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THE RELATIONSHIP BETWEEN PUBLIC EXPENDITURE AND ECONOMIC GROWTH IN SOUTH SUDAN

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Abstract

Existing studies on the relationship between public expenditure and economic growth have shown conflicting results over time, this means that there is no clear explanation for this relationship. This study therefore examined the relationship and dynamic interactions between the composition of public expenditures and economic growth in South Sudan. Gross Domestic Product (GDP Per Capita) was used as a proxy for economic growth in the study. The study used regression model for panel data to analyze the data. Random effect was found to be the efficient model after the Hausman test results; panel unit root tests and Granger Causality were exploited. The study used secondary data spanning from 2006 to 2014 showing a lot of limitation in the study time due the status of South Sudan as the world's youngest state. The findings showed that public expenditure on infrastructure, productive sector and security are positive determinant of economic growth on the other hand government expenditure on social services sector is found to have a negative impact on economic growth. The study therefore recommended among others that: there should be effective channeling of public funds to sectors which support growth.

Keywords: Public expenditures, Infrastructure sector, Productive sector, Social services sector, Security sector, Random effect model

INTRODUCTION

The correlation between government expenditure and economic growth has continued to generate series of debates in the economic literature. Two main theories that explain the long run relationship between the two variables; one is Wagner's law and another is Keynesian hypothesis. These two theories observe practical relationship between two variables in different perspective. Wagner's law considers public expenditure as endogenous factor that is driven by national income. In contrast to it Keynesian hypothesis consider public expenditure as exogenous variable that influences economic growth.

To be exact, while Wagner's law establishes that causality runs from economic growth to public expenditure, Keynesian view establishes direction of causality to be from public expenditure to economic growth. Knowledge of precise direction of causality has important policy implications. If casualty were Wagnerian then public income should be treated as important policy variable while public expenditure is downgraded to a passive role. On the other hand if causality supports Keynesian view public expenditure becomes an important policy variable as was experienced during 1930's great depression in the Western industrialized world.

Government activity may directly or indirectly increase total output through its interaction with the private sector. Lin (1994) outlines some important ways in which government can increase growth. These include provision of pubic goods and infrastructure, social services and targeted intervention (such as export subsidies).

Economic growth is an essential ingredient for sustainable development. Economic growth brings about a better standard of living of the people and this most a time is brought about by improvement in availability of infrastructures, access to food, health, housing, education. These sectors are very important in stimulating the economic activities as well as addressing the nation's human development and thereby bringing about sustainable development.

Economic growth also can be used as a gauge to evaluate the performance of the economic development of a country. Economic growth is closely related to the economic situation in the long term and reflects the occurrence of expansion in economy because of government expenditure. Rapid economic growth would be vital to increase income and job opportunities for the people. To enable economic growth to be maintained at a high-level, one of the important factors which need to be enhanced is government expenditure.

Government expenditure is one of the important tools which contribute to the economic growth of a nation including South Sudan. Government expenditure includes the allocation provided by the government to carry out various government projects with a desire to enhance

the growth of the country's economy. Most of the government expenditures are funded by the tax revenue collected by the government.

Public expenditure policies aimed at increasing public expenditure productivity, though not sufficient, is desirable. Many researchers have examined the effects of aggregate public expenditure on economic growth with mixed results: same support the hypothesis that the share of public spending is negatively associated with economic growth (Egbetunde and Fasanya (2013) Yasin, (2000)); others have found that public spending is positively correlated with economic growth (Shafuda (2015). In general, as noted by Levine and Renelt (1992), studies on the relationship between aggregate public expenditure and economic growth have not yielded robust results. In fact they are very sensitive to small changes in model specification.

This has to, and rightfully too, a number of studies testing the effects of certain public expenditure components on economic growth. These results have also been contradictory,for example most studies have found a strong correlation between Health care and growth Alshahrani and Alsadiq(2014) Muhammed.andAsfaw (2014) and Nurudeen and Usman (2010) while, in contrast, others have reported a statistically insignificant relationship between economic growth and public investment (Barro (1991).

Overview of South Sudan Economy

The Republic of South Sudan became the world's newest nation and Africa's 55th county on July 9, 2011, following a peaceful secession from the Sudan through a referendum in January 2011. As a new nation, South Sudan has the dual challenge of dealing with legacy of more than 50 years of conflict and continued instability, along with huge development needs. Formal institutions are being built from a very low base and the capacity of government to formulate policy and implement programs is limited, but growing.

South Sudan has significant oil wealth, which if effectively used to drive development, could provide the basis for progress in the coming years. Unfortunately, the nearly two – years long conflict, which broke out in Juba on December 15, 2013 and later engulfed six of the 10 states of the county, deteriorate development gains achieved since independence and worsened the humanitarian situation. It is now expected that the Compromise Agreement on the Resolution of the Conflict in the Republic in South Sudan, signed by President of the Republic of South Sudan and the Opposition in August 2015, will put in place the necessary framework for peace and security, and lead to longer - term development and prosperity.

Although South Sudan has vast and largely untapped natural resources, beyond a few oil enclaves, it remains relatively undeveloped, characterized by a subsistence economy. South Sudan is the most oil-dependent County in the world, with oil accounting for almost the totality of

exports, and around 60% of its gross domestic product (GDP). On current reserve estimates oil production is expected to reduce steadily in future years and to become negligible by 2035.

The county's growth domestic product (GDP) per capita in 2014 was $1,111. Outside the oil sector, livelihoods are concentrated in low productive unpaid agriculture and pastoralists work, accounting for around 15% of GDP. It's noted that, 85% of the working population is engaged in non- wage work, chiefly in agriculture (78%). Since late 2014, the decline in the oil price has further exacerbated the economic hardship of South Sudan. It is estimated that the current conflict has cost up to 15% of the potential GDP in 2014.

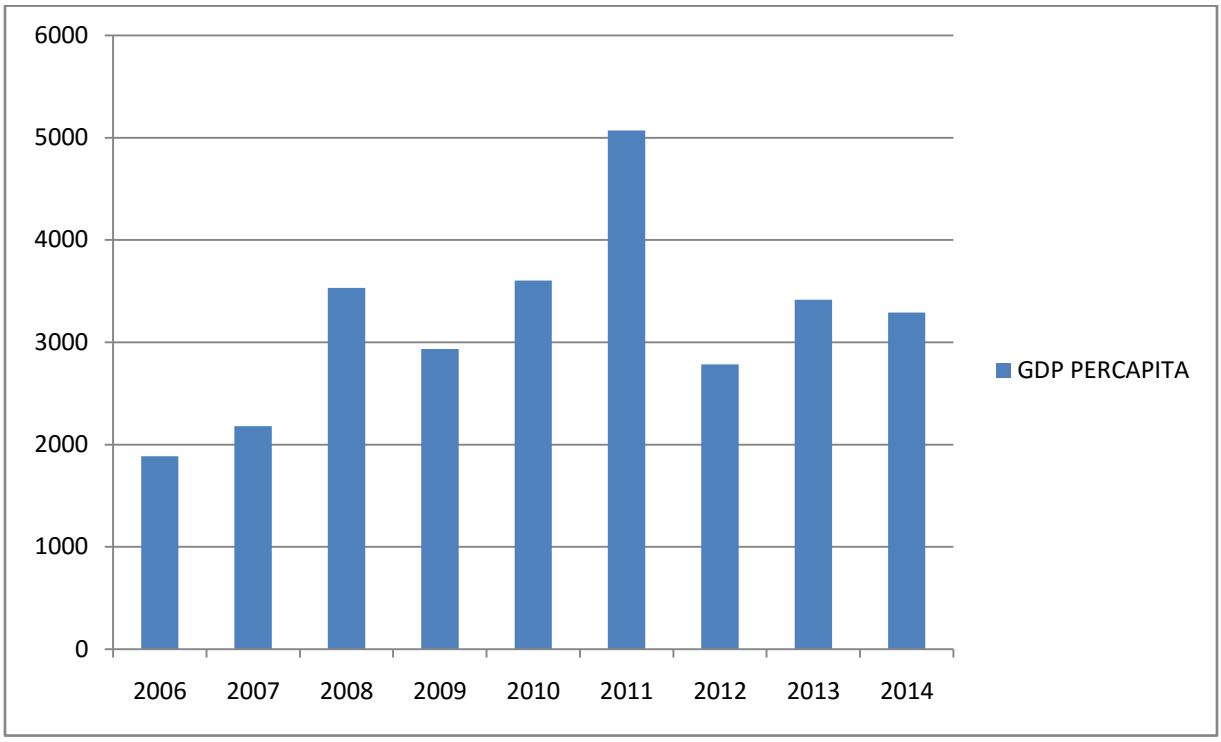
Military expenditure has increased, jeopardizing the availability of resources for service delivery and capital spending on much needed infrastructure. Oil production has fallen by around 201% due to the conflict, and is expected to remain at 165,000 barrel/day up to the end of FY2015/16.

The recent decline in oil prices from $110 per barrel to less than $50 per barrel has further aggravated the losses of oil revenue, and has had a negative impact on macro-budgetary indicators, requiring painful fiscal adjustments. The current account has deteriorated considerably leading to depreciation of the parallel exchange rate and fueling inflation. The low level of foreign reserves can negatively affect food imports with further knock on effects on food intakes, notable during the "lean season," which runs between April and October. The incidence of poverty has also worsened, from 44.7% in 2011 to more than 57.2% in 2015, with a corresponding increase in the depth of poverty.

The county is very young with two thirds of the population under the age of 30. Almost 83% of South Sudanese resided in rural area before the outbreak of the recent conflict, which has displaced more than 2 million people. Only 27% of the population aged 15 years and above is literate, with significant gender disparities: the literacy rate for males is 40% compared to 16% for females. The infant mortality rate is 105 (per 1,000 live births), maternal mortality rate is 2,054 (per 100,000 live births), and only 17% of children are fully immunized. Fifty – five percent of the population has access to improved sources of drinking water. Around 38% of the population has to walk for more than 30 minutes one way to collect drinking water, and some 80% of South Sudanese do not have access to any toilet facility. The government began earnestly working on the development of Southern Sudan (as it was then known) after the signing of the Comprehensive Peace Agreement (CPA) in July 2005, with the support of development partners. However, the task was extremely challenging with large parts of the country remaining isolated for up to six months of the year due to the rainy season and poor road conditions which made access close to impossible. Nevertheless, the country had begun to post improved results, particularly in health and primary education in the years following the

2005 CPA, and the resumption of the oil flows in 2013 was expected to boast economic growth significantly. However, the impact of the conflict on the population and the breakdown in services has had deep economic and social consequences for a county where human development is already among the worst in the world (Source, National Bureau of Statistic).

Figure 1. GDP Percapita



Source: WDI, South Sudan GDP

Statement of the problem

South Sudan has been running its economy since the Comprehensive Peace Agreement (CPA) signed in 2005. Public expenditures have been on rise. In the early years of the CPA, the government was able to spend a reasonable share of its resources on capital, but since 2008 the investment share has been declining.

In 2006 and 2008, capital expenditures were above 25% of the total, and after 2008, the capital share started gradually declining reaching below 20% in 2010 and 2011, and 17% in the first 6 months of 2012, Capital expenditure decreased only in relative terms. In USD equivalent, capital expenditure decreased in 2009, in correspondence of a sharp decrease in oil revenue, due to falling oil prices, and then increased gradually, but less than current expenditure. The budgeted amounts for capital expenditures show even a more dramatic decline in the last three budgets, going from 17% in the FY2011/12 budget to 6% in the FY2012/13 budget

demonstrating how capital expenditures bore the brunt of the fiscal austerity adjustment. In fact capital expenditures have been cut by 80% in the FY2012/13 budget, compared to 22% for salaries, 9% for transfers, and other expenditures have been cut by 47%. This is largely expected as it is easier to cut investment spending than to reduce salary payments in the face of temporary revenue shortfalls.

The declining share of capital expenditures from 2009 to 2011 was actually accompanied also by a reduction in the share of the wage bill (the wage bill increased, but at a slower pace than overall expenditures, hence lowering its share). However, because of their rigidity, the share of wages and salaries went up again in the context of the last austerity budget, as they are difficult to cut. This seems to indicate that the level of the wage bill, which is on the very high side by international standards, needs to be addressed structurally to allow for a more investment – and growth – oriented budget in the years to come (Source; Ministry of Finance).

Operating expenditures are high, at around 40 percent of total expenditure, and they have been growing in the last few years. It will be important to analyze, and in case re –classify, operating expenditures, which often include many wage and salary elements and transfers. It may also be necessary to identify areas for cost savings and rationalization. (Source, Ministry of Finance) The lack of studies on the relationship between government expenditure components on economic growth in newly independent, fragile and conflict ridden state of South Sudan motivated this study.

General research objective

To examine the relationship between public expenditure and economic in growth South Sudan

Specific research objectives

I. Analyze the relationship between public expenditure on infrastructure sector and economic growth in South Sudan.
II. To examine the relationship between Production sector expenditure by the government and economic growth in South Sudan
III. Investigate the relationship between public expenditure on social service sector and economic growth in South Sudan.
IV. Investigate the relationship between public expenditure on security sector and economic growth in South Sudan.

Research Hypotheses

I. H01: Public expenditure on infrastructure sector has no significant contribution on economic growth in South Sudan

   H1:1, Public expenditure on infrastructure sector has significant contribution on economic growth in South Sudan

II. H02: Public expenditure on Productive sector contributes negatively on economic growth in South Sudan

   H1:2, Public expenditure on Productive sector contributes positively on economic growth in South Sudan

III. H03: Public expenditure on social service sector contributes negatively on economic growth in South Sudan

   H1:3, Public expenditure on Social Services sector contributes positively on economic growth in South Sudan

IV. H04: Public expenditure on security sector has a negative contribution on economic growth in South Sudan

   H1:4, Public expenditure on security sector has positive contribution on economic in South Sudan

Justification

This study is to develop an analytical framework for determining relationships the between various government expenditures components and economic growth. This is with a view to assist the policy makers have an empirical knowledge of determining the economic components allocation of public funds and avoid intuition in making expenditure decisions which mostly lead to disastrous economic consequences. This study has never been done in South Sudan. Thus, it is very important to look at trends, levels and composition of public expenditures, being aware of the fact that optimally directing this expenditure that have positive relation with economic growth and eliminating expenses that have negative relation, and separating the neutral ones are necessary.

Scope

This study used panel data for the period 2006 to 2014. The study examined funds allocation going to the various components of the economy. This study is organized into five chapters. In chapter one, the study examined the background of the study, the public expenditure policy in South Sudan, profile of public expenditure and an overview of GDP (per capita) growth for the period of the study. Chapter two of the study contains Literature Review, The Theoretical,

Empirical and a summary of the Literature. Chapter three focused on research design, study population, data collection and procedure, data analysis and model specification procedure, data processing and analysis. Chapter four emphasized on research finding and discussion. Chapter five concentrated on summary, conclusion and recommendations.

LITERATURE REVIEW

Theoretical literature

There are several theories .which explain the relationship. The theories which explain this relationship includes: Wagner's law, Peacock- Wiseman's model, Rostow- Musgrave's model.

The Keynesian theory

The Keynesian model indicates that during recession a policy of budgetary expansion should be undertaken to increase the aggregate demand in the economy thus boosting the Gross Domestic Product (GDP). Keynes regards public expenditures as an exogenous factor which can be utilized as a policy instruments to promote economic growth. From the Keynesian thought, public expenditure can contribute positively to economic growth. Hence, an increase in the government consumption is likely to lead to an increase in employment, profitability and investment through multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers. In economic theory, it appears as Harrod-Domar Keynesian theory of growth or simply, Harrod – Domar growth model. A mathematical equation of this model: $y = f(k,s)$ shows the existence of a direct relationship between savings and the rate of economic growth.

The Big Push Theory

The Big Push Theory has been presented by Paul Rosenstein Rodan (1943). The idea behind this theory is that a big push or a big and comprehensive investment package can be helpful to bring economic development. In other words, a certain minimum amount of resources must be devoted for developmental programs, if the success of programs is required.

The theory of the model emphasizes that underdeveloped countries require large amounts of investments to embark on the path of economic development from their present state of backwardness. As some ground speed is required for the aircraft to airborne, in the same way, certain critical amount of resources must be allocated for development activities. This theory is of the view that through 'Bit by Bit' allocation no economy can move on the path of economic development, rather a specific amount of investment is considered something

necessary for economic development. Therefore, if so many mutually supporting industries which depend upon each other are started, the economies of scale will be reaped. Such external economies which are attained through specific amount of investment will become helpful for economic development.

The Endogenous Growth Theory

Paul Romer and Robert Lucas (1990) are the principal authors of the endogenous growth theory. The theory highlights the fact that if productivity is to increase, the Labour force must continuously be provided with more resources. Resources include physical capital, human capital and knowledge capital (technology).

Growth in this model is driven by technological change that arises from intentional investment decisions made by profit maximizing agents. The distinguishing feature of the technology as an input is that it is neither a conventional good nor a public good; it is a no rival, partially excludable good. Because of the no convexity introduced by a no rival good, price-taking competition cannot be supported, and instead, the equilibrium is one with monopolistic competition. The main conclusions are that the stock of human capital determines the rate of growth, that too little human capital is devoted to research in equilibrium, that integration into world markets will increase growth rates, and that having a large population is not sufficient to generate growth.

The idea behind endogenous growth theory can be seen most easily by considering the production function, $Y = AK$, which did not make an explicit distinction between capital accumulation and technological progress. In conclusion it lumped together the physical and human capital whose accumulation is studied by neoclassical theory with the intellectual capital that is accumulated when innovations occur.

The Wagner's Law/ Theory of Increasing State Activities

Adolph Wagner (1835-1917) was a German economist who based his Law of Increasing State Activities on historical facts, primarily of Germany. Wagner advanced his 'law of rising public expenditures' by analyzing trends in the growth of public expenditure and in the size of public sector. Wagner's law postulates that: (i) the extension of the functions of the states leads to an increase in public expenditure on administration and regulation of the economy; (ii) the development of modern industrial society would give rise to increasing political pressure for social progress and call for increased allowance for social consideration in the conduct of industry (iii) the rise in public expenditure will be more than proportional increase in the national income (income elastic wants) and will thus result in a relative expansion of the public sector.

Thus, in the initial stage of economy growth, the state finds out that it has to expand its activities quite fast in several fields like education, health, civil amenities, transport, communications, and so on. But when the initial deficiency is removed, then the increase in state activities many be slowed down. The factors, which contribute to the tendency of increasing public expenditure, relate to a growing role of the state in ever-increasing socio-economic complexities of modern society.

Rostow - Musgrave Theory

Musgrave framework, states that fiscal policy influences economic growth through its impact on allocate efficiency, the stability of the economy and the distribution of income. Musgrave (1999) carried out a research on growth of public expenditure and concluded that, at the early stages of economic development, the rate of growth of public expenditure will be very high because government provides the basic infrastructural facilities (social overheads) and most of these projects are capital intensive, therefore, the spending of the government will increase steadily. The investment in education, health, roads, electricity, water supply are necessities that can launch the economy from the practitioner stage to the take off stage of economic development, making government to spend and increasing amount with time in order to develop an egalitarian society.

Peacock and Wiseman's Political constraint theory

Wiseman and Peacock in their study of public expenditure in UK for the period 1890-1955 revealed that public expenditure does not increase in a smooth and continuous manner, but in jerks or step like fashion. At times, some social or other disturbance takes place creating a need for increased public expenditure which the existing public revenue cannot meet. While earlier, due to an insufficient pressure for public expenditure, the revenue constraint was dominating and restraining an expansion in public expenditure, now under changed requirements such a restraint gives way. They founded their analyses upon a political theory of public determination namely that governments like to spend more money and citizens do not like to pay taxes, and that government need to pay some attention to the wishes of their citizens. The duo saw taxation as setting a constraint on government expenditure. As the economy and thus incomes grew, tax revenue at constant tax rate would rise, thereby enabling public expenditure would show a gradual upward trend even although within the economy there might be a divergence between what people regarded as being desirable level of public expenditure and the desirable level of taxation. During the periods of social upheaval however, this gradual upward trend in public expenditure would be disturbed.

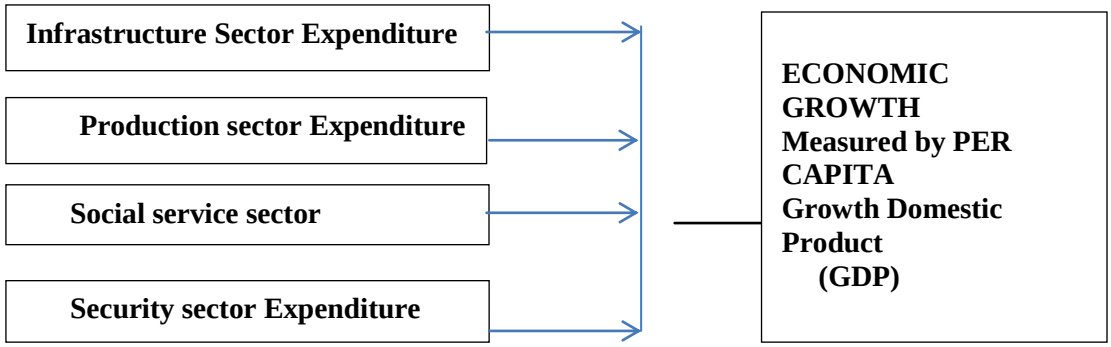
The public expenditure increases and makes the inadequacy of the present revenue quite clear to everyone. The movement from the older level of expenditure and taxation to a new and higher level is the displacement effect. The inadequacy of the revenue as compared with the required public expenditure creates an inspection effect. The government and the people review the revenue position and the need to find a solution of the important problems that have come up and agree to the required adjustments to finance the increased expenditure.

They attain a new level of tax tolerance. They are now ready to tolerate a greater burden of taxation and as a result the general level of expenditure and revenue goes up. In this way, the public expenditure and revenue get stabilized at a new level till another disturbance occurs to cause a displacement effect. Thus each major disturbance leads to the government assuming a larger proportion of the total national activity. In other words, there is a concentration effect. The concentration effect also refers to the apparent tendency for central government economic activity to grow faster than that of the state and local level governments.

Conceptual Framework

The study aims at investigating the relationship between public expenditure and economic growth in South Sudan. The study is conceptualized in the framework below.

Figure 2. Conceptual Framework



Empirical Review

The empirical review primarily focused on the impact of public expenditure on economic growth in developing countries.

GDP (per capita)

Growth domestic product (GDP) per capita is a core indicator of economic performance and commonly used as a broad measure of average living standard or economic wellbeing.

Infrastructure sector

An adequate supply of infrastructure services has long been viewed as a key ingredient for economic development, both in the academic literature (starting with the work of Aschauer 1989) as well as in the policy debate (World Bank 1994). Over the last two decades, academic research has devoted considerable effort to theoretical and empirical analyses of the contribution of infrastructure development to growth and productivity. More recently, increasing attention has been paid also to the impact of infrastructure on poverty and inequality (Estache, Foster and Wodon 2002, World Bank 2003, 2006). While the empirical literature on these two topics is far from unanimous, on the whole a consensus has emerged that, under the right conditions, infrastructure development can play a major role in promoting growth and equity and, through both channels, helping reduce poverty.

There are many concrete indications that deficient infrastructure hampers Africa's development in a variety of ways. Diao and Yanoma (2003) show that growth in the agricultural sector is constrained by high marketing costs, which largely reflect poor transport (as well as other infrastructure) facilities. Estache and Vagliasindi (2007) argue that an insufficient power generation capacity limits growth in Ghana. Lumbila (2005) finds that deficient infrastructure may hinder the growth impact of FDI into Africa. In addition, access to infrastructure services is critical for improving the economic opportunities of the poor (Estache 2003, World Bank 2006), and therefore the deficient quantity and quality of Africa's infrastructure is potentially a major obstacle for poverty reduction across the region.

Productive Sector

Seeking to answer the question, 'why are some countries performing better than others?'Cervantes-Godoy&Dewbre (2010) looked for shared characteristics of twenty-five developing countries posing extraordinary success in reducing extreme poverty over the past twenty to twenty-five years.

These countries were compared using indicators of their macroeconomic characteristics and, especially, their agricultural economic characteristics. The countries chosen for analysis constitute a highly diverse mix. The group includes some of the poorest and some of the richest developing countries in the world, representing virtually all geographic regions. Their findings from time-series, cross-section regression analysis, reveal that while economic growth generally was an important contributor to poverty reduction, the sector mix of growth mattered substantially, with growth in agricultural incomes being especially important.

Social Services sector

Social Services are very important for promoting inclusive growth, they affect development in four ways (Adlung 2007; Mattoo and Payton 2007;Qureshi and teVelde 2007): directly, through effects on national incomes and employment (services often constitute the majority or main source of incomes); directly, through effects on range and quality of social services, such as health and education; indirectly, through effect on investments climate, including through transport systems, communication services and energy services.

Improvements in health can enhance workers' productivity by increasing their physical capacities, such as strength and endurance, as well as their mental capacities, such as cognitive functioning and reasoning ability; evidence of this link is increasing at the microeconomic level (Bloom and Canning 2005).There are plausible pathways through which health can influence the pace of income growth at the macroeconomic level also, via its effects on labor market participation, worker productivity; investments in human capital, savings and population age structure (Commission on Macroeconomics and Health 2001). Moreover, since growth is one of the most important determinants of poverty reduction, and since poor health often constrains the productivity of the poor, improvements in health are likely to be particularly beneficial for poverty reduction as well.

Security Sector expenditure

Citizen security is a key dimension. Crime and violence are increasingly recognized as serious obstacles to the formation of social and human capital formation and sustainable economic development (CEPAL 2011), investment, and economic growth (WEF 2011). Increased levels of crime and victimization destroy social capital by fomenting social mistrust, weakening societal unity, and contributing to generalized fear and the erosion of institutions, which are the basic requisites for the collective action needed for development.

Critique of literature

Many studies have aimed at estimating the effects of public expenditure on economic growth. Empirical studies have yielded conflicting results: some support the hypothesis that a rise in the share of public spending is associated with a decline in economic growth. Others have found a positive correlation between economic growth and public spending and still other studies have found no significant relationship. Results and evidence differ by country/region, analytical method employed, and categorization of public expenditures. In general, studies of the relationship between aggregate public expenditure and economic growth have not yielded

robust results, as the results of many are sensitive to small changes in model specification (Levine and Renelt (1992)).

Unfortunately there is no literature available that discusses the effect of public sector expenditure on economic growth in South Sudan. The objective of this paper is to conduct empirical analysis over the effect and direction of relationship between the four fundamental sectors of South Sudanese economy, Infrastructure, Productive, Social Service and Security.

Research Gap

Literature on the relationship between public expenditure and economic growth in South Sudan and other fragile, war affected countries in general, is insufficient as most studies have largely focused on developed countries and stable developing countries. This study aims at filling the gap by using the recent data to analyses the relationship between public expenditure and economic growth in fragile, and under develop South Sudan.

METHODOLOGY

Research Design

Research design is the blueprint for fulfilling objectives and answering questions (Cooper and Schindler, 2014). Here, causal research is chosen as the type of research based upon the purpose of this research is to find out the relationship between the independent variables and dependent variable

Study Population

Target population in statistics is the specific population about which information is desired According to Cooper and Schindler (2003), a population is a well – defined or set of people, services, elements and events, group of things or households that are being investigated. This definition ensures that population of interest is consistent. This study targeted public expenditure in South Sudan on sectorial budgetary allocations, mainly, Infrastructure sector, Productive Sector, social service and security sector as the independent variables and per capita (GDP) as the dependent variable. The data has investigated the whole study period from 2006-2014 and for that reason sampling was not undertaken.

Data Collection and procedure

This study used secondary data for the period 2006 -2014 due to availability of the data used in this research. Data was extracted from World Bank Index (WDI), National Bureau of statistic and the Ministry of Finance and Economic Planning.

Data processing and analysis

Panel Unit root test for stationarity (Levin, Lin & Chu)

The study made use of secondary panel data and the data was checked for consistency and suitability through a number of statistical measures. The data becomes stationary the first differences for the entire variables. Data analysis software, EViews (Econometric Views) version 8 was used to analyze the data collected in this study.

Hausman test

Hausman test was carried out to choose between the fixed or random effects estimators. Secondly, The Hausman Test for endogeneity can help us determine whether or not there is some form of omitted variable biased in this regression.

Model Specification

The framework for the study was used based on the Keynesian and endogenous growth models. The Keynesian model states that expansion of government expenditure accelerates economic growth. Although, endogenous growth models do not assign any important role to government in the growth process, they focus on the components of government expenditure that are productive or unproductive with the composition of government expenditure exerting more influence compare to the level of government Expenditure.

The Keynesians model economic growth as a function of public expenditure. It defines total public expenditure as a function of summation of all individual government expenditure in all components.

The modification of the model helped to investigate the relationship between government expenditure on economic growth. The level of government expenditure and composition of government expenditure are important determinants of growth. Thus, the model expresses economic growth (GDP) as a function of various levels and components of government expenditure that include total Infrastructure (FRA), Productive (PRO), Social Services (SOS) and Security (SEC).

Thus, the growth model is specified as:

$$GDP = F(EXFRA, EXPROD, EXSOSE, EXSEC \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where:

GDP = Growth Domestic Product.

FRA = Expenditure on Infrastructure sector

PROD = Expenditure on Production sector

SOS = Expenditure on social Services sector

SEC = Expenditure on Security sector

$\varepsilon t =$ Refers to error tem

The above equation is converted into linear form and the result is indicated below:

$$GDP_t = \beta_0 + \beta_1 FRAS_t + \beta_2 PROD_t + \beta_3 SOS_t + \beta_4 SEC_t + \varepsilon_t .....(2)$$

β0 captures all other explanatory variables which affect growth, but are not captured in the model and β1; β2; β3; β4; are the parameter coefficients of economic growth with respect to FRAS, PRO, SOS and SEC respectively.

RESEARCH FINDINGS AND DISCUSSION

Stationarity test

The initial step is to conduct the stationarity test and this is achieved by running Levin, Lin and Chu panel unit root test due to nature of the data as shown in table

Table 1: Panel Unit root test for stationarity (Levin, Lin & Chu)

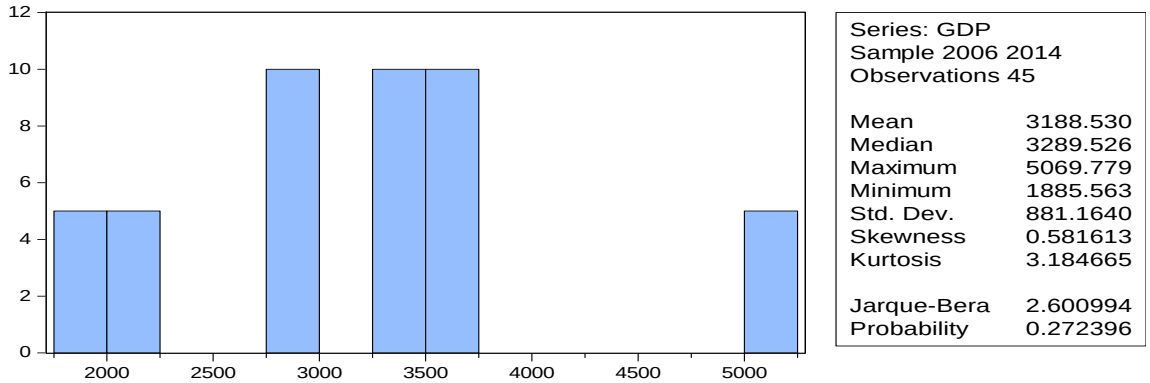
Variables	T.Statistic	P.value	Order of Integration
D(GDP)	-8.13283	0.0000	FIRST DIFFERENCE
D(FRAS)	-8.86880	0.0000	FIRST DIFFERENCE
D(PROD)	-10.8220	0.0000	FIRST DIFFERENCE
D(SOS)	-7.85730	0.0000	FIRST DIFFERENCE
D(SEC)	-6.19566	0.0000	FIRST DIFFERENCE

To empirically confirm that the variables are non-stationary, Levin, Lin & Chu (LLC) was used to test the stationary of the data. The result indicates that all the variables are non-stationary in levels; first difference of the variables was performed to achieve stationary of the variables implying that the variables are integrated to order one -I(1).

Normality Test

The Jarque-Bera statistic was used to test for normality with the result of the probability value of 0.27% for the residuals in the regression; therefore we accept the null hypotheses that the data is normally distributed.

Figure 3. Normality test



Test for Causality

To realize this objective, granger-causality statistic was used with two lags. The null hypothesis is rejected when the probability value is less than 5%.

Table 2: The results of pair wise causality tests

Pairwise Granger Causality Tests
Date: 05/16/16 Time: 21:18 Sample: 2006 2014 Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LFRAS does not Granger Cause LGDP	35	4.90348	0.0144
LGDP does not Granger Cause LFRAS		21.7127	1.E-06
LPROD does not Granger Cause LGDP	35	7.49151	0.0023
LGDP does not Granger Cause LPROD		57.2062	6.E-11
LSOS does not Granger Cause LGDP	35	0.54916	0.5831
LGDP does not Granger Cause LSOS		3.63263	0.0387
LSEC does not Granger Cause LGDP	35	20.3762	3.E-06
LGDP does not Granger Cause LSEC		2.91010	0.0700
LPROD does not Granger Cause LFRAS	35	126.515	2.E-15
LFRAS does not Granger Cause LPROD		6.46775	0.0046
LSOS does not Granger Cause LFRAS	35	3823.18	8.E-37
LFRAS does not Granger Cause LSOS		4.36634	0.0217
LSEC does not Granger Cause LFRAS	35	107.259	2.E-14
LFRAS does not Granger Cause LSEC		1.70975	0.1981
LSOS does not Granger Cause LPROD	35	24.7154	5.E-07
LPROD does not Granger Cause LSOS		5.74724	0.0077
LSEC does not Granger Cause LPROD	35	9.07403	0.0008
LPROD does not Granger Cause LSEC		0.90560	0.4151
LSEC does not Granger Cause LSOS	35	3.95685	0.0298
LSOS does not Granger Cause LSEC		1.65008	0.2090

The estimated results show that public expenditures on infrastructure cause GDP at the same time public expenditure on productive sector causes GDP. It is also noted that GDP causes public expenditure social services. Infrastructure causes public expenditure on productive sector and social services, whilst productive expenditures cause social service, security cause productive and social services. Generally, the results show that there is causality between GDP and most of the public expenditures in South Sudan.

Regression model estimation results

Random effect was chosen as the efficient model after the Hausman test was carried to determine whether the public expenditure correlate to economic growth and the following results were found after estimating the regression equation.

LGDP = -4.83438748043 + 0.308643374196*LFRAS + 0.151795161897*LPROD - 0.0803049961136*LSOS + 0.254626651475*LSEC + Error term

Table 3: Regression model results

Dependent Variable: LGDP
Method: Panel EGLS (Cross-section random effects)
Date: 05/16/16 Time: 21:23
Sample: 2006 2014
Periods included: 9 Cross-sections included: 5
Total panel (balanced) observations: 45
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.834387	1.064480	-4.541550	0.0001
LFRAS	0.308643	0.051766	5.962249	0.0000
LPROD	0.151795	0.071291	2.129231	0.0394
LSOS	-0.080305	0.154770	-0.518867	0.6067
LSEC	0.254627	0.116722	2.181478	0.0351

	Effects Specification	S.D.	Rho
Cross-section random		0.000000	0.0000
Idiosyncratic random		0.131731	1.0000

	Weighted Statistics		
R-squared	0.816111	Mean dependent var	8.030081
Adjusted R-squared	0.797722	S.D. dependent var	0.277865
S.E. of regression	0.124971	Sum squared resid	0.624706
F-statistic	44.38052	Durbin-Watson stat	2.652747
Prob(F-statistic)	0.000000		

	Unweighted Statistics		
R-squared	0.816111	Mean dependent var	8.030081
Sum squared resid	0.624706	Durbin-Watson stat	2.652747

The estimation results reveal that the independent variables jointly account for approximately 81.61% changes in economic growth. The adjusted R2 of 79.77% of changes in South Sudan's GDP is explained by the variation in the explanatory variables (the model).

The Durbin Watson statistic is used to test the existence of serial correlation between the variables. It should be noted that the optimum value for Durbin-Watson (DW) which refers to no serial correlation is (2); and since the estimation output reveals that the DW reaches a value of (2.65), this mean that we reject having a serial correlation

The findings showed that public expenditure on infrastructure sector was highly significant and positive determinant of economic growth. Expenditures on productive sector were positive determinants of economic growth. On the other hand public expenditure on social services sector is found to be a negative determinant of growth. Security sector were found to be positive determinants of economic growth.

If all the explanatory variables included in the model are zero at certain time period then the value of the dependent variable (GDP) will be equal to the constant term which in this case is -4.834387.

A unit percentage increase in public expenditure on infrastructure increases economic growth by 0.30% also a unit percentage increase in public expenditure on security would increases economic growth by 0.25%. Unit percentage increase on public expenditure on social services sector would negatively affect economic growth by -0.80%. A unit percentage increase in productive sector would increases economic growth by 0.15%.

SUMMARY

Infrastructure sector: According to the findings of the study it is clear that public spending on infrastructure sector had a positive and statistically significant relationship with growth domestic product (GDP). This implies that spending on the gross fixed capital formation like; roads, railway, dams, schools and hospitals would accelerate the badly need economic growth for the young country.

Since the (P value) is less than (.05); the null hypothesis is rejected and the alternative hypothesis is accepted. Thus, there is a significant relationship between public expenditure on infrastructure sector and economic growth.

Productive sector: The study finds significant relationship between productive sector and economic growth (GDP Since the (P value) less than (.05); the null hypothesis is rejected and the alternative hypothesis is accepted. Thus, there is a significant relationship between public expenditure on productive sector and economic growth.

Social service sector: The study explores a negative relationship between and GDP and the social service sector, this highlighted the progress in education and health made by the country after the independent. Since the (P value) is less than (.05); the null hypothesis is rejected and the alternative hypothesis is accepted. Thus, there is a significant relationship between public expenditure on social services sector and economic growth.

Security Sector: The study finds that there is a positive relationship between GDP and the security sector. Since the (P value) is less than (.05); the null hypothesis is rejected and the alternative hypothesis is accepted. Thus, there is a significant relationship between public expenditure on security sector and economic growth.

CONCLUSIONS

Infrastructure sector has a positive and statistically significant relationship with growth domestic product (GDP). This implies that spending on the gross fixed capital formation like; roads, railway, dams, schools and hospitals would accelerate the need economic growth for the young country.

Productive sector**:** The study finds significant relationship between productive sector and economic growth, therefore spending on agriculture and tourism would accelerate economic growth.

Social service sector**:** The study explores a negative relationship between and GDP and the social service sector, this highlighted a need for government intervention in seems to be mismanagement of fund allocated to this sector.

Security Sector**:** The study finds that there is a positive relationship between GDP and the security sector, for the protection of its people and the investor, security need to be strengthened to facilitate the movement of goods and services in all corners of the country and therefore to attract foreign direct investment(FDI).

The findings show that composition public outlays is positively correlated with economic growth in consistence with findings of Colombier (2011), Bingxin, Shenggen and Anuja (2009), Abu, N., and Abdullahi, U. (2010), Olugbenga and Owoeye (2007) who decisively recognized a correlation between public expenditure and economic growth.

RECOMMENDATIONS

This study used panel data and estimated the regression of random effects model, this means analysis on the co-integration between variables and investigation of the long run and short run

relationships between the variables can be carried out in another study when adequate expenditure data are available for a similar research.

The findings showed that public expenditure on infrastructure, productive and security sectors are significant and positive determinant of economic growth on the other hand public expenditure on social services sector impact economic growth negatively.

The results of this project report emphasis that the composition of public expenditure is important for economic growth; however, the study has not exhausted all the public expenditure components including the States and Counties in South Sudan thus this create another opportunity for further studies. Additionally, since this study stresses that the public expenditure is important for economic growth, the government need to increases budgetary allocations to the sectors which support economic growth to move the country forward whilst encouraging private sector led growth. Excessive efforts should be exerted by the government of South Sudan to improve on social services sector which has shown a negative correlation with economic growth in this study, it's noted that only 27% of population aged 15 and above is literate according to the World Bank and National bureau of statistic, this justified the result of this research, government involvement in the management allocated to this sector for provision of basic service is required for the country to develops it human capital.

LIMITATIONS

This study primarily focuses on relationship between public expenditure and economic growth in South Sudan without checking for distortions and misuse of funds within the components. Secondly, at its fourth year of independent from Sudan, the country has not been able to record enough data on economic growth; this limited the study to only nine years. Therefore, this study has regrouped the ten sectors into four sectors in the following classifications; Infrastructure sector, Production sector (Natural Resources, Economic functions), Social Service sector(Health, Education, Public Administration, Rule of Law, Social and humanitarian and Accountability) and Security sector.

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APPENDICES

South Sudan Growth Domestic Product and Public Expenditures (2006-2014) SSP

YEAR	GDP (PER CAPITA)	FRAS	PRO	SOS	SEC
2006	1885.562906	343,599,067	182,554,145	1,242,339,429	1,204,829,977
2007	2179.725306	160,242,585	171,046,427	902,478,243	1,191,997,153
2008	3531.482208	791,913,683	412,574,023	2,173,370,437	1,882,083,871
2009	2935.829086	512,293,667	279,997,278	1,576,091,832	1,411,438,526
2010	3604.64278	604,295,874	376,018,781	2,536,909,657	1,514,867,147
2011	5069.779399	1,016,768,751	561,507,667	3,874,413,142	3,806,693,987
2012	2785.634294	419,059,983	389,858,974	3,156,434,406	2,847,181,003
2013	3414.586526	395,245,729	244,847,195	3,077,218,125	3,706,297,392
2014	3289.525871	193,527,737	956,428,957	4,200,283,315	5,466,985,830

HAUSMAN TEST RESULT

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	4	1.0000

* Cross-section test variance is invalid. Hausman statistic set to zero.
** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LFRAS	0.308643	0.308643	0.000000	1.0000
LPROD	0.151795	0.151795	0.000000	1.0000
LSOS	-0.080305	-0.080305	0.000000	1.0000
LSEC	0.254627	0.254627	0.000000	1.0000

Cross-section random effects test equation:
Dependent Variable: LGDP
Method: Panel Least Squares
Date: 05/16/16 Time: 21:24
Sample: 2006 2014
Periods included: 9
Cross-sections included: 5
Total panel (balanced) observations: 45

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.834387	1.064480	-4.541550	0.0001
LFRAS	0.308643	0.051766	5.962249	0.0000
LPROD	0.151795	0.071291	2.129231	0.0401
LSOS	-0.080305	0.154770	-0.518867	0.6070
LSEC	0.254627	0.116722	2.181478	0.0358

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.816111	Mean dependent var	8.030081
Adjusted R-squared	0.775246	S.D. dependent var	0.277865
S.E. of regression	0.131731	Akaike info criterion	-1.039260
Sum squared resid	0.624706	Schwarz criterion	-0.677927
Log likelihood	32.38334	Hannan-Quinn criter.	-0.904559
F-statistic	19.97123	Durbin-Watson stat	2.652747
Prob(F-statistic)	0.000000		

RANDOM EFFECT MODEL

Dependent Variable: LGDP
Method: Panel EGLS (Cross-section random effects)
Date: 05/16/16 Time: 21:23
Sample: 2006 2014
Periods included: 9
Cross-sections included: 5
Total panel (balanced) observations: 45
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.834387	1.064480	-4.541550	0.0001
LFRAS	0.308643	0.051766	5.962249	0.0000
LPROD	0.151795	0.071291	2.129231	0.0394
LSOS	-0.080305	0.154770	-0.518867	0.6067
LSEC	0.254627	0.116722	2.181478	0.0351

Effects Specification	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	0.131731	1.0000

Weighted Statistics			
R-squared	0.816111	Mean dependent var	8.030081
Adjusted R-squared	0.797722	S.D. dependent var	0.277865
S.E. of regression	0.124971	Sum squared resid	0.624706
F-statistic	44.38052	Durbin-Watson stat	2.652747
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.816111	Mean dependent var	8.030081
Sum squared resid	0.624706	Durbin-Watson stat	2.652747