf dealers than to farmers and it is therefore alleged that they usually favour the companies by down grading the tobacco at the market centers. Although in the process of

classification, TTB classifiers usually do so in the presence of farmer representatives, the latter are usually not knowledgeable enough on the different tobacco grades and have little influence on the final grades offered to farmers.

Before 1997, classification of tobacco leaves was being undertaken by the Songea Co operative Union classifiers and according to the TTB, these classifiers deviated from the normal classification standards and deliberately upgraded the leaves, to such an extent that top grades outturn was usually abnormally high. TTB resumed classification in 1997 and it claims to have rectified the standards hence the real quality outturn realised since then indicated a decline of top grades. It is obvious therefore that as far as classification is concerned, there are conflicting views as to how the exercises is undertaken and to whose advantage. However, at the end of the day, farmers still have to accept the grades offered through the system.

4.4.4 Input loan repayments

Not all farmers are incapable of repaying their loans but most simply practice "strategic default" by deliberately seeking to avoid repayment. The most commonly used strategy is that of produce diversion whereby, farmers obtain inputs from one company (with which they have interlocking contracts) and later sell their tobacco to other companies. The loan arrangement therefore does not give leaf dealers any means of enforcing repayment. Farmers have the opportunity to shift their sales between the different companies operating in their localities and continue loan defaulting.

4.4.5 Government intervention

Both district and regional authorities have been far more involved in the tobacco marketing system in Songea district then it is expected under liberalization. From the informal discussions conducted during the study, it is evident that from the very beginning, the government was in favour of making SAMCU, the dominating institution in dealing with the crop rather than the private leaf dealers. To achieve this objective, deliberate efforts were made to ensure that SAMCU remained the sole leaf dealer. PCS leaders were persuaded not to enter into new contracts with the private companies during the 1998/1999 cropping season. The withdrawal of private leaf dealers from the district was therefore a result of an uncompetitive environment created by a number of reasons including indirect government intervention.

4.5 Crop enterprise competition

Farmers in Songea district grow various food crops alongside tobacco. There is evidence to indicate that crop enterprise competition exists. For the purpose of this study, only one major crop enterprise that competes with tobacco in resource use is considered. This is maize. Using budgeting techniques, gross margins for the two enterprises were calculated.

Table 4.13: Gross margins for tobacco and maize, 1997/98 season

Item	Tobacco	Maize
Average yield (kg/ha)	772.5	3,242.5
Average price per kg (Tshs)	440	60
Gross returns (Tshs/ha)	339,900	194,550
Costs for physical inputs (Tshs/ha)	95,300	38,674
Gross margins (Tshs/ha)	244,600	155,876
Total mandays	280	57
Cash returns per manday (Tshs)	874	2,735

Source: Survey data as indicated in appendices 3 and 4

Results of the analysis (Table 4.13) indicate that the more profitable enterprise is tobacco with a gross margin per hectare of Tshs 244,600. Maize has a gross margin per hectare of Tshs 155,876. Simon (1997) got similar results in his study on tobacco based farming systems in Tabora district. However, considering labour requirements and returns to labour, tobacco was found to be a highly labour demanding crop. It has low returns to labour of Tshs 874 as compared to Tshs 2,735 for maize. To some farmers, this high demand for labour outweighs its relative profitability and the overall effect is in line with the proposed hypothesis that the alternative crop enterprise (maize) is a more desirable venture to undertake in the study area under the liberalized market economy.

4.6 The PAM results

The survey data of the 1997/98 cropping season for tobacco production were used to compute the PAM at farm level. Table 4.14 summarizes these results.

Table 4.14: Results of PAM for the 1997/98 season for tobacco

Accounts	Revenue	Tradable input Costs	Non-tradable input Costs	Profits
Private values	339,900	58,643.75	260,031.25	21,225
Social values	562,380	55,906.44	415,344.01	91,129.55
Divergence	-222,480	2,737.31	-155,312.76	-69,904.55

Source: Derived from survey data, 1999 as indicated in appendix 9

4.6.1 Interpretation of PAM results

The divergence row for the production system indicates that the largest distortions between private and social values occur under revenues. The divergence is Tshs. – 222,480. The negative sign implies that the prevailing market price for the product (tobacco) falls short of its socially potential value. These results are similar to those obtained by Kakwemeire and Mbiha (1999) when studying cotton marketing in Kahama district. This means that the existing market conditions under liberalization caused farmers to be paid less than the potential value of their product. The government levies various taxes and fees on the tobacco industry which when combined with the poor state of infrastructure results into high private costs in the entire marketing chain. These

levies (in Tshs/kg of tobacco) include; TTB regulatory charge (29.0), tobacco council levy (0.5), crop research levy (1.5), PCS levy (25.0), union levy (19.0), Apex levy (6.0) and district cess (50.0). At the end of the day, it is the smallholder farmer who bears this load by being offered low prices for his tobacco.

Under non-tradable input costs, the divergence is Tshs –155,312.76. The negative sign implies that farmers pay less for the domestic factors they use in tobacco production than they would have paid had these factors been valued at their socially optimal prices. Land being one of the domestic factors, had a significant impact on the divergence of non-tradable input costs. This is because in the study area, land acquisition is either through inheritance or being offered by village authorities. Hence the private value is zero as compared to its social opportunity value based on maize production. Generally the divergence implies that farmers are indirectly being subsidized on the domestic factors.

Divergence on tradable inputs is not so high (Tshs 2,737.31). The positive sign of the divergence value implies that the prevailing market prices of tradable inputs are higher than their socially optimal values. Furthermore, it implies that under market liberalization policy, there is a net taxation of tobacco growers for the tradable inputs employed in production.

The divergence on the profit column (Tshs –69,904.55) indicates that the overall effect of taxes levied on the inputs and outputs and the effect of market conditions is the net

taxation of tobacco production at the farm level. This value indicates the level of profit transferred out of tobacco production. Social values on the profit column are positive and substantially large (Tshs 91,129.55). This suggests that smallholder tobacco production is potentially a profitable enterprise. Again these results are similar to those of Kakwemeire and Mbiha (1999) on cotton production in Kahama, who also got positive and large social values on the profit column. However the existing marketing arrangements under liberalization have made tobacco production appear uncompetitive with low resource allocation efficiency.

4.6.2 Efficiency indicators of the tobacco production system

The summary results of efficiency indicators derived from the PAM are presented in In Table 4.15.

Table 4.15: Efficiency indicators of the tobacco production system

NPCO	NPI	EPC	DRC	PCR
0.60	1.05	0.55	0.82	0.92

Source: computed from Table 4.15

Key: NPCO Nominal protection coefficient

NPINominal protection coefficient of tradable inputs

EPC= Effective protection coefficient

DRC =

Domestic resource cost

PCR = Private cost ratio

4.6.2.1 Nominal Protection Coefficient on Tradable Output (NPCO)

An NPC of 0.60 is less than unity and it indicates that the private price of output is less than its parity price. Hence producers are not protected. They are implicitly taxed on the product (tobacco). These results are consistent with the negative divergence on revenues in the PAM.

4.6.2.2 Nominal Protection Coefficient on Tradable Inputs (NPI)

An NPI of 1.05 is greater than unity and it indicates that producers are taxed when they buy tradable inputs, hence again producers are not protected. These results are consistent with the positive divergence on tradable input costs in the PAM.

4.6.2.3 Effective Protection Coefficient (EPC)

An EPC of 0.55 is less than unity. It implies that under the existing market conditions, there is a net disincentive to produce the commodity in question (tobacco) this coefficient combines the effects of both the input and output markets.

4.6.2.4 Private Cost Ratio (PCR)

A PCR of 0.92 is less than unity. It implies that smallholder tobacco production under the liberalized market economy realises profits, which are in excess of normal returns to

domestic resources. This is consistent with the positive profits (Tshs 21,225) observed under private values in the PAM results. However, this PCR value does not imply that smallholders exploit the maximum potential benefits (profits) of the productions system. As PCR approaches unity, than it becomes just worthwhile to produce tobacco, and the allocation of productive resources reaches an optimal point in the sense that further reallocation would reduce the welfare of the smallholder farmer.

4.6.2.5 Domestic Resource Cost (DRC)

A DRC of 0.82 is less than unity, implying that the production of the commodity (tobacco) is desirable from the social point of view. Thus tobacco production is a desirable enterprise relative to the international market in terms of economic efficiency. In other words it is a potentially profitable enterprise. This is consistent with the positive profits (Tshs 91,129.55) observed under social values in the PAM results. Comparing the DRC and PCR values, it is evident that smallholder tobacco growers in Songea district have not captured the full potential benefits (profits) of the production regime.

4.7 Sensitivity analysis

It is important to note that PAM is a static model, which cannot capture potential changes in the various factors influencing profitability of enterprises. Efficiency indicators for the production system are subject to changes in these factors. To overcome the limitation, the effects of factors, which may change the indicators, and

therefore the level of efficiency of tobacco production system were explored by conducting a set of sensitivity analyses. This involved recalculating the efficiency indicators. Identification of these factors may lay support to intervention aimed at improving economic incentives to smallholder tobacco producers. Changes in parity prices of product, producer price and parity prices of inputs would likely change the level of efficiency of the production system. In this study, different scenarios were designed to estimate how much change in each of the concerned factors would alter the efficiency of the production system by recalculating the values of the indicators when the factors change by a certain percentage. As for the market price of inputs, the government had already removed all forms of taxes on agro-inputs such as fertilizer and other chemicals during the season under study. It would be illogical therefore to expect any significant reduction in input prices under the current policies of liberalization whereby input subsidy has been completely phased out since the 1994/95 cropping season.

4.7.1 Effects of an increase in producer prices.

An attempt was made to determine the effects of an increase in producer price on the efficiency of tobacco production system from the private point of view. A 20 % increase in producer prices would decrease the PCR by 20 % and increase EPC and NPC by 27 % and 22 % respectively (Appendix 8). These indicators were selected since they capture the potential private profitability of the enterprise, which is likely to be affected by any change in producer prices. These results depict the sensitivity of the indicators to the change and their implication is that there will be an increase in

producer incentives following an increase in producer prices by 20 % . Smallholder tobacco growers will be more protected and the profits realised in excess of normal returns to domestic resources will increase.

4.7.2 Effects of a decrease in parity prices of products.

Stability of export prices is probably one of the most important concerns in any export crop industry. Although tobacco export prices have been relatively stable as compared to other crops, an attempt was made to determine the effects of a decrease in the parity price of the product by 20 %. It is important to note that such a change will always bring about a change in the private (market) price of the product. Hence it will be illogical to observe changes in indicators that contain private value elements without adjusting the values of these elements. For that matter only the DRC, which is an indicator for social returns to domestic resources or social profitability is considered. After the sensitivity analysis, DRC has increased by 28% to 1.05 (Appendix 8). This value is greater than unity and it implies that with a decrease of 20 % in parity prices of tobacco, the production of the crop becomes undesirable from the social point of view in terms of economic efficiency relative to the international market.

4.7.3 Effects of an increase in parity prices of inputs.

Tobacco is a crop, which requires a lot of inputs most of which are tradable in the world market (eg imported fertilizers and pesticides). The parity prices of tradable inputs will therefore affect production desirability. An attempt was made to determine the effects of an increase in parity prices of inputs by 20 % on the efficiency of the

production system. However since no adjustments are made on the private value elements, only the DRC, which is an indicator for social returns to domestic resources or social profitability is considered. Results of the sensitivity analysis (Appendix 8) indicate that the DRC has increased very slightly by 2 % and it is less than unity. This shows that the DRC is insensitive to changes in parity prices of tradable inputs and because it is still less than unity, the implication is that even after an increase in parity prices of inputs by 20 % tobacco production is still a desirable enterprise from the social point of view. Further analysis as to the sensitivity of the DRC to changes in parity prices of inputs requires an inspection of the cost accounts of the production system on the social side (Appendix 9). After adjusting the parity prices of inputs (20% increase) the ratio of the costs of tradable elements to non-tradable elements is 1:6. This indicates that costs of non-tradable elements such as labour, warehousing, port charges, fuel for transportation plus land and labour outweigh costs of tradable elements. This is an important observation in terms of identifying areas for intervention in the domestic production and marketing chain rather than putting all the blame on international market prices of inputs.

CHAPTER V
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The general objective of this study was to undertake economic analysis of smallholder tobacco production and marketing in Songea district under a liberalized market economy. It aimed at tracing the role of institutions and organizations, identifying institutional forms of market failure, analyzing the economic efficiency of the production system, the degree of distortion in the market and the patterns of incentives for smallholder tobacco growers under liberalization. It also aimed at evaluating the relative profitability of maize, an alternative crop enterprise that competes with tobacco. This chapter therefore presents a summary of the major findings followed by conclusion and recommendations.

5.2 Summary of major findings.

The study found that smallholder tobacco growers in Songea district have household characteristics common to most rural household settings elsewhere in Tanzania. Their most important enterprise is tobacco production because of the cash earnings realized from the crop. However, maize production competes with tobacco for resources. Farmers are faced with many problems in their production activities but pests, diseases and unavailability of inputs were the most prominent ones. Extension services were found to be accessible to the majority of smallholders growing tobacco. Seasonal financing for crop production depended mostly upon tobacco leaf dealers. However,

loan repayment rates were extremely poor and hence small holders are heavily indebted to tobacco companies as a result of accumulated input debts over years.

In terms of resources, land is acquired free by the majority of the small holders either through inheritance or by being offered by village authorities. Land therefore, as a domestic resource is not yet a problem. In terms of labour, family labour is the major source in tobacco production. Many tradable inputs are required in production of the crop. The major problem cited in marketing of tobacco was unfair classification which, according to farmers interpretation, resulted into them being offered low prices for their produce.

Under liberalization, tobacco industry involved many participants with different roles. These included farmers, PCSs, leaf-dealers, the co-operative union and TTB. The study identified a number of setbacks with the free market arrangements. These include; interlocking contracts, which were against the idea of free market arrangements, a price setting mechanism that resulted into monopolistic rather than competitive prices, unfair classification system, uncoordinated input loan arrangements and unnecessary government intervention.

Gross margin analysis indicated that tobacco enterprise was more profitable compared to maize since it had a higher GM. However, considering labour requirements and returns to labour, tobacco was found to be a highly labour demanding crop with a low returns to labour and to some farmers, this fact outweighs its relative profitability and

the alternative crop enterprise (maize) becomes a more desirable venture in terms of resources allocation.

The PAM results revealed that from the social point of view, tobacco production is potentially a profitable enterprise when evaluated at the international market level. However, although small holders are indirectly subsidized on the domestic factors they use, there is a net taxation on tradable inputs employed. Also, small holders are paid less than the potential value of their product. They are not protected. The overall effect is a net taxation of tobacco production at the farm level. Thus, the existing marketing arrangements have made it appear as if tobacco is an uncompetitive crop, with a low resource allocation efficiency. There is therefore a net disincentive to produce the crop.

Results of the sensitivity analysis indicated that with a 20 % increase in producer prices, efficiency indicators revealed a sharp increase in producer incentives. Small holders will be more protected and profits, realised in excess of normal returns to domestic resources, will increase. With a 20 % decrease in the parity price of the product, indicators depict that production of the crop becomes undesirable from the social point of view. However, efficiency indicators were insensitive to a 20 % increase in parity prices of tradable inputs implying that tobacco production will still be a desirable enterprise from the social point of view and that costs of non-tradable elements in the entire production and marketing chain outweigh those of tradable elements.

5.3 Conclusion

The results of this study indicate clearly that smallholder tobacco production is potentially a profitable enterprise. However, it is evident that growers in Songea district have not captured the full potential benefits of the production regime despite operating under a liberalized market scenario. Market liberalization policy opened up markets by formally allowing private leaf-dealers to invest in the marketing of tobacco. However, there haven't been efficient operations within the liberalized markets. Arrangements have not provided adequate incentives to tobacco growers in terms of pre-harvest services and marketing efficiency in general. Many problems have been noted from the study, which indicated gross inefficiency in the entire production-marketing system. These problems increase costs and reduce revenues in the input/output markets and prevent the realization of potential income gains by tobacco growers. The first hypothesis governing the study is therefore true that, there is a net taxation of tobacco production at the farm level.

As a result, some smallholders have shifted some or all of their production resources to the more commercially and socially desirable alternative crop enterprises. The second hypothesis stating that maize production is more desirable is also true. However, in the absence of parallel studies indicating the relative profitability of the other crops to which resources are switched, shifting of resources is unguided and therefore at best shows farmers desperation, resulting from unfavourable market environment. Farmers' decision to reallocate resources confirms the rationality assumption embedded in the theory of production. Intervention is necessary in the operation of liberalized markets to

increase incentives and comparative advantage in costs, revenues and efficiency of resource use.

5.4 Recommendations

This study was conducted with reference to the 1997/98 cropping season before private leaf dealers withdrew from Songea district. Based on the study findings, the following recommendations aimed at improving the tobacco marketing system are made.

i) Growers should initiate arrangements that will ensure self-reliance

One generally observed characteristic of tobacco enterprise is the requirement for purchased seasonal inputs. The majority of small holders cannot afford to purchase adequate quantities of seasonal inputs on a cash basis at the start of the production season. Growers are therefore forced to enter into contracts with leaf dealers to ensure adequate and timely supply of inputs. This situation is a severe weakness on the part of growers that has to resolved. Rural savings mobilization has proved to be difficult to implement and therefore any lending mechanisms that is to be instituted needs access to finance from outside the local economy. Farmers must be encouraged to establish their own local organizations such as savings and credit co-operative societies or a tobacco development fund. The co-operative union could also consider establishing farmers co-operative bank that can deal with farm credit/loans to tobacco growers. Such organizations must be able to access capital from wider financial markets.

ii) Rationalization of the loan repayment system

Lending seasonal inputs to smallholder farmers is inevitable. However, many farmers seek to avoid loan repayment even where it is in their ability to do so. Some choose not to take enough efforts to repay loans. The haphazard nature of lending systems observed, meant that defaulting farmers have not necessarily been penalised. The reverse of this is that reliable repayers have received little reward for their good faith. Strategic default has thus become a culture among smallholder farmers. Whatever lending mechanism that might be employed in future, there will be a need to professionalize the grass root organizations (e.g. PCS's) so as to bring about accountability and responsibility particularly in enforcing loan repayment.

iii) Improvement of the classification system

To ensure that classification is fair to all parties involved, the team of classifiers should comprise representatives from the different stakeholders. There should be representatives of farmers, co-operative societies, leaf dealers and these individuals should all work under the leadership of TTB classifiers. Farmers and society representatives should be well trained so that they understand the different grades precisely and are able to voice out their complaints in case of downgrading. On the other hand, TTB should make deliberate efforts to ensure that tobacco growers are knowledgeable on the different grades such that when it comes to classifying their tobacco they don't raise unjustifiable complaints because of ignorance.

iv) To investigate the possibility of introducing an auction system

Auction systems have been found to be the fairest way of buying export crops. The system has been used and appreciated elsewhere such as in the United States, India, Zimbabwe and Malawi. The system is quick, simple and efficient. It promotes good grading and presentation and ensures maximum competition on prices to the benefit of farmers. Prices of tobacco are set through the auction system on the tobacco sales floor. Every bale of tobacco, which averages 100 kg is sold individually. Bales of tobacco are laid out in lines and the auctioneer and buyer walk along these lines, each bale being auctioned as the auctioneer prices the bale in question.

The auction system promotes maximum buyer competition and is responsive to quality and presentation and therefore will enable farmers to get better prices. The system is completely transparent and open. Growers retain control of their products and there is price compensation (premium) in times of under supply. There is also a potential of quick payment to farmers. Auctions will also take advantage of mid-season increases. The major shortcomings in as far as auctioning is concerned are that there is likely to be price drops in times of over supply. Also prior to opening of sales, there is no certainty of price since the system works on the basis of supply and demand. Unpredictability of prices can produce grower uncertainty. Successful operation of the action system relies heavily on up to date market information and intelligence. TTB should therefore investigate the practical and financial implications of introducing an auction system in tobacco marketing arrangements.

v) Development/improvement of extension services

Technical updating of tobacco growers is an important component in rationalizing production and marketing of the crop. Increase in yield per hectare can be achieved through improved growing techniques. Improved quality and presentation can also be achieved through better handling, curing, grading and advanced marketing techniques. Provision of adequate and quality extension services is therefore vital, and the current move should be to see whether extension services can as well be shifted to the private sector so as to accommodate the special knowledge required in the production and marketing of tobacco and the ever-increasing number of smallholder producers. However, stakeholders in the industry should find ways to institutionalize payment for private extension services.

vi) Adoption of improved technology

The level of production at household level in any one year depends on either the average area cultivated or the average yield per area. Almost all farmers in Songea district use the hand hoe in farm operations. There is a need to mobilize growers to adopt use of ox-driven farm implements in order to expand on their hectarage and improve land tillage. This will definitely have a positive effect on labour demand, particularly during land preparation stage. Growers should also prepare adequate and quality curing capacity for their tobacco crop. Introduction of improved technology needs to be preceded by studies to ascertain social, economic and climatic factors that might promote their adoption.

vii) Reduced government/political interference

The government's regulatory role has been entrusted upon the TTB. To be able to create a fair and competitive environment, no further government intervention in favour of one party amongst the stakeholders is required. Apart from the need for the government to play its regulatory role, liberalization should be left to take its own course without being interfered unnecessarily by both district and regional government authorities.

viii) Environmental conservation programmes

Environmental problems associated with tobacco production in Songea district include; clearing and degrading of natural woodlands, degradation of land, loss of soil fertility and reduction of diversity or altering of species composition. These problems should not go unchecked. Deliberate measures should be undertaken to mobilize growers and beneficiaries into enabling the execution of sustainable utilization of natural resources so as to mitigate the negative impact of tobacco production on the environment. Thus afforestation programmes should be established by encouraging community based participatory approaches to increase tree planting and woodland conservation. Extension services should be rationalized so that forestry extension is incorporated into sensitive tobacco growing areas. Forestry staff should then train both growers and other extensionists on tree planting and monitoring. There should also be a refocused approach from increasing hectarage to increasing yields per hectare and improving quality particularly to those farmers who cultivate large areas. An inefficient farmer is less environmentally friendly.

Bank of Tanzania (BOT) (1999) Economic and operations report for the year ending 30th June 1999 pp 128.

Croon, I. Deutch, J and Temu, A.E.M. (1984) Maize production in Tanzania southern highlands: Current status and recommendations for the future. CIMMYT, Mexico pp. 110.

Czinkota, M.R. Katobe, M. and Mercer D. (1997) Marketing management. Text and cases. Blackwell Business.

DALDO (1999) District agriculture and livestock development. Annual report for Songea district.

Dorward, A. Kydd, J and Poulton, C. (eds) (1998). Smallholder cash crop production, New Institutional Economics Perspective, CAB International, Wallingford. pp. 280.

Ellis, F. (1982) Agricultural price policy in Tanzania. In: World Development, Volume 10 No.4. pp 214-242.

Ellis, F. (1988) Tanzania. In: Agricultural pricing policy in Africa: Four country case study, (Edited by Harvey C.) Macmillan Publishers, London, pp. 106-115.

Ellis, F. (1992) Agricultural pricing policies in developing countries, Cambridge University Press pp. 357.

Fones, S.M. (1987). Role of price policy in stimulating agricultural production in Africa. Issue paper No. 2, Swedish University of Agriculture Sciences pp. 13.

Harrigan, J. Loader, R and Thritle, C. (1992) Agricultural price policy: Governments and the market. A training material for agricultural planning. No. 31, FAO, Rome pp. 282

Hawassi, F.G.H. Mdoe, N.S.Y. Turuka, F.M. and Ashimogo, G.C. (1998) Efficienct fertilizer use in the southern highlands of Tanzania. *Quarterly Journal of International Agriculture*, 37: 222 – 237.

International Tobacco Growers Association (1998) Who gets the added value from tobacco leaf, ITGA, West Sussex pp. 5.

Jaffee, S. and Morton, J. (eds) (1995) Marketing Africa's high value foods. Kendall Hunt, Iowa, pp. 198.

Jones, E and Muthura, J. (1989) The supply responsiveness of small Kenyan farmers. *Journal of Development Areas*, 24 (3) 535 – 544.

Kakwemeire, N.D.K. and Mbiha, E.R. (1999) The effect of crop marketing liberalization on cotton production and farmers income in Kahama district. In: Proceedings of the 3rd scientific conference of the Tanzania Agricultural Economic Society. (Edited by Mdoe N.S.Y, Isinika A.C. and Turuka F.M) 7 – 9 July,1999, Arusha, Tanzania. pp 221.

Kohls, R.L. and Uhl, O.N. (1990) Marketing of agricultural products, Macmillan Publication Co. New York. pp 170.

Launders, J. (1998) Co-operatives and agricultural marketing. Liberalization in Eastern and Southern Africa, *Journal of International Co-operation*, 91 (1) 25-31.

Lemweli, I.O.N. (1992) Economic analysis of the effects of government intervention on production, marketing and consumption of rice in Tanzania, M.Sc. Thesis Sokoine University of Agriculture, Tanzania, Unpublished.

Lipumba, N.H.J. (1977) Pyrethrum supply in Tanzania. Special emphasis on price responsiveness, University of Dar es Salaam, Unpublished M.A. dissertation pp. 164.

Mahundaza, J.S. Mollel, O.L. and Bhahebura, N.M. (1992) The study of input supply, distribution and performance of liberalization of input distribution system: Fertilizer. Final Report. Vol 2 MOAC. Dar es Salaam.

Marketing Development Bureau (MDB) (1994) 1993/94. Industry review of tobacco, MALD, Dar es Salaam pp. 80.

Minde, I.J. (1991) Factors affecting agricultural marketed surplus in Tanzania: The case of Maize. In: Doss, C.R. and Olson, C. (eds) African Rural Social Sciences Research Network. Issues in African Institute for Agricultural Development. pp. 508-531.

Mlay, G.I. (1988) Analysis of policies affecting maize production and consumption in Tanzania. Report for FAO, Rome. pp. 69.

Ministry of Agriculture (1999) Agricultural and Livestock Policy. Government Printer. Dar-es-salaam.

Monke, E.A. and Pearson, S.R. (1989) The Policy Analysis Matrix for Agricultural Development, Cornell University Press, Ithaca and London. pp 279.

Mwamfupe, D.G. (1987) Agricultural decision making: M.A. dissertation, University of Dar es Salaam. pp. 112.

Platteau, J. (1996) Physical infrastructure as a constraint on agricultural growth: The case of Sub-Saharan Africa. Oxford Development Studies 23 (3), pp. 180-220.

Ponte, S. (1996) Free to remain poor: Liberalization and rural povety in Tanzania. Paper submitted for presentation at the workshop on poverty alleviation, Development Studies Institute, Sokoine University of Agriculture, Morogoro, 25-27 March, 1996 pp. 19.

Poulton, C. Katinila , N. and Gondwe, A. (1997) The cashewnut sector in Tanzania: Overcoming problems of input supply. Policy Research Programme. Natural Resource Policy and Advisory Department. ODA.

Samki, J.K. and Harrop J.F. (1982) Research on fertilizer distribution and agro-ecological zones in Ruvuma region. Tanzania Agricultural Research Organization. Ministry of Agriculture and Livestock Development. pp. 61.

Scarborough, V. and Kydd, J. (1992) Economic analysis of agricultural markets. A manual. Marketing Series No. 5. Natural Resources Institute, Catham, U.K. pp. 166.

Shapiro, B.I. and S.J. Staal (1995) The Policy Analysis Matrix applied to agricultural commodity markets. In: Prices products and people. Analysing agricultural markets in development countries. (Edited by Gregory Scott) Rienner Publisher. Boulder, London pp. 73-97.

Shepherd, A.W. and Farolfi, S. (1999) Export crop liberalization in Africa. A review. FAO Agricultural Services Bulletin 135. Rome.

Simon, S.M. (1998) Peasant strategic resource use under free market conditions and the factors affecting its optimal allocation: A case of tobacco based farming systems in Tabora. Msc Thesis. Sokoine University of Agriculture, Tanzania. Unpublished

Staal, S.J. and B.I. Shapiro (1994) The effects of recent price liberalization on Kenyan peri-urban dairy. A case study using the Policy Analysis Matrix approach. In: Food Policy Vol. 19 No. 6, 1994 pp. 33-47.

Tanzania Tobacco Board (1999) Annual report on the state of the tobacco industry and proposal for rectification. Morogoro, Tanzania.

Temu, A.A. (1999). Emperical evidence of changes in the coffee market after liberalization: A case of northern Tanzania. Ph.D. Thesis, Urbana Illinois pp.210

Turuka, F.M. (1995) Price reforms and fertilizer use in small holder agriculture in Tanzania. Ph.D. Thesis. Lit Verlag Munster – Hamburg. pp. 264.

United Republic of Tanzania (URT) (1983) The Agricultural Policy of Tanzania, Dar es Salaam, Government Printers pp. 62.

Willamson, O.E (1993) Transaction cost economics: The governance of contractual relations. *Journal of Law and Economics 22*: 233-262.

World Bank (1981) Accelerated development in Sub-Saharan Africa, World Bank, Washington D.C. pp. 61.

World Bank (1983) Tanzania Agricultural Sector Report. Report No. 4052-TA, World Bank, Washington D.C. pp. 269.

World Bank (1993) Tanzania. A povety profile. Report No. 12298- TA, World Bank, Washington D.C. pp. 225.

World Bank (1994) Adjustment in Africa: Reforms, results and the road ahead, World Bank, Washington D.C. pp. 196.

World Bank (1997) Rural Development: From vision to action. Environmentally and socially sustainable development, Study series 12. World Bank, Washington D.C.

APPENDICES

Appendix 1: Farmer's questionnaire

Questionnaire no..... date of interview.....interviewer's name.....

Module 1: Household identification variables

1.Farmer's name..... Gender..... Village.....
2.Division.....

3.Gender of household head..... Age..... (years)

level of education of household head.

1=None

2=Adult education

3.=Primary education

4.=Secondary education

5.=Others (specify).....

4. Household composition

Age group	Males	Females
Below 17 years 17 – 50 years above 50		

Module 2: Farm activities

5. Besides tobacco, what other crops do you grow?

.....

.....

6. Rank your crops according to the order of importance.

.....

.....

7. Give criteria used for the ranking.

.....

.....

8. State the planting, harvesting and marketing periods of tobacco and maize.

Crop Planting Harvesting Marketing

9. Do you receive advice from extension agents on production and marketing of the different crops you grow?

1 = Yes 2 = No.

10. How do you collect information on market prices?

1 =Direct visit to the market

2 =Cross checks with middle men

3 =Hear from friends.

4 =Other (specify)

11. How far is the selling point from your homestead?

Tobacco	km
Maize	km
Others (specify)	km.

12. Where do you experience problems most in your agricultural activities?

1 = Production 2 = Marketing 3 = Both

(i)Tobacco..... (ii) Maize..... (iii) Others specify.....

Module 3: Farm resources and inputs availability and use

A. land availability and use

13. What is the total land area owned by the family?

..... (hectares)

14. How did you acquire this land?

1=Inherited

2=Bought

3=Hired

4=Given by village government

15. What is the total area cultivated during the last season (1997/1998)..... (hectares)

16. Give actual hectares allocated to the different enterprises last season.

B. Labour availability and use

Indicate labour used for the following enterprises/activities during last season (1997/1998)

Enterprise	Family labour (Mandays)	Exchange labour (Mandays)	Hired labour (Mandays)
Tobacco			
Nursery work (Sowing & watering)	.....	.....	.....
Firewood collection	.....	.....	.....
Barn construction and maintenance	.....	.....	.....
Land preparation & ridging	.....	.....	.....
Transplanting	.....	.....	.....
Fertiliser & pesticide application	.....	.....	.....
Topping & desuckering	.....	.....	.....
Harvesting	.....	.....	.....
Curing	.....	.....	.....
Sorting, grading, bailing and marketing	.....	.....	.....
Others (specify)	.....	.....	.....
Maize			
Land preparation	.....	.....	.....
Planting	.....	.....	.....
Insecticide & fertilizer application	.....	.....	.....
Weeding	.....	.....	.....
Harvesting	.....	.....	.....
Haulage and marketing	.....	.....	.....
Others (specify)	.....	.....	.....

18. Indicate the source, quantity and cost of purchased inputs/services used for the different enterprises during the the 1997/98 season

Tobacco production

Inputs	Source	Quantity	Price/Unit		Transport cost		Total	
			Private	Social	Private	Social	Private	Social
Fertilizer								
Seedbed packs								
Insecticide								
Firewood								
Tractor Services								
Hired labour								
Others (specify)								

Maize production

Inputs	Source	Quantity	Price/Unit		Transport cost		Total	
			Private	Social	Private	Social	Private	Social
Fertilizer								
Seeds								
Insecticide								
Tractor Services								
Hired labour								
Others (specify)								

Module 4: Investment and equipment costs

19. Indicate price/cost, year purchased/rented, expected useful life and enterprise where used for the different items/equipment

Item	Year purchased/ rented/constructed	Expected useful life (Yrs)	Purchase price/cost		Enterprise where used
			private	social	
Land					
Barn					
Hoe(s)					
Wheel barrow(s)					
Empty drum(s)					
Fertilizer caps					
Others (specify)					

Module 5: Enterprise output, consumption and marketing

20. Give the amount (in kg) produced, consumed at home, sold and prices of the different crop enterprises in the 1997/1998 season.

Crop Enterprise	Amount Produced	Amount Consumed	Amount Sold	Unit Price (Tshs) Private	Social
Tobacco	.....	.....	.....	.....	
Maize	.....	.....	.....	.....	

Module 6: Credit and selected financial data

21. What are your present sources of credit?

.....

.....

.....

22. Did you have any outstanding debts from previous seasons borrowing (before the 1997/1998 season)

1 = Yes

2. = No

23. If yes, how much and when did you borrow? Tshs ....199.....

24. Did you take any loans for farm operations during the 1998/1999 season?

1 = Yes

2 = No

25. If Yes, what was the value of the loan? Tshs.....

26. Please indicate how the loan was allocated among the various enterprises/activities on the farm.

Enterprise	Fertilizer Allocated	Pesticide allocated	Money allocated
Tobacco	.....	.....	.....
Maize	.....	.....	.....
Other (specify)	.....	.....	.....

27. What interest rate do you pay and what is the repayment period? Rate.....%

Repayment period.....

28. What are the major reasons as to why you fail to repay your debts.....

.....

.....

.....

Module 7: Miscellaneous information

29. Besides income received from crop production, do you have any other source of income?

1. Yes
2. No

30. If yes, please specify the source(s) and amount earned per year.

1. Source..... amount per year Tshs.....
2. Source..... amount per year Tshs.....
3. Source..... amount per year Tshs.....

31. Please, give details of all taxes paid during the 1997/1998 farming season.

Type of tax	Total amount paid (T.shs.)
1.	.....
2.	.....
3.	.....

32. What are your major tobacco marketing problems?

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

33. Do you have any other problems affecting tobacco production?

1. = Yes
2. = No

34. If yes, please specify the problems (s)

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

35. How do you think these problems can be solved?

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

36. What is your view on prices of tobacco for the last three seasons?

1995/96 .....
1996/97 .....
1997/98 .....

37. What is your view on the classification system of tobacco?

.....

.....

Appendix 2: Check list for tobacco companies

1. Name of company
2. When did the company commence its activities in Tanzania?
3. When did it commence its activities in the study area?
4. What activities is the company engaged in as far as the study area is concerned?
5. What is the companies point of view on the quality of tobacco being produced?
6. What are the constraints facing small holder tobacco farmers as far as production is concerned?
7. What is the companies point of view on the price setting mechanism?
8. What type of loans does the company offer to small holder farmers, and what is the mechanism of repayment?
9. Indicate the trend of input given to farmers for the previous seasons in the study area.

Season	No. of S.H. farmers linked to the company	Total value of input loans given (T.shs.)	Total value of loans repayed at the end of season (T.shs.)	Debt balance carried forward to next season (T.shs.)
1995/96				
1996/97				
1997/98				

10. From the companies point of view, what are the major reasons as to why many small holder farmers fail to repay their input loans?
11. What measures are being taken by the company to ensure that interlocking contracts are being adhered to, hence loans are being repayed?
12. What is the companies view on the performance of primary co-operative societies?
13. What are the major problems facing the company as far as tobacco marketing is concerned?
14. Parity prices for tobacco (1997/1998 season)

Activity/Item	Price/cost
FOB (T.shs/ton)	-
Export tax (T.shs/ton)	-
Port charges :handling/storage etc (T.shs/ton)	-
Transport : processor to port (T.shs/ton)	-
Value of any by product (T.shs/ton)	-
Processing losses (T.shs/ton)	-
Processing costs (T.shs/ton)	-
Storage costs (T.shs/ton)	-
Transport : farm to processor (T.shs/ton)	-

Others costs (specify) (T.shs/ton)	-
Profit/Mark up (T.shs/ton)	-
Farm parity price (T.shs/ton)	-
Farm parity price (T.shs/kg)	-

15. Parity prices for fertilizers (1997/98 season)

Activity/Item	Price/cost
1. CIF (T.shs/ton).	-
2. Import taxes (T.shs/ton)	-
3. Port charges :Unloading/storage/etc (T.shs/ton)	-
4. Losses (T.shs/ton)	-
5. Transport (T.shs.)	-
6. Warehousing/storage (T.shs/ton)	-
7. Other costs (specify) (T.shs/ton)	-
8. Market price (T.shs/ton)	-
9. Transport : farm to processor (T.shs/ton)	-
10 .Mark up (T.shs/ton)	-
11. Price at farm gate (T.shs/ton)	-
12. Price at farm gate (T.shs/kg)	-

16. Parity prices for pesticide (1997/98 season)

Activity/Item	Price/cost
1. CIF (T.shs/ton).	-
2. Import taxes (T.shs/ton)	-
3. Port charges :Unloading/storage/etc (T.shs/ton)	-
4. Losses (T.shs/ton)	-
5. Transport (T.shs.)	-
6. Warehousing/storage (T.shs/ton)	-
7. Other costs (specify) (T.shs/ton)	-
8. Market price (T.shs/ton)	-
9. Transport : farm to processor (T.shs/ton)	-
10 .Mark up (T.shs/ton)	-
11. Price at farm gate (T.shs/ton)	-
12. Price at farm gate (T.shs/kg)	-

Appendix 3: Costs and returns of maize per hectare, 1997/98 season

Average yield (kg)[a]……3242.5

Average price per kg (Tshs)[b]……60

Gross returns (tshs)……194550

Input requirements and costs

i) Labour inputs (mandays)[c]

Operation	Mandays
Land preparation	15
Planting	8
Weeding	10
Fertilizer application	5
Harvesting	12
Crop haulage & marketing	7
Total	57

ii) Physical input costs[d]

Item	Unit	Qty	Life span (yrs)	Unit cost (Tshs)	Total Cost (Tshs)
Fertilizer	kgs	167	1	220	36,740
Transport cost for fertilizer	kgs	167	1	2	334
Hoes	-	4	5	2000	1,600
Total					38674

Total cost of physical inputs (Tshs/ha)……..38,674

Gross margin (Tshs/ha)……...155,876

Returns to labour (Tshs per manday)……..2,735

[a]Average yield as computed from survey data

[b]Average price per kg as computed from survey data

[c]Labour requirements obtained from survey data

[d]Physical input costs as computed from survey data.

Appendix 4: Costs and returns of tobacco per hectare, 1997/98 season

[a]Average yield (kg)..... 772.5

[b]Average price per kg (Tshs)..... 440

Gross returns (Tshs)..... 339,900

Input requirements and costs

i) Labour inputs (mandays)[c]

Operation	Mandays
Nursery work	35
Firewood collection	10
Barn construction and maintenanc	20
Land preparation and ridging	25
Transplanting	10
Weeding	30
Fertilizer appliation	5
Topping and csuckering	32.5
Harvesting	45
Curing	22.5
Sorting, grading, bailing and marketing	45
Total	280

ii) Physical inputs costs[d]

Item	Unit	Qty	Life span (yrs)	Unit cost (T.shs.)	Total Cost (T.shs.)
Fertilizer	kgs	312.5	1	177.2	55,375
Transport cost for fertilizer	kgs	312.5	1	2	625
Pesticide	kgs	3	1	1,200	3,600
Tarlined paper	rolls	1/2	1	20,000	10,000
Jute twine	kgs	10	1	920	9,200
Hessian cloth	mts	52	1	200	10,400
Barn	-	1	5	17,500	3,500
Hoe	-	4	5	2,000	1,600
Axe	-	2	5	2,500	1,000
Total					95,300

Total costs of physical inputs (Tshs/ha)..... 95,300

Gross margin (Tshs/ha)..... 244,600

Returns to labour (Tshs per manday)..... 870

[a]Average yield as computed from survey data

[b]Average price per kg as computed from survey data

[c]Labour requirements obtained from survey data.

[d]Physical input costs as computed from survey data

For farm tools (barn, hoe and axe) costs associated are for depreciation

Appendix 5: Derivation of social price for fertilizer

		TR	NTR	TOTAL
1.	Exchange rate – (1997) (Tshs/$)			624
2.	CIF Dar-es-Salaam ($/ton)			167.56
3.	CIF Dar-es-Salaam (Tshs/ton) = 1. * 2.	10,4557		
4.	Port charges - wharfage (Tshs/ton)		1,568	1,568
5.	- handling (Tshs/ton)		2,496	2,496
6.	Weight losses (Tshs/ton)		2,091	2,091
7.	Border price (Tshs/ton) = sum (3. – 6.)	104,557	6,155	110,712
8.	Transport – port to warehouse (Tshs/ton)	900	2,100	3,000
9.	Cost at warehouse (Tshs/ton)		1,045	1,045
10.	Transport – Dar to Songea (Tshs/ton)	12,000	28,000	40,000
11.	Market price (Tshs/ton) = sum (7. – 10.)	117,457	37,300	154,757
12.	Transport to farm (Tshs/ton)	3,600	8,400	12,000
13.	Price at farm gate (Tshs/ton) = sum (11. –12.)	121,057	45,700	166,757
14.	Price at farm gate (Tshs/kg) = 13./1000	121	45.7	166.7
15.	Portions/share	0.73	0.27	1.00

TR = Tradable component

NTR = Non – tradable component

Source; survey data, 1999

Appendix 6: Social price for pesticide (Thiodan dust) 1997/98 season

		TR	NTR	TOTAL
1.	Exchange rate (1997) (Tshs/$)			624
2.	CIF Dar-es-salaam ($/ton)			1,618.26
3.	CIF Dar-es-salaam (tshs/ton) = 1. * 2.	1,009,793		1,009,793
4.	Port charges - wharfage (Tshs/ton)		1,568	1,568
5.	- handling (Tshs/ton)		2,496	2,496
6.	Weight losses (Tshs/ton)		10,098	10,098
7.	Border price (Tshs/ton) = sum (3. – 6.)	1,009,793	14,162	1,023,955
8.	Transport – port to warehouse (Tshs/ton)	900	2,100	3,000
9.	Cost at warehouse (Tshs/ton)		1,045	1,045
10.	Transport – Dar to Songea (Tshs/ton)	12,000	28,000	40,000
11.	Market price (Tshs/ton) = sum (7. – 10.)	1,022,693	45,307	1,068,000
12.	Transport to farm (Tshs/ton)	3,600	8,400	12,000
13.	Price at farm gate (Tshs/ton) = sum (11. –12.)	1,026,293	53,707	1,080,000
14.	Price at farm gate (Tshs/kg) = 13./1000	1,026.3	53.7	1,080
15.	Portions/share	0.95	0.05	1.00

TR = Tradable component

NTR = Non – tradable component

Source; survey data, 1999

Appendix 7: Parity price for tobacco in Songea, 1997/98 season

1.	Exchange rate (1998) (Tshs/$)	665.5
2.	FOB ($/ton)	2,400
3.	FOB (Tshs/ton) = 1. * 2.	1,597,200
4.	Port charges (Tshs/ton)	97,163
5.	Storage charges (Tshs/ton)	13,310
6.	Transport to port of exit (Tshs/ton)	66,550
7.	Head office overhead costs (Tshs/ton)	99,825
8.	Fumigation costs (Tshs/ton)	6,655
9.	Container stuffing (Tshs/ton)	6,655
10.	Ex – processing price (Tshs/ton) = 3. – (sum of 4. – 9.)	1,307,042
11.	Processing fee (Tshs/ton)	252,890
12.	Pre – processing price (Tshs/ton) = 10. – 11.	1,054,152
13	Green leaf equivalent 75% (Tshs/ton) = 12.* 0.75	790,614
14.	Stationary – marketing (Tshs/ton)	3,000
15.	Field overheads (Tshs/ton)	30,000
16.	Transport – PCS to factory (Tshs/ton)	30,000
17.	Farm parity price (Tshs/ton) = 13. – (sum of 14. –16.)	727,614
18.	Farm parity price (Tshs/kg) = 17/1000	727.614

Source ; Survey data, 1999

Appendix 8: PAM and efficiency indicators after sensitivity analysis

Accounts	Revenues	Tradable input costs	Non tradable input costs	Profits
Private	*407,880	*58,643.75	*260,031.25	*89,205
	**339,900	**58,643.75	**260,031.25	**21,225
	***339,900	***58,643.75	***260,031.25	***21,225
Social	*562,380	*55,906.44	*415,344.01	*91,129.55
	**449,595	**55,906.44	**415,344.01	**-21,655.45
	***562,380	***67,088	***415,344.01	***79,948
Divergence	*-154,500	*2,737.31	*-155,312.76	*-1,924.55
	**-109,695	**2,737.31	**-155,312.76	**42,880.45
	***-222,480	***-8,444.25	***-155,312.76	***-58,723

20% increase in producer prices			20% decrease in parity prices of product	20% increase in parity prices of inputs
NPCb = 0.60	EPCb = 0.55	PCRb = 0.92	DRCb = 0.82	DRCb = 0.82
NPCa = 0.73	EPCa = 0.70	PCRa = 0.74	DRCa = 1.05	DRCa = 0.84
Change = 22%	Change = 27%	Change = 20%	Change = 28%	Change = 2%

* 20% increase in producer prices

** 20% decrease in parity price of product

*** 20% increase in parity prices of inputs

b = before sensitivity analysis

a = after sensitivity analysis

Appendix 9: Revenues, costs and profits of tobacco per hectare, 1997/98 season

		PRIVATE VALUES						SOCIAL VALUES					
Accounts	Amount	Prices (Tshs/unit)	Values (Tshs)	TR (Share)	NTR (Share)	TRV (Tshs)	NTRV (Tshs)	Prices (Tshs)	Values (Tshs)	TR (Share)	NTR (share)	TRV (Tshs)	NTRV (Tshs)
1. Revenue account													
Output (kg/ha)	772.5	440	339,900					728	562,380				
Total Revenue			339,900						562,380				
2. Cost account													
A. Material inputs													
Fertilizer (kg)	312.5	177.2	55,375	0.73	0.27	40,423.75	14,951.25	166.7	52,093.75	0.73	0.27	38,028.44	14,065.31
Pesticide (kg)	3.00	1,200	36,00	0.95	0.05	3,420	180	1,080	3,240	0.95	0.05	3,078	162
T/paper (rolls)			10,000	0.50	0.50	5,000	5,000		10,000	0.50	0.50	5,000	5,000
Jute twine (kg)	10	920	9,200	0.50	0.50	4,600	4,600		9,200	0.50	0.50	4,600	4,600
Hessian cloth (mts)			10,400	0.50	0.50	5,200	5,200		10,400	0.50	0.50	5,200	5,200
Barn			3,500	0.00	1.00	0.00	3,500		3,500	0.00	1.00	0.00	3,500
Hoe			1,600	0.00	1.00	0.00	1,600		1,600	0.00	1.00	0.00	1,600
Axe			1,000	0.00	1.00	0.00	1,000		1,000	0.00	1.00	0.00	1,000
B. Labour (mandays)	280	800	224,000	0.00	1.00	0.00	224,000	800	224,000	0.00	1.00	0.00	224,000
C. Land (ha)	1	0.00	0.00	0.00	0.00	0.00	0.00		156,216.7	0.00	1.00	0.00	156.216.7
Total Cost			318,675			58,643.75	260,031.25		471,250.45			55,906.44	415,344.01
3. Profit account (Tshs)			21,225						91,129.55				

Farm tools includes repair and depreciation costs. TR and NTR respectively represent tradable and non tradable components. TRV and NTRV respectively represent values of tradable and non tradable inputs.

Source: Survey data, 1999