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# Fiscal Policy and Economic Growth in Sudan, 1996-2011

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## ABSTRACT

Fiscal policy is the use of government spending and taxation to influence the economy. Hence this study investigates the role of fiscal policy on economic growth in Sudan during the period 1996-2012. For this purpose we choose GDP as represents of economic growth and government expenditure and taxation as represent of fiscal policy. Data of the study were collected from central bureau of statistics and taxation chamber as well. Using these data ordinary least squares method was applied to the linear form of the model. The results showed that fiscal policy play significant role on economic growth in Sudan during the period of study.

**Keywords:** *fiscal policy, economic growth, government expenditure, taxation, Badreldin*

## 1. INTRODUCTION

Fiscal Policy refers to the methods employed by the government to influence and monitor the economy by adjusting taxes and/or public spending. In doing so, the governments for example aims to find a balance between lowering unemployment and reducing the inflation rate. It refers to government attempts to influence the direction of the economy through changes in government taxes, or through some spending (fiscal allowances). Hence it can impact on the following variables in the economy: aggregate demand and the level of economic activity, the pattern of resource allocation and the distribution of income, also it has an impact on overall effect of the budget outcome on economic activity.

The objective of this paper is to assess the role of fiscal policy on economic growth during the period 1996-2011. Data of the study was collected from central bureau of statistics in republic of Sudan. Using these data OLS technique is applied to annual time series data covering the period mentioned above.

The rest of this paper falls as following. Section two reflects literature review, section three overviews Sudan economy. Section four offers methodology and data collection as well as results, while section five shows the conclusion remarks.

## 2. LITERATURE REVIEWS

The effective fiscal policy can also be used to spur growth and revive a stagnant economy. What needs to be explored in this respect for a developing economy is the causal relationship between growth (say, of real per capita GDP) on the one hand, and quantitative fiscal adjustment (improvement in fiscal balance), expenditure composition (wages and salaries, development expenditure, and social services such as education and health), and sources (domestic and foreign) of financing budget deficits on the other hands (Mahran, 2005).

The concept of systematic state intervention to stimulate economic development has been a major part of

the ideology of many developing countries. Yet perhaps surprisingly, taxes as a percentage of GNP in less developed countries are generally less than in developed countries. If social security contributions are included, the differences in tax ratios widen. Among the LDCs, the tax revenue as a percentage of GNP is 12.9 per cent for low-income countries, 23.1% for middle-income countries and 37.7 per cent for developed countries. The increase in tax ratio with GNP per capita is a reflection of both demand and supply factors - demand for social goods (collective goods like education, highways, sewerage, flood control and national defense) and the capacity to levy and pay taxes. Wagner's law, named for the nineteenth century German economist Adolph Wagner, states that as real GNP per capita rises, people demand relatively more social goods and relatively fewer private goods. A poor country spends a high percentage of its income on food, clothing, shelter and other essential consumer goods. After these needs have been largely fulfilled, an increased proportion of additional spending is for social goods.

The most important taxation goal in LDCs is to mobilize resources for public expenditure. According to the IMF, the amount of these resources is determined by GNP per capita, the share of the mining sector in GNP, the share of exports in GNP and tax policy. It is desirable to look at how tax policies affect public spending and the impact of taxes on stability of income and prices. However, achieving these crucial taxation goals must be viewed in light of other goals, such as improved income distribution, efficient resource allocation, increased capital and enterprise and administrative feasibility. The LDC governments must consider all of these goals when designing tax schemes to achieve rapid economic growth, to improve the lot of the poor and to stabilize prices.

The main tools of fiscal policy are taxes and/or public spending. Thus here we discuss the two instruments of the policy.

### 2.1 Taxation

To tax is to impose financial charges upon a taxpayer (an individual or legal entity) by a state or functional equivalents of a state such that failure to pay is

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punishable by law. Taxes are also imposed by many sub-national entities. Taxes consist of direct taxes or indirect taxes, and may be paid in money. A tax may be defined as a "pecuniary" burden lay upon individuals or property to support the government. A payment exacted by legislative authority. A tax "is not a voluntary payment or donation, but an enforced contribution, exacted pursuant to legislative authority" an is "any contribution imposed by government whether under the name of toll, tribute, tallage, gabel, impost, duty, custom, excise, subsidy, aid, supply, or other name. In modern taxation system, taxes are levied in money, but in-kind and corvee taxation is characteristic of traditional or pre-capitalist states and their functional equivalents. The method of taxation and government expenditure of taxes raised are often highly debated in politics and economics.

Taxation has four main: Revenue, Redistribution, Re-pricing, and Representation. The main purpose is revenue: taxes raise money to spend on roads, schools and hospitals, and on more indirect government functions like market regulation or legal system. This is the most widely known function. A second is redistribution, normally this means transferring wealth from the richer sections of society to poorer sections. A third purpose is re-pricing. Taxes are levied to address externalities: tobacco is taxed, for example, to discourage smoking, and many people advocate policies such as implementing a carbon tax. A fourth, consequential effect of taxation in its historical setting has been representation. The American Revolution slogan "no taxation without representation" implied this: ruler's tax citizen and citizen demand accountability from their rulers as the other part of this bargain. Several studies are shown that direct taxation (such as income taxes) generates the greatest degree of accountability and better governed, while indirect taxation tends have smaller effect.

The most importance obstacles to an empirical investigation of the effect of fiscal policy on growth are that marginal tax rates and subsidies. Which are the relevant variable according to theory and not observable. To compute marginal income tax rates are would ideally use the methodology of Barro and Sahaskul (1993). However, this requires information of individual income and taxes that currently publicly available only for a small set of developed countries (quoted in Esterly and Sergio, 1993).

## 2.2 Government Expenditure

Policy makers are divided as to whether government expansion helps or hinders economic growth. Advocators of bigger government argued that government programs provide valuable (public goods) such as education and infrastructure. They also claim that increases in government spending can bolster economic growth by putting money into people's pockets. Proponents of smaller government have the opposite view. They explain that government is too big and that higher spending undermines economic growth by transferring additional resources from productive sector of

the economy to government, which uses them less efficiently. They also warn that an expanding public sector complicates efforts to pro-growth policies-such as fundamental tax reform and personal retirement account-because critics can use the personal existence of a budget deficit as a reason to oppose policies that strengthen the economy (Mitchell, 2005)

It is difficult to disentangle a prior whether the relation between government expenditure and GDP goes from the latter to the former or vice versa. To the extent that the impact of government expenditure on GDP is mostly in terms of aggregate demand impulse rather than changed output potential. Focusing the analysis of figures adjusted for the cycle contribution to contain the issues of reverse causality. They argued that an impact of government expenditure on potential output cannot be excluded. However, the effect can be the opposite depending on which types of expenditure are considered. While government investment or public education expenditures are likely to improve the growth by crowding out resources to private investment (Kneller, Bleaney, and Germell, 1999).

Moreover (Levine and Renelt, 1992) showed that fiscal variables are generally non robust when included in cross-country growth regression (quoted in Arpaia and Turrini, 2008).

Generally, Fiscal Policy (FP) is the economic term that defines the set of principles and decisions of government in setting the level of public expenditure and how the expenditure is funded. Fiscal policy and monetary policy (MP) are the macroeconomic tools that governments have. With regard to fiscal policy it is observed that LDCs are characterized by underdeveloped financial markets that governments could borrow little or nothing from the public. In some countries, however, deposit-taking banks were forced to buy government papers at low interest rates thereby depriving private sector of the available fund. But this was not a matter of deep concern since public investment was believed to be most important for development. Thus borrowing from the central bank mainly financed budget deficit that could not be financed by foreign borrowing. As such fiscal policy largely consisted of the determination of the size of the government deficit that would have to be financed domestically. This in turn would determine the required increases in the quantity of money and its effect.

## 3. ECONOMIC GROWTH IN SUDAN

Since Sudan has achieved its political independence in 1956, the Sudanese government adopted a number of development plans. These plans included the Ten-Year Plan (1960/61-1969/70), the Five-Year Plan (1970/71-1974/75), the Amended Five-Year Plan (1970/71-1976/77), the Six-Year Plan (1977/78-1981/82), the first Three-Year Public Investment Program (1979/80-1981/82), the second Three-Year Public Investment Program (1982/83-1984/85), the Four-Year Salvation, Recovery and Development Program (1988/89-1991/92)

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and the Three-Year National Economic Salvation Program (1990/91-1992/93), and the Comprehensive National Strategy covering the period (1992/93-2001/02). Abaker (2000) examined from an empirical point of view the relationship between the development strategies (export promotion and import substitution) and GDP growth in Sudan, over the period (1970-1990). He argues that "Import substitution strategy has failed as a development strategy especially, when the industrial sector remains under government control".

According to Dagdeviron and Mahran (2005), it has been a monumental task to move the economy dramatically from a state of downward trend and some central control that characterized the period of the 1970s and 1980s, to a free-market economy where market forces set the rules of the game in resource allocation and economic growth in the 1990s. The strict demand management policies adopted over the 1990s, coupled with some supply measures, were meant primarily to stabilize the economy by curbing inflation, the rate of which declined from three-digits to nearly 5.0% in 2001. The 1990s registered positive growth rates, with an annual average rate of 0.33% per annum during the first half of the decade. In contrast, the second half of the 1990s registered sustained and stable positive growth at progressively higher rates. The poor economic performance over 1984-1991 compared to that during the sub-period 1992-2002 suggests that the ill-advised policies and the government approach to policy making played an important role in that dismal performance. It is to be noted that while the period 1984-1991 was characterized by intensified civil war, the period 1992-2002 witnessed the adoption of stabilization and liberalization policies. Thus, while peace is a necessary condition for economic growth it is by no means sufficient for the realization of this objective. As the growth experience of the post 1992 reform showed, in addition to peace, a firm commitment to a credible stabilization program is needed (Suliman, 2005).

Ahmed (2006) examined from an empirical point of view the impact of export-promotion and import-substitution strategies on real GDP in Sudan over the period 1980-2004. He argued that "both development strategies have played a positive and significant role on real GDP growth during the sub-period of (1980-1991). On other hand, neither import-substitution nor export promotion strategies have had a significant role to play on real GDP growth for the second sub-period (1992-2004)". The first attempt towards systematic planning of economic development in Sudan was made in the context of the ten-year plan (1961/62-1970/71). This plan was drawn-up in response to the realization that the development program for the period (1946-1961), though greatly stimulated the Sudanese economy, was no more than a collection of capital projects without defined targets or an underlying theme. Within that program, the sectoral allocation of investment was such that agriculture was allotted 25.4 percent, industry 22.7 percent, transport and distribution 20.1 percent, and social services and

housing 31.8 percent (Ali and Elbadawi, 2002). Following the 1969 military takeover, a five-year plan for economic and social development was adopted for the period 1970/71-1974/75. While this plan was supposed to have a "Socialist" orientation, a number of observers noted that the new plan was not different from its predecessor, except perhaps that its parameters were a shade *ad hoc*. The five-year plan aimed at an annual GDP growth rate of 7.6% during the plan period and at an improvement of people's well-being via an increase of 6.2% per annum in per capita income. The sectoral targets of the plan were to increase agricultural production by 60.8%, animal products by 75.5% and industrial output by 57.4%. A total of 470 projects were identified according to which total investment of Ls. 432.9 million was allocated. Due to political instability and subsequent changes in the political orientation of the military regime, the five-year plan ran very quickly into implementation problems. In 1974, which was supposed to be the last year of the original plan horizon, the plan had to be extended on *ad hoc* basis to the fiscal year 1976/77 (Ali and Elbadawi, 2002).

A number of other subsequent plans and programs were also initiated, including the Six-Year Plan (1977/78-1981/82), the first Three-Year Public Investment Program (1979/80-1981/82), and the second Three-Year Public Investment Program (1982/83-1984/85). Despite these planning efforts, the economic performance could at best be described as poor. This dismal performance of the economy may be traced back to a multitude of both local and international factors. Internally, the sixteen years of military rule (May 1969-April 1985) were characterized by erratic economic policies, ill-conceived plans, poorly executed and managed projects, and irrational resource allocation. As a result, the Four-Year Salvation, Recovery and Development Program (1988/89-1991/92) was initiated with a view to effectively address the aforementioned problems in a comprehensive and systematic framework. Its basic objective was to achieve an average real GDP growth rate of at least 5% per annum during the program's period. Central to the strategy for the agricultural sector was the question of food security. The Program envisaged boosting the production of food crops as well as private stock building, food management, and the promotion of trade and special relief measures. The government intended to reduce substantially its dependence on imported wheat by attaining self-sufficiency to a target level of around 90% by the end of the program period. To achieve this objective, a number of measures were proposed which included demand management and increased domestic production (MEEP, 1988).

Following the change in the political regime in June 1989 the new government designed a medium-term economic program, namely the National Economic Salvation Program (1990/91-1992/93) to arrest the deterioration in the economy and to lay the foundation for a sound recovery that would take the economy back onto a path of sustained growth and financial stability. The general objectives of the program may be summarized as follows. First, revitalization of the Sudanese economy

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through reallocation of resources towards production; second, enhancement of the role of the private sector, whether national or foreign, to play a more active role in achieving the objectives of the program; third, reorientation of financial, economic and institutional structures with a view to creating an environment more conducive to private sector participation. The means to achieve these objectives included putting emphasis on the development of agriculture as a leading sector; encouraging exports through liberalization of export prices and scrapping the export license system, and by providing subsidies, if needed; and implementing institutional reforms to remove administrative obstacles. Sectoral strategies and objectives were not spelt out explicitly in the program. However, with regard to the agricultural sector, the following implicit objectives were emphasized. Within the context of the Investment Encouragement Act (1990), the program aimed at rehabilitation of existing and new agricultural projects, encouraging agricultural credit, with ceilings on bank credits to agriculture and animal production, and introducing corn as a new cash crop beginning in the 1990/91 season (MEEP, 1990).

The Economic Salvation Program (ESP) laid the ground for the adoption of a longer term Comprehensive National Strategy covering the period 1992-2002. This strategy has been implemented through three medium-term programs, which aimed at enhancing the liberalization process and overcoming the difficulties encountered in the implementation of the (ESP). Strategic priorities included economic reforms with particular emphasis on privatization and liberalization measures for creating an open trade regime and macro-economic stability (Brussels, 2001). According to Ali and Elbadawi (2002), a visual inspection of the data series over the period 1960-1998/2000 for which consistent data were available on real GDP per capita suggests four sub-periods of growth experience. Although these periods are of different lengths, Ali and Elbadawi (2002) estimated the trend growth rates for each of the sub-periods and calculated the mean and the standard deviation of growth rates as well as the coefficient of variation for the four periods. They observed alternating sub-periods of negative and positive growth. The negative growth periods are the longest ones, but with relatively low negative growth rates. By contrast, the positive growth sub-periods are shorter with relatively high per capita growth rates. For the whole period, there was a positive, but insignificant, growth trend with a very low R-squared. The details show that during the negative growth sub-periods there were fluctuations around the sub-period trend. Overall, Sudan's growth record was one of volatile growth. The coefficient of variation indicates that the positive growth periods had relatively low variability while the negative growth periods were volatile. For the whole period the coefficient of variation is fairly high confirming the overall volatility of the growth experience of the country. Having outlined the economic growth performance, we now briefly examine economic structure and sectoral share and growth rates. Firstly, agriculture is

the dominant sector in the Sudanese economy. In addition to generating directly about 40 percent of GDP, agriculture also drives activity in the services sectors such as transportation, agro-industry, and commerce that account for a large part of the rest of the economy. Even more importantly, 80 percent of the labor force is employed in agricultural and related activities, and the performance of agriculture is the main determinant of year-to-year changes in poverty levels and plays a vital role in national food security (Mahran, 2000). Secondly, the sector supplies nearly all raw materials for Sudanese agro-industries such as sugar, textile, leather, and food-processing. Finally, agriculture is the source of virtually all Sudan's exports, and therefore the key determinant of developments in the balance of payments (IMF, 1999). Indeed, the share of agriculture in Sudan's total exports is estimated at almost 80 percent, where the main agricultural exports include cotton, gum Arabic, sesame, livestock, groundnut, fruits, and vegetables. Sudan has benefited from the variation in climate conditions, water resources, and soil types, which have allowed the country to grow a wide variety of perennial crops in different regions (MEPD, 2003).

Since early 1990s, the Sudan has undergone a dramatic shift in policy towards economic liberalization and resource mobilization. Despite the shift in policy, the efforts made during the 1990s toward diversification, together with the advent of oil, agriculture remains the backbone of the economy. In contrast, the weak contribution of the manufacturing sector by 1 percent of GDP in the 1950s encouraged the government to take a leading role in industry, then cherished by successive governments through implementation of import-substitution strategies aimed at industrial growth and transformation. Since early 1960s the public sector became the main investor in industry. In subsequent developments, a number of major import-substitution ventures were established by the public sector including sugar, textile, cement and metal industries whereas the private sector expanded on edible oil, soap, chemicals and household utensils. Structural weaknesses of industry had been perpetuated by protectionist policies and the orientation of production toward final consumption. Such orientation did not observe the major difference in consumption pattern at sectoral, geographic and social levels, between income groups (Brussels, 2001). According to Mahran (2000), the services sector had the lion share in GDP, which has exhibited a rising trend during the last three decades at the expense of agriculture and industry. This share, estimated at an annual average of nearly 52.0%, typifies the economic structure of many LDCs.

Along these lines, Brussels (2001) also observed that the contribution of the services sector to the GDP was estimated at 50 percent in 1973/74 and at 54 percent in 1990/91. It is therefore evident that the structural changes that have taken place during the last three decades favored tertiary activities at the expense of productive activities in agriculture and industry. The major issues which

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accompanied the growth of this sector in the 1970s and 1980s, and which were targeted by the economic policies of the 1990s, focused on changing the economic structure. The policies adopted in this respect favored the productive sectors through provision of financing, various administrative, financial and monetary incentives, reduction of government spending and budgetary control aimed at rationalizing aggregate demand. However, the efforts that were made during the last two decades toward changing the structure of the economy have at best been frustrated. The economy of Sudan continued to be in disarray in mid-1991. The principal causes of the disorder have been the violent, costly civil war, an inept government, an influx of refugees from neighboring countries, as well as internal migration, and a decade of below normal annual rainfall with the concomitant failure of staple food and cash crops. The economic and political upheavals that characterized Sudan in the 1980s have made statistical material either difficult to obtain or unreliable. Prices and wages in the marketplace fluctuated constantly, as did the government's revenue. Consequently, information concerning Sudan's economy tends to be more historical than current. In the 1970s, economic growth had been stimulated by a large influx of capital from Saudi Arabia and Kuwait, invested with the expectation that Sudan would become "the breadbasket" of the Arab world, and by large increments of foreign aid from the United States and the European Community (EC). Predictions of continuing economic growth were sustained by loans from the World Bank and generous contributions from such disparate countries as Norway, Yugoslavia, and China. Sudan's greatest economic resource was its agriculture, to be developed in the vast arable land that either received sufficient rainfall or could be irrigated from the Nile. By 1991 Sudan had not yet claimed its full water share (18.5 billion cubic meters) under the 1959 Nile Waters Agreement between Egypt and Sudan. Sudan's economic future in the 1970s was also energized by the Chevron Overseas Petroleum Corporation's discovery of oil on the borderlands between the provinces of Kurdufan and Bahr al Ghazal. Concurrently, the most thoroughly researched hydrological project in the Third World, the Jonglei Canal (also seen as Junqali Canal), was proceeding ahead of schedule, planned not only to provide water for northern Sudan and Egypt, but also to improve the life of the Nilotic people of the Canal Zone. New, large agricultural projects had been undertaken in sugar at Kinanah and cotton at Rahad. Particularly in southern Sudan, where the Addis Ababa accords of March 27, 1972, had seemingly ended the insurgency, a sense of optimism and prosperity prevailed, dashed, however, when the civil war resumed in 1983. The Khartoum government controlled these development projects, but entrepreneurs could make fortunes through the intricate network of kinship and political relations that has traditionally driven Sudan's social and economic machinery. In the early 1970s, public enterprises dominated the modern sector, including much of agriculture and most of large-scale industry, transport, electric power, banking, and insurance. This situation resulted from the private sector's inability to finance

major development and from an initial government policy after the 1969 military coup to nationalize the financial sector and part of existing industry. Private economic activities were relegated to modern small- and medium-scale industry. The private sector dominated road transport and domestic commerce and virtually controlled traditional agriculture and handicrafts. In the 1980s, however, Sudan underwent severe political and economic upheavals that have shaken its traditional institutions and its economy. The civil war in the south resumed in 1983, at a cost of more than £Sd11 million per day. The main participant in the war against government was the Sudanese People's Liberation Army (SPLA, the armed wing of the Sudanese People's Liberation Movement (SPLM)), under John Garang's leadership. The SPLA made steady gains against the Sudanese army until by 1991 it controlled nearly one-third of the country. The dearth of rainfall in the usually productive regions of *Sahel* and southern Sudan added to the country's economic problems. Refugees, both Sudanese and foreigners from Eritrea, Ethiopia, Uganda, and Chad, further strained the Sudanese budget. International humanitarian agencies have rallied to Sudan's aid, but the government rejected their help. When Jaafar Nimeiri was overthrown in April 1985, his political party disappeared, as did his elaborate security apparatus. The military transitional government and the democratically elected coalition government of Sadiq al Mahdi that succeeded the exiled Nimeiri failed to address the country's economic problems. Production continued to decline as a result of mismanagement and natural disasters. The national debt grew at an alarming rate because Sudan's resources were insufficient to service it. Not only did the SPLA shut down Chevron's prospecting and oil production, but it also stopped work on the Jonglei Canal. On June 30, 1989, a military coup d'état led by Colonel (later Lieutenant General) Umar al Bashir overthrew the government of Sadiq al Mahdi. Ideologically tied to the Muslim Brotherhood and dependent for political support on the Brotherhood's party, the National Islamic Front, the Bashir regime has methodically purged those agencies that dealt primarily with the economy the civil service, the trade unions, the boards of publicly owned enterprises, the Ministry of Finance and Economic Planning, and the central bank. Under Bashir's government, Sudan's economy has been further strained by the most severe famine of this century, the continuation of the war in the south, and a foreign policy that has left Sudan economically, if not politically, isolated from the world community ([country.study.su/sudan](http://country.study.su/sudan)). Sudan entered the twenty-first century mired in several conflicts. These conflicts have led to huge loss of life and have severely debilitated the country's capacity to rebuild and develop. The 2005 comprehensive peace agreement between the North and the South, and the recent ceasefire between the Sudanese government and the rebels in the Darfur region, present a window of opportunity for Sudan to meet its future developmental and social priorities. Two factors—Sudan's emergence as an oil producer and its heavy debt burden—play an important role in explaining the country's economic performance and, perhaps more

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importantly, have a major bearing on its outlook. The declared policy of introducing tax reform has resulted in the implementation of what is so-called the Value Added Tax (VAT) as from 1<sup>st</sup> of June 2000 replacing consumption tax, sales tax and excise duties. VAT is fiscally defined as a tax that to be levied on an increment in the prices of a good or services that occurs due to adding the value of its production at each intermediate stage (Transformation) or the value of its packing or the value of its repacking or the value of its recycling it from one stage to another unit it reaches the consumer (Nur, 2000).

The oil sector still contributes only modestly to overall economic output, but its impact on the external and fiscal balances is substantial: oil accounts for some 93% of exports and 50% of domestic revenue in 2009. Sudan's debt problems can be traced back to the 1960s when the country embarked on a strategy of large-scale industrialization, financed in part by foreign borrowing at non concessional terms, and initially accompanied by government regulation of the economy. External debt, which stood at about US\$35 billion in 2009—most of which is in arrears (including to the IMF)—is not sustainable in the absence of debt relief (IMF report 2010). The IMF reported that the challenges facing Sudan are immense and complex—from establishing and maintaining peace to rebuilding the country. Maintaining macroeconomic stability and promoting investment are essential to growth and development—and to making progress towards achieving the MDGs. These tasks have become more difficult because of the recent global financial crisis. In addition, foreign inflows, including foreign direct investment, remittances, and oil export receipts are projected to moderate relative to recent years. Sudan's difficult debt position, which limits its access to concessional loans, further complicates the situation. There are risks that the notable achievements made over the last decade, including in reducing poverty, could be reversed, underscoring the need to persevere with prudent macroeconomic policies and structural reforms to promote economic growth and development. The volume of investment in Sudan during the 1990s had reached to about 7 billion US\$ of which about 4.7 billion US\$ had been invested in petroleum sub-sector in second half of the 1990s (Eltigani, 2000). But it is argued that no positive multiple impacts in terms of employment had been realized in the short-run. This could be due to the fact that most of these huge investments were in form of capital stock whose positive impact will be realized after a while. Moreover, most of these investments were foreign investment, coupled with a foreign labor. The Sudanese economy has emerged as one of the fastest growing economies in the region over the last five years. Real GDP growth averaged 8 percent during 2004–08 with single digit inflation and a relatively stable currency, although preserving the latter often resulted in large movements in foreign exchange reserve (Abbas et al, 2010). However, Sudan's macroeconomic has become increasingly dependent on oil over the last decade. In real terms, the oil sector accounts for only about 10 percent of

Sudan's overall GDP—small compared with agriculture and services, which account for 35% and% percent, respectively, of real output. However, its impact on Sudan's external and fiscal balances in recent years has been pivotal: oil now accounts for about 95 percent of Sudan's exports and over half of all government revenue.<sup>2</sup> Thus, Sudan's macro-economy has become highly dependent on oil sector developments, especially the world price of oil. For instance, within six months of the August-2008 reversal in the rising world oil price trend, foreign exchange reserves had more than halved to an uncomfortably low level of 2 weeks of imports. The 2009 fiscal deficit of government of national unity (GoNU) is similarly expected to widen notably relative to 2008. Fiscal revenues have begun to reflect the depletion in oil reserves while expenditure rigidities have emerged due to fiscal decentralization. Sudan's proven oil reserves are limited—good for about 20 years at current production rates—and the faster than expected maturity of the higher quality Nile blend wells since 2006 has called into question the sustainability of fiscal and external balances going forward. On the expenditure side, fiscal federalism has limited central government control over a large part of expenditure, i.e. automatic transfers to sub-national governments. Moreover, Sudan has limited access to concessional external finance and faces high political uncertainty. Sudan's access to concessional foreign loans has been adversely affected by its arrears status to bilateral and multilateral creditors, including the funds. There is also uncertainty over the outcome of parliamentary and presidential election in 2010, and the status of south following 2011 referendum. A large unresolved external public debt burden, and security and peace-related spending pressures, further reinforce the complexity of fiscal situation.

#### 4. THE MODEL, METHODOLOGY AND RESULTS

In this section we specify the model, data collection in addition to the methodology of the study. The model takes the following form:

$$Y = f_i(G, T) \quad (1)$$

$$f_i > 0 \quad (2)$$

Where:

Y is gross domestic product (GDP).

G is government expenditure.

T is taxation as percentage from GDP.

According to economic theory, fiscal policy impacts positively on economic growth, so that we expect positive signs of parameters.

It is important to note that in this study, fiscal policy is measured by two variables taxation (T) and government expenditure (G).

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Economic growth (Y) is measured by gross domestic product (GDP) and this is the dependent variable in the model. Data of the study is collected from the Taxation Chamber and Central Bureau of Statistic. The real value of variables is simply calculated as the nominal values of the variable divided by consumer price index (CPI).

Table (4.1) shows our variables in millions Sudanese pounds. For instance, gross domestic product (GDP) and government expenditure (G) were collected from central bureau of statistics (CBS). Accordingly taxation data was collected from taxation chamber (TC).

**Table (4.1)**

Year	Y	G	T	CPI
1996	10478.1	770.5	1.7	11235.54
1997	16137.4	912.59	1.9	16475.09
1998	21935.9	1041.255	1.9	19276.80
1999	27058.8	1128.0	2.0	22388.33
2000	33662.7	1845.1	3.0	24190.07
2001	40658.6	2615.1	3.9	25377.49
2002	47756.1	2915.6	4.0	27537.65
2003	55733.8	3334.0	3.8	29579.16
2004	68721.4	5736.9	3.9	32138.65
2005	85707.1	7916.9	3.4	34797.60
2006	98718.8	9906.5	3.6	11235.54
2007	114017.6	9635.2	4	16475.09
2008	127746.9	10810.8	3.3	19276.80
2009	148137.1	12102.1	3.9	22388.33
2010	10478.1	770.5	1.7	24190.07
2011	16137.4	912.59	1.9	25377.49

Source: CBS and TC, Republic of Sudan

However, the real values of variables used in this study is simply calculated as the nominal values of the variable in table (4.1) above divided by consumer price index (CPI). Thus the following table shows the real values of government expenditure and GDP, in addition to tax as percentage of GDP.

Year	Y	G	T
1996	0.8	0.1	1.7
1997	0.6	0.0	1.9
1998	0.6	0.1	1.9
1999	0.7	0.0	2.0
2000	0.7	0.0	3.0
2001	0.8	0.1	3.9
2002	0.9	0.1	4.0
2003	1.0	0.1	3.8
2004	1.1	0.1	3.9
2005	1.2	0.1	3.4
2006	1.4	0.1	3.6
2007	1.6	0.1	4
2008	1.7	0.1	3.3
2009	1.9	0.1	3.9
2010	2.1	0.2	1.7
2011	2.5	0.3	1.9

Source: own calculation based on data from table 4.1

Applying ordinary least squares (OLS) technique to the data covering the period (1996 – 2011) on the variables mentioned above, we estimated the linear form of equation (1), The regression results are given in equation (3), where the figures inside the brackets are the t-ratios of the estimated parameters:

$$Y = 7.124 G + 0.163 T \quad (3)$$

(6.173)    (3.624)

$$R = 0.934 \quad F = 99.797 \quad DW = 1.197$$

Equation (3) is statistically significant at the 5% level of confidence as indicated by the (F) ratio. The value of  $R^2$  suggests that 93% of the variation in economic growth (Y) is explained by variations in the government expenditure (G) and taxation (T). The Durbin-Watson statistic indicates the absence of serial correlation in the model at the 5% level.

## 5. CONCLUSION

The purpose of this study is to investigate the role of fiscal policy on economic growth in Sudan over the period (1996-2011). Annual time series data has been used in the analysis to estimate the model. We choose real GDP as measurement of economic growth, government expenditure as well as taxation as main tools of fiscal policy. The data of study were obtained from central bureau of statistics and taxation chamber in republic of Sudan. The results showed the important role that played by fiscal policy on economic growth in Sudan during the study period.

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