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Performance of the agricultural sector during pre and post-oil production in the Sudan

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ABSTRACT

This paper discusses the conditions of the agricultural sector during pre and post-oil production in the Sudan, and evaluates the performance of this sector in terms of several aspects, including factors of production (land, capital, and labor), contribution to GDP, growth rate, and the value of agricultural exports in the trade balance. The paper highlights the impact of oil production to the performance of agricultural sector and warning of dependence on oil as a single source for the Sudan economy. Unbalanced growth has been prevailed in the Sudanese economy during post-oil production, and the performance of the agricultural sector has declined significantly compared to other productive sectors.

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INTRODUCTION

Agriculture has been the most important resource for Sudan, but oil production and export have taken on greater significance since 2000. The agricultural sector plays an influential role in the Sudanese economy, as it is one of the major sectors which contribute to the GDP. This sector is considered an essential axis in the case of economic and social development in Sudan. However, the economy of Sudan has experienced unbalanced growth during the period following the end of high oil production. In view of the high revenues to the country, the government concentrated on investment and the developments in the petroleum sector at the expense of the other productive sectors include agriculture. The main purpose of this paper is to examine the impact of oil revenues in the performance of agricultural sector in Sudan's economy. This paper exam and compares the performance of the agriculture sector before and after the production of oil in Sudan in different aspect include; the contribution to the GDP, the growth rates of the agricultural sector, investigate the impact of this sector in the trade balance and Finally, evaluate the factor of production (land, capital and labor).

Modern economics today mainly adopts two factors, capital and labor. Land, central to the classical economy, has typically been part of capital. However, for the developing countries which depend heavy on agricultural, lands still retains great value and plays an influential role in the economies of these countries. Economically, land comprises all naturally contains resources, Such as any specific geographical locations contain forest, fertile soil, mineral. (Gaffney, M.M., 2008) Natural resources are the key factor for production of all goods, while capital and labor are essential factors to exploit these resources. The concept of land utilization in a broad sense describes all activities practice by humans to benefit from land sources; this term applies equally to urban and rural land.

Literature Review:

There has been several studies evaluate the role of oil resources in the long-term growth of national economies. Some studies found similar results and other come out with conflicting results about the impact of oil revenue in economic growth. (TorbenK.Mideksa 2013) investigates the economic impact of natural resource endowment using quantitative comparative method and focusing on the Norwegian economy. The study results indicate that, on average, about 20% of the growing in GDP per capita since 1974 is because of petroleum endowment. (Anthony Enisan 2012) assesses the significance of oil in economic growth and development in the Nigerian in a multivariate VAR model over the period 1960-2009. He use Granger causality test to finds the relationship between oil, agriculture, manufacturing and trade. Empirical evidence in his study shows that the subsectors are grown and Granger causality test finds bidirectional causality between oil and manufacturing, oil

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and building & construction, manufacturing and trade & construction, manufacturing and building & services, and agriculture and building & construction. (Rhys and Chris 2006) examines the effect of the appearance of India and China as important players in the global economy of 21 sub-Saharan African countries. Trade between the Africa and ''Asian Drivers'' and has grown significantly since 1990 and in the last few years they have also become sources of foreign direct investment (FDI) in the region. The study found that Africa has been affected differs from country to country, with some such as Sudan, Nigeria ans Angola, being important and export others such as Ethiopia, Ghana, Kenya, Uganda and Tanzania mainly importers from Asia. (Ogbonnaand Ebimobowei 2012) examine the impact of oil revenue and Nigerian economy during the period 1970-2009. They used Pearson correlation to analyzed primary and secondary and descriptive statistics to explain evidence and event. The results of the analysis found that oil revenue affects positively to the gross domestic product and per capital income of Nigeria. However, the relationship between petroleum revenue and inflation rate was negative. They suggest proper utilization and management for oil revenue to achieve long run growth and development of the country.

Methodology:

This paper examines and compares the performance of the agricultural sector before and after the production of oil in Sudan. The performance examined in four basic areas: the first one is the contribution of this sector to the GDP; the second is the growth rate, third the value of agricultural commodities in the trade balance and finally, the factor of production (Land, labor and capital). This study adopts a descriptive approach to address the evidence and examine the performance of agriculture sector during pre and post-oil production in Sudan. Such analyses are based on secondary data gathered from central Bank of Sudan and the ministry of finance publications covering the period 1959 to 2010. The study segmented into two periods; to allow us examine both period.

Discussion:

The agriculture sector is composed of three main sub-sectors which are agriculture, livestock, and forestry. At Sudanese independence in 1956, the total land use for agricultural purposes was estimated at 2567885 Ha. The traditional rain-feed farming covered about 1881138 Ha, which represented almost 71 present of the total farming area, while the irrigated and the mechanism farmland nearly 254472 Ha and 27589 Ha respectively [6], in spite of the distortion characterizing traditional agriculture in the Sudan. However, this was the most popular farming system during the middle of the nineteenth century. Therefore, successive governments have tried to improve traditional agriculture by incentive policies designed to expand food corps mostly produced by the traditional sub-sector. Rain-feed farming has gone on since independence and even at this time suffers from lack of infrastructure and retardation of the methods that used in farming; that, in addition to the absence of skilled labor. These difficulties have negatively affected the production of crops, even though the area covered by rain-feed agriculture is large. However, productivity is modest compared with irrigated and mechanized sub-sectors, probably due to fluctuation of rain and decline of soil fertility as a result of non-compliance with the agricultural cycle. Therefore, in attempt to solve all these problems, in 1954 the government of Sudan signed an agreement with the Food and Agriculture Organization of the United Nations (FAO) to develop the agricultural sector. Since the 1970s, FAO has worked along with government to provide technical assistance and capacity building. It has playing a critical role in create innovative methods in food security and animal feed. (Sudan, C.B., 2009). In addition to traditional sub-sector, a large modern mechanized rain-fed farming infrastructure has developed on order to produce a cereal crops. Furthermore, using land for irrigated farming has increased steadily from the early independence years to the mid of nineties in the last century, the farming land rose from 300562 Ha in 1957 to 598299 Ha and to750690 Ha in 1965 and 1972consecutive (Sudan, C.B., 2009). The Gezira Scheme in central Sudan was one of the largest irrigated agricultural projects in the Africa at that time; the area of this project covers almost about 809370 Ha. Moreover, new projects have been undertaken, such as the Rahad scheme with 121405 Ha and the New Halfa project in eastern Sudan with 161874 Ha. (Sudan, C.B., 2009).

Table 1: Farming Area During The Period Pre-Oil Production Between 1955 And 1965 By Ha

Years	Irrigated Land	Traditional Rain-fed	Mechanized Rain-fed	Total
1955-1956	254472	1881138	27589	2567885
1956-1957	300562	1956288	106095	2355662
1957-1958	299286	1851704	42960	2193950
1958-1959	360860	2171078	82245	2614184
1959-1960	404068	2167156	77905	2649171
1960-1961	460947	2024966	56530	2542445
1961-1962	502774	2225803	107691	2836270
1962-1963	502709	2383687	44857	2967676
1963-1964	524464	2657631	50846	3232942

Source: Ministry of finance, economic show report 1969

Use of land for agriculture purposes has increase significantly during the period from 1955 to 1970. The farming area multiplied from 2355662 Ha in 1957, to 4525241 Ha in 1971. Irrigated agriculture area received the largest share of this increase. The farming area in this sector tripled, while the rain fed agriculture area rose doubled. However, the situation was different in mechanism rain-fed, where this sector did not received substantial increases in acreage, even some time the cultivated area has fallen, such in session 1965 – 1966 where plantings declined to only 29450 Ha. It fell by more than 70 present from the session of 1961-1962.

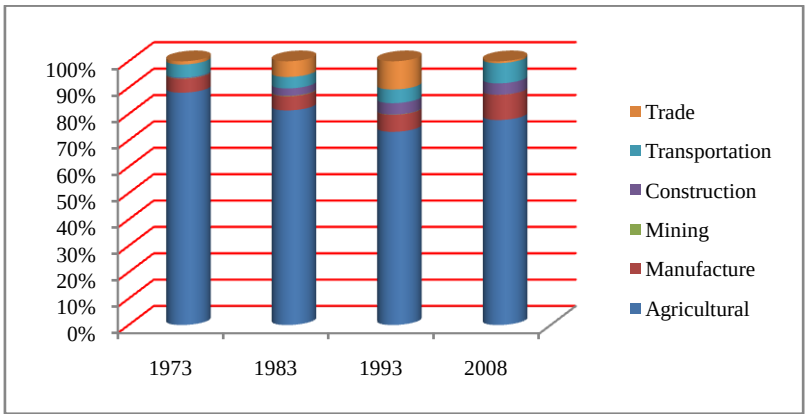
Table 2: Farming area during the period pre-oil production between (200-2010) by Ha

Years	Irrigated Land	Traditional Rain-fed	Mechanized Rain-fed	Total
2002-2003	1618742	4856227	9712455	16187424
2003-2004	849839	5544193	96153308	102547340
2004-2005	849839	4492010	7769964	13111813
2005-2006	6029816	7729495	728434	14487745
2006-2007	809371.	9752923	6151221	16713515
2007-2008	1092651	10238546.	5625130	16956327
2008-2009	1335462	18129916	N.A	19465378
2009-2010	1456868	16875391	N.A	18332259

Source: Central bank of Sudan, annual reports for 2001, 2003,2005,2006,2009 and 2010

During post-oil production the area of farmland expanded. Irrigation farmland expanded from 524464 Ha in the mid-1960s to around 1.4 Ha in the 2010. Traditional and mechanized rain-fed area also jumped to 10.2 and 6.5 million hectares in 2008, respectively. The expansion in farmland was aimed at meeting population growth and the rise of domestic consumption. Mainly Sudan produces cereal crops include, sorghum, wheat and millet that in addition to export cash crops such as cotton, groundnuts, sesame and gum Arabic.

Evaluating the size of manpower is one of the important ways of assessing the performance of the agricultural sector. Economically labor is a factor of production similar like capital and land. As term labor represents the available manpower which works to transform national resources into consumer goods; in another way labor is the exertion that people contribute to produce goods and provide services. The size of the active manpower in Sudan has been difficult to estimate that because of lack of a comprehensive manpower database, in addition to the weakness of means that used to confine the manpower. Therefore, the paper adopted on census data associated with distribution of manpower. During the forty years that has left independence the distribution of manpower among the productive sectors showed superiority of the agricultural sector. But, deterioration of agricultural in addition to outbreak of conflict and civil war in farming area propelled much of farmers to migrate toward urban looking for other jobs opportunities



Fig, 1: Distribution of manpower based on census

According to the 1973 and 1983 censuses, most manpower was engaged in traditional agricultures in rural areas (Central Bureau of Statistics, 1969). In 1980, The International Labor Organization (ILO) estimated the manpower in Sudan at 6 million persons, equal to about 33 percent of the total population. This number rose to about 8 million in the early 1990s. The drought season that hit Sudan in the 1980s caused the migration of millions of people from the worst hit areas to Khartoum and other urban areas along the Nil River. The last census, which was organized in 2008, estimated manpower in the agricultural sector at 43(Central Bureau of Statistics, 1969) percent of total Sudan labour force. Despite the relative decline of the workforce in the agricultural sector, it is still supreme sector and accommodates the highest proportion of the workforce.

The gross domestic product (GDP) in Sudan's economy consists of three fundamental productivity sectors, which are the agricultural, industrial and service sectors. For a long time, the agricultural sector was dominant and had the highest contribution to the GDP among the sectors; conversely, after the appearance of oil, this

sector deteriorated and agricultural production greatly decreased. The lack of significant investment projects in this sector is one of the major factors that caused this decline. Since 1997, the contribution of the agricultural sector to the GDP has been decreasing 47% in 1997 (Finance, M., 1997) to only 31% in 2009 (Sudan, C.B., 2009).

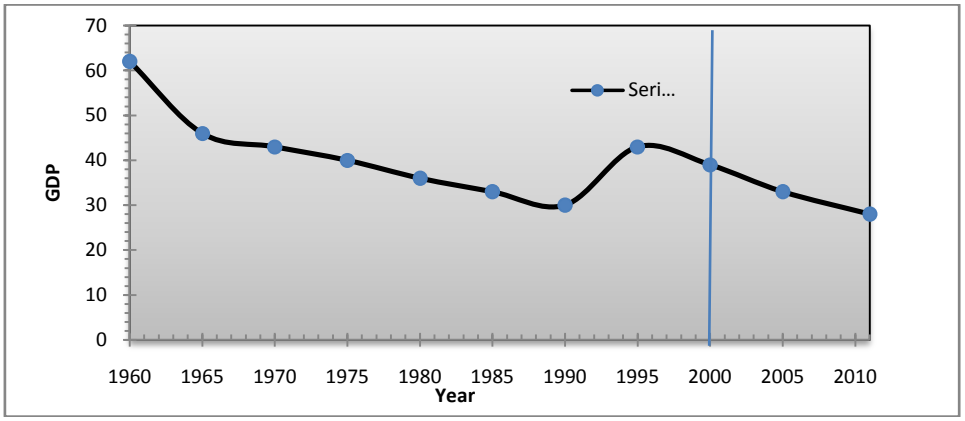


Fig. 2: Contribution to GDP during the period from 1960 to 201
Source: Author spreadsheet using Ministry of Finance, and Central Bank of Sudan data

Reviewing the distribution of GDP of the economic sectors since independence until the end of the twentieth century, it is clear that the share of the agricultural sector to the GDP was declining, that share was 62% in 1956, it became, on average, about 46% in the sixties and seventies era then decreased further to about 37% during the period of the eighties and nineties (Adam, F., 2006)]. The analysis and comparison of this evidence indicates the expanding role of the industrial sector to the GDP during the period from 1997 to 2007, while the role of the agricultural sector had clearly declined, and another relative decline has occurred in the contribution of the service sector to the GDP. These drops are due to the large investments in the oil industry and the lack of development and absence of significant investment in other sectors.

The measurement of the growth rate determines the extent of the decline or growth for the productive sectors, so in this section we will observe the growth rates of each sector, and note the growth impact of certain sectors on other sectors. The growth rate for the agricultural sector has greatly deteriorated in recent time, in spite of the contribution of this sector being considered a third of the total GDP; it has experienced decreasing growth rates from year to year. In 1992 the growth rate reached only 31.5% and since that year, these percentages have begun to decline even further to only 6% in 2007 (Sudan, C.B., 2009). The most significant factors are negligence and a lack of development for this vital sector. This deterioration has had a negative repercussion and has led to labor migration and displacement from agricultural areas towards the cities. Furthermore, the concentration by the government on the oil industry and provision of facilities and granting exemption for its investors is one of the factors which has contributed to the decline in the performance of the agricultural sector.

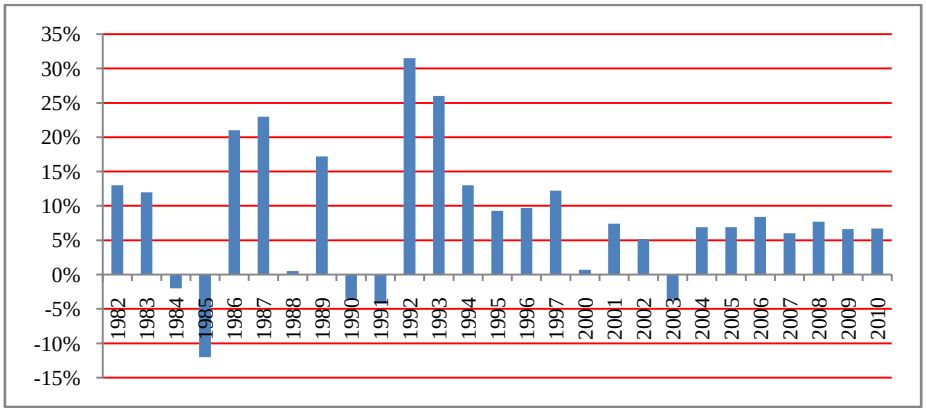


Fig. 2: Growth Rate of The Agriculture Sector
Source: Authors' compilation using Ministry of Finance and Central Bank of Sudan, data

There is no sustainable development in the agriculture sector due to the lack of progress and investment. The total investment done by Arab countries in agriculture sector in Sudan was estimated to be 91 projects during the period from 2000 up to 2009, while the investment projects undertaken by the same countries in the industrial sector was estimated to be 685 in the same period (Investment, M., 2009). Therefore, the lack of investment is one of the most important factors that contributed to the poor growth of these sectors. The trade balance reflects a country's transactions with the world. Through the exports and imports the trade balance of Sudan achieved a continuous deficit rate from year 1991 up to 1997 and had the largest percentage of disability when it reached $884 million in 1996 (Finance, M., 1997). This deficit is attributed to the lack of influential materials in the trade balance and the low quality of exports, as well as the inability to compete in the global market. Previously, most exports from the agricultural sector were cotton, sesame, and Arabic gum, which they represented more than 90% of the total value of exports. However, after the start of the oil export this situation changed. Oil became the controlling factor in the trade balance, and the role of the agricultural sector exports reduced significantly. The following table explains the value of major exports during the period from 1990 to 2010.

Tabl 3: Value Of Major Exports Commodities (Million Usd) From 1990 To 2010 By Usd

Years	cotton	gum Arabic	sesame	groundnuts	Live animals	oil
1990	200	41.944	58	5.8	82.896	N.V
1995	122.951	51.4	80.449	2.735	75.806	N.V
1999	34.614	26356	107.834	0.148	96.277	688.802
2005	107.29	107.56	118.58	2.01	114.88	9118
2006	64.3	0.3	167	50.2	121.7	4,704.00
2007	68.5	0.8	92.8	51.9	80.6	8,052.70
2008	61.8	60.9	141.8	N.V	45.5	10,845.60
2009	43	33.1	143.3	N.V	179.5	6,902.80
2010	40.4	23.8	167.3	0.2	2.6	9,406.00

Source:Distortions to Agricultural Incentives in Sudan. Paper

Before oil production, most exports came from the agricultural sector, where they represented more than 90% of the total value of the trade balance. However, after the start of the oil export this situation changed. Oil became the controlling factor in the trade balance, and the role of the agricultural sector exports reduced significantly.

RESULT AND DISCUSSION

Undoubtedly, all the facts and evidence points to the deterioration of the agricultural sector after development of oil production, and also demonstrates that the oil revenues have not been positively used in order to develop other productive sectors. On the axis of GDP, the contribution of the agriculture and service sectors has declined while the contribution of the industrial sector, which includes oil, has increased. Moreover, in terms of growth rates, the agricultural and service sectors have dropped a decline that has plagued this sector in the current period due to a lack of production and the absence of sufficient funding.

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