

AGRICULTURAL MANAGEMENT,
MARKETING AND FINANCE
WEB DOCUMENT

**Small farmer participation in export production:
The case of Tanzania**



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Preface

In January of 2003, the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the Eastern and Central Africa Programme for Agricultural Policy Analysis (ECAPAPA), in conjunction with the Food and Agriculture Organization of the United Nations (FAO), commissioned research studies on small farmer participation in export production in four countries: Uganda, Ethiopia, Kenya and Tanzania. The four African countries selected for the case studies belong to a group of countries for which agricultural trade is particularly important and their economies are highly dependent on agricultural exports.

The country case studies aimed at providing information for improving producer capacity to respond to market changes, provide policy guidelines for institutional support to small farmer export production and understand small farmer responses to market incentives for export production and corresponding support needs. This entailed assessing the potential of improving small farmer production of export crop (traditional and non-traditional crops) and examining farmer and institutional constraints critical to farmers' participation in export crop production.

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Thanks go to Doyle Baker, Chief, AGSF, FAO, for his support in the development of the studies and for enabling the studies to be published and to John Dixon, Senior officer, AGSF, FAO, who provided advice and support for the studies. Thanks also go to Martin Hilmi, for editing and for following the publication process.

Acronyms

ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
CAN	Calcium Ammonium Nitrate fertilizer
EAC	East African Community
ECAPAPA	Eastern and Central Africa Programme for Agricultural Policy Analysis
FAO	Food and Agriculture Organization of the United Nations
FOB	Free On Board
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
NPK	Nitrogen Phosphorous Potassium fertilizer
PPP	Public and Private Partnerships
SADC	Southern Africa Development Community
SAP	Structural Adjustment Programme
TFA	Tanzania Farmers' Association
WTO	World Trade Organization

1. Introduction

1.1 Background

There were two major policy changes occurring in the late 1980s and 1990s which form the background to the proposed studies. The Structural Adjustment Programme (SAP) aims were that of stimulating an increase in foreign exchange earnings and devaluation etc, in an attempt to create incentives for the reallocation of resources towards internationally traded and/or tradable commodities. The essential recommendation had been to make exports more profitable and to remove taxes on agricultural exports. Furthermore, market liberalization and the removal of legal restrictions were intended to emphasize more efficient resource allocation at all levels; especially the participation of small farmers in export production. At the same time, marketing boards were abolished and smallholders did not receive advice on production and marketing requirements for lucrative export agricultural products.

For the first time in history, the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) included agricultural trade. Policies that facilitated more open trade, it was envisaged, would result in efficiency gains and allow domestic food needs to be met more cheaply by less costly imported supplies. The commitments to improve market access and to reduce domestic support and export subsidies in developed countries had increased the opportunities for developing countries to export. Gains resulting from the Uruguay Round, however, were not shared equally by all countries and within countries, and not by all agricultural producers.

The main challenges for increasing competitiveness were improving quality of agricultural products for export, to lower costs, to develop trade and marketing strategies and to diversify production to take advantage of market opportunities. Against this favorable background, it remains to be seen, whether developing countries will be able to capture the opportunities, and within countries which segments of the farming community will gain and lose.

The small farm culture in Africa is currently more oriented towards subsistence farming than commercial farming. This orientation will have to change if diversification into non-traditional crops is to succeed. Furthermore, production continues to be dominated by a few commodities. For example, Ethiopia is deriving 60 percent of its total export earnings from coffee, Uganda 56 percent and Tanzania 11 percent. The need to correct this heavy reliance on a few traditional commodities has led to the design and implementation of agricultural diversification programmes in several countries.

This study seeks to address the following key questions pertaining to small farmers participation in export production:

- What kind of services and regulatory functions do governments still need to provide in order to enable smallholders to participate and benefit?
- How can the entrepreneurial capacity of producers and exporters be enhanced in order to compete in international markets?
- How are the opportunities and risks perceived by farmers and support institutions?

1.2 Study objectives

Objectives of this study (as specified in the project proposal) are;

- a) To provide information for improving producer capacity to respond to market changes;
- b) To provide policy guidelines for institutional support to diversification into export production;
- c) To understand how small farmers respond to market incentives for export production and corresponding support needs.

1.3 Study approach and methodology

This study focused on synthesizing existing secondary data, carrying out rapid surveys of farmers and a brainstorming session in a stakeholders' workshop

2. Literature review

2.1 Agricultural production and farming systems in Tanzania

Tanzania is among the least developed countries with a Gross Domestic Product (GDP) per capita of US\$265 in 2001. Agriculture contributes to about 45 percent of GDP and employs 80 percent of population. Three quarters of Tanzania's export earnings come from the agriculture sector. The major export crops are coffee, cotton, tea, tobacco, cashew nut and sisal. Staples are maize, rice, sorghum, millet, cassava and potatoes. The majority of the Tanzanian population lives in rural areas, where they are primarily engaged in agriculture.

Tanzania's agriculture consists of seven major farming systems as described below.

(i) Coffee-banana, horticulture, tea and dairy farming

This system is dominated by perennials where coffee is intercropped with bananas. Banana is the staple in this system, consumed mainly by ethnic groups such as Chagga, Haya and Nyakyusa. The system is found in the regions of Arusha, Kilimanjaro, Tanga, Mbeya, Ruvuma and Kagera. In some areas tea is grown, cereals and pulses are also intercropped, but separately from perennials and dairy cattle with crop residue are sources of manure. Rainfall is high and high-value vegetables are grown for the market. The areas that practice this system have a problem of land scarcity.

(ii) Maize and legumes

Among the seven farming systems, this system is practiced by the largest number of small-holder farmers. Most of the marketed maize is produced in this system. Land is not scarce, therefore shifting and fallowing are common practice. The system is found in the western zone and southern highlands. Vegetable production particularly tomatoes, onions and paprika have been increasing in recent years.

(iii) Pastoral and agro-pastoral system

The pastoral system is prevalent in the arid and semi-arid zones of central Tanzania. The predominant pastoral group is Maasai found in the Arusha region. Meat and milk are staples and cash income from livestock sale is used to purchase cereals. Some pastoralist practice mixed farming where they grow sorghum and millet, besides keeping livestock. However, crop production is limited by continuous migration in search for pastures. Besides Maasai, other ethnic groups in this system are Gogos and Barbeig.

(iv) *Sorghum, millet, livestock (cotton and rice)*

The major activity in this system is crop production, however livestock plays a significant role by providing meat and milk, also a source of draught power for cultivation and transport. The system is prevalent in the Lake Victoria zone in regions of Shinyanga and Mwanza. The predominant ethnic group in this farming system are Sukumas.

(v) *Wetland paddy and sugarcane*

The system is found in the alluvial valleys of major river basins and lakes such as Rufiji, Kilombero, Kyela, Lower Moshi, Ruvu and Usangu. Sugar cane is carried out on a large – scale basis. Competition for water use for urban supply, hydroelectric power production, rice and sugar cane plantations is not uncommon. Rice is the staple in this farming system.

(vi) *Cassava, cashew and coconut*

The subsistence crop is cassava, while cashew and coconut are cash crops. The system is found in the coastal regions of Mtwara, Coast and Lindi.

(vii) *Plantations*

Most plantations are found near major railway lines and roads. The major plantations produce wheat, tea, sugarcane and sisal, also there is commercial tree production. Staple foods depend on other farming systems around the plantation.

2.2 Agricultural and trade policies

Agricultural and trade policies have evolved over years in line with the country's economic policies. Broadly Tanzania's economic policies can be subdivided into three phases namely, post-independence, (1961-66), socialism (1967-85) and reforms (1986-todate). In the socialist era, the country had pursued a state-led economy, while in the first and last phase the economy had been more liberal.

Since 1986 , Tanzania has been undertaking macroeconomic policy reforms in line with the SAP in order to remedy its long ailing economy. The reforms were considered necessary for creating macroeconomic stability for sustained economic growth. Agriculture being the largest economic sector was implicitly or explicitly the target of the reforms. Reforms which specifically targeted the agricultural sector included: withdrawal of government from fixing producer and consumer prices, reduction of export taxes and removal of agricultural subsidies, particularly in farm inputs, lifting of the government monopoly in marketing of staples and export crops, privatization of state-owned companies, and promotion of the private sector. Reforms that indirectly affected the agricultural sector include removal of exchange and interest rate and rationalization of government spending through strict fiscal policies and downsizing of the civil service. The later reform led to a reduction in government spending in agriculture and delivery of extension and support services to agriculture.

The trade policy in 2002, envisaged transforming the economy via integration into meaningful regional and global economy through strategic trade liberalization. Specifically, the policy sought to achieve a diversified competitive economy coupled with an increase in foreign exchange, promotion of value adding in commodities, promotion of production technology and investment in areas with comparative advantage. Other objectives were to promote regional and international trade and maintain a long-term balance in the current account. Policy strategies were the promotion of export-oriented investments, export promotion schemes (e.g. export rebates), dissemination of trade information, creation of export processing zones, export finance schemes and promotion of cross-border food trade. Tanzania is a member of the East African Community (EAC), the Southern Africa Development Community (SADC) and the World Trade Organization (WTO).

Proportionally, farm households that grow traditional export crops are fewer than food crop producers (see Table 1). Promotion of traditional exports without diversification is likely to increase polarization in income distribution. Among export crops, coffee has the highest number of producers followed by cashew and cotton, in decreasing order.

Table 1: Number and percentage of farms planted with various crops

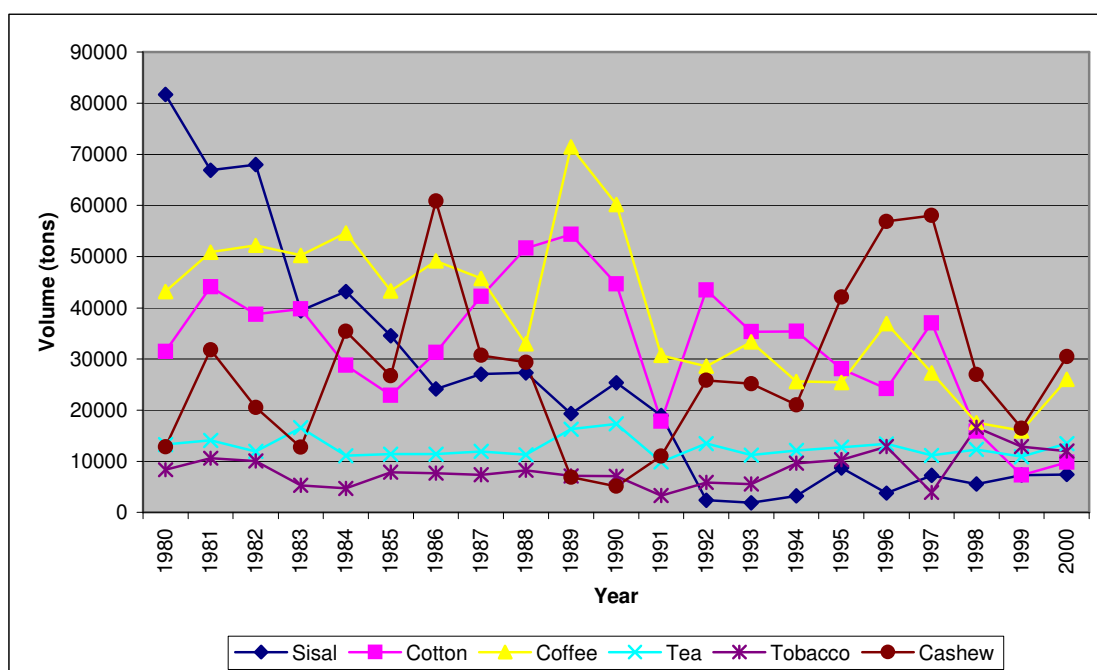
Crop	Number of holdings	Percent
FOOD		
Maize	2 92 9048	63.4
Paddy	910 628	19.7
Sorghum	860 881	18.6
Cassava	1 316 140	28.5
Sweet potatoes	1 087 357	23.5
EXPORT		
Coffee	542 985	11.8
Cotton	150 534	3.3
Tobacco	96 806	2.1
Tea	14 510	0.3
Cashew	265 062	5.7
TOTAL	4 620 000	
<i>Note: Area and holdings is for small holders</i>		
<i>Sisal not grown by smallholder thus excluded</i>		

Source: District Integrated Agricultural Survey, 1998/99

2.3 Agricultural export performance

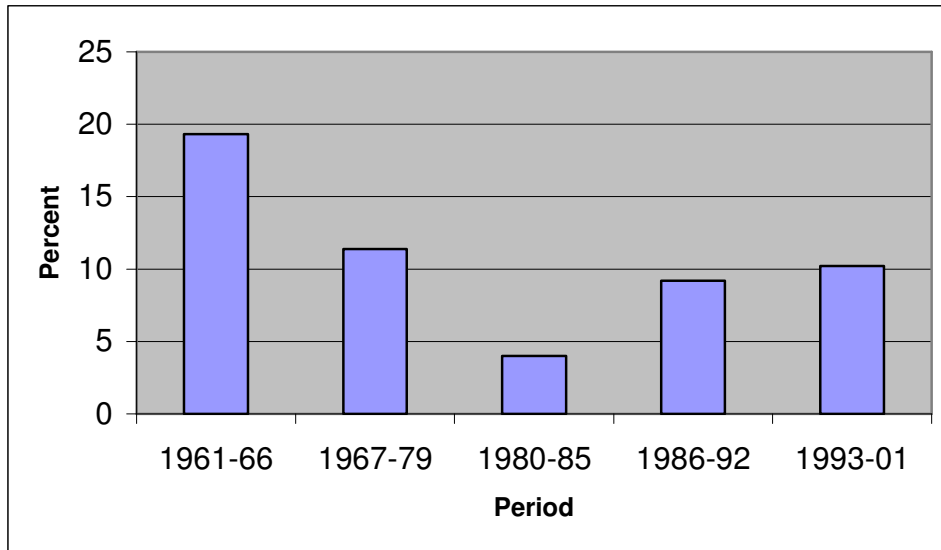
Production and export of agricultural crops had been influenced by domestic policies and prices in international markets. Tanzania exports performed best in the post-independence period and reached a peak in the early 1970s. Such performance was attributed to favorable economic policy and prices in international markets. Inefficiency in nationalization of large-scale farms (tea, coffee, etc.) and marketing organizations coupled with unfavorable world commodity prices, resulted in a subsequent decline in agricultural production and export. A much closer look in the reform period (see Figure 1) suggests that most exports reached their minimum level in late 1980s and recovered gradually in subsequent years with fluctuations partly attributed to erratic weather. The share of export in GDP has followed a similar path indicating the importance of agricultural exports (see Figure 2).

Figure 1: Trends in agricultural exports, 1980-2000



Source: Selected statistical series; 1951-1990; Basic Data: Agriculture Sector, various issues

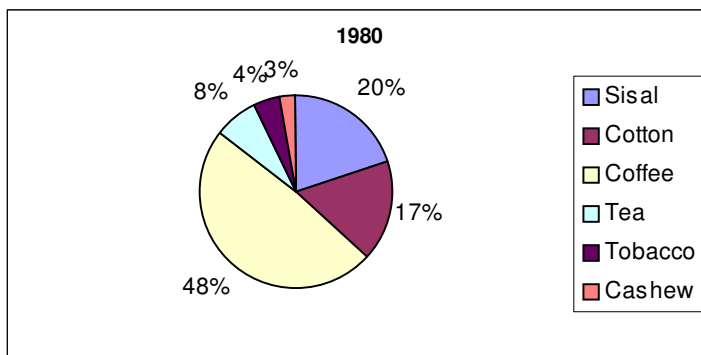
Figure 2: Tanzania Exports (percentage of GDP)

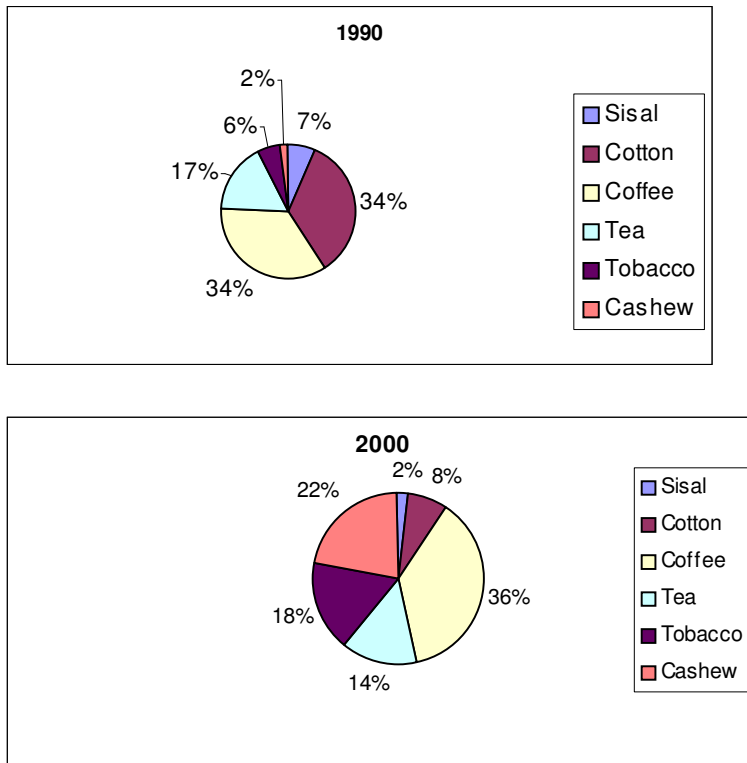


Source: Economic Bulletin (BoT), various issues

Besides the overall change in export volume, the share of crops in total value for the five major exports had been changing (see Figure 3 and 4). The most remarkable change was the decline in sisal from 44 percent in 1960 to 2 percent in year 2000. In the same period the share of tea (3 percent) and tobacco (1 percent) increased steadily to 14 and 18 percent, respectively in the year 2000. Coffee and cotton have accounted for more than 50 percent of export value, despite fluctuations from year to year. Most prominent was the coffee boom in the 1980s, where coffee itself accounted for nearly half of the value of exports. The cashew nut export declined, but recovered in subsequent years.

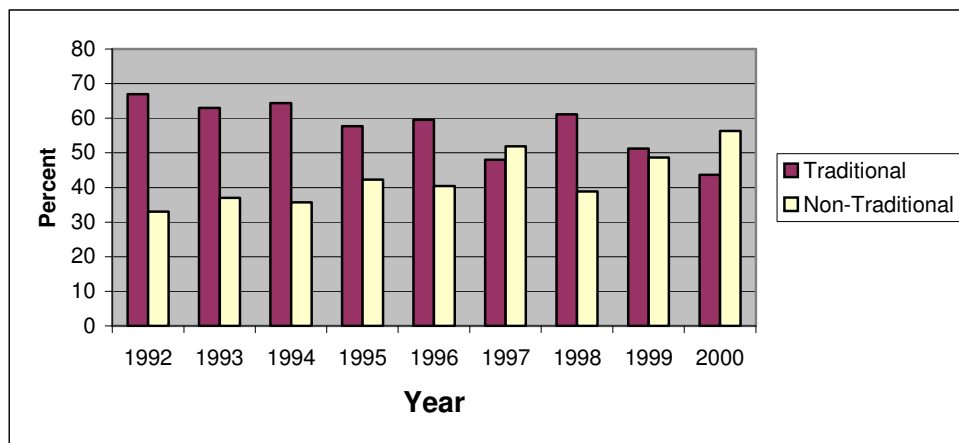
Figure 3: Composition share of major exports in export value (in percentages)





Source: Calculated from Economic Bulletin (BoT) data

Figure 4: Shares of traditional and non-traditional exports (in percentages)

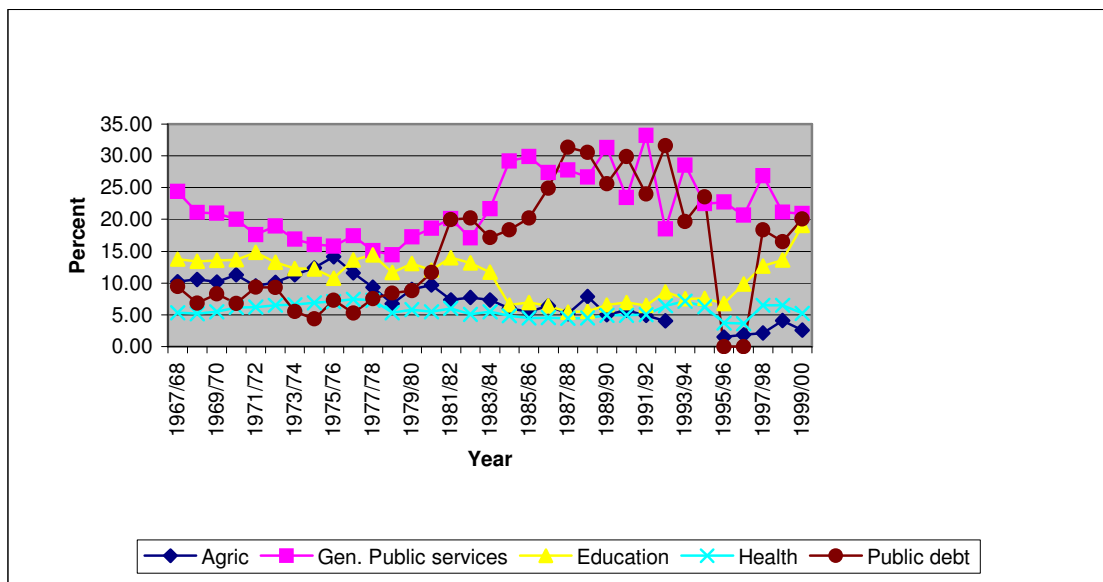


The share of traditional exports (five major crops) had been declining gradually, while non-traditional exports had been increasing. It should be noted that non-traditional exports include minerals such as gold and manufactured goods. The share of agriculture in non-traditional exports was less than 20 percent, which implied that agricultural diversification was increasing, but not yet impressive.

2.4 Public investment and agricultural performance

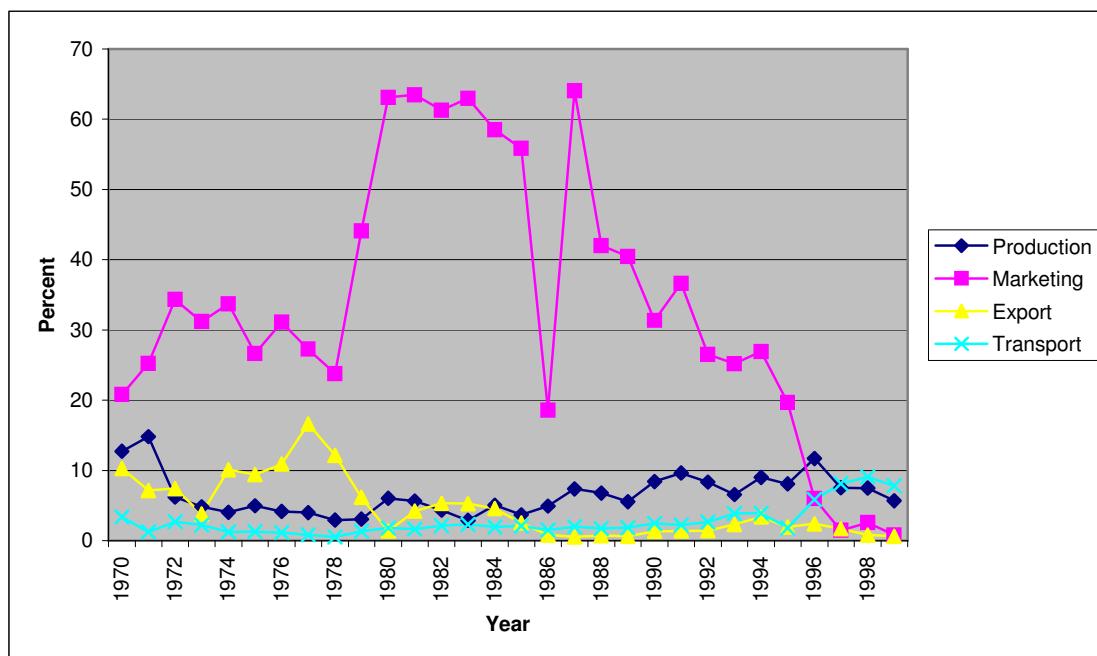
Government investments in extension service, research and infrastructure (e.g. irrigation, markets and rural roads) is crucial not only for promotion of agricultural production, but also as an incentive for further investment by the private sector. Amid an increase in public debt service, the budget share of agriculture declined from 15 percent in late 1970s to single digits in recent years (see Figure 5). The financing of agriculture from commercial banks followed a similar pattern, particularly in marketing and export financing (see Figure 6). The rapid decrease in marketing financing may be attributed to uneconomical borrowing of cooperatives before market liberalization. However, the transport sector enjoyed a growth in financing, a trend likely to have a complementary effect in agricultural production.

Figure 5: Share of government expenditure in selected sectors (in percentages)



Source: The economic survey, various issues

Figure 6: Trend in commercial lending to selected sectors (in percentages)



Source: Calculated from Economic Bulletin (BoT), various issues

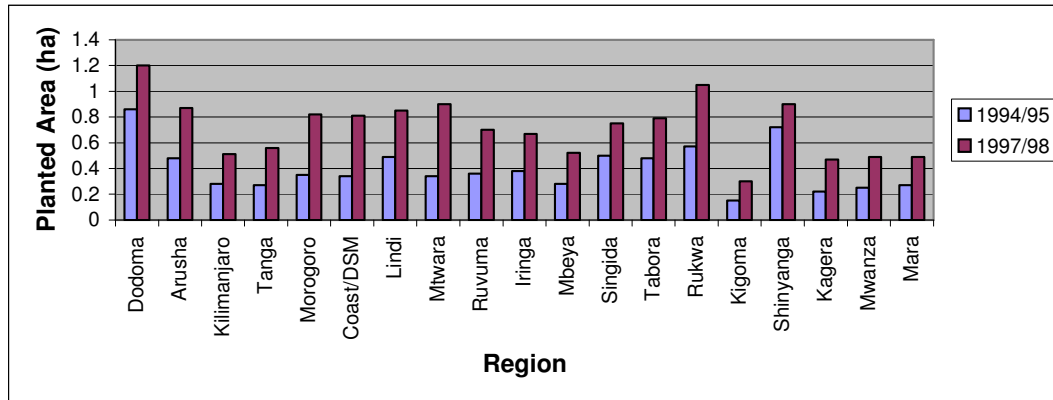
2.5 Response to policy reforms by farmers and exporters

A recent study (WB/IFPRI, 2000) that reviewed the performance of the agricultural sector revealed some important information, worth highlighting. Currency depreciation (1986-1993) provided an incentive to exporters, however since 1993 the real exchange rate has depreciated. Currency depreciation coupled with the decrease in regional food demand (caused by favourable weather) reduced real producer prices for food crops. Unlike food crops, real producer prices of export crops have risen substantially relative to the pre-reform period, thus eliminating the implicit taxation caused by overvaluation. Low potential increase in real prices of exports is owed to a decrease in Free on Board (FOB) prices of the five major crops, particularly coffee and inefficiency in the crop marketing institutions. Hence, prices of exports are determined by movements in world prices, marketing margins and the real exchange rate. The study further observed that devaluation and input subsidy removal increased the real price of fertilizer. The increase in the real price of fertilizer, coupled by a fall in producer prices, reduced the profitability of using fertilizer, particularly for food crops such as maize, resulting in a decrease in the use of fertilizer by about 50 percent. By using a supply-response model for the study, it confirmed that farmers were sensitive to prices in their decisions regarding both food and export crop production.

Another remarkable observation was that farm sizes (planted area) had been increasing, while intensity of input usage had been decreasing. From these two observations it can be postulated that farmers were substituting land for fertilizer. The removal of input subsidies

had increased the cost of fertilizer and in an attempt to maintain the same level of output, farmers were increasing their farm size.

Fig 7: Average planted area per plot



3. Results from the farmers' survey

3.1. Introduction

A farmers' survey was conducted in two farming systems, namely cashew-coconut-cassava and maize-legume, in the Coast and the Iringa regions, respectively. The two farming systems form a unique combination where cashew is the principal and traditional export in the former system, while the latter system is dominated by food crops (i.e. maize) in addition to paprika which is a recent non-traditional horticultural export. Cashew has experienced booms and lows in international markets, hence the crop can provide a good case in understanding farmers' responses to markets. Since the survey was intended to supplement a literature review, a small sample of 58 farmers was drawn at random from the two districts (see Table 2). The survey was conducted in May 2003. This section presents results from the farmers' survey as a basis for discussion on issues raised in section 1.

Table 2: Sample distribution

Region	Frequency	Percent	Valid Percent	Cumulative Percent
Iringa	28	48.3	48.3	48.3
Coast	30	51.7	51.7	100.0
Total	58	100.0	100.0	

3.2 Sample profile

Most of the respondents (88 percent) were full-time farmers and female-headed farm households constituted 17 percent of the sample. Nearly all (93 percent) respondents were involved in decision-making regarding farming operations. Two thirds of respondents were of ages between 25 and 55 years old(see Table 3) and 91 percent were married with an average of seven dependants. Average farming years was 19 and the cultivated area ranged from 1.5 to 70 with a mean of 11 acres. As will be shown later, paprika farmers in the Iringa region were younger and had been in farming for fewer years and had relatively larger farm sizes (see Table 4). None of the farmers considered themselves as a commercial farmer. The highest education achieved by most farmers (81 percent) was primary education. (see Table 5)

Table 3 :Age groups of respondents

	Frequency	Percent	Valid Percent	Cumulative Percent
Under 25 yrs	4	6.9	6.9	6.9
25-40 yrs	19	32.8	32.8	39.7
40-55 yrs	19	32.8	32.8	72.4
Over 55	16	27.6	27.6	100.0
Total	58	100.0	100.0	

Table 4: Regional comparison of farming experience and farm sizes

Region	Farming (years)	Number of acres cultivated
Iringa	16.5	12.07
Coastal	22.0	10.33

Table 5 : Educational background of farmers

	Education category	Frequency	Percent	Valid Percent	Cumulative Percent
	Primary level education	47	81.0	81.0	81.0
	Secondary level education	4	6.9	6.9	87.9
	Had formal training in agriculture	1	1.7	1.7	89.7
	None of the above	6	10.3	10.3	100.0
	Total	58	100.0	100.0	

About half of the farmers had incomes ranging between US\$400 and US\$800 per year. Nearly two thirds of non-traditional crop growers in the Iringa region fell in the middle-income group (see Table 6). About half of the farmers owned land and leasing of land was more common among paprika growers in the Iringa district, suggesting more commercialized farming in non-traditional crop farmers (see Table 7).

Table 6: Income per year

Income per year (Tsh.)	Region		Total
	(in percentages)	(In Percentages)	
	Iringa	Coastal	
Under 400 000	34.6	41.4	38.2
400 000 to 800 000	61.5	44.8	52.7
Over 800 000	3.8	13.8	9.1
Total	100.0	100.0	100.0

Table 7: Land ownership

Land ownership	Region		(in percentages)
	(in percentages)	(in percentages)	Total
	Iringa	Coastal	
Own	44.4	60.0	52.6
Rented	22.2		10.5
Leased	7.4		3.5
Family land	7.4	6.7	7.0
Inherited	3.7	3.3	3.5
Own and rented	11.1	3.3	7.0
Own and family		16.7	8.8
Own and inherited		10.0	5.3
Rented and leased	3.7		1.8
Total	100.0	100.0	100.0

3.3 Crops produced and dependency on markets

Paprika farmers in the Iringa district grow relatively fewer crops (see Table 8) supporting the previous observation of commercialized farming through specialization. However, multiple cropping practiced among cashew growers was considered to be a risk mitigating strategy.

Table 8: Number of crops produced (in percentages)

Number of crops	Iringa	Coast
1	0	0
2	15	3
3	71	10
4	14	13
Over 4	0	74
Total	100	100

All interviewed farmers in the Iringa district grew paprika and maize, while tomatoes were grown by 86 of the respondents. The most common crops in the Coast region were cassava (93 percent), cashew (83 percent) and maize (80 percent). Other common crops were coconut (77 percent) and sweet potatoes (57 percent).

In general farmers in the survey area were market-oriented, selling over 50 percent of the major crops grown (except staples such as maize and sweet potatoes-see Table 9). This trend suggests increasing market-orientation of farmers as a result of policy reforms. Proportionally, horticultural crops (mostly from Iringa), paprika and tomatoes were grown primarily for the market.

Table 9: Percentage of crops sold

CROP	>25%	25 TO 50%	50% TO 75%	OVER 75%	TOTAL (N)
Paprika	0	0	0	100	100 (34)
Cashew	13.6	13.6	4.5	68.2	100 (22)
Coconut	21.4	21.4	21.4	35.7	100 (14)
Maize	27.6	37.9	31.0	3.4	100 (29)
Cassava	21.1	15.8	36.8	26.3	100 (19)
Onions	0	0	0	100	100 (4)
Tomatoes	0	0	3.7	96.3	100 (27)
Rice	20	20	60	0	100 (10)
Sweet Potatoes	0	66.7	33.3	0	100 (3)

Major market outlets for farmers were local markets and private traders (middlemen), suggesting little diversification (see Table 10). None of the interviewed farmers sell produce through cooperatives, indicating the diminishing role of cooperatives. Market liberalization has increased competition in the market, squeezing most of the inefficient cooperatives out of the market particularly in areas without strong traditional exports. Farmers have failed to penetrate the supermarket and the restaurant markets appropriately, typically such markets requiring products to have added value. However, the possibility of selling to such markets indirectly through middlemen cannot be ruled out.

Table 10: Market outlets (percent of producers)

CROP	SUPER MARKETS	LOCAL MARKETS	RESTAURANT	MARKETING BOARD	WHOLE SELLER /MIDDLEMEN	COOPERATIVE	OTHERS	TOTAL (N)
Paprika	66.7			4.8	19		9.5	100 (21)
Cashew		57.1	14.3		28.6			100 (21)
Coconut		100						100 (13)
Maize		86.4			13.6			100 (22)
Cassava		52.6			42.1		5.3	100 (19)
Onions		75.0			25.0			100 (4)
Tomatoes		53.8			56.2			100 (26)
Rice		80			10		10	100 (10)
Sweet Potatoes		66.7			33.3			100 (3)

The most preferred terms of payment to farmers by crop buyers were cash on delivery (see Table 11). Few buyers acquired produce at the farm gate, this explained by the difficulty in assembling produce among small and scattered farmers. Farmer preference for cash on selling point explained the failure of cooperatives to compete with private crop buyers. Few farmers sell their produce on credit and among them two-thirds experienced difficulty in collecting their money.

Table 11: Mode/terms of payment to farmers by crop buyers

	Frequency	Percent	Valid Percent	Cumulative Percent
Cash on delivery	40	69.0	75.5	75.5
Cash at farm gate	7	12.1	13.2	88.7
One week credit	1	1.7	1.9	90.6
Cash on delivery and flexible credit terms	3	5.2	5.7	96.2
Cash on delivery and one week credit	1	1.7	1.9	98.1
Cash at farm gate and flexible credit terms	1	1.7	1.9	100.0
Total	53	91.4	100.0	
System	5	8.6		
	58	100.0		

Given a choice, the most preferred crops for specialization were high value horticultural crops (paprika and tomatoes), staples (maize and cassava) and traditional exports (cashew-see Table 12). Market reliability was the most frequently reported and highly ranked consideration in crop choice (see Table 13). Food security was another important factor reflecting choice of staples such as maize and cassava, which were produced for home consumption and cash. About 77 percent of respondents had the opinion that exporting non-traditional agricultural products such as mangoes and hot peppers, could offer an opportunity to make a reasonable living.

Table 12: Specializing choice in production

Crop	Frequency	Percent	Valid Percent
Paprika	12	20.7	20.7
Cashew	11	19.0	19.0
Coconut	1	1.7	1.7
Maize	17	29.3	29.3
Cassava	9	15.5	15.5
Onions	1	1.7	1.7
Tomatoes	18	31.0	31.0
Rice	3	5.2	5.2
Okra	1	1.7	1.7
Banana	1	1.7	1.7

Table 13: The most important reason for specializing in selected crops

Reasons	Percent		
	Most important	Second in importance	Third in importance
Reliable market	63.2		20.6
Cash and food	8.8	44.9	11.8
New crop/trend	1.8		
Expert on it/experience	5.3	6.1	
Long term	15.8		
Fast maturity	3.5		
Traditional crop	1.8		
Production cost/capital requirement		34.7	
Good price		4.6	
Less labour		6.1	
Intercropping suitability		4.1	
Easy to manage			
Draught resistance			50
Total	100	100	100
(n)	(57)	(49)	(34)

Note : Total percent exceeds 100 because of multiple responses in some cases

Only two out of five farmers kept records for their farm operations and transactions. Among those that did not keep records, (see Table 14) ,nearly one-third thought record keeping was not important. Other cited reasons for not keeping records were lack of knowledge and difficulty in getting used to a new practice.

Table 14 : Reason for not keeping records

Reason	Frequency	Percent	Valid Percent
Not important	18	31.0	48.6
Not used to	16	27.6	43.2
Lack of knowledge	17	29.3	45.9
Total	37	63.8	100.0
No response	21	36.2	
Total	58	100	

3.4 Animals reared and dependency on markets

About 60 percent of farmers rear some kind of livestock and home use was the common motivation among livestock keepers (see Table 15).

Table 15 : Reasons for rearing animals

Reason	Frequency	Percent	Valid Percent	Cumulative Percent
Home use	17	29.3	51.5	51.5
For sale	7	12.1	21.2	72.7
Home use and for sale	9	15.5	27.3	100.0
Total	33	56.9	100.0	
No response	25	43.1		
Total	58	100.0		

3.6 Information sources

Tradition and habit were the most important determinants of crops grown. Potential market information provided by buyers was another important factor influencing crop choice. Neighbours and friends also had influence in adoption of crops by farmers. Few farmers relied on formal information sources such as media and the Ministry of Agriculture. (see Table 16)

Table 16 : How do you decide what crops to grow?

Source of information	Frequency	Percent	Valid Percent
Habit/tradition/inherited plantation	32.0	55.2	56.1
Information given to you by ministry of agriculture	9.0	15.5	15.8
Information given to you by neighbor/friend	12.0	20.7	21.1
Information given to you by a buyer	12.0	20.7	21.1
Market information from the media/radio	7.0	12.1	12.3
Total	57.0	98.3	100.0
No response	1.0	1.7	
Total	58.0	100.0	

Most farmers based their pricing decisions on going market prices (see Table 17). Few farmers consider production costs in pricing their crops. Such pricing behaviour suggests that farmers had price knowledge prior to production. Only 51 percent of farmers received advice during the past cropping year.

Table 17 : Pricing criteria for crops

Pricing criteria	Frequency	Percent	Valid Percent	Cumulative Percent
Cost of production estimates based on records kept	2	3.4	3.5	3.5
What the going market price is	53	91.4	93.0	96.5
What you feel the crop is worth	1	1.7	1.8	98.2
Combination of market price and crop worthiness	1	1.7	1.8	100.0
Total	57	98.3	100.0	
No response	1	1.7		
Total	58	100.0		

3.6 Input use

One-third of the interviewed farmers reported to have utilized credit facilities for their farms. Slightly more farmers in the Iringa district (36 percent) than the Coast district (29 percent) utilized credit facilities. Among credit facility users, 69 percent were satisfied with the credit terms. Among the dissatisfied, interest rate was the most common problem (60 percent).

About 50 percent of farmers used various types of fertilizer during the past 12 months. nitrogen, phosphorus and potassium (NPK) and calcium ammonium nitrate (CAN) were the most frequently used fertilizers (see Table 18). Despite the fact that 60 percent of farmers kept animals, only 6 percent used organic fertilizer. As expected, fertilizer was mostly applied to high value crops, such as paprika and tomatoes. Fertilizer was also applied to maize, which was both a food and a cash crop (see table 19). Private traders and stockists were the major sources of inputs. Private companies such as the 'Tanzania Farmers' Association (TFA) was a source to a significant number of farmers.

Table 18 :Types of fertilizer used

Fertilizer type	Frequency	Percent	Valid Percent
Urea	3.0	5.2	10.3
NPK	26.0	44.8	89.7
CAN	25.0	43.1	86.2
DAP	4.0	6.9	13.8
Organic	6.0	10.3	20.7
Total	29.0	50.0	100.0
Did not use	29.0	50.0	
Total	58.0	100.0	

Table 19: Crops on which fertilizer has been applied

	Frequency	Percent	Valid Percent
Tomatoes	21.0	36.2	77.8
Paprika	23.0	39.7	85.2
Maize	21.0	36.2	77.8
Onions	1.0	1.7	3.7
Cabbage	1.0	1.7	3.7
Total	27.0	46.6	100.0
Did not use/no response	31.0	53.4	
Total	58.0	100.0	

Other inputs such as fungicides and improved seeds were used in high value crops and maize (Table 20 and Table 21). Two-thirds of farmers reported that they had problems in obtaining input. The most prominent problem in securing inputs was high price (see Table 22). As mentioned in the previous sections, removal of input subsidies has resulted in price increase.

Table 20: Crops on which fungicide has been applied

Crop	Frequency	Percent	Valid Percent	Cumulative Percent
Tomatoes	15	25.9	75.0	75.0
Cashew	1	1.7	5.0	80.0
Tomatoes and pepper	3	5.2	15.0	95.0
Tomatoes and onions	1	1.7	5.0	100.0
Total	20	34.5	100.0	
No response/do not use	38	65.5		
Total	58	100.0		

Table 21: Crops planted by using improved seeds

	Frequency	Percent	Valid Percent	Cumulative Percent
Tomatoes	17	29.3	56.7	56.7
Paprika	2	3.4	6.7	63.3
Maize	3	5.2	10.0	73.3
Tomatoes and paprika	8	13.8	26.7	100.0
Total	30	51.7	100.0	
No response/do not use	28	48.3		
Total	58	100.0		

Table 22: Problems in getting farm inputs

Problem	Fertilizer	Seed	Insecticide	Fungicide
High price	72.4	69.6	71.4	85.7
Money is scarcity	20.7	17.4	17.9	4.8
Not available on time	3.4	8.7	7.1	4.8
Acceptability is difficult	3.4	4.3	3.6	4.8
Total	100.0	100.0	100.0	100.0
Response (n)	29	23	28	21

The majority of farmers (91 percent) had used hired labour. Occasional use of hired labour was the most common, though a significant percentage of farms (38 percent) used them regularly (see Table 23). Among users of hired labour, 40 percent reported to have experienced some problems. The most common labour problem was unfaithfulness (37 percent).

Table 23: Frequency of using hired labor

Frequency	Frequency	Percent	Valid Percent	Cumulative Percent
Occasionally	30	51.7	57.7	57.7
Regularly	22	37.9	42.3	100.0
Total	52	89.7	100.0	
No response/do not use	6	10.3		
Total	58	100.0		

When asked about what to be done to produce more crops, most frequently mentioned strategies were to increase farmers' access to credit, and hence capital, provide better prices and more access to input and product markets and to promote contract farming and out-growers schemes.

3.7 Institutional linkages

As expected, institutions reported most frequently by farmers as having connections with agriculture in farmers' village and districts were the Ministry of Agriculture and related extension agency. The newly formed Ministries of Livestock and Cooperatives seemed to be less known. Farmers' cooperatives were the least reported institutions, reflecting their diminishing role. With regard to services (see Table 24) research institutions featured most prominently, followed by the Ministry of Agriculture and to some extent the extension agency. This might be a reflection of various projects implemented by the research institutions. As indicated in previous sections, until recently (2000), the Ministry of Agriculture's budget had been falling in nominal and real terms. However, many research centres had been able to raise their own funds through competitive research funded bidding, particularly in international organizations. The shift in the research approach from research centre to farm-based experiments, might also reflect the observed farmers perception on service provision.

Table 24: Institutions connected with agriculture in your village/district

Institution	Frequency	Percent	Valid Percent
Ministry of Agriculture and Food Security	16.0	27.6	47.1
Ministry of Water and Livestock Development	5.0	8.6	14.7
Ministry of Cooperative and Markets	2.0	3.4	5.9
Agricultural Research Institute	9.0	15.5	26.5
Agricultural Extension	15.0	25.9	44.1
Farmers cooperative	2.0	3.4	5.9
NGOs	7.0	13.8	23.5
Total	34.0	58.6	100.0
No response	24.0	41.4	
Total	58.0	100.0	

Table 25: Assistance obtained from various institutions

Assistance Obtained	Institution (percent of respondents received assistance)							Total % (n)
	Min. of Agric.	Min. of Livestock	Coops	Research Centre /inst.	Extension	NGOs	Others	
Market information	17.5		5.9	70.6				100 (17)
Product information	20			73.3	6.7		5.9	100 (15)
Production inputs	11.8			64.7	23.5			100 (17)
Packaging								0
Post harvest information								0
Pest/disease problems				100				100 (11)
Training	25			50	25			100 (24)

Nearly a quarter (23 percent) of farmers had attended some training offered by the Ministry of Agriculture and 50 percent of them found the training useful, particularly in their daily farm business management (46 percent). A similar percentage of farmers (24 percent) were aware of training conducted in the past year. Special subjects they would have liked to be included in future training were the agronomy of crops grown in their villages and information on how to access credit. Some farmers suggested the need to provide them with reading/information materials. When asked about the type of assistance required for their better response to agricultural diversification, market information, farm input and irrigation, and credit access (in the decreasing order) were most frequently mentioned.

About three-quarters (76 percent) of farmers had the opinion that the government should lead the agricultural diversification process, rather than other agencies such as the private sector, farmers' associations or exporters/processors. The marketing board was the most preferred agency for leading export of non-traditional exports. Slightly over two-thirds of farmers think it was necessary to enforce grades and standards in non-traditional exports.

Table 26: Choice of agency to lead export of non-traditional agricultural products

Agency	Frequency	Percent	Valid Percent	Cumulative Percent
Marketing board	29	50.0	51.8	51.8
Producer associations	7	12.1	12.5	64.3
Private exporters	19	32.8	33.9	98.2
Other	1	1.7	1.8	100.0
Total	56	96.6	100.0	
No response	2	3.4		
Total	58	100.0		

During the past five years, about two-thirds of farmers had made changes in their cropping patterns. Most changes included increase and decrease in the acreage of some crops. The crops most affected by changes were tomatoes, paprika, maize, banana, cashew, cassava, pigeon peas, coconut and okra. The most frequent change was increased acreage of some crops (see Table 27). Nearly a quarter of the farmers stopped growing some of the crops. Paprika was the most frequently mentioned newly adopted crop (see Table 28). Earning income is the most frequently mentioned reason for changing cropping pattern (see Table 29). Other related reasons were reliable market and good price. The most reported strategies for adapting to market changes were (in decreasing order of importance) produce storage (sell later when price was high), searching for alternative markets and adjustment in acreage.

Table 27 : Change of crop acreages

Change	Frequency	Percent	Valid Percent	Cumulative Percent
Increase acreage	16	27.6	47.1	47.1
Stop growing	9	15.5	26.5	73.5
Reduce acreage	6	10.3	17.6	91.2
No change	3	5.2	8.8	100.0
Total	34	58.6	100.0	
No response	24	41.4		
Total	58	100.0		

Table 28 : New crops introduced

Crop	Frequency	Percent	Valid Percent	Cumulative Percent
Paprika	25	43.1	67.6	67.6
Cashew	1	1.7	2.7	70.3
Passion	1	1.7	2.7	73.0
Orange	1	1.7	2.7	75.7
Coconut	1	1.7	2.7	78.4
Pepper	1	1.7	2.7	81.1
Pumpkin	1	1.7	2.7	83.8
Pineapples	1	1.7	2.7	86.5
Maize	1	1.7	2.7	89.2
Pigeon peas	1	1.7	2.7	91.9
Spinach	1	1.7	2.7	94.6
Banana	1	1.7	2.7	97.3
Others	1	1.7	2.7	100.0
Total	37	63.8	100.0	
No response/no change	21	36.2		
Total	58	100.0		

Table 29 : Reason for changing cropping pattern

Reason	Frequency	Percent	Valid Percent	Cumulative Percent
Reliable market	3	5.2	10.7	10.7
Not good price	4	6.9	14.3	25.0
Available land	1	1.7	3.6	28.6
Better living	1	1.7	3.6	32.1
Earn more	13	22.4	46.4	78.6
Can't manage large area	2	3.4	7.1	85.7
Lack of input	2	3.4	7.1	92.9
Diversity product	2	3.4	7.1	100.0
Total	28	48.3	100.0	
No response/no change	30	51.7		
Total	58	100.0		

Unfavorable aspects of market liberalization as reported by farmers included unstable price (most frequently mentioned), high input price and low produce price in some places. The most favorable aspects were the ability to sell at any time (did not have to wait for crop buying season), and buyer choice i.e. more market outlets.

4. Conclusion and recommendations

This study has attempted to achieve three objectives: (i) provide information for improving producer capacity to respond to market changes; (ii) provide policy guidelines for institutional support to diversification into export production; (iii) understand and study small farmer responses to market incentives for export production and corresponding support needs.

Results suggest that policy reforms have provided opportunities to farmers through increased market outlets, crop choice and producer price in some areas. However, increased benefits are not without risk. Market price uncertainty coupled with increased farm input cost and limited access to credit, have rendered some farmers unable to benefit from increased opportunities. Limited education and poor access to agricultural services delivery in some areas have further complicated the production environment of small farmers. From the study it is evident that benefits of reforms and market liberalization would outweigh the negative effects, if strategies are designed to mitigate the increased risk in the farming business.

A stakeholders workshop synthesized the study results and came up with the following recommendations regarding the study questions outlined in the introduction of this paper.

4.1 Government services and regulatory functions

- Agricultural research – government should play a leading role. Private sector can sponsor few demand driven research activities
- Regulation of market functions e.g. enforcing grades and standards, market conduct (e.g. prevent collusion)
- Education and training particularly nurturing of entrepreneurial culture
- Public infrastructure and services e.g. smallholder irrigation schemes, roads, telecommunication, energy (electricity), etc.
- Because of increased participation of the private sector in providing some of the functions mentioned above, the government should play a leading role in enhancing public and private partnerships.

4.2 Enhancing the entrepreneurial capacity of producers and exporters

- Training in entrepreneurial skills
- Contract farming and out-growers schemes (examples of emerging out-growers schemes around sugar plantations in Kilombero and Mtibwa sugar factories in the Morogoro region, vegetable and paprika farming in the Iringa district where companies provide farmers with extension service, farm input and sometimes credit and buy the produce from farmers at agreed price)
- Rural agro-processing

4.3 Risks and opportunities from the SAP and globalization

Risks

- Market and price uncertainty
- Market collusions
- Unregulated/multiple farm inputs (e.g. pesticides, seeds) and product quality (e.g. mixed quality coffee beans)
- Lack of collective loan guarantees (e.g. cooperative)
- Unstable government policies e.g. taxes and export permit for staples e.g. maize
- Investment in public land (partial private land ownership)

Opportunities

- More market outlets
- Increased producer prices (limited to areas where markets are accessible)
- Diversified product/crop demand including non-traditional crops
- Staple as potential export crop e.g. increased export of maize particularly in the southern regions of Tanzania. There is a need to capture potential markets in countries that are long term grain importers such as Botswana, Namibia and Angola besides opportunistic markets in politically unstable countries (e.g. for refugees) and draught affected countries
- Food marketing in emerging supermarket chains
- Markets in agroprocessing industries

Institutional support

- Land policy, collective (village) land ownership prevents farmers from using their land as loan collateral. Bureaucracy on issuing farm land title deed makes the matter worse
- Need to update crop suitability maps, so that potential investors in agriculture do not have to spend much time looking for information. Crop suitability maps should be coupled with farm budget, indicating typical production costs and returns. This aspect is related to small farmers participation in out-growers schemes
- Policies that give priority to investment in labour intensive crops. Despite increased investment in flower farms, employment has not expanded much in the areas where farms are located

4.4 Constraints to non-traditional exports

- Lack of user-friendly extension literature (unlike traditional exports)
- Lack market information and stable markets (buyers)
- No marketing boards for non-traditional agricultural exports (farmers rely on traders)
- Little processing and value adding activities
- Extension workers have little knowledge on them

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Annex 1: Tanzania: export of major agricultural crops

Year	Sisal	Cotton	Coffee	Tea	Tobacco	Cashew
1951	144 514	8 451	17 022	834	1 704	8 300
1952	160 338	11 288	19 085	1 034	1 238	11 696
1953	172 544	15 006	15 443	1 150	707	11 542
1954	170 474	12 311	19 733	1 595	721	16 572
1955	176 861	20 709	18 946	1 755	2 001	18 506
1956	188 623	28 347	21 922	2 155	971	17 020
1957	185 338	27 655	18 769	2 396	1 739	34 204
1958	201 665	32 586	22 569	2 510	1 629	31 840
1959	213 364	31 252	19 895	2 865	1 590	33 774
1960	210 595	39 504	25 502	3 357	2 090	37 287
1961	204 867	30 159	44 878	3 393	1 836	40 659
1962	223 474	33 418	26 084	4 029	782	60 054
1963	218 510	48 619	26 416	4 070	908	43 275
1964	212 961	45 194	33 482	4 699	829	56 784
1965	216 639	56 163	28 390	4 415	3 286	64 739
1966	207 633	86 178	51 127	6 462	3 364	72 844
1967	220 040	60 740	45 253	6 211	4 911	73 008
1968	204 203	62 936	49 158	7 054	5 240	81 091
1969	187 913	56 901	49 486	7 715	5 047	84 615
1970	232 944	60 679	44 947	7 054	7 532	80 287
1971	191 010	55 018	35 530	8 411	6 633	99 951
1972	176 670	64 615	54 718	9 202	7 137	115 826
1973	144 032	60 434	60 229	9 494	7 244	113 625
1974	120 836	49 931	41 029	9 677	12 061	117 951
1975	117 634	39 674	54 385	10 367	8 581	101 328
1976	127 113	57 581	57 869	11 998	15 763	72 464
1977	108 030	40 421	46 703	11 977	11 737	78 642
1978	106 376	46 735	50 737	14 977	10 960	47 835
1979	121 719	38 943	45 296	15 024	7 039	41 678
1980	81 730	31 476	43 202	13 290	8 331	12 800
1981	66 918	44 100	50 879	14 086	10 606	31 816
1982	68 002	38 767	52 234	11 938	10 064	20 557
1983	39 423	39 770	50 250	16 601	5 285	12 757
1984	43 219	28 760	54 632	11 110	4 707	35 381
1985	34 529	22 922	43 306	11 378	7 865	26 664
1986	24 143	31 259	49 170	11 418	7 699	60 867
1987	27 029	42 233	45 786	11 929	7 398	30 684
1988	27 323	51 670	32 945	11 247	8 208	29 398
1989	19 311	54 367	71 464	16 251	7 125	6 880
1990	25 370	44 661	60 185	17 321	7 067	5 104
1991	18 950	17 840	30 730	9 890	3 290	11 000
1992	2 390	43 510	28 600	13 480	5 870	25 810
1993	1 900	35 350	33 350	11 210	5 540	25 160
1994	3 200	35 400	25 600	12 100	9 600	21 000
1995	8 700	28 080	25 440	12 750	10 280	4 120
1996	3 780	24 170	36 900	13 380	12 850	56 890
1997	7 270	37 040	27 300	11 170	3 920	58 080
1998	5 550	15 930	17 570	12 330	16 640	26 990
1999	7 290	7 310	15 980	10 930	12 860	16 430
2000	7 450	9 810	25 990	13 440	12 010	30 440

Source: Selected Statistical Series 1951-1990, Economic Surveys

Annex 2: Percentage of government expenditure by selected sectors

Year	Agric	Gen. Public services	Education	Health	Public debt
1967/68	10.22	24.40	13.77	5.32	9.45
1968/69	10.56	21.12	13.40	5.19	6.85
1969/70	10.20	20.93	13.54	5.50	8.25
1970/71	11.30	20.00	13.68	6.17	6.81
1971/72	9.53	17.64	14.83	6.23	9.35
1972/73	10.12	18.95	13.29	6.51	9.30
1973/74	11.29	16.88	12.28	6.63	5.52
1974/75	12.39	16.07	12.23	6.88	4.34
1975/76	14.16	15.83	10.76	7.12	7.28
1976/77	11.60	17.43	13.60	7.46	5.28
1977/78	9.33	15.06	14.42	7.27	7.53
1978/79	6.77	14.44	11.65	5.36	8.44
1979/80	9.03	17.21	13.07	5.84	8.79
1980/81	9.71	18.61	12.06	5.47	11.65
1981/82	7.36	20.13	13.99	6.04	19.96
1982/83	7.73	17.09	13.18	5.09	20.20
1983/84	7.36	21.67	11.71	5.48	17.14
1984/85	6.03	29.17	6.54	4.84	18.34
1985/86	5.47	29.87	6.96	4.51	20.24
1986/87	6.43	27.35	6.42	4.54	24.92
1987/88	5.20	27.77	5.44	4.47	31.35
1988/89	7.87	26.67	5.55	4.51	30.56
1989/90	5.04	31.27	6.58	4.92	25.59
1990/91	5.74	23.44	6.95	4.93	29.85
1991/92	4.88	33.21	6.48	5.04	23.98
1992/93	4.04	18.50	8.60	6.40	31.55
1993/94		28.55	7.55	7.16	19.70
1994/95		22.46	7.58	6.26	23.55
1995/96	1.52	22.69	6.80	3.70	0.00
1996/97	1.85	20.67	9.86	3.62	0.00
1997/98	2.13	26.88	12.67	6.52	18.38
1998/99	4.13	21.14	13.59	6.51	16.51
1999/00	2.60	20.90	19.00	5.20	20.10

Source: Calculated from Economic Surveys, various issues

Annex 3: Commercial bank (domestic) lending by sector (in million of Tanzanian shillings.)

Year	Agric. Production		Agric Marketing		Agric Export		Transportation		Total	
	Mil. Tsh.	%	Mil. Tsh.	%	Mil. Tsh.	%	Mil. Tsh.	%	Mil. Tsh.	%
1970	172	13	280	21	139	10	45	3	1 347	100
1971	223	15	380	25	107	7	19	1	1 505	100
1972	96	6	532	34	115	7	42	3	1 549	100
1973	88	5	568	31	69	4	40	2	1 821	100
1974	116	4	978	34	293	10	36	1	2 899	100
1975	166	5	894	27	315	9	43	1	3 351	100
1976	154	4	1 142	31	401	11	43	1	3 673	100
1977	175	4	1 201	27	733	17	37	1	4 403	100
1978	184	3	1 486	24	759	12	33	1	6 249	100
1979	210	3	3 027	44	425	6	92	1	6 866	100
1980	445	6	4, 72	63	101	1	136	2	7 400	100
1981	482	6	5 429	63	361	4	140	2	8 551	100
1982	418	4	5 872	61	510	5	205	2	9 579	100
1983	308	3	6 706	63	564	5	247	2	10 643	100
1984	653	5	7 580	59	590	5	253	2	12 955	100
1985	643	4	9 789	56	447	3	367	2	17 529	100
1986	1 362	5	5 150	19	221	1	414	1	27 690	100
1987	4 039	7	35 221	64	301	1	1 097	2	54 990	100
1988	6 020	7	37 324	42	618	1	1 539	2	88 846	100
1989	6 612	6	48 361	40	744	1	2 224	2	119 598	100
1990	13 225	8	49 220	31	2 085	1	3 838	2	156 906	100
1991	20 074	10	76 531	37	2 884	1	4 633	2	208 877	100
1992	16 685	8	52 925	27	2 834	1	5 292	3	199 538	100
1993	17 883	7	68 645	25	6 266	2	10 561	4	272 286	100
1994	24 433	9	73 004	27	9 126	3	10 597	4	271 238	100
1995	21 086	8	51 294	20	5 131	2	4 774	2	260 829	100
1996	17 236	12	8 820	6	3 505	2	8 656	6	147 298	100
1997	13 920	8	2 675	1	3 117	2	15 016	8	184 840	100
1998	18 826	7	6 419	3	1 954	1	22 777	9	251 079	100
1999	17 739	6	2 439	1	1 948	1	24 322	8	312 020	100

Source: Calculated from Economic Bulletin, various issues