

IMPACT OF STRUCTURAL ADJUSTMENT POLICIES ON SMALLHOLDER FARMING SYSTEMS IN TANZANIA: THE EXAMPLE OF MBEYA REGION

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Abstract

This paper presents results of a field study on the impact of Structural Adjustment Policies (SAP) on smallholder farming systems in Rungwe and Mbozi district, Mbeya region. Data for the study were collected using a structured questionnaire administered to 180 randomly selected farmers from Mbozi and Rungwe district. Results of the study indicate that SAP policies have had a considerable impact on smallholder farming systems. High input prices and lack of credit inputs are among the major constraints which have compelled farmers to use less amounts of purchased inputs in their farms. To cope with this situation farmers responded by abandoning and/or switching from growing some crops and reducing crop area under cultivation and/or management. The main policy concern emanating from the study is that the Government should create conducive environment (e.g. supporting research development and extension services, provision of market information and infrastructure) which would encourage and support agricultural investment and development.

Key words: Smallholder farmers, farming systems, SAP policies, Rungwe and Mbozi district.

1 Introduction

At the end of the 1970s many Sub-Saharan African (SSA) countries entered into a prolonged economic recession. Macro-economic aspects of this crisis were a growing disparity between national income and expenditure. International trade and balance of payments were characterised by increasing deficits. The financing of fiscal deficits was in many cases inflationary, to which many governments often responded by extending price control, Tanzania being no exception. Many of the problems which faced agriculture in developing countries in the late 1970s were the sectoral reflection of macroeconomic distortions, coupled with policies where governments controlled all the prices of some commodities in the economy, and owned and operated a multitude of parastatal organisations. Due to these problems, structural adjustment programmes (SAPs) have been implemented in many Sub-Saharan African (SSA) countries with the aim of stimulating agricultural production and exports (Helleiner, 1992; Riddell, 1992).

Since 1986 Tanzania has been undertaking economic reforms to establish a free market economy in order to stimulate economic growth. Many of the reforms being undertaken are aimed at encouraging development of the private sector which had been neglected for a long time, thereby reducing government participation in the economy. Prior to adopting these programmes, Tanzania was already implementing her own locally designed structural adjustment programmes in response to the economic crisis of the late 1970s to early 1980s (Kashuliza and Mbiha, 1995). The locally designed programmes covering the period between 1981-1985 include the National Economic Survival Programme (NESP), and the Structural Adjustment Programme (SAP).

In light of poor performance of her domestic SAPs, Tanzania entered into negotiations with the IMF for a fund supported Economic Recovery Programme (ERP), whose implementation in the country began in July 1986 (Kashuliza and Mbiha, 1995). The objectives of ERP I, 1986-89 were to increase the rate of growth of output in the economy, to rehabilitate the physical infrastructure of the country, and to restore internal and external balance. ERP II covering 1989/90-1991/92, also known as the Economic and Social Action Programme (ESAP) aimed at further sustenance and development of the major objectives and policies that were initiated during ERP I. In addition, ESAP put more emphasis on the improvement of economic infrastructure and social services that had deteriorated significantly in the late 1970s and early 1980s.

In general the above economic programmes aimed at restoring the basis for sustainable economic growth, by providing increased incentives to agricultural producers and general reduction in state intervention in the economy by encouraging privatisation. The main SAP measures implemented in Tanzania include exchange rate adjustment, producer price adjustment and market liberalisation.

SAP policies were expected to have a wide range of impacts on farmers and their farming systems. For example, because of currency devaluation, it is expected that in agriculture, the price of imports would rise relative to the price of exports, although both would rise relatively to non-agricultural prices (FAO, 1994). This shift would have effects on resource allocation and hence impact on farm production and exports. Currency devaluation can have some negative effect of increasing the cost of essential agricultural inputs. For example, a study by Geisler (1992) in Zambia reported that farmers abandoned hybrid maize because of high cost of inputs. This follows from the fact that, currency devaluation could result in inflation and increase in price of imported inputs, hence making them unaffordable to poor smallholder farmers (FAO, 1994). Kashuliza and Mbiha (1995); Shechambo and Kulindwa (1995); Kilimwiko (1994); Turuka (1995); Sankhayan (1994); have found that some farmers in Tanzania are already using less amounts of inputs or not using inputs at all in their farms due to the effect of input subsidy removal. Elimination of subsidies has pushed the prices of inputs and other consumer goods beyond the reach of most farmers.

This paper presents findings of a study conducted in Rungwe and Mbozi districts of Mbeya region whose aim was to assess the impacts of selected SAP policies and how farmers in these areas have responded or evolved mechanisms to cope with changes emanating from those policies. More specifically the study sought to (i) evaluate the effects of currency devaluation and removal of agricultural input subsidies on smallholder farmers, and (ii) assess the response of farmers to such measures and study

changes they have evolved to cope with those impacts.

2 Methodology

2.1 Study area

Empirical data for this study were collected from Rungwe and Mbozi districts in Mbeya region during the period of March and April 1997. The data collected covered the period of four cropping seasons, from 1993 up to 1996. Mbeya region was selected for this study as a representative of the Southern Highland regions (i.e. Rukwa, Ruvuma and Iringa), which are important agricultural regions of Tanzania. The region has some important cash crops, such as coffee, tea, pyrethrum, cocoa and food crops such as maize; paddy, banana and beans. Mbeya region is also one of the leading surplus producers of maize (the major staple crop of the country) and other crops such as rice, banana, and round potatoes.

2.2 Data collection

Two districts 4 divisions (two per district) and twelve villages (six per district) were selected for this study on the basis of ease of communication and accessibility. At village level 90 farmers were randomly selected from each district. A total of 180 farmers were interviewed using a structured questionnaire. Informal discussions with key informants, including village leaders, extension agents, co-operative society officials and other farmers outside the formal sample provided additional or general information pertaining to changes in farming systems.

2.3 Analytical Techniques

Descriptive statistics such as frequency tables, percentages and means were used to summarise the data. A double-log regression equation was used to assess the impact of input subsidy removal and currency devaluation on quantity of fertiliser used. The regression parameters were estimated by ordinary least squares (OLS). The double-log form was adopted because it provided the best fit in relation to the data collected and hypothesised relationships when compared to other functional forms. The double-log regression can be specified as follows;

$$\text{Log } Q_i = \beta_0 + \beta_1 \log P_i + \beta_2 \log P_j + \beta_3 \log I_c + \beta_4 \log A_c + D_{A_i} + U$$

Where:

- Q_i = Quantity of fertiliser of type i (i.e. quantity of Urea and SA respectively)
- P_i = real price of fertiliser of type i (i.e. price of Urea and SA respectively)
- P_j = real price of fertiliser of type j, considered as a substitute to fertiliser of type i. The prices of fertilizers were deflated by the consumer price index using 1993 as the base year. (i.e. price of CAN and Urea respectively)
- I_c = Income obtained from the crop (i.e. Coffee and maize respectively)
- A_c = crop area cultivated (i.e. area under coffee and maize respectively)
- D_{A_i} = Dummy of availability of fertiliser
1 = Available, 0 = other wise
- U = Error term

4 Results and Discussion

4.1 Farmers' Assessment

With respect to the impact of currency devaluation and input subsidy removal, 97.8% of the sample farmers in Rungwe district reported that their input use had been affected. The corresponding figure for Mbozi district was 96.7%. However, a few of the sample farmers felt that, these SAP policies had no effect on their production activities (Table 1). Following currency devaluation and input subsidy removal, several farmers indicated that prices of inputs were so high that they could not afford to purchase them. Due to high prices of inputs, some farmers responded by using less amount of inputs on their farms while others indicated that they were no longer using inputs at all since 1993. The situation became even more serious from 1995 after complete removal of input subsidy.

Table 1 Sample farmers affected by currency devaluation and removal of subsidies in the study area.

Whether input subsidy had effect or not	Rungwe district		Mbozi district	
	Number	Percent	Number	Percent
Affected	88	97.8	87	96.7
Not affected	2	2.2	3	3.3
	90	100.0	90	100.0

Source: Survey data (1997)

Table 2 shows sample farmers' responses with respect to the effects of input subsidy removal in Rungwe and Mbozi districts. The results indicated that 42.2% and 49.6% of the interviewed farmers used fewer amounts of inputs than before subsidy removal whilst 37.6% and 15% have stopped using inputs completely in Rungwe and Mbozi districts respectively. With increased prices of inputs, farmers preferred to use inputs in some crops (e.g. coffee and maize) which were regarded to be profitable. The results in Table 2 also reveal that in response to input subsidy removal, 14.8% of the sample farmers in Rungwe district used inputs only on relatively profitable crops such as coffee and maize. The corresponding figure for Mbozi was 28.9%. These farmers used fertilisers, herbicides in coffee and maize because of their profitability and no inputs were applied on beans.

In Rungwe district crop switching was evident, where farmers had stopped plucking tea and directed their efforts to banana cultivation and animal husbandry. Following input subsidy removal, banana has now become a prominent cash crop in the district (Table 3). The results in Table 3 reveal that a large proportion of the sample farmers in Rungwe district grow banana as a cash crop. Before the implementation of SAP policies, a large proportion of farmers in Rungwe district were mainly growing banana as a food crop. But following a complete input subsidy removal the situation has changed, whereby farmers have now directed their efforts towards banana farming. This change

can be associated to the fact that, farmers have reduced management of the area under tea and in some cases stopped plucking it because they have not been receiving payment for the leaves previously sold to Tanzania Tea Authority (TAT) for several months. Therefore farmers have opted to re-allocate their time and labour to banana farming because this crop generates income throughout the year without payment problems

Table 2 Responses of farmers on effects of input subsidy removal in the study area

Effect of input subsidy removal	Rungwe District		Mbozi District	
	Number	Percent	Number	Percent
Less amount of inputs used in the farm	38	42.2	43	49.6
No inputs used in the farm	34	37.6	13	15.0
Switched from growing some crops	5	5.4	6	6.5
Inputs applied only on profitable crops	13	14.8	25	28.9

Source: Survey data (1997)

Table 3 Farmers growing banana as a cash crop in the study villages of Rungwe district

Division	Village	Sample Farmers	Farmers Growing Banana	
			Number	Percent
Pakati	Mpuga	15	8	53.31
	Katundulu	15	6	40.00
	Segela	15	10	66.70
Ukukwe	Kyimo	15	12	75.0
	Ibula	15	7	46.7
	Mpandapan da	15	9	60.0

Source: Survey data (1997)

4.2 Changes in the cropping patterns

In response to currency devaluation and input subsidy removal, farmers also have abandoned and reduced crop area under cultivation for some crops. Kashuliza and Mbiha (1995) report that some farmers had abandoned coffee farms in preference for maize cultivation. Geister (1992) has also reported similar results in Zambia where farmers replaced maize for Soya beans. The results of the present study show that, 35.6% of the sample farmers in Rungwe district have abandoned growing some crops while 64.4% have not. In Mbozi district none of the sample farmers had done so (Table

4). This is so mainly because in Mbozi district only coffee, maize and beans are grown as major crops. On area cultivated, 54.4% of the sample farmers in Rungwe district reduced area cultivated for some crops while 45.6% have not. In Mbozi district only 1 farmer out of the 90 sample farmers had done so (Table 4).

Table 4 Effect of Input subsidy removal on crop cultivation in the study area.

Farmers' Reaction	Rungwe district		Mbozi district	
	Number	Percent	Number	Percent
Abandoned	32	35.6	0	0.0
Not abandoned	58	64.4	90	100.0
Reduced	49	54.4	1	1.1
Not Reduced	41	45.6	89	98.9

Source: Survey data (1997)

Reasons given by farmers in Rungwe district for abandoning and/or reducing growing of some crops were increased cost of production as a result of high prices of inputs and lack of credit inputs to them. The same reasons have been given by Kashuliza and Mbiha (1995) and Geisler (1992) that farmers have been abandoning certain crops because of increased costs of production attributable to high prices of inputs. Of the total sample of 90 farmers interviewed in Rungwe district, 32 (35.6%) have abandoned growing some crops while 58 (64.4%) have not (Table 4). For those who abandoned growing some crops, 5 farmers (15.6%) have abandoned coffee and 16 farmers (50%) have stopped plucking tea (Table 5). Out of 45 farmers, who have reduced area under cultivation to some crops, 23 farmers (46.9%) have reduced area under coffee, 16 farmers (32.7%) have reduced area under tea and 10 farmers (20.4%) have reduced growing maize in Rungwe district.

Abandoning of crops and reduction of crop area under cultivation is evident in Rungwe district partly due to the fact that in this district land expansion is impossible because of high population density. This is common in Rungwe district because there are many other crops grown by farmers hence getting big chances of switching to other crops such as from tea to banana, tea to coffee, coffee to maize and coffee to tea.

4.3 Results of the regression analyses

The results of the regression analyses carried out are presented in Tables 6, 7, 8 and 9. These results reveal that, most variables in the equations are statistically significant in explaining the variation in quantity of fertiliser used in both coffee and maize for the two districts respectively.

The results in Table 6 and 7 indicate that despite an increase in the area cultivated, income obtained from the crop and availability of fertiliser in Rungwe district, the amount of fertiliser applied in the farms decreased. From the results, it can be learnt that an increase in the price of fertiliser was associated with use of less amount of fertiliser

by farmers in Rungwe district. And due to increase in the price of one type of fertiliser, farmers had the option of using the alternative fertilisers, which were found to be cheaper. In some cases farmers had to apply farmyard manure. This implies that increase in the price of fertiliser was the limiting factor determining the amount of fertiliser used on coffee and maize.

Table 5 Crop abandoned and reduced as a result of input subsidy removal in the study area.

Crop	Rungwe district				Mbozi district			
	Abandoned		Reduced		Abandoned		Reduced	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Coffee	5	15.6	23	49.9	0	0.0	1	1.1
Tea	16	50.0	16	37.7	NA	NA	NA	NA
Maize	0	0.0	10	20.4	0	0.0	0	0.0
Beans	0	0.0	0	0.0	0	0.0	0	0.0
Banana	0	0.0	0	0.0	NA	NA	NA	NA

Note: NA means not applicable

Source: Survey data (1997)

Table 6 Results of regression analysis of quantity of fertiliser used in coffee

Variable	Coefficient	T-ratio
P_{Urea}	-0.2576	-1.827*
P_{CAN}	0.7872	2.287**
A_{Coffee}	0.8728	2.367**
I_{Coffee}	0.9291	1.737**
D_{Af}	-0.5054	-3.721***
Constant	-1.8724	-0.621

R^2 -adjusted = 0.6178

D-W = 2.428

F-ratio = 12.642***

* Significant at 0.10% level

** Significant at 0.05% level

*** Significant at 0.01% level

Source: Survey data (1997)

Table 7 Results of regression analysis of quantity of fertiliser used in maize

Variable	Coefficient	T-ratio
P _{SA}	0.527	3.55***
P _{Urea}	-0.454	-1.432*
A _{Maize}	0.270	1.282*
I _{Maize}	0.274	0.842
D _{At}	0.524	-2.462**
Constant	2.482	0.641

R²-adjusted = 0.4383

D-W = 2.887

F-ratio = 25.191***

* Significant at 0.10% level

** Significant at 0.05% level

*** Significant at 0.01% level

Source Survey data (1997)

A closer examination of the significant coefficients in Tables 8 and 9 indicate that an increase in the price of fertiliser was associated with decreased use of fertiliser. Despite increased fertiliser availability, increase in crop area cultivated and income obtained from the crop, farmers used little amounts of fertilisers in their farms. This was mainly due the fact that prices of fertilisers were high such that some farmers couldn't afford to purchase them. As a result farmers had to use lesser amounts of fertilisers and other inputs than the optimal amount required.

Results in Mbozi districts indicate that high prices of inputs are associated with use of small amounts of those inputs in farms and resulting in fall of crop productivity. Most of the farmers interviewed in the study area reported that yield of crops declined despite an increase in area cultivated because they applied smaller amounts of those inputs.

Table 8 Mbozi district: Results of regression analysis of quantity of fertiliser used in coffee

Variable	Coefficient	T-ratio
P _{Urea}	-0.6846	-3.740***
P _{CAN}	2.2470	0.206
A _{Cofee}	0.6728	2.347***
I _{Coffee}	0.3567	1.987*
D _{At}	0.4678	2.173**
Constant	-1.2340	-0.728

R₂-adjusted = 0.5214

D-W = 2.765

F-ratio = 12.4287***

* Significant at 0.10% level

** Significant at 0.05% level

*** Significant at 0.01% level

Source Survey data (1997)

Table 9 Results of Regression analysis of quantity of fertiliser used in maize

Variable	Coefficient	T-ratio
P _{SA}	0.248	3.101**
P _{Urea}	-0.463	-2.310*
A _{Maize}	0.729	3.253***
I _{Maize}	0.288	4.461**
D _{Af}	0.249	5.127***
Constant	-1.678	-6.767

R₂-adjusted = 0.4501

D-W = 2.872

F-ratio = 11.4671***

* Significant at 0.10% level

** Significant at 0.05% level

*** Significant at 0.001% level

Source Survey data (1997)

5 Policy implications and recommendations

Following input subsidy removal and currency devaluation, which led to high prices, farmers in the study area have been highly affected. The empirical results show that input subsidy removal and currency devaluation has raised the price of inputs. As a result of high input prices, a large proportion of smallholder farmers can not afford to purchase those inputs. To cope with this situation, some farmers were responding by applying fewer amounts of those inputs and/or applied farmyard manure (FYM) in their fields. In some cases farmers had been responding by abandoning growing some crops, reducing crop area under cultivation and/or switching from growing certain crops. It can be learnt from the results that, high price of inputs was associated with the use of smaller amounts of inputs in smallholder farms in the study area. This implies that SAP policies implemented in the country did not achieve the intended goals on one hand, the policy environments were not properly prepared to suit smallholder farming environments. From the results it can be deduced that sequencing and/or preparatory conducive policy environment which can suit smallholder farming systems is important. This calls for midterm policy evaluation before launching a comprehensive implementation of the policies so as to be able to do some policy adjustments that suit the smallholder farming environments. Most of the policies that were implemented under SAP aimed at promoting economic growth. This is from the fact that economic development is a major concern for all underdeveloped nations. This is widely accepted by development experts that agriculture is one of the most important bases for economic development in these nations. That is why many developing nations are encouraged by foreign partners to make efforts to improve their agriculture.

In Tanzania where the economy is highly dependent on agriculture and whose main source of production is by smallholder farmers, efforts are required to improve the efficiency of agricultural production. Based on findings of the study the following are some of the policy implications which would lead to better performance of agricultural production and hence improvement in smallholder welfare and the nation as a whole.

- To ensure better smallholder agricultural performance, Government participation is very crucial through provision of physical infrastructure, provision of information, supporting some training opportunities to both farmers and

traders, and support and improve research and extension development services

- The government should provide favorable rural environment (e.g. provision of infrastructure, and market information), which will encourage establishment of NGOs and attract more external investors and trading companies. These can help to assist smallholder farmers in the provision of credit, provide better prices and even to support research and extension services.
- Farmers should form strong groups or co-operative societies to enforce their bargaining power in markets in order to ensure better prices and other services for their produce and inputs. This also can assist to provide means or security for applying for credit or loans from financial institutions, and trading companies.

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