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Assessing Smallholder Farming and Poverty in Post-Conflict-Sierra Leone

Md. Nur Alam Siddik¹, Sajal Kabiraj², Joghee Shanmugan³ & Sesay Kahota⁴

Abstract

Achieving food security in the world continues to be a challenge. Food insecurity in Africa remains a persistent and daunting challenge in which 230 million Africans constituting 20 percent of the continent's population are classified as hungry. The challenges will intensify in the coming decades, as Africa's population, currently growing at 2.5 percent annually, is set to double to two billion by 2050. This situation is the case also for Sierra Leone. By 2050, the population of Sierra Leone is expected to be doubled to 12.4 million people. Smallholder farming might offer a solution to food insecurity through its potential source of increased agricultural production. The study therefore seeks to provide an assessment of smallholder farming in post-conflict Sierra Leone from 2003-2012, within the framework of the production function relation with a view to address food Security concerns in the Country. Findings of the study show that smallholder farmers have been making significant contribution towards food security, economic growth and poverty reduction in Sierra Leone. To maintain this momentum, policy makers including the government and donors should promote the commercialization of smallholder agriculture through increasing productivity intensification, value addition, post-harvest infrastructure and marketing with emphasis in commodity chain, development and institutional strengthening to build self-reliance of farmer-based organizations. On this basis, future study on food security issues is necessary with a view to further provoke policy discourse; such study could be the nexus between the strengthening of Agricultural institutions and Smallholder farming.

Keywords: Smallholders, Poverty, Food Security, Profit, Export, Import, Sierra Leone

1. Introduction

1.1 Background of the study

Over the past five decades the world has focused considerable attention to agricultural productivity and development, with particular attention on smallholder farming. The relationship between smallholder farming and poverty is crucial in the understanding of agricultural development to economic growth. This study is not undermining the role of smallholder farming to poverty reduction particularly in Sub-Saharan African economies. Pervasive poverty and chronic hunger continues to pose severe threat on the population of most low-income countries, this has necessitated the increased awareness of concerns to climate change and the food crisis situation by government and international donors to improve the political will and resource mobilization to smallholder farmers, especially in Africa. Consistent with this notion, an international position in recent times has come up with the understanding that more and robust political will and international donor assistance is required in re-shaping and reviving agricultural livelihood and infrastructure in Africa's continent.

¹Researcher, School of Finance, Dongbei University of Finance and Economics, Dalian, China & Assistant Professor, Dept. of Finance and Banking, Begum Rokeya University, Rangpur, Bangladesh. Email: nasiddikbru@gmail.com

²Corresponding Author, Professor in Business Management, SII-GIME, Dongbei University of Finance and Economics, Dalian, China. Email: skabiraj@dufe.edu.cn

³Associate Professor in Business Management, Skyline University College, University City of Sharjah, UAE. Email: jshanmugan@skylineuniversity.ac.ae

⁴Dongbei University of Finance and Economics, Dalian, China. Email: sesay.kahota@outlook.com

To this end, smallholder agricultural activities should be prioritized in line with improving the capacity of smallholder farmers towards the fight for poverty reduction, access to local and international markets. Smallholder farming and smallholder farmers are however defined in different ways based on the country context and environmental conditions. This however brings about the interchanging usage of the term 'smallholder farming', 'smallholder', and 'small-scale', 'resource poor farming', 'resource poor farmers and 'peasant farmers/farming'. Chamberlin et al. (2008) explained the word smallholder only points to their inadequate or limited resource relatively compared to other farmers in the sector. This belief is included in Ellis (1993) definition that smallholder farmers are household farmers with limited access to means of livelihoods and depends primarily on household labour to produce self-subsistence and for market sales. These definitions are similar to the characteristics of smallholder farmers. The subject of focus is mainly on constraints in land and labour. In Sub-Saharan Africa, the primary characteristics of the production methods of smallholder farmers/farming are straight forward, crude and traditional and has resulted to low output in the region. Sierra Leone is no exception, in the country's smallholder farmers are faced with outdated technology, low agricultural output, high seasonal labour volatility and increase risk exposure. Despite these bottlenecks the contribution of smallholders to agricultural production cannot be over emphasised with women playing vital role in the production process. Additionally, most smallholder farmers have various means of livelihoods and survival including but not limited to off-farm income, remittance etc. Inspire of these various means of livelihoods they are still vulnerable to socio-economic and weather shocks.

Globally, smallholder farming varies from individual to another in terms of farm length, resource allocation and distribution, crops, life stock and off-site farm operations. To this end, it can be seen that the use of external inputs and labour hired, the size of food crops sold and household expenses patterns do varies. The differences and problems indicated above are typical features of smallholders for the Sierra Leone economy. Despite these differences and constraints, the role of smallholder farming is vital to the country's economy. However, the majority of the population of Sub-Saharan African countries are found in the rural areas where poverty, chronic hunger and deprivation are more pervasive. Increased in agricultural infrastructure and outputs are therefore crucial and central to the wellbeing of the rural population in Africa. About 70 percent of Sub-Saharan African population engage in agricultural activities with the view to reduce poverty and enhancement of economic activities. Examples of African countries that are agrarian in nature include but not limited to Burundi, Rwanda, Bukinafaso, Uganda and South Africa. The share of the rural population is approximately 80-90 percent and is economically active in agriculture. This explains the significance role agriculture plays in the lives of people, welfare and productivity growth, poverty reduction and development (Csaki and de Haan, 2003). Agriculture is vital in the country's economy directly and indirectly. The direct effect include the provision of employment opportunities, market facilities for agricultural inputs and outputs, and the provision raw materials for industrialization. The indirect effect includes low food prices, welfare increasing effect, access and affordability of food to the poor. This is critical to the overall wellbeing of Africa's growing population (Sahn et al. 1999).

Consistent with the notion of the overall macroeconomic stand point, the New Partnership for Africa's Development (NEPAD) in 2003 pointed out that 'increased and sustained rate of agricultural development driven largely by output growth is necessary in African countries in the fight against poverty. This is because development in agriculture is critical and has a powerful leverage effect on the health condition of African economies. Despite these advantages of agriculture to the overall climate of the region, however, the sector faces numerous problems such as weak capital formation, low participation of the private sector, limited support to research and new technological discovery and limited extension opportunities and services. Additionally poor credit facilities, limited microfinance institutions to assist the purchase of inputs and marketing, weak coordination of community based organizations and farmer's organizations in terms of the delivery of information dissemination to the majority of rural farmers, and poor road infrastructure to market access. Sierra Leone is also with these features. The weak performance of the agricultural sector, no doubt, is largely responsible for the slow pace towards poverty reduction and hunger in the African continent, coupled with environmental and institutional challenges that have impacted negatively on agricultural output growth in the region (CAADP, 2010) The study will focus on agricultural policies conducive for sustained growth and to also inform policy makers on sound agricultural growth policies for smallholder farmers.

Given the relative poor infrastructural facilities of agricultural farmers, particularly smallholder farmers which have the potential of escalating poverty, important and crucial research questions arise: (i) Can support to smallholder farmers maximize their welfare and enhance agricultural growth in an economy? (ii) Can agricultural growth policy designed useful for poverty reduction?

An investigation into these issues will help provide guidance and inform policy makers to design sound agricultural policy conducive for the growth of smallholder farmers and poverty reduction, since agricultural development, including growth of smallholder farmers are conventionally expected to reduce poverty.

1.2 Objectives of the Study

Sustained and viable overall growth performance and development of the Sierra Leone economy highly relies on prudent agricultural infrastructure as the bedrock to poverty alleviation and economic growth. This is because the sector offers the opportunity to capital formation, increased employment, and stimulates industrialization drive, provision of proper service delivery to the society. The sector accounts of approximately 46% of the share of gross domestic product and one-fourth of export earnings and stands as the greatest employer of the Sierra Leone economy. Therefore, it has led to the development of other growth sectors within the economy of Sierra Leone. To encourage and motivate commercial agriculture, the ability of farmers should be improved. Hence, the main objective of this study is to provide an assessment of smallholder farming and poverty in post-conflict Sierra Leone. The specific objectives are as follows:

- i. To determine the resource flow (financial, physical and human) to smallholders farmers and implication to poverty reduction and economic growth;
- ii. To determine the link between smallholder farmers and the government in terms of supporting the sector;
- iii. To assess the link between smallholder farmers and private sector involvement in the sector and;
- iv. To provide policy recommendation to academics, researchers, and policy makers including the government and donor partners in the sectors for poverty reduction as it is expected that growth in the agricultural sector will reduce poverty.

2. Literature Review

Having examined the theoretical literature, it's necessary to highlight some empirical evidences on the topic. There are various empirical studies undertaken by researchers pertaining the subject matter. However, Dannson (2004) presents a case study of fruit production in Ghana, "linking small-scale farmers to export markets". This case is relevant to our study as it studies the strengthening of farm-agro-business linkages to facilitate the involvement of smallholders to high-value markets. This study is an example of vertical and horizontal coordination in the fruit export chain. Smallholder farmers in Ghana produce roughly 60% of the total fruit supply. The main problems faced by fruit farmers are lack of access to financial resources, lack of production skills and information, and lack of effective and sustained demand for farm products. The lack of financial resources limits farmers' ability to purchase inputs and adopt improved technology. This deficiency ultimately affects yields and produces quality and reduces profitability and further development. A lack of information on prices and markets for smallholder farmers also exists, thus limiting their ability to explore better prices and better markets. The lack of effective and sustained demand is generally the problem in the linkages of smallholder producers and processing firms. Smallholders are unable to negotiate with the company for better prices with their products.

This case study reveals that it is beneficial to both the farmers and the processing firms for small farmers to be organized into effective cooperatives. Farmer's organizations are effective in promoting linkages between farmers and the processing firm Farmapine. Farmapine Ghana Ltd. Farmerpine Ghana is located in Nsawam, where Ghana's main pineapple-growing area is. The company manages approximately 160 cooperative farmers. In 2003, Farmapine exported close to 12,000 tons of pineapples to France, Germany, the Netherlands, Italy, Poland, the United Kingdom, and the United States. Farmerpine ensures that farmers adopt good agronomic practices to enhance yields and fruit quality. With the assistance of the Directorate of Agricultural Extension Services, Farmerpine train farming on planting, fertilizer and chemical application, pest and disease control and overall management of the plant to ensure that quality fruits are produced. Field visits are conducted bi-weekly to ensure that farmers are adopting practices taught to them. Farmapine began by producing farmers 100 percent of credit requirements for production. Therefore, farmers are able to overcome the constraint of inadequate access to credit. In addition, Farmer pine arranges the supply of inputs such as fertilizer and other agrochemicals to be supplied to the farmers.

Regarding the production skills, the training provided by Farmer pine and both governmental and nongovernmental institutions contributed to strengthening linkages between the farmers and agribusinesses. Training in farm-level production and management skills is one way Farmer pine intervene to develop effective agribusiness, which foster strong farm agribusiness linkages that result in improved yield and quality. Through cooperatives, farmers acquire training that enables them to adopt good farm practices to increase their yields and to meet the specifications required by the market. Moreover, the farmer cooperatives are trained in methods to improve product quality and business planning. As a result of the vertical integration provided by Farmer pine, a proportion of the farmers' supply of Farmer pine that meets the exports requirements increased from 30% to 45% within three years of operation. Farmers receive an average 30% of the FOB price per kilogram of pineapples (Dannson, 2004). Institutions play a valuable role in promoting farm-agribusiness linkages in Ghana. The Department of Cooperatives and Department of Agricultural Extension Services support the studies of farm-agribusiness linkages. In addition, to develop strong and effective farmer groups to promote farm-level production and linkages to agribusinesses, a Farmer Based Department (FBO) program was designed. The FBO program involves the organization of farmers into groups, training of these farmer organizations, and financial support to enable them to develop and operate as viable organizations that are self-supporting and that the needs of their members. Through FBO, small-scale farmers are able to establish linkages with input suppliers, banks and a processing company. The cooperatives are transparent in their financial accounting, which creates trust between the executives of the cooperatives and their members and members, thereby enabling members to contribute to the cooperative for its development.

In short, this case study found that the challenges Ghanaian fruits farmers faced in participating in African and global market is very great. This case study reveals that the organization of fruit farming into cooperatives and the vertical coordination between cooperatives and processing firms solves these challenges. The cooperatives help small-scale farmers enhances their capabilities to meet the export quality requirements. The processes/export firm through the cooperatives provides a wide range of extension services to cooperatives' members such as technical training, financial needs, and inputs for production. In addition, local authorities provide support to facilitate the linkages of smallholders to market. The authorities play a fundamental role in establishing and maintaining farm-agribusiness linkages. A large component of this involvement is the provision of market information and extension services to farmers. Through cooperatives, smallholders exchange knowledge with processing/export firms and increase their capability to meet quality requirements. The processing/export firm provides technical assistance for cooperative members to ensure quality of the products from the very beginning. In addition, smallholders establish linkages with inputs supplies through FBO. The competent farmers' cooperative provides a strong incentive to the export firm to outsource primary production processes.

During the 1950s and 1960s when most Sub-Saharan African countries gained their independence, agriculture was viewed as a backward sector with little prospects of becoming the main engine of growth for the rest of the economy (Eicher et al. 2006). Many African political leaders by then believed that industrialization was an article highway to prosperity, while Western development economists believed that agriculture was a passive sector, which can be squeezed to finance industrialization. Regrettably, the decision to give priority to industry over agriculture yielded poverty, hunger and famine in Africa. Now, most developing countries have come to realise the importance of the agriculture sector, especially smallholder agriculture, in the process of poverty alleviation and economic development. Table 1 shows income and contribution to total household income in South Africa

Table-1: Income and Contribution to Total Household Income in South Africa

| Income Source | Average Monthly Income(R) | Contribution as % of Total Household Income |
|-----------------------|---------------------------|---|
| Farming | 546 | 41.0 |
| Pension | 329 | 24.8 |
| Wages | 329 | 19.4 |
| Remittances | 168 | 12.4 |
| Family Business | 19 | 1.4 |
| Other non-farm income | 13 | 1.0 |
| Total | 1324 | 100 |

Source: Machethe et al (2004)

Therefore, agricultural development is a highway to prosperity. Development of consistent and transparent institutions, which boost agricultural performance, is the major challenges facing developing nations of Africa, Asia and Eastern Europe. Eicher (2006) argued that the absence of a good institutional environment spearheads Africa's agricultural development crisis. The main argument here is that even if organisations in developing nations would grow and flourish, the fruits will be unstable without the creation of a good institutional environment. In the South African scenario, creating a good institutional environment requires institutional re-crafting for developing nations. Institutional re-crafting should pay attention to the time optimism thus careful attention should be directed to the time and resources needed to lay the institutional foundation. Eicher (2006) explicated borrowed or replica institutions from developed nations will have a high feature rate in Africa. He described effective agricultural institutions as a sine qua non for getting agriculture moving in Africa. Author concluded that institutional transformation is necessary in Africa if increased productivity of smallholder farmers and poverty alleviation are the most important objectives. When a good institutional environment is in place, the next step is to have a good agricultural leadership to work with political leaders with unusual political skills to maintain over time. Over the years, smallholders have played key roles in global bio-energy value chains and certification. There are evidence from three cases studies overview presented by the Food and Agriculture Organization (FAO, 2012). However, over the last few years, there has been growing interest in modern bio-energy. This is due in part to its potential for rural development and climate change mitigation, and as an energy alternative given high price of oil. At the same time, concerns regarding the possible negative impacts of modern bio-energy development and sustainability requirements introduced in key importing markets have led to the development of a range of voluntary standards aimed at ensuring the sustainability of bio-energy production. While one of the goals of voluntary standards is to enhance the sustainability of bio-energy production- including from a socio-economic perspective- they might also present a disincentive for incorporating smallholder farmers in value chains, due to greater cost and complexity. The FAO's Bio-energy and Food Security Criteria and Indicators (BEFSCI) project has conducted three case studies to examine the opportunities and challenges for smallholders by: 1) bio-energy as a new type of value chain, and by 2) bio-energy certification schemes.

3. Methodology

3.1 Data

Data on the financial support by the government and donors in establishing projects and programmes in support of smallholder farmers, data on the level of smallholder farmers supply of food crops, the level of food export, import and domestic food crop consumption were collected from the government of Sierra Leone, donors, IMF and World Bank including other international financial institutions from the period 2003 to 2012.

3.2 Estimation Procedure

We denote Total Cost as (TC), Total Revenue is specified by (TR) and Profit is symbolized by (π). TC as the expenditure incurred by government/donor in setting up projects and programmes in support of smallholder farmers activities. TR is defined as $P \times Q$, where P is sales price and Q is quantity. (The income generated from smallholders output food crops exported and also for domestic consumption). Therefore profit (π) is TR-TC, which is a measure of the benefit/impact derived in an economic activity, that will impact on poverty reduction which is the difference between total revenue and total cost. The author recognizes the fact that imports of food items is part of the cost incurred by government; and the sales of imported food items domestically form part of the revenue obtained. The pattern of food prices in the country signals the level to which domestic production augmented by imports to meet consumers' needs. Most food prices data are obtained by Statistics Sierra Leone for estimation of the Consumer Price Index. The conclusion reached shows that retail prices for most domestic food prices in the country has continued be high than imported prices. However, the gap has considerably reduced over the past 24 months indicating that local production has risen faster than increased in demand. Additionally, unlike the case in the past when local food prices were higher than imported food prices even in major food producing areas such as the Scarcies (Kambia) and Bolilands (Makeni) (Spencer, 1996). Local food prices are now lower than that for imported food price in the urban areas of the hinterland of Sierra Leone, especially in Kenema town, indicating that transportation costs of imported food prices to provincial headquarter towns is now adequate to narrow the slight competitive advantage that imported food items may still have in the capital.

There are signals that the prices of domestic produced food items are determined by the prices of imported food in addition to the level of production in the country, the international price for imported food items and local transportation cost plays an important part in driving imported food prices to different urban areas of the country. Based on the above and to mitigate distortions in the analysis due to limitation of data from various sources the author considers imported food prices as proxy to domestic food prices in order to provide a fair estimate of the level of domestic food consumption in monetary terms. It is to be noted that import of food items does not form part of the domestic supply level neither the efforts of smallholders farmers it is just to consolidate domestic output. To this end, the objective of capturing imported food items is to determine the trend and the level of augmenting domestic demand with a view to inform policy makers particularly the government of its implication to the economy. The author calculates the supply, cost of imports and disbursement/cost of projects, revenue from exports and domestic consumption, profit relation and analyses the result

3.3 Data Description and Source

Table -2: Data Description and Source

| Variable | Symbol | Description | Source |
|-----------------------|--------|---|---------------------------------|
| Domestic supply Level | DS | The total amount of food crops supplied by smallholder farmers for export and for domestic use ⁵ | MAFFS/SSL/Index Mundi Data Base |
| Total Supply | TS | Sum of domestic supply plus import | Index Mundi Data Base |
| Export | X | The total amount of food crops exported to abroad for foreign currency earnings | BSL/Index Mundi Data Base |
| Import | I | The amount of food crops brought into the country from abroad to consolidate domestic demand | SSL/IMF CD- ROM |
| Domestic Consumption | DC | The amount of food consumed domestically including also import | SSL/ Index Mundi/ Data Base |
| Exchange Rate | XR | Annual price of US dollar in Leones | BSL/World Bank |

4. Findings and Discussion

4.1 Findings

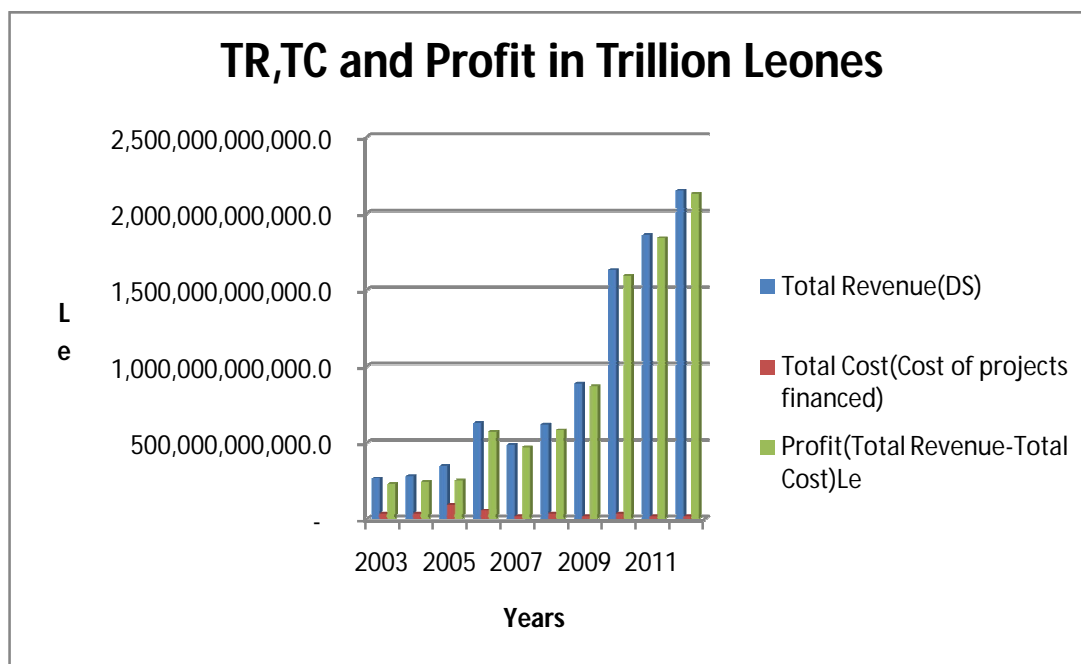
The Total Revenue obtained is Le9, 155,977,925,901.08 in local currency terms and the total cost of financing the project meant primarily to support the activities and operations of smallholder farmers is Le377, 035,651,712.90. The total revenue and the total cost difference yield the profit that amounts to Le 8, 778,942,274,188.18. This statistics reveals that from the period 2003 to 2012, smallholders' farmers have been making significant contribution towards poverty reduction and economic growth. Table -3 shows the result of the production function (Revenue, Cost and Profit).

Table-3: Result of the Production Function Relation (TR, TC and Profit)

| Year | Exchange Rate | Total Revenue(DS) | Total Cost(Cost of projects financed) | Profit(Total Revenue-Total Cost)Le | Profit(Total Revenue-Total Cost) US\$ |
|--------------|---------------|-----------------------------|---------------------------------------|------------------------------------|---------------------------------------|
| 2003 | 2347.94 | 267,297,991,046.8 | 37,703,565,171.3 | 229,594,425,875.54 | 97,785,404.61 |
| 2004 | 2701.30 | 282,702,635,897.9 | 37,703,565,171.3 | 244,999,070,726.64 | 90,696,839.69 |
| 2005 | 2889.59 | 346,634,280,790.8 | 94,258,912,928.2 | 252,375,367,862.53 | 87,339,583.20 |
| 2006 | 2961.91 | 627,387,956,535.1 | 56,555,347,756.9 | 570,832,608,778.12 | 192,724,549.15 |
| 2007 | 2985.19 | 488,533,930,589.8 | 18,851,782,585.6 | 469,682,148,004.11 | 157,337,658.10 |
| 2008 | 2981.51 | 619,977,738,256.6 | 37,703,565,171.3 | 582,274,173,085.31 | 195,294,754.45 |
| 2009 | 3385.65 | 887,162,792,817.0 | 18,851,782,585.6 | 868,311,010,231.36 | 256,468,037.23 |
| 2010 | 3978.09 | 1,630,751,760,757.7 | 37,703,565,171.3 | 1,593,048,195,586.38 | 400,455,793.13 |
| 2011 | 4349.16 | 1,857,352,942,281.2 | 18,851,782,585.6 | 1,838,501,159,695.60 | 422,725,366.98 |
| 2012 | 4344.04 | 2,148,175,896,928.2 | 18,851,782,585.6 | 2,129,324,114,342.58 | 490,171,653.65 |
| Total | | 9,155,977,925,901.08 | 377,035,651,712.9 | 8,778,942,274,188.18 | 2,390,999,640.18 |

Figure-1: Trend of TR, TC and Profit (2003-2012)

⁵Domestic supply provides the revenue figures for the smallholder farmers as their efforts are accounted for in the domestic supply of food items notably for export and domestic consumption, imported food items are not included as import is outside the effort/supply of smallholders farmers

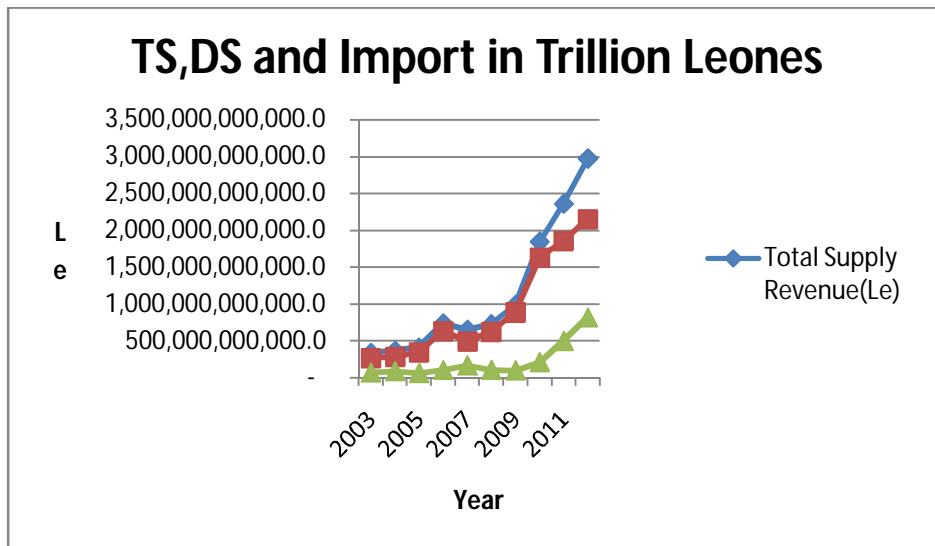


The trend in figure 1 indicates that TR is higher than cost and import is on the high margin. The trend also shows a lower difference between the profit and the revenue, while cost is significantly minimized, profit is maximized hence is the aim of production. The total supply, domestic supply and imports of food items are computed in domestic currency terms, the rationale for this is to have an estimate of the total supply reflective of the unit of domestic currency denomination.

Table -4: Total Supply, Domestic Supply and Imports in Local Currency

| Year | Exchange Rate | Total Supply Revenue(Le) | Domestic Supply(Le) | Import(Le) |
|--------------|---------------|-----------------------------|----------------------------|----------------------------|
| 2003 | 2347.94 | 336,144,219,199.8 | 267,297,991,046.8 | 68,846,228,152.9 |
| 2004 | 2701.30 | 367,980,707,769.9 | 282,702,635,897.9 | 85,278,071,872.0 |
| 2005 | 2889.59 | 410,180,124,171.3 | 346,634,280,790.8 | 63,545,843,380.5 |
| 2006 | 2961.91 | 736,358,520,017.7 | 627,387,956,535.1 | 108,970,563,482.6 |
| 2007 | 2985.19 | 652,621,386,587.0 | 488,533,930,589.8 | 164,087,455,997.3 |
| 2008 | 2981.51 | 723,580,602,210.2 | 619,977,738,256.6 | 103,602,863,953.6 |
| 2009 | 3385.65 | 988,308,951,141.0 | 887,162,792,817.0 | 101,146,158,324.0 |
| 2010 | 3978.09 | 1,841,726,171,791.3 | 1,630,751,760,757.7 | 210,974,411,033.6 |
| 2011 | 4349.16 | 2,357,125,862,183.1 | 1,857,352,942,281.2 | 499,772,919,901.9 |
| 2012 | 4344.04 | 2,968,408,135,716.7 | 2,148,175,896,928.2 | 820,232,238,788.5 |
| Total | | 11,382,434,680,787.9 | 9,155,977,925,901.1 | 2,226,456,754,886.8 |

Figure-2: Trend in Total Supply, Domestic Supply and Imports in Local Currency

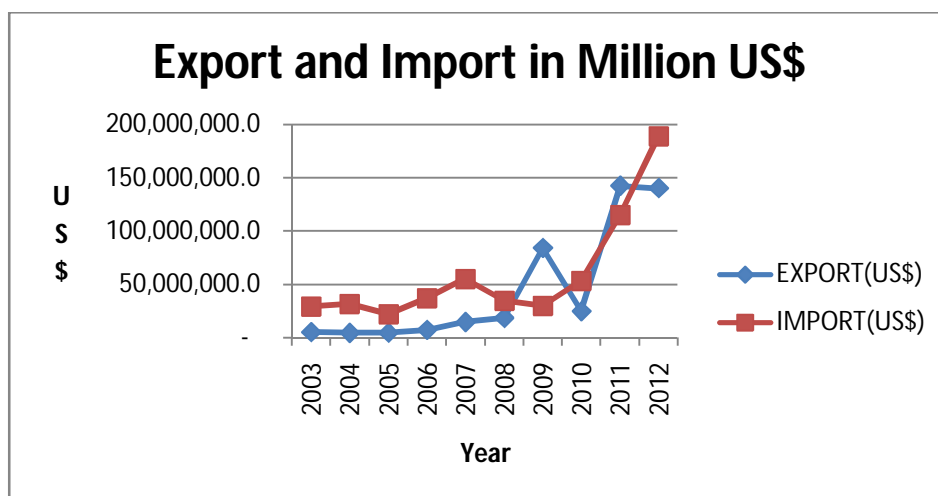


The result of export revenues and import costs are computed in foreign currency terms, this is because export and import transaction requires foreign currency involvement. However, the average annual exchange rate for the period 2003 to 2012 is used to obtain the local currency, the Leone. The result is shown in table 5 below:

Table-5: Result of Export and Import in US\$/Le

| YEAR | EXCHANGE RATE | EXPORT(US\$) | IMPORT(US\$) | EXPORT(Le) | IMPORT(Le) |
|------|---------------|---------------|--------------|-------------------|-------------------|
| 2003 | 2347.94 | 5,299,452.6 | 29,321,950 | 12,442,805,622.2 | 68,846,228,152.9 |
| 2004 | 2701.30 | 4,585,974.8 | 31,569,310 | 12,388,078,440.7 | 85,278,071,872.0 |
| 2005 | 2889.59 | 4,673,046.2 | 21,991,320 | 13,503,175,886.4 | 63,545,843,380.5 |
| 2006 | 2961.91 | 7,289,911.1 | 36,790,650 | 21,592,054,544.2 | 108,970,563,482.6 |
| 2007 | 2985.19 | 14,708,320.5 | 54,967,250 | 43,907,070,055.1 | 164,087,455,997.3 |
| 2008 | 2981.51 | 18,579,994.3 | 34,748,400 | 55,396,525,257.8 | 103,602,863,953.6 |
| 2009 | 3385.65 | 84,109,289.7 | 29,874,960 | 284,764,616,785.7 | 101,146,158,324.0 |
| 2010 | 3978.09 | 24,745,410.9 | 53,034,130 | 98,439,410,307.6 | 210,974,411,033.6 |
| 2011 | 4349.16 | 142,385,818.1 | 114,912,460 | 619,259,008,533.9 | 499,772,919,901.9 |

Figure-3: Trend of Export and Import in US\$/Le



4.2 Discussion

Since the focus of the study is to assess the direct contribution of smallholder farmers to poverty reduction and economic growth in Sierra Leone excluding import, as import does not form part of the efforts of the smallholder farmers to poverty reduction. The result in table-4 indicates that total supply of food items is the sum of domestic supply and import, this suggest that domestic supply provides the basis to determine the contribution of smallholder farmers on the economy. For this reason domestic supply is taken as the total revenue obtained from the sales of the food items for domestic consumption and for export only by the efforts of smallholders. The cost of financing the project is the total disbursements in support of the projects and programmes for the operation of smallholder farmers in the country from 2003 to 2012. Comparing the revenue figures and the cost figures, the profit which is the economic benefit derived from the contribution of smallholder farmers to poverty reduction and economic growth is Le8, 778,942,274,188.18 equivalent of US\$ 2,390,999,640.18. The export and import figures show that imports exceeds export, driven mainly by the importation of rice, this implies that the country is still a net importer of rice even though rice is produced within the domestic economy. The implication is that the profit realised from the contribution of small holder farmers to the economy is from domestic sales and not from export. However, export is still significant in the sense that it makes room for the country to earn foreign currency, this is crucial for the importation of goods and services.

The result indicates that prices of export of the food items are highly volatile, fluctuating a lot, the pattern is unstable, implying that even if a country exports more in quantity terms, if export prices are not favourable in the international markets, the revenue to be obtained from such export will be low as revenue is price multiplied by quantity. This phenomenon is usually characterised by commodity crisis or the fallacy of composition. (i.e. more export does not necessarily implies more revenue). No wonder, export revenues fall short of import cost as it is observed from the result of export and import figures in table-5. This scenario might pose a serious problem to debt servicing mechanisms; one way for a country to be able to service her debt is by getting more export revenues compare to import cost and save the rest for financing infrastructural and development projects including debt serving. The export result observed is not favourable and hence crucial to poverty reduction and economic growth. Nonetheless, the contribution of smallholder farmers to poverty reduction and economic growth clearly manifested in the domestic sales of the food items which generate the benefit maximised in the economy.

The result also reveals that smallholder farmers efforts provides savings for the government, reducing the budget deficit and preventing further borrowing by government. This is good for poverty reduction and economic growth prospects. The result indicates that production does not necessarily mean supply, what is produced might not be the supply for that particularly period, for instance if a farmer is able to produce 50Kg of 800 bags of rice and decides to supply 50Kg/600bags the entire production is 800 bags but the total supply for the period is 600bags, meaning that the 200 bags is left for household use. To this end, data available here is for total supply and not the entire production; it is possible that the difference between production level and supply level is reserved for smallholder farmers' household consumption, which perhaps helps in increasing their food consumption and improving their livelihood. Finally, smallholder farmers contribute to the eradication of food poverty, by way of making food available, affordable and accessible for domestic consumption hence promoting and consolidating food security drive in the country's economy.

5. Conclusion

The study seeks to assess theoretically and empirically the role of smallholder farmers to poverty reduction and economic growth in post conflict Sierra Leone using 2003-2012 data for total supply, export, import, domestic consumption and exchange rate collected from the World Bank, Index Mundi Data Base, IMF, Government of Sierra Leone policy documents and the International Financial Institutions relating specifically on the operations and activities of smallholder farmers. The production function technique with focus on cost, revenue and profit is applied in the study to determine the extent to which the roles of smallholder farmers impact on poverty reduction and economic growth in Sierra Leone.

The study acknowledges the fact that in spite of agriculture being leading growth driver in providing job opportunities, increase the level of food productivity of the economy and attain food security, the sector's contribution to the growth and development has been underexploited mainly due to a variety of challenges, including the widening technology divide, weak infrastructure and declining technical capacity.

These challenges have been exacerbated by weak input and output marketing systems and services, slow progress in regional integration, land access, right issues, and limited access to affordable credits. Giving these scenarios, there is growing consensus among policy makers that positive prospect of the country's agriculture sector could be more inclusively by assisting smallholder farmers to be better associated with commercial farmers bolster their specialization and market-oriented value addition. The policy implication is that, smallholder farmers should be supported by donors, government and the private sector to practice agriculture as a business by enhancing their skills and knowledge and making appropriate agricultural technologies accessible, and affordable with a view to address hunger and food security concerns. The result revealed that, total revenue obtained is by far exceeds the cost of financing the projects and programmes meant for smallholder operations for the period 2003-2013. The implication is that smallholder farmers have been making significant contribution towards poverty reduction, food security and economic growth. To maintain this momentum, policy makers including the government and donors should promote the commercialization of smallholder agriculture through increasing productivity intensification, value addition, post-harvest infrastructure and marketing with emphasis in commodity chain, development and institutional strengthening to build self-reliance of farmer-based organizations (FBOs).

The result indicates that prices of export of food items are simply volatile, characterising an unpredictable trend. This may affect revenue obtained from exports. As a policy response and to achieve Agricultural development particularly for Agricultural producers, the challenges of commodity prices fluctuation should be addressed, while protecting the economy from acute market issues, productivity and related risks. In addition, it is necessary to support the smallholder farmers by helping them become active in overall economic activities. If each smallholder farmer were able to increase production to a level where surpluses is common, it still would not benefit the farmers if there are no markets on which excesses can be sold with stable prices. The study noted that what is actually supplied in the market is different from the entire stock of production. Although data on the entire production of smallholder farmers food items on the economy were not available, but the total supply data available provides reasonable signal, to conclude that the difference on the production level and the supply level of smallholder farmers is reserved for smallholder's household use/consumption. The implication is that smallholders' household consumption may have increased food consumption and ignoring their livelihood. To this end, smallholder farmers, no doubt contributes to poverty eradication, by way of making food available, affordable and accessible for domestic consumption and hence consolidating and promoting food security drive in the country's economy.

The study noted that imported food items do not form part of the efforts/contributions of the smallholder farmers on the output level of total supply. This is because; imported food items are food items that are brought into the country from abroad. However, import is included into the study specifically to capture its trend and the amount of foreign currencies spent on importation of the food items, to augment domestic demand, and to inform policy makers, particularly government on the implications of imports to the economy. The result reveals that, import exceeds exports, driven mainly by the importation of rice, which implies that the economy is a net importer of rice, even though rice is produced domestically. Thus the profit realised is driven by domestic sales from smallholder farmers output. The implication is that the economy may be greatly affected by import shocks, and thus increase the budget deficit and hinder the country's external sector. Therefore, to overcome such a scenario, the government should develop appropriate small scale irrigation infrastructure, access to rural financial services, tailored to the specific needs of clients expected to be individuals and groups in particularly the FBOs/ABCs in order to boost rice production: the staple food in the country, leading to food security, market surplus particularly for low land smallholders, and the creation of wealth and employment notably for the youth in the Agriculture sector. Finally, the study indicates that the low intensification of farmers in policy formulation processes thereby alienating the majority of small-scale farmers that dominate the sector remain a major challenge. Therefore, to ensure effective strategic and well-coordinated operational planning and operation of projects with efficient coordination of researches and implementing partners and government monitoring and evaluation of projects, smallholder farmers need to be given the opportunity to participate actively in the Agricultural policy formulation.

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