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Research Report 06.1

ASSESSING MARKET DISTORTIONS AFFECTING POVERTY REDUCTION EFFORTS ON SMALLHOLDER TOBACCO PRODUCTION IN TANZANIA

Dennis Rweyemamu
&
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ABBREVIATIONS

ATTT	Association of Tanzania Tobacco Traders
c.i.f.	cost, insurance, freight
DIMON	DIMON Morogoro Tobacco Processors Ltd
DRC	Domestic Resource Cost
EPC	Effective Protection Coefficient
f.o.b.	free on board
NPCO	Nominal Protection Coefficient on Tradable Output
NPI	Nominal Protection Coefficient on Tradable Inputs
OED	Operations Evaluation Department, World Bank
PAM	Policy Analysis Matrix
PCS	Primary Cooperative Society
PCR	Private Cost Ration
PRSP	Poverty Reduction Strategy Paper
SAMCU	Songea Agricultural Marketing Cooperative Union
STANCOM	Standard Tobacco Company
TLTC	Tanzania Leaf Tobacco Company
TTB	Tanzania Tobacco Board
TTC	Tanzania Tobacco Council

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ABSTRACT

This study attempts to analyse the efficiency of production, the degree of distortion in the markets and the pattern of incentives for smallholder tobacco growers in Songea, Tanzania.

A survey was conducted on a sample of tobacco growers in Songea district, and secondary data collected from key organisations in the industry. A Policy Analysis Matrix (PAM) of the tobacco production and marketing system was constructed so as to determine the private and social profitability of the system, distortions in the markets and the efficiency of resource use in the pursuit of maximizing income. Since PAM is a static model, a sensitivity analysis to explore the effect of potential changes in various factors that influence profitability of the enterprise was also conducted.

The analysis revealed that although tobacco production is potentially a profitable enterprise relative to the international market, smallholders are paid less than the actual value of their product. The overall effect is a net taxation of tobacco production at the farm level. Thus the existing marketing arrangements have made it appear uncompetitive with low resource allocation efficiency. There is a net disincentive to produce the crop. In the absence of distortions, smallholder farmers in the region would have realised more to their average annual income from tobacco production alone. These findings reveal the importance of the crop in poverty reduction efforts, and the significant effects of market distortions.

Sensitivity analysis indicated that an increase in producer prices resulted into a sharp increase in producer incentives and smallholders will be more protected with profits realised 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 tobacco 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. Intervention is, therefore, necessary in the operation of liberalized markets to increase incentives and comparative advantage in costs, revenues and efficiency of resource use.

1 INTRODUCTION

1.1 Background Information

In most sub-Saharan countries, there appears little immediate rural industrialization or other non-farm engines of growth and poverty alleviation. This implies that smallholder agriculture is likely to remain the major source of rural growth and livelihood improvement for a long time to come (World Bank, 1997; Platteau, 1996). The 1998 OED argues that well-meaning efforts in Tanzania by the government, civil society and donors were not focused on the root causes of income poverty, but on its symptoms. This issue interacts with agriculture to the extent that, in Africa the poor are typically concentrated in rural areas, and within the rural areas relatively better-off persons normally get a higher share of income from non-farm sources (Reardon et al., 1994). Thus, problems in achieving poverty alleviation are linked to problems in achieving higher agricultural performance. Also problems in achieving higher agricultural growth are linked with problems of access to markets. According to the Participatory Poverty Assessment carried out in Tanzania by the World Bank ("Voices of the Poor", 1995), one of the factors of importance to the poor was access to markets. Also views from the grassroots expressed at zonal workshops during the preparation of the Poverty Reduction Strategy Paper (PRSP), identified limited access to markets as one of the key causes of income poverty.

Within the context of agricultural performance, 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, hence contribute to poverty reduction initiatives. 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. The 1998 OED report claims that failure to recognise export cropping as the engine for growth has led to overall economic distress and jeopardized the success of Tanzania's hard fought and painful structural adjustment efforts.

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. Currently, the export crops industry in Tanzania, particularly at the farm level, is constrained by several factors, some of which are attributed to market failure, resulting from imperfections in the marketing system.

Tobacco is an export crop grown worldwide in more than 120 countries (ITGA, 1998). In Tanzania, it is one of the major agricultural export crops, being the third largest foreign exchange earner after coffee and cashew nuts (BOT, 2003). It is the main source of income to some 72,000 smallholder farmers who are striving to get out of or stay out of poverty. It also offers employment opportunities in both tobacco farms and in the three processing factories in Morogoro and Ruvuma regions. In addition, the crop provides raw material for cigarette manufacturing factories, thus offering further employment opportunities in the country.

1.2 Problem Statement

Over the years, Tanzania has experimented with a wide variety of agricultural marketing policy regimes, from unregulated markets to cooperative-based marketing to centralized crop authorities and back to relatively unregulated markets. Export marketing has experienced similar changes, as well as dramatic shifts in the real exchange rate. Agriculture markets are influenced by government

interventions mostly through price and trade policies. The agriculture sector cannot be treated in isolation, as it is substantially influenced by macro-economic factors. Some of the problems facing the sector could be attributed to market distortions. A distortion, in this case, is a degree of divergence between a situation with a particular intervention and a situation without the intervention.

Currently, problems facing the tobacco industry 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 result from an imperfect competition where a small number of buyers are 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 crops 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, hence poverty status. Price incentives are captured in commodity, domestic factor and input markets. It is therefore important to examine the effects of market distortions on the economic incentives of export crop growers and identify institutional forms of market failure.

In some recent literature, knowledge on quantitative effects of market distortions on tobacco production in Tanzania is still insufficient. Given this background, it is the objective of the study to analyse the direction and extent of distortions and therefore, empirically fill the gaps in the literature. The study will identify patterns of incentives and analyse the economic efficiency of smallholder tobacco production.

1.3 Objectives of the Study

General Objective

The broad objective of this study is to assess market distortions affecting poverty reduction efforts through tobacco production.

Specific Objectives

Specifically the study seeks to:

(i) analyse the economic efficiency of tobacco production;

(ii) assess the degree of distortion in the input/output markets; and

(iii) trace the role of institutions and organisations in the production and marketing systems and identify institutional forms of market failure.

2 REVIEW OF LITERATURE

2.1 Smallholder Export Crop Production in Africa

The rural economy of many African countries is based on export crop production. As noted earlier, export crops are grown for international markets. Most of them 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) recognised a number of contributions that export crops could make to agricultural development at the household level. Export crops are the nucleus around which extension services, input supply and marketing are built. Food crops often benefit from residual fertilizers in the soil when they follow export crops in rotation. Export crops also allow the purchase of productivity enhancing equipment and accumulation of capital for other investments. At the aggregate level, if export 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 export crop production under market liberalization are somewhat different from those facing food crops. Many staple food crops in sub-Sahara 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. Even where international trade might exist (as for example with rice and maize), intra-country transport costs might inflate prices within producing regions, thus hindering goods movements into the world market. 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 export crops than for food crops. In general therefore, the use of purchased inputs remains profitable for export crops as compared to food crops.

2.2 Distortions in Agriculture Commodity Markets

Policy distortions is a problem faced in most of the developing countries and in some developed countries as is indicated by the major effort that has been undertaken in recent years to measure the distortions in the agriculture sector. Several studies have sought to evaluate the costs of such trade distortions. The late 1970s and early 1980s saw several less developed countries raising producer prices for cereals relative to other competing opportunities, thus increasing incentives for food production. A good example is shown in the study in Kenya by Jabara (1985). The study revealed that producer prices (output prices deflated by input prices) for food and other crops increased substantially from 1979 to the early 1980s and that these price increases were associated with the increase in marketed agricultural production. In another major study on pricing policy in developing countries, the United Nations Food and Agriculture Organisation (FAO) (1985) noted that, while international cereal prices fell to 18 per cent between 1978-82, developing countries' domestic producer prices rose on average by 5 per cent over the same period.

The study by Byerlee and Sain (1986) found no consistent evidence of price disincentives for wheat producers in less developed countries. Although the countries kept prices low to wheat consumers, according to the Byerlee and Sain study, the countries did so using policies that did not directly tax

wheat producers. Also, the situation of taxation of some agricultural commodities in Kenya has been reported by a number of authors. It is clear that government taxation of the exportable commodities, which is embraced in the controlled prices set by the government, is a policy considered unfavourable. Westlake (1987) draws attention to the policy distortions that exist in Kenya's major agricultural sub-sectors and tries to visualize the empirical method to estimate distortions on a national level. Kennedy and Cogill (1987) try to qualify the negative effects on the staple food production by intervening policies in the competing export crops. They state that "benefits from Kenya's policies accelerating the production of export/cash crops had to some degree, negative effects on the staple food production and hence on national food security".

2.3 Production Response to Changes in Commodity Markets

Theory suggests that there is no single factor that determines the 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 maximising. 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 export crop production in favour of food crop production. These findings concur with predictions 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.

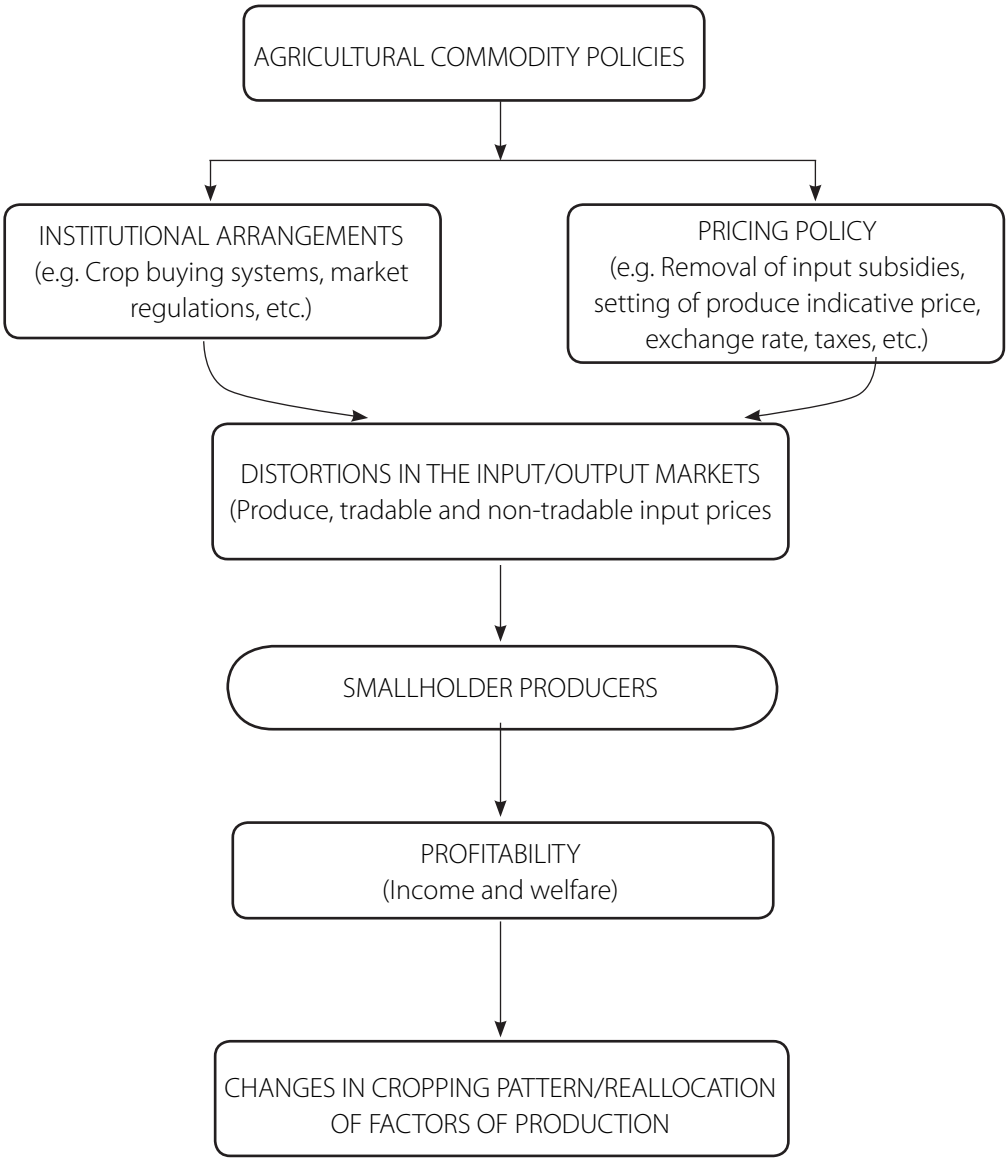
In summary we note that, although price can be the main machinery, which accounts for the production trends of agricultural products, much needs to be noted on non-price attributes. It is because of this, that apart from dealing with price factors such as the relationships of production costs, producer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

3 RESEARCH METHODOLOGY

3.1 The Conceptual Framework

A conceptual framework for analyzing the impact of distortions on agricultural production and marketing systems was developed as in figure 1.

Figure 1: Conceptual Framework for Analysing the Impact of Policy on Export Crop Production and Marketing



Distortions in the context of production and marketing of agricultural commodities can be defined as those interventions, which lead to price alterations that farmers face affecting their incomes and welfare, hence pushing them even deeper into poverty. Thus, these interventions alter economic incentives to the producers. With market liberalization new institutions and free marketing arrangements emerged aiming at enhancing competition in both input and output markets. The effects of divergence as a result of interventions can be measured at the market levels. Profitability of production systems (defined as the difference between revenues and costs) is a key issue affected by changes in commodity, domestic factor and input markets. Distortions in the input/output markets can result into a net taxation of the production system hence lowering of profitability. This could lead to changes in cropping patterns and resource allocation among the alternative crop enterprises (shifting towards the more desirable enterprise). Institutional market failure could also result into a situation in which markets do not function efficiently because of inadequate development or lack of appropriate regulations. Hence identifying institutional forms of market failure and their effect is also important in evaluating agricultural commodity markets. Changes in profitability as a result of policy intervention can be measured in production systems.

An evaluation of the impact of distortions comes from an understanding of how they affect profits. Distortions create incentives or disincentives for production systems and the long-term environment for the development and sustainability of the markets, and of agricultural production, hence directly having impacts on poverty alleviation initiatives. The aim of this study is to analyse the efficiency of production, degree of distortions in the markets, and patterns of incentives for tobacco growers under the current policies.

3.2 Study Area

This research study was conducted in Songea district, Ruvuma region. The district was chosen to represent tobacco growing areas in the country.

3.3 Sources of Data

Data for the study was obtained from both primary and secondary sources.

3.3.1 Primary Data

Primary data collection involved questionnaire design, pre-survey, sampling and administration of the questionnaires to farmers (with reference to the 2001/2002 cropping season). While collection of cross-sectional data is mainly for the evaluation of policy distortions for the base year, time series data is used in the derivation of averages in situations where seasonal data may not be reliable. Additional primary data was collected through informal discussions with agricultural field officers, primary co-operative societies, key informants and private companies.

Questionnaire Design

A questionnaire was developed to elicit information required in accomplishing the objectives of the study. It was designed to capture both quantitative and qualitative data on smallholder coffee, cashew nuts and tobacco production. The questionnaire is divided into six 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: Credit and selected financial data
- Module 6: Miscellaneous information, such as extension services, taxes paid and subsidies received and opinions on production and marketing problems.

Pre-survey

Prior to the main survey, a pre-survey was conducted. This was essential, as it enabled the researchers to pre-test the questionnaire and to ascertain the feasibility of conducting the major survey in the intended area of study. Questionnaire pre-testing was conducted using a small sample of 15 farmers for each crop.

Sample Selection Techniques

The research covered five divisions in Songea district. From each division, one ward was chosen randomly to get a total of five wards and from each ward at least two villages were selected randomly to get a total of ten villages. From a list of farmers in the villages, the researchers 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 this crop in the 2001/2002 season were excluded from the sample and the remaining assumed to be homogenous, thus justifying the random selection. In total, the sample size was 120 tobacco farmers.

Questionnaire Administration

The questionnaire was administered by the researchers, with the help of enumerators and village extension officers (VEO) responsible for each village. Individual farmers were interviewed in their homes or village offices. Informal discussions were also held with extension agents, primary co-operative society officials, cooperative union, and other traders in the localities involved with crop purchase and input supply.

3.3.2 Secondary Data

Secondary data was also collected from various government and non-governmental organisations to complement the information obtained from the sample farmers.

3.4 Analytical Techniques

Part of the analysis was based on descriptive statistics to describe the response, characteristics and trends of some of the data and information. The Policy Analysis Matrix (PAM) was employed as a quantitative analytical tool to analyse the economic efficiency of the production systems, and the degree of distortion in the input/output markets. An attempt was also made to assess the presence and role of institutions and organisations and the identification of institutional forms of market failure.

3.4.1 The Policy Analysis Matrix (PAM)

The Policy Analysis Matrix (PAM), developed by Monke and Person (1989), provides an organisational framework, which identifies patterns of incentives for economic actors at each level of the commodity chain, and analyses 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.

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 1 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 1: 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 interventions 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 1, 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.

Estimation of Private Costs and Revenues

Using the survey data, simple means were computed to obtain estimations of costs and revenues of coffee, cashew nuts and 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. 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 them for transportation of crops and/or inputs, transport charges by similar modes of transport in a particular area were used. However, investment costs and depreciation on those assets were not calculated.

Estimation of Social Costs and Revenues

The social costs of inputs had 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) The Social Price of the Crop

The valuation of social price of the crop 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 crop 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.

(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 were treated as totally non-tradable and their social prices 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.

(iv) Social Value of Land

In order to determine the social value of land, the opportunity cost of land for tobacco production was estimated, which is taken as the highest net return to land (per hectare) of its competitive crop (in this case maize).

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 (NPC))

NPCO is the ratio between private and social revenue of the output (i.e. the ratio of domestic

market price of the product to its parity price at the farm-gate). In Table 1 above, NPCO = A/E. If NPCO >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 NPCO < 1, it indicates that producers are implicitly taxed on the product. If NPCO = 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 1 above, 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 subsidised. 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 1 above, 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 1 above, 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 1 above, 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.

3.4.2 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 production systems will be explored by conducting a set of sensitivity analyses. This involves recalculating the efficiency indicators. Identification of these factors may lay support to intervention aimed at improving economic incentives to smallholder export crop producers. In this study, different scenarios will be 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 certain percentages.

4 STUDY FINDINGS

4.1 Socioeconomic Characteristics of Smallholder Tobacco Growers

The study found that smallholder tobacco growers in the 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 realised from the crop. However, maize production competes with tobacco for resources. Farmers are faced with many problems in their production activities, with pests, diseases and unavailability of inputs being the most prominent ones. Extension services were found to be accessible to the majority of smallholder tobacco growers. Seasonal financing for crop production depended mostly upon tobacco leaf dealers. However, loan repayment rates were extremely poor and hence smallholders 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 smallholders either through inheritance or being offered by village authorities. Therefore, land as a domestic resource is not 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, resulted into them being offered low prices for their produce. Descriptive statistics for socioeconomic characteristics of the smallholder farmers are appended.

4.2 Institutions/Organisations and their Effects on the Marketing System

The very existence of a market depends on the institutional rules and arrangement that govern and /or influence exchange. The efficiency of marketing operations will therefore depend very much on market institutions and organisations and their operations. Free tobacco markets in the 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 (PCSs) and in a way competed with the co-operative union (SAMCU). The governmental regulatory role had been entrusted upon the Tanzania Tobacco Board (TTB).

The Primary Co-operative Societies (PCSs)

The PCSs are the major link between tobacco farmers and leaf-dealers. The marketing functions of purchasing cured tobacco, cash payments, supplies of inputs to tobacco farmers and similar activities 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 a chairperson, vice chairperson and a 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 accessing services provided in tobacco production and marketing. The PCSs 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 make payments to farmers after tobacco sales and subtract the amount of the loan owing.

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

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

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 PCSs and to be able to attract them, there are certain cash offers made by the dealers. Amounts paid depend on services provided to the farmers. Items for which leaf dealers pay PCSs include; loading and unloading of bales onto and off lorries in order to transport them to the marketing area, cash offers to PCSs 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 PCSs. This was the result of conflicts between regional and district government authorities and the co-operative union on one side and commercial companies on the other. 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 years, 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 incidence of strategic default. Growers supported by government authorities perceived this as a move to collude and undermine the interests of the growers. PCSs therefore cancelled their contracts with the companies and sold their crop to SAMCU.

The Co-operative Union (SAMCU)

After liberalization, SAMCU begun to compete on an equal footing with other leaf dealers in buying cured tobacco leaves from farmers. The union also entered into contracts for farming arrangements with tobacco growers through PCSs. From the information gathered it was evident that 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 PCSs cancelled their contracts with private leaf dealers and sold their crop to the cooperative union during the 1998/99 season. However, SAMCU performed poorly in that season in terms of marketing the crop and paying the farmers, bringing back private leaf dealers into the picture in 1999/2000. In the season under study, (i.e. 2000/2001), SAMCU did not buy any tobacco in Songea district.

Tanzania Tobacco Board (TTB)

As an aftermath to 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) in 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 out only in regions specified by the Commissioner of Agriculture in the regulations (by-laws); ensuring that only growers registered by the Board 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 authorised 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.

4.3 Institutional Free Market Arrangements and their Limitations

Interlocking Contracts

The study found that 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/her 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 the lack of alternative marketing arrangements.

Price Setting Mechanism

Field tobacco prices are negotiated and agreed upon in the Tanzania Tobacco Council (TTC). The council consists of 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 the price, which include the previous season's world market price. The price is then announced by the TTB just before the 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.

It was found that 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, and the contracts entered, 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.

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 downgrading the tobacco at the market centres. Although in the process of classification, TTB classifiers usually do so in the presence of farmers 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 out-turn was usually abnormally high. TTB resumed classification in 1997 and it claims to have rectified the standards hence the real quality out-turn 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 exercise is undertaken and to whose advantage. However, at the end of the day, farmers still have to accept the grades offered through the system.

Input Loan Repayments

One of the most critical issues of concern in the tobacco industry has been that of growers being heavily indebted to leaf dealers (tobacco companies), as a result of debts accumulated over the years. Up to the 20001/2002 farming season, primary co-operative societies in Songea district were indebted to a total of US$ 3,000,000 in respect of tobacco production inputs advanced to them by the companies. The debt balance for the individual companies was as follows:

Tanzania Leaf Tobacco Company (TLTC)	US$ 1,300,000
DIMON	US$ 750,000
STANCOM	US$ 950,000

From the survey results 80 per cent of the sampled tobacco growers took input loans form leaf dealers through Primary Co-operative Societies. The remaining 20 per cent claimed not to have taken the loans. The average value of input loan secured was Tshs 85,000. The interest rate was 22 per cent for a repayment period of 12 months.

Although half of the interviewed farmers claimed not to have any outstanding debts, those who had gave several reasons for failure to repay their loans. 40 per cent of this group of sample farmers claimed that "unfair" classification, which translated into low income, was the major reason for failure to repay loans. Poor yields and low tobacco prices were the reasons cited by 30 per cent of the respondents. Another 10 per cent cited loan diversion to other needs as the reason for failure to repay. Note that the respondents gave multiple reasons.

However, basing on the profitability of the enterprise, the study found that not all farmers are incapable of repaying their loans. Most of them 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 defaulting on loans.

In an effort to reduce non-repayment of input loans, tobacco companies have formed an association known as the Association of Tanzania Tobacco Traders (ATTT), which was given the task of coordinating contractual arrangements between growers (through PCS) and the companies so as to stop incidence of strategic default by the growers. Farmers and government authorities perceived this move as collusion, which could undermine the interests of growers in as far as prices are concerned.

4.4 The PAM Results

The survey data of the 2001/2002 cropping season for tobacco production were used to compute the PAM at farm level. Table 2 summarizes these results. (Derivation of parity prices, cost & revenue structures are attached as appendices).

Table 2: Results of PAM for the 2001/2002 Season for Tobacco (Value in Tshs '000)

Accounts	Revenue	Tradable Input Costs	Non-tradable Input Costs	Profits
Private Values	381,154.8	57,192.5	277,282.5	46,679.8
Social Values	579,462	390,35.61	433,820.7	106,606.2
Divergence	-198,307.2	18,156.89	-156,538.2	-59,925.89

Source: Derived from survey data, 2003

Efficiency Indicators of the Tobacco Production System

The summary results of efficiency indicators derived from the PAM are presented in Table 3 below.

Table 3: Efficiency Indicators of the Tobacco Production System

NPCO	NPI	EPC	DRC	PCR
0.65	1.46	0.60	0.80	0.86

Source: computed from Table 2

Key:

NPCO Nominal protection coefficient of tradable outputs

NPI Nominal protection coefficient of tradable inputs

EPC Effective protection coefficient

DRC Domestic resource cost

PCR Private cost ratio

Nominal Protection Coefficient on Tradable Output (NPCO)

An NPC of 0.65 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.

Nominal Protection Coefficient on Tradable Inputs (NPI)

An NPI of 1.46 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.

Effective Protection Coefficient (EPC)

An EPC of 0.60 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.

Private Cost Ratio (PCR)

A PCR of 0.86 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 46,679) 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, then 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.

Domestic Resource Cost (DRC)

A DRC of 0.80 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 106,606) 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.

The Ministry of Agriculture and Cooperatives (MAC) also carried out an assessment of competitiveness of Tanzania agricultural tradable in 1999 using the DRC. MAC used three production groups designated as low, medium and high technology level users. Results of that study showed that the DRCs for fire cured tobacco (which is grown in Songea) were 0.56 (low technology), 0.56 (medium technology), and 0.44 (high technology) (MAC, 1999). These results were much better than the 0.80 obtained in this study, and indicated that the tobacco production by then was also potentially a very profitable enterprise. In comparison, the PCR values were 0.76, 0.77, and 0.60 for low, medium and high technology, respectively. It was reported then that the difference between PCR and DRC was caused by an overvalued exchange rate and inefficiencies in the marketing and processing cost structures.

4.5 Sensitivity Analysis

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 liberalisation, whereby the input subsidy has been completely phased out since the 1994/95 cropping season.

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 per cent increase in producer prices would decrease the PCR by 18 per cent (0.85 – 0.69) and increase EPC and NPC by 23 per cent (0.60 – 0.74) and 20 per cent (0.65 – 0.78), respectively. 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 the implication is that there will be an increase in producer incentives following an increase in producer prices by 20 per cent. Smallholder tobacco growers will be more protected and the profits realised in excess of normal returns to domestic resources will increase.

Effects of a Decrease in F.O.B. Prices of the Product

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 per cent. 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 25 per cent (0.80 - 1.0). This value is greater than unity and it implies that with a decrease of 20 per cent 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.

Effects of an Increase in C.I.F. Prices on Inputs

Tobacco is a crop, which requires a lot of inputs, most of which are tradable in the world market (e.g. 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 per cent 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 indicate that the DRC has increased very slightly by 1.3 per cent (0.80 – 0.81) and it is still 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 per cent tobacco production is still a desirable enterprise from the social point of view. Further analysis as to the insensitivity of the DRC to changes in parity prices of inputs indicates that costs of non-tradable elements such as labour, warehousing, port charges, and transportation 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.

Effect of Exchange Rate Movements

After the introduction of economic reforms to enable market forces to play a greater role in the economy, the real exchange rate depreciated significantly to levels consistent with market conditions from 1986 to 1993, providing better incentives to exporters. However, from 1995 the real value of the shilling has risen as the nominal exchange rate remained relatively stable, while Tanzania's inflation remained above that of its main trading partners (Table 4). The appreciation of the real value of the Tanzanian shilling affected the profitability of exports and lowered relative prices.

Table 4: Trends in the Inflation and Exchange Rate

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Inflation %	31.8	30.3	35.8	28.7	21.8	24.0	33.5	27.4	21.0	16.1	12.9	7.5	7
Exchange Rate (Tshs to USD)	99.3	143.4	195.1	219.2	297.9	405.0	509.6	574.8	580.0	612.1	669.8	745	799
Effective Real Exchange Rate Index (1990=100)	79.8	91.0	100.0	89.6	106.5	103.7	102.2	98.0	82.5	73.2	69.4	-	-

Source: Bank of Tanzania

From the PAM point of view, the appreciation of the real value of the Tanzanian shilling implies that the f.o.b. price of the product (in Tshs) decreases in real terms (and so will the farm-gate price). As shown earlier, a 20 per cent decrease in parity price of product makes the crop undesirable from the social point of view. The opposite is also true (i.e. with a depreciating RER, profits realised in excess of normal returns to domestic resources will increase). It is important to note that on the other hand, an appreciating real value of the Tanzanian shilling implies that the c.i.f. prices of inputs (in Tshs) will also decrease. However, as shown earlier, the DRC is insensitive to changes in parity prices of tradable inputs. Costs of non-tradable elements such as labour, warehousing, port charges, and transportation outweigh costs of tradable elements. Thus, the overall effect (combining effect on produce price and effect on input price) is a disincentive to exporting the crop. It is worth noting that Tanzania's inflation rate is on a steady decline.

4.6 Effects of the Distortions on Poverty Reduction Efforts

Using the Single Indicator Approach to rank the performance of income and non-income poverty indicators in Tanzania Mainland by region, Ruvuma is placed among the most deprived regions in food, with 27 per cent of households living below the food poverty line. Using the headcount ratio for the basic needs poverty line, although not among the most deprived, still 41 per cent of households in Ruvuma live below the basic needs poverty line. The per capita household monthly income in rural areas is Tshs 12,988 (nominal) (HBS, 2000/01).

On average, the distribution of the household's main source of cash income reveals that sale of export crops contributes the most income (56 per cent), sale of food crops (24 per cent), business income (6 per cent), wages and salaries (6 per cent), other casual cash earnings (3 per cent), cash remittances (2 per cent), fishing (1 per cent), sale of livestock products (1 per cent), and other sources (2 per cent) (HBS, 2000/01). Note that tobacco is the major export crop in the region, hence it contributes significantly to cash income. Other export crops include coffee and sunflower, and small amounts of soy beans, cashew nuts and simsim.

From the PAM results, the divergence in profits (difference between private profits and social profits) in tobacco production for the 2001/2002 season was about Tshs. 60,000. Thus, in the absence of distortions in the marketing system, smallholder farmers in the region would have realised 38 per cent more to their average annual income of about Tshs. 155,856 from tobacco production alone. These statistics therefore, reveal the importance of the crop in poverty reduction efforts, and the significant effects of market distortions.

5 CONCLUSION, RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH

5.1 Conclusion

The results of this study indicate clearly that tobacco production is the major source of rural growth and livelihood improvement in Songea district, as it contributes significantly to cash incomes of the majority of smallholder farmers. Despite the fact that it is potentially a profitable enterprise, it is evident that farmers have not captured the full potential benefits of their production regimes despite operating under a liberalised market scenario. There have not been efficient operations within the markets to provide adequate incentives to growers. A number of problems have been noted from the study indicating gross inefficiency in the production-marketing system. These problems increase costs and reduce revenues in the input/output markets and prevent the realisation of potential income gains by tobacco growers. Market distortions therefore, have significant effect on poverty reduction efforts under tobacco production in the district. Intervention is therefore necessary for the operation of the liberalised markets, so as to increase incentives and impact on incomes and welfare of smallholder farmers.

5.2 Recommendations

What is needed is the development of conditions supporting general market operations to avoid market failure. Within this broad guideline, a number of specific recommendations can be made.

(i) Review of the Taxation System

From the Policy Analysis Matrix, it is evident that there is a large distortion between private and social values under revenues. The divergence implied that the prevailing market price for the product (tobacco) falls short of its socially potential value. 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 (17.0), tobacco council levy (1.0), crop research levy (2.0), PCS levy (25.0), union levy (19.0), Apex levy (6.0) and district cess (26.0). At the end of the day, it is the smallholder farmer who bears this load by being offered low prices for his tobacco. The net effect is to reduce incentives to tobacco production and therefore, to reduce growth in incomes. This has further effects of maintaining poverty, re-enforcing the vulnerability of rural people to external shocks, and ultimately, reducing export earnings and national incomes. All of these effects are completely at odds with the stated objectives of national agricultural policy. Thus the tax system should be reviewed.

(ii) 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 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. There is also a potential of quick payment to farmers. 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 auction 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 into tobacco marketing arrangements.

(iii) Initiate Better Credit Arrangements

One generally observed characteristic of tobacco enterprise is the requirement for purchased seasonal inputs. The majority of smallholders 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, a practice that violates the competitive market model. This situation is a severe weakness on the part of growers that has to be resolved. 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 organisations such as savings and credit co-operative societies or a tobacco development fund. The co-operative union could also consider establishing a farmers' co-operative bank that can deal with farm credit/loans to tobacco growers. Such organisations must be able to access capital from wider financial markets.

(iv) Rationalisation 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 observed haphazard nature of the lending systems 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 need to professionalise the grassroots organisations (e.g. PCSs) so as to bring about accountability and responsibility particularly in enforcing loan repayment.

(v) 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 stake holders. 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 express their complaints in the case of downgrading. On the other hand, the 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 do not raise unjustifiable complaints because of ignorance.

(vi) Increased Investment in Infrastructure and Supporting Services

More investments in transport infrastructure, research and extension are needed. An improved transport infrastructure will essentially reduce the costs of tobacco marketing and input delivery. While returns to investment in research are known to be very high worldwide, extension services are necessary for the diffusion of improved practices by farmers. Increase in yield per hectare can still be achieved through improved growing techniques. Improved quality and presentation of tobacco leaves can be achieved through better handling, curing, grading and advanced marketing techniques. Provision of adequate and quality extension services is therefore, vital. The current move should be to see if extension services can as well be shifted to the private sector, and stake holders should find ways to institutionalise payment of private extension services.

(vii) Strengthening Co-operative Societies

At present, a few insiders generally dominate PCSs, with little accountability, technical capacity and creditworthiness on offer marketing services to farmers. Very few are trusted sufficiently by traders to fulfil an effective intermediary role. Without the cooperatives, smallholder farmers are left with almost no form of collective organisation, which could play a vital role in agricultural marketing. These PCSs are important grassroots institutions that could provide a variety of market-related services with direct impact on enterprise profitability. PCSs bring economies of scale to credit institutions, extension services, input supplies and buyers of agricultural produce, since they do not have to deal with each individual farmer. On the other hand, smallholders can combine their forces in order to have more bargaining power when dealing with input suppliers and buyers of their produce.

The government should encourage the establishment and continuous operation of member owned and member-controlled cooperatives which are economically strong and capable of operating as viable independent business entities. Small farmer associations should be recognised and supported with the view of transforming them into future economically strong cooperatives.

5.3 Areas for Further Research

This study has led to some useful findings and conclusions on market distortions affecting tobacco producers and their efforts to reduce poverty. However, there is a critical area that needs further research. This is the effect of HIV/AIDS on production and marketing activities. HIV/AIDS cannot be considered solely as a health problem and research efforts are needed to address its economic consequences. Increasingly, the pandemic is having a major impact on crop production in rural societies of Tanzania. The following impacts of HIV/AIDS need to be systematically explored:

- Remote fields tend to be left fallow and the total output of the agricultural unit declines;
- There is a switch from labour intensive crops like tobacco to less demanding ones;
- Post production activities such as processing are impaired;
- A breakdown in agricultural support services occurs as a result of staff/personnel falling sick; and
- Credit intended for agricultural production and marketing activities can be diverted for medical care of the sick relatives, funeral expenses and food, resulting in a decline of crop yields and loss of income, causing households to default on loan repayment.

APPENDIX I: DERIVATION OF PARITY PRICE OF TOBACCO IN SONGEA 2001/2002 SEASON

Table 5

1.	**Exchange Rate (1st quarter, 2002)**	**953.60 Tshs/USD**
2.	F.O.B. (US$/ton)	1,996.50
3.	F.O.B. (Tshs/ton) = 1 x 2	1,903,862.40
4.	Port Charges (0.4%)	51,870.00
5.	Storage Costs	47,500.00
6.	Transportation to Port of Exit	4,750.00
7.	Head Office Overheads	142,500.00
8.	Container Stuffing	14,250.00
9.	Fumigation	4,750.00
10.	Packing Material	76,000
11.	Ex-Processing Price = 3 - (Sum of 4 to 10)	1,562,242.40
12.	Processing Fee	475,000.00
13.	Pre-Processing Price = (12 - 11)	1,087,242.40
14.	Green Leaf Equivalent 75%	815,431.80
15.	Transport - Marketing Centre to Factory	22,500.00
16.	Field Overheads	50,000.00
17.	Farm Parity Price (13 - Sum of 14 and 16)	742,931.80
18.	Farm Parity Price (Tshs/kg) = 17/1000	742.90

Source: Tanzania Tobacco Board, 2003

APPENDIX II: DERIVATION OF PARITY PRICE OF FERTILISER (S/A) 2001/2002 SEASON

Table 6

		TRADABLE	NON-TRADABLE	TOTALS
1.	Exchange Rate (Average Bureau - 2001)			871.53 Tshs/USD
2.	C.I.F. Dar-es Salaam ($/ton)			120
3.	C.I.F. Dar-es Salaam (Tshs/ton) 1 x 2	104,583.60		104,583.60
4.	Pre-shipment Inspection		758.23	758.23
5.	Radiation Fee		46.2	46.2
6.	Wharfage (1.5% c.i.f.)		1,568.75	1,568.75
7.	20% VAT on Wharfage		313.75	313.75
8.	Handling Charges		3,486.12	3,486.12
9.	20% VAT on Handling		697.22	697.22
10.	Border Price = 3 + (sum of 4 to 9)	104,583.60	6,870.27	111,453.87
11.	Transport to Godown (warehouse)	653.65	1,525.19	2,178.85
12.	20% VAT on Transport to Godown		435.77	435.77
13.	Loading/Offloading/Stacking		941.25	941.25
14.	Losses & Rebagging (0.05% of C.i.f.)		52.30	52.30
15.	Transport (DSM - Makambako)	6,013.55	14,031.63	20,045.19
16.	20% VAT on Transport		4,009.00	4,009.00
17.	Handling Charges		8,715.30	8,715.30
18.	Transport (Makambako - Songea)	4,800.00	11,200.00	16,000.00
19.	Loading/Offloading		1,045.84	1,045.84
20.	Market Price (Songea) = (Sum of 10 - 19)	116,050.80	48,826.55	164,877.37
21.	Transport to Farm (average)	4,500.00	10,500.00	15,000.00
22.	Price at farm gate (Tshs/ton)	120,550.80	59,326.55	179,877.37
23.	Price at farm gate (Tshs/kg)	120.55	59.32	179.87
24.	Portions/shares	0.90	0.10	1.00

Source: Tanzania Fertilizer Company, 2003

APPENDIX III: DERIVATION OF PARITY PRICE OF PESTICIDE (THIODAN DUST) 2001/2002 SEASON

Table 7

		TRADABLE	NON-TRADABLE	TOTALS
1.	Exchange Rate (Average Bureau - 2001)			871.53 Tshs/USD
2.	C.I.F. Dar-es Salaam ($/ton)			800
3.	C.I.F. Dar-es Salaam (Tshs/ton) 1 x 2	697,224.00		697,224.00
4.	Wharfage (1.5% c.i.f.)		10,458.36	10,458.36
5.	20% VAT on Wharfage		2,091.67	2,091.67
6.	Handling Charges		3,486.12	3,486.12
7.	20% VAT on Handling		697.22	697.22
8.	Border Price = 3 + (sum of 4 to 7)	697,224.00	16,733.37	713,957.37
9.	Transport to Godown (warehouse)	653.65	1,525.19	2,178.85
10.	20% VAT on Transport to Godown		435.77	435.77
11.	Loading/Offloading/Stacking		941.25	941.25
12.	Losses & Rebagging (0.05% of C.i.f.)		348.60	348.60
13.	Transport (DSM - Makambako)	6,013.55	14,031.63	20,045.19
14.	20% VAT on Transport to Makambako		4,009.00	4,009.00
15.	Handling Charges		8,715.30	8,715.30
16.	Transport (Makambako - Songea)	4,800.00	11,200	16,000.00
17.	Loading/Offloading		1,045.84	1,045.84
18.	Market Price (Songea) = (Sum of 8 - 17)	708,691.20	58,985.95	767,677.17
19.	Transport to Farm (average)	4,500.00	10,500.00	15,000.00
20.	Price at farm gate (Tshs/ton)	713,191.20	69,485.95	782,677.17
21.	Price at farm gate (Tshs/kg)	713.20	69.48	782.67
22.	Portions/shares	0.09	0.10	1.00

Source: Traders Survey, 2003

APPENDIX IV: REVENUES, COSTS AND PROFITS OF TOBACCO PER HECTARE 2000/2001 SEASON

Table 8

		PRIVATE VALUES						SOCIAL VALUES					
	Amnt	Prices Tshs/unit	Values Tshs	TR shares	NTR shares	TRV Tshs	NTRV Tshs	Prices Tshs/unit	Values Tshs	TR shares	NTR shares	TRV (Tshs)	NTRV (Tshs)
1. Revenue Account													
Output (kg/ha)	780	488.66	381,154.8					742.90	579,462				
Total Revenue			381,154.8						579,462				
2. Cost Account													
A. Material Inputs													
Fertilizer (kg)	250	250	62,500	0.55	0.45	34,375	28,125	179.87	44,967.5	0.55	0.45	24,732.13	20,235.38
Pesticide (kg)	5	1,600	8,000	0.86	0.14	6,880	1,120	782.67	3,913.35	0.86	0.14	3,365.481	547.869
Seeds (kg)			2,600	0	1	0	2,600		2,600	0	1	0	2,600
T/paper (rolls)			10,000	0.5	0.5	5,000	5,000		10,000	0.5	0.5	0.5	10,000
Jute twine	12.5	950	11,875	0.5	0.5	5,937.5	5,937.5		11,875	0.5	0.5	5,937.5	5,937.5
Hessian Cloth			10,000	0.5	0.5	5,000	5,000		10,000	0.5	0.5	5,000	5,000
Barn			4,000	0	1	0	4,000		4,000	0	1	0	4,000
Hoe			1,500	0	1	0	1,500		1,500	0	1	0	1,500
B. Labour (man days)	280	800	224,000	0	1	0	224,000	800	224,000	0	1	0	224,000
C. Land (ha)	1	0	0	0	0	0	0		160,000	0	1	0	160,000
TOTAL COST			**334,475**			**57,192.5**	**277,282.5**		**472,855.9**			**39,035.61**	**433,820.7**
3.Profit Account (Tshs)			**46,679.8**						**106,606.2**				

Source: Computed from Survey and Secondary Data

APPENDIX V: SELECTED DESCRIPTIVE STATISTICS FOR SOCIO-ECONOMIC CHARACTERISTICS OF THE SMALLHOLDER FARMERS

Table 9: Education Level of Sample Farmers

Level of Education	Frequency	Percentage
Primary	99	80.8
Adult	12	10.0
None	8	6.7
Secondary	3	2.5
Total	120	100

Table 10: Most Important Crop Enterprise for Sample Farmers

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

Table 11: 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

Table 12: 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

Note: Amounts and percentages reflect multiple responses

Table 13: Provision of Extension Services to Sample Farmers

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

Table 14: Reasons for Failure to Repay Loans by Sample Farmers

Reason	Frequency (N = 60)	Percentage
Poor/unfair classification	24	40.0
Poor yields	18	30.0
Low tobacco prices	12	20.0
Misallocation of funds	6	10.0

Table 15: 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
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 from godowns	2	2.0

Note: Amounts and percentages reflect multiple responses

Table 16: 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

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