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Relationship between Structural Changes and Economic Growth in Kenya

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Abstract:

The prime objective of this study was to investigate the relationship between structural changes and economic growth in Kenya using panel data for the period 1977-2016, that sought to demystify the unknown and uncertain nexus between structural changes and economic growth in Kenya. Some of the factors pointed out in the study include Balance of Trade Structure (BOTS), Public Education Expenditure Structure (PEES), Energy Expenditure Structure (EES) and Wage Employment Structure (WES). The study used both causal research design and ordinary least squares method while data was collected using a data collection sheet which was cleaned and coded. The data was analyzed using multiple linear regressions method, specifically using the Fixed Effects Model of Panel data analysis and Granger Causality analysis in the causal research design. Using the Fixed Effects Model in the study, balance of trade structure was found to have a negative relationship with economic growth and at the same time was insignificant as a variable that can be used to predict economic growth since the coefficient and p-value were -1.63768 and $0.626 > 0.05$ respectively. Public education expenditure structure was found to have had a positive relationship with economic growth though it was established that it was also not significant as a variable in predicting economic growth since its coefficient and p-value were 12.7979 and $0.206 > 0.05$ respectively. Energy expenditure structure was found to have a negative relationship with economic growth though it was found that it was the only variable that was significant in predicting economic growth, since it had a coefficient and p-value of -0.5077 and $0.005 < 0.05$ respectively. Wage employment structure was found to have a positive relationship with economic growth though it was also an insignificant variable in predicting and explaining growth since it had a coefficient and p-value of 1.54817 and 0.197 respectively. Granger causality test was used to determine causality between structural changes and economic growth. Using Lag 6 as the point of long run reference, balance of trade structure, public education expenditure structure and wage employment structure were found to have bidirectional causality with economic growth since at Lag 6, they all had bidirectional p-value of 0.000. Energy expenditure structure was found to have unidirectional granger causality running from energy expenditure structure to economic growth (with $p=0.000 < 0.05$) with non-existing causality running from economic growth ($p=0.184 > 0.05$). Confidence intervals were constructed at 95% confidence level with the assumption that resulting intervals would bracket the true population parameter in approximately 95 per cent of the cases in Kenya.

Keywords: Balance of trade structure, public education expenditure structure, energy expenditure structure, wage employment structure, economic growth, panel data analysis, fixed effects model, granger causality test

1. Introduction

Globally, the history of capitalist economic development postulates that there is an intimate and complex relationship between the processes of economic growth and changes in economic structure (Silva & Teixeira, 2008). The relationship may not be straightforward in the sense that in some countries economic growth causes structural change while in other countries structural change causes economic growth. This is because structural change is the outcome of both initiated and uninitiated processes that reflect the ability of a firm, industry, region or national economy to respond to new competitive pressures and new opportunities (Dietrich, 2009). Thus, on a macro level, a failure to respond to a constantly changing competitive environment can result in economic decline, unemployment and economic inequality (OECD, 2012). This has the implication that the scale of structural change would correlate (with various lags in time) with changes in competitiveness and changes in income and expenditure on initiated programs (at the micro or macro scales). In most countries, there is a constant process of economic restructuring resulting from technological and social change, combined with competitive and comparative advantage which constantly reworks the sectoral, locational and regional dynamics of economic activity in a globalized economy (Dicken, 2010). Among others, one illustration of the process of structural change at the level of the world economy is Kondratieff waves (Freeman and Louçã, 2001). The long wave theory of Kondratieff relates technological change to global economic cycles leading to higher levels of global prosperity, where structural change is a driver of increased returns and the realization of returns that propels better and more production.

In 1963, when Kenya gained independence, it was a period of global economic expansion and stability. The country benefitted from high prices since Commodity prices were generally high. In addition, the country was left with significant foreign exchange reserves (from the colonial regime) and was therefore able to deal with economic instability. The first decade after Independence was,

therefore, a period of vibrancy, economic prosperity and high aspirations (Swamy 1994). In the first decade after independence Kenya made an impressive and tremendous progress in the area of economic development. This is because gross domestic product (GDP) grew by 6.6 per cent, savings and investments were relatively high for its per capita income and the expansion of primary, secondary, tertiary, technical and university enrolment was high and has been generally impressive since 1963 (KNBS, 2014). In academic sphere, for instance, the number of primary schools doubled between 1963 and 1983 while their enrolment rose by almost five times (Ikiara 1990). In secondary school education, the number of schools expanded by almost 14 times between 1963 and 1983, and it has tremendously increased from 7,174 in 2012 to 9,942 schools in 2016 (KNBS, 2017). In some cases, the first ten years of Independence in Kenya are sometimes referred to as the "Golden Years", since they were marked with an impressive record of economic growth. On the contrary, the period 1980-1990 is sometimes referred to as the "lost decade" since it was characterized by severe external and internal difficulties and challenges that began in 1973. Since there was increase of oil prices in 1973, the living conditions of the Kenyan people, just like those of most African countries, moved from bad to worse. In addition to the rise of oil prices in 1970s, Kenya faced many challenges and hardships as a result of the world recession that followed the economic crisis of 1970s. These challenges and hardships included the fluctuating prices of the country's major exports, drought and famine, high population growth, the collapse of the East African Community, high rates of urbanization, increasing debt, low levels of technology, land fragmentation, widespread poverty, disease and ignorance. These factors had a negative impact on the country's economy. For instance, the gross domestic product per capita declined, followed by food shortages and a general decline in standards of living. To alleviate these problems, the state responded through a number of ways. One of them was the implementation of the structural adjustment programs (SAPs) that were introduced during the fiscal years 1980/81 with the aim of adopting SAPs was to restore efficiency in all sectors of the economy and hence raise the rate of economic growth (Central Bureau of Statistics 1997). In Kenya, early SAPs were advocated for by the World Bank, IMF and other western donors, though; SAPs have evolved over the period. Their Initial focus was, on eliminating fiscal and external imbalances and reviving growth in the country. The implementation involved liberalization of market prices and marketing systems; financial sector reforms; government budget rationalization to avoid wastages; reforms in international trade regulation ; implementing divestiture and privatization of parastatals and implementation of civil service reforms (Central Bureau of Statistics 1997b). These elements have long been implemented in varying degrees, since the market is expected to play a critical role in economic growth. Through adjustment process, structural adjustment programmes emphasized market liberalization in addition to fair market competition and the development of a progressively vibrant private sector (KNBS 2007, 2009). The fundamental ingredients of structural adjustment programmes are based on an economic model of private ownership (in terms of consumption, savings and investments), competitive markets (with forces of demand and supply being the key decision makers) and an outward-oriented (favourable Balance of Payment) development strategy. Some of the most outstanding reforms that were undertaken by the Kenyan government then include decontrol of interest rate and foreign exchange rates, price decontrols; liberalization of foreign trade; decontrol of customer and producer prices. In Kenya, these came to be known as externally initiated structural adjustment programs.

In the wake of multiparty democracy in Kenya from 1992, there have been self initiated structural adjustments in Kenya. For instance, there was the desire to increase exports to alleviate the balance of trade problems. In addition the Kenyan government has always increased its funding to the education sector in its bid to increase the number of academic institutions ranging from primary schools to secondary schools, colleges and universities knowing well that in a competitive world the quality of human capital must be well educated and skilled. Similarly, the Kenyan government has always created a favorable investment climate for its citizens and foreign investors by doing away with bureaucracies and initiated industrialization programs of which the supply of electricity has been increased to realize this particular goal (KNBS, 2017). Some of the efforts the successive Kenyan governments have made in the in-country self-initiated structural programs include: formulation of policies with objective of increasing exports while formulating ways to reduce imports, increase supply and access to electricity as a major source of energy to realize industrial productivity, raising standards of education by increasing education development expenditure, restructuring wage employment in the public sector to reduce bulging public wage bill and to increase domestic demand while at the same time create an enabling environment to increase investment levels in the country (WB, 2011). This had led to structural changes in the sense that in the balance of trade structure, from 1996 to date, imports have increased tremendously more than exports yet before 1996 the two were almost proportionately at the same level. In the public education expenditure, recurrent expenditure increased exponentially while development expenditure increased at a comparatively low rate, although, between 1978 to 1996, they were comparatively at par. On energy expenditure structure, expenditure on petroleum increased tremendously from year 1998 although expenditure on electricity has also increased as late as 2014, 2015, and 2016 relatively almost closing the gap. With increased investments in the country, On the other hand, this in turn changed Kenya's wage employment structure in a way that more are employed in the private sector than public sector unlike the situation before 1980's. All these are statistics reported by KNBS (2016). With the above highlighted scenario, no known studies have been done to determine how both externally initiated SAPs and In-country self-initiated SAPs affect economic growth, specifically in Kenya.

1.1. Statement of the Problem

Over the period, many developing countries have to some extent tried to increase their exports while formulating ways to reduce imports, increase supply and access to electricity as a major source of energy to realize industrial productivity, raising standards of education by increasing education development expenditure, restructuring wage employment in the public sector to reduce bulging public wage bill and to increase domestic demand while at the same time create an enabling environment to increase investment levels in the country (WB, 2011). This has also been the scenario with Kenya. For instance, in Kenya, for the years 1980, 1990, 2000, 2010

and 2016, exports have increased to Ksh million 515, 1244.01, 134527, 409793.7 and 506548 respectively for the period while Imports have greatly surpassed imports by increasing to Ksh million 959, 2545.63, 247804, 947381.9 and 1431745 respectively for the respective years. In public education, development expenditure increased to Ksh million 12517.7, 63.23, 1289.04, 20052.8 and 24168.93 while recurrent expenditure increased to Ksh million 126027, 582.12, 48404.92, 178,043.1 and 318179.4 respectively for the five selected years in its bid to improve the quality of its workforce. On commercial energy, Kenya incurred ksh million 116.38, 317.65, 53667, 190064.1 and 154678.9 on petroleum while it incurred ksh million 532, 224.33, 6332, 17927 and 122571 expenditure on electricity respectively for the years 1980, 1990, 2000, 2010 and 2016 in its bid to increase industrialization and productivity. On wage employment, Kenya experienced increase in private wage employment (in thousand wage employment) of 534.3, 708.9, 1002.9, 1399.6 and 1817.2 while public wage employment increased to 471.5, 700.4, 692.5, 659.5 and 737.1 respectively for the years 1980, 1990, 2000, 2010 and 2015 in its bid to stimulate a vibrant private sector in the economy (KNBS,1980-2015) All these have led to structural changes in Kenya though they are some of the efforts Kenya has made to increase its domestic productivity to avert problems of dependency on multilateral organizations (IMF, 2012). All this is normally done with the main objective of accelerating economic growth. Even though, Kenya has experienced fluctuation in economic growth. For instance for the years 1980, 1990, 2000, 2010 and 2015 Kenya has had annual GDP growth rates of 5.59%, 4.19%, 0.59% , 8.4% and 2.4% respectively. Despite all these, there is no well known relationship between these structural changes and economic growth in Kenya. Therefore this study fills this gap by establishing the relationship between structural changes and economic growth.

Secondly, previous studies that were done only looked at specific components of a structure and how they relate to economic growth. For instance, there have been various studies that were done to investigate the role of components of government spending and their contribution to long term economic growth (Aschauer, 1989, Barro, 1990, Tanzi & Zee, 1997, and Maingi, 2010), with a particular focus on sectoral expenditures including expenditure on agriculture, defense, and education and health sectors. Other studies, for instance, Ebohon (1996), Shiu and Lam (2004), Ezzo (2010), Odularu and Okonkwo (2009), Dantan et al (2012), and Onuonga (2012) investigated the relationship between energy consumption and economic growth while Khalkhali (2002), Kanu, Ikechi and Ozurumba (2014) and Pavelescu (2007) investigated the relationship between consumption and economic growth. The mentioned studies suffer from certain shortcomings. First, the studies did not take into account the structure (composition) of Sectoral expenditures as indicators of structural change. Secondly, those studies were done in different countries within differing timeframes. Therefore, the available literature does not look at the aspect of structural change hence limited literature is available to explain the relationship between structural changes and economic growth. This study therefore fills this gap by analyzing Kenya's new development structure after adopting self initiated adjustment programs in addition to some of the Structural adjustment programs of 1981 to determine their relationship with economic growth. This study specifically fills this gap by finding out the relationship between Balance of Trade Structure and economic growth, Public Education Expenditure Structure and economic growth, Energy Expenditure structure and economic growth and wage employment structure and economic growth in Kenya.

1.2. Specific Objectives

The study sought to achieve the following specific objectives:-

- i. To establish the relationship between changes in Balance of Trade Structure and economic growth in Kenya.
- ii. To find out the relationship between changes in Public Education Expenditure structure and economic growth in Kenya.
- iii. To determine the relationship between Changes in energy expenditure structure and economic growth in Kenya.
- iv. To establish the relationship between changes in wage employment structure and economic growth in Kenya.

2. Theoretical Review

Since the government of Kenya for many years has strived to adopt many policies with the objective of accelerating economic growth, the study therefore adopted the following theories:

2.1. Absorption Approach to Current Account Balance Theory

As put forward by Giancarlo (2002), there are three outstanding theoretical approaches that try to explain current account balance that are normally applied differently according to prevailing economic environment due to the desired implications on economic policy of a nation at a given point in time. These approaches include absorption approach, Elasticity Approach and inter-temporal approach.

Absorption Approach is the first approach to the current Account balance. Giancarlo (2002) outlined that current account balance is the difference between domestic output and spending (absorption) at a given time period. This theory assumes that prices remain constant and also emphasizes in changes in real domestic income. This is why it's also called the real income theory of balance of payments. In an open economy, the Keynesian national income framework is given by $Y=C+I+G+X-M$, while absorption (aggregate demand) is given by $A=C+I+G$ while Current account balance (CAB) is given by $X-M=Y-A$. Therefore, this implies that the balance is affected by the change in domestic expenditure. In effect of currency depreciation, the current account can improve since it depends on its effect on national income, Y, and its domestic absorption. The resultant net effect is usually ambiguous and the outcome of currency devaluation depends on its direct impact on absorption which in turn discourages investment and consumption in the domestic economy. This shows that currency depreciation can improve the current account balance since it depends on its effect on national income and on domestic absorption capacity. This approach makes a conclusion that depreciation is effective in improving the current account balances when the economy has idle resources, the economy meets the Marshall-Lerner condition and the government employs contractionary fiscal or monetary policy along with depreciation (Giancarl, 2002). However the major limitation of this theory/approach is that it assumes a fixed exchange rate regime while many economies are in a floating exchange rate regime (Caves,

Frankel, & Jones, 2002). Despite of the weakness, this study based its emphasis on absorption approach because it views the current account balance as the difference between domestic output and spending (absorption) at a given time period. Further, absorption approach theory is utilized since prices are assumed to remain constant at a particular year keeping in mind that time series data are always standardized figures with no probability of changing since it relates to past macroeconomic activities rather than expected future macroeconomic behavior. Furthermore, this approach is grounded on national income accounting identity framework that provides consistency checks and reasoning based on components of national income, hence, the approach provides a consistent and coherent foundation for open-economy policy analysis (Obstfeld & Rogoff, 1994).

2.2. Neo-Classical Growth Theory

The Neo-classical growth theory was a result of a model that was developed by Solow (1956) that revolutionized the understanding of growth theory. The model recognized that the inputs of physical capital and labour alone did not encompass all information that is relevant to understanding the size, strength and growth potential of a particular economy. While building on other pioneering works that enquired into the effects of technological progress on an economy, Solow also understood that a significant part of economic output is usually dependent on the rate of technological progress of the economy under study. With this recognition, Solow added technology to the production function equation, though as variable that existed exogenously from the neoclassical model's production function equation (Cortright, 2001). In his view, Solow outlined that the exogenous technology variable was only meant to account for any discrepancies between what certain levels of capital and labour would indicate as the output and actual output, especially in analyses that are comparatively cross-country in nature. The most outstanding importance of this model is that it provided a vehicle for explaining the rate of growth over time. However, Solow's model suffers from a major weakness which is keeping technology outside of the equation, rendering the model incapable of explaining why or how or from where technological progress came from (Cortright, 2001). Therefore the model suffers from weak explanatory power. However this shortcoming was quickly recognized and many studies have been done and theorized many different ways to account for technology itself and technological progress.

Another implication of Solow's work was the theory of income convergence (Barro, 2001). The aspect of convergence is based on diminishing returns to capital that was first recognized by Malthus and Ricardo. The theory of convergence states that economic differences between countries will shrink over time due to diminishing returns to capital. However, the theory of convergence has a weakness in that it is a gross oversimplification of the economic realities and differences between most countries hence economic convergence is not true in an absolute sense. However the theory of convergence is correct on condition that its effects only apply when all other variables are held constant (Barro & Sala-i-Martin, 1992, 1995, Mankiw, Romer, & Weil, 1992 and McCallum, 2003). While it was highly credited to make a great headway in the understanding economic growth, Solow's model did not have adequate explanatory power to fully account for output and to predict growth. More specifically, the most outstanding shortcoming is that the long-run per capita growth rate i.e. entirely determined the rate of technological progress that is outside the model. In addition, the long run growth rate also depends on the rate of population growth, an element that is exogenous to the standard theory. Therefore, over time, economists continued their work into more refined ways to account for economic output and growth. Besides all these criticisms, this theory was productive since it played a major and essential role in the development of dynamic general equilibrium analysis which is the basis for much of today's development economics theory. Despite all these criticisms, this theory is important in this study because this study makes assumption that the inputs of physical capital and labour are part of the components that contribute to economic growth. That is why, in part, this study sought to find out the relationship between public education expenditure structure and economic growth and wage employment structure and economic growth in Kenya.

2.3. The New Growth Theory

This theory was put forward by Paul Roemer (1986), Lucas (1988), and Rebel (1991). New growth theory emphasizes that economic growth is primarily the result of endogenous forces and not external forces. It holds that investment in human capital (labor), innovation, and knowledge are key contributors to long term economic growth. The theory also focuses on the existence of positive externalities and spillover effects of a knowledge-based economy which lead to long term economic development. The new growth theory postulates that policy measures can have an impact on the long term growth rate of an economy. For example, subsidies for education, research and development or on the job training or policy measures that may lead to increased incentives for innovation.

Paul Roemer (1986), Lucas (1988), and Rebel (1991) omitted technological change but they postulated that growth in this model was due to indefinite investment in human capital which had spillover effect on economy and exhibiting constant returns to capital accumulation. The endogenous growth model also known as AK model is the simplest endogenous model which gives a constant-saving-rate of endogenous growth. The model assumes a constant, exogenous saving rate and fixed level of the technology. It eliminates the concept of diminishing returns hence leading to endogenous growth (Ozurumba, Benedict, & Anayochukwu 2012). However, this theory is supported with models in which agents optimally determine the consumption and saving levels in an economy. This is achieved by optimizing the resource allocation to research and development leading to long term technological progress. Grossman and Hellmann (1991) incorporated the concept of imperfect markets and Research and Development to the growth model.

Many typical endogenous growth theories are expressed by the simple equation, $Y = AK$. The A represents factors that lead to changes in technology and K represents both physical and human capital. In this case, the production function assumes constant marginal product of capital, unlike the Solow model which assumes diminishing marginal product of capital. The implication of constant marginal product of capital is that investments in physical and human capital could create external economies and improvements in productivity in a country. The most interesting part of endogenous growth models is their importance of and contribution to explaining the differences in economic growth between developed and developing countries (Todaro & Smith, 2006). Aspects of this theory are employed in this study because the study, in part, looked at the structure of public education expenditure. This emanates

from the presumption of the theory that education improves manpower productivity and fosters innovation which is a key driver of technological progress (Mercan & Sezer, 2014).

2.4. Pre-requisite, Conservation, Neutrality, and Interdependence Hypotheses Theory

This theory was discussed sequentially by Ebbon (1996), Tom and Jamelkova (2003) and Mehra (2006). These testable hypotheses emanate from studies done by a number of researchers that looked into the relationship between energy consumption and economic growth. The theory embodies approaches that look at energy as a very important input in the production process that ultimately contributes to economic growth. The approach used in this theory is discussed hereunder.

The first one is Pre-requisite hypothesis which postulates that energy consumption in an economy is a prerequisite for economic growth given that energy is a direct input in the production process and an indirect input that complements labor and capital inputs in production (Ebbon, 1996; Toman and Jamelkova, 2003). The pre-requisite hypothesis assumes a unidirectional granger causality running from energy consumption to GDP with implication that a country's economy is energy dependent and that policies that promote energy consumption should be adopted to stimulate economic growth since inadequate provision of energy may limit economic growth.

The second is Conservation Hypothesis which asserts that energy conservation policies may not adversely affect real GDP (Mehra, 2006). Some of the conservation policies include reduction in greenhouse emissions, efficiency improvement measures and demand management policies designed to reduce energy consumption and waste control. The conservation hypothesis is well supported if an increase in GDP Granger-causes an increase in energy consumption. However, a growing economy that is constrained by political, infrastructural and mismanagement of resources could generate inefficiencies besides the problem of reduction in the demand for goods and services including energy consumption. In such a case, an increase in GDP may have a negative impact on energy consumption.

The third is Neutrality hypothesis which views energy consumption as a small component of real GDP of which energy consumption should not have a significant impact on economic growth (Asafu- Adaye, 2000; Jumbe, 2004). Therefore this hypothesis postulates that energy conservation policies may not adversely affect real GDP. Neutrality hypothesis is supported when its provided by the absence of Granger-causality between energy consumption and real GDP. Interdependence hypothesis is the fourth which assumes a bidirectional relationship between economic growth and energy consumption in an economy. This is why it's also called the "feedback" hypothesis because energy consumption and real GDP are interdependent and may serve as complement to one another. Therefore, with this hypothesis, increase in energy consumption result in increase in real GDP growth rate and vice-versa while a decrease in real GDP results in a decrease in energy consumption and vice versa. Therefore, the interdependence hypothesis is supported by evidence of bi-directional granger-causality between energy consumption and real GDP.

3. Conceptual Framework

A conceptual framework is typically a hypothesized model that identifies the variables under study and their relationships and in a diagrammatic form, it presents the way the researcher conceptualizes the relationship between independent variables and the dependent variable and other variables (Shields, Patricia and Rangarjan, 2013). Using annual GDP growth model as suggested by Malik et al. (2010) this study used Economic growth rate (%) as the dependent variable while Balance of Trade Structure (BOTS), Public Education Expenditure Structure (PEES), Energy Expenditure Structure (EES) and Wage Employment Structure (WES) as independent variables as shown in Figure 1 below.

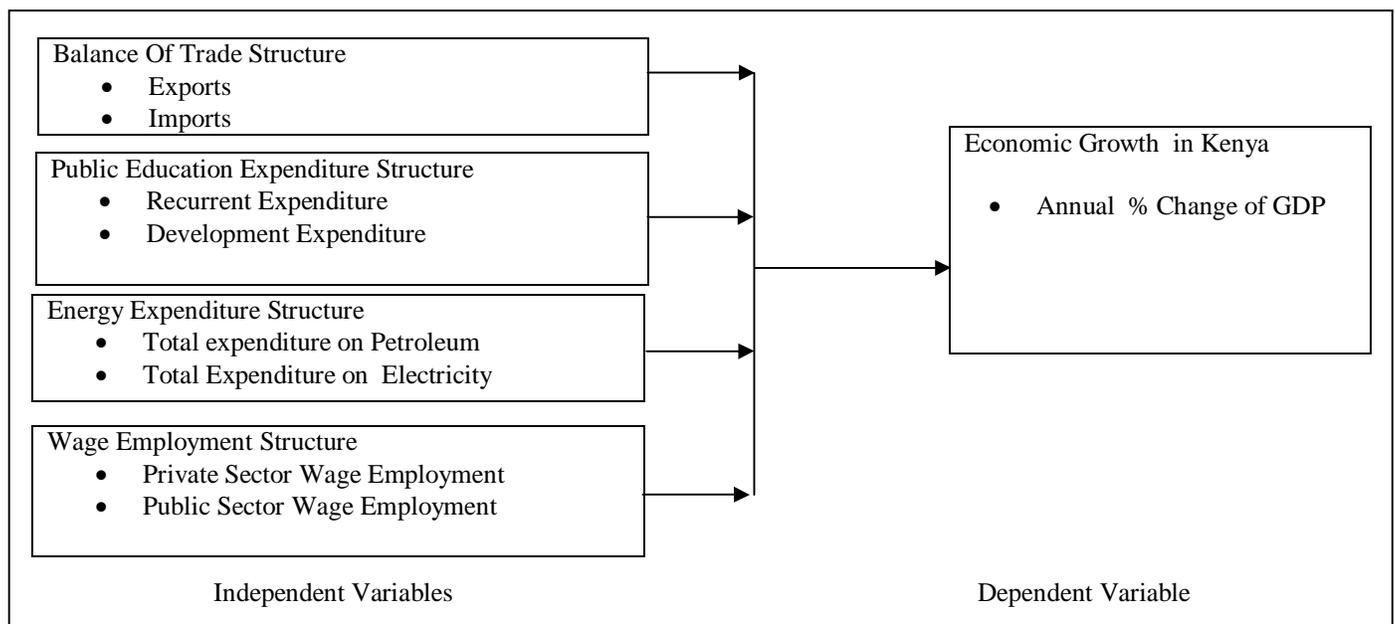


Figure 1: Conceptual Framework

4. Critique of Existing Literature

Many of the empirical studies done in closer subject to this study were cross country in their investigation. For instance, Keller (2000), conducted a study on productivity of imports of intermediate goods that embody new technology using industry level data for eight OECD countries (Sweden and G-7 countries) during the period 1970-1991. Some studies adopted the disaggregated data on imports and incomes. Narayan and Narayan (2005) and Bathalomew (2012) decomposed GDP into consumption, and investment and exports expenditure. The aim of this exercise was to underscore the various uses the incomes were committed to and their implication on imports. Bathalomew (2012) found consumption and Government expenditure to have a significant effect on imports in Sierra Leone; while Frimpong and Oteng-Abayie (2006) concluded that investment and export components of income were the major determinants of import trend in the long run while household and government expenditure were significant in the short run. On the other hand, some relatively closer studies have focused on imports in a specific sector. For instance, Ghosh (2004) used disaggregated data focusing on import of crude oil in India, applying autoregressive distributed lag (ARDL) bound testing approach to cointegration. Hye (2011) focusing on agricultural sector established that a long run association exists between agricultural growth and agricultural raw material imports, specifically, the study also found a bidirectional causality. Baiyegunhi and Sikhosana (2012) focusing on wheat imports in South Africa concluded that income is a significant determinant of wheat imports. Castro-Zuniga (2004) investigated the issue of Export Led Growth in both developed and least developing countries using either cross-sectional or time series approaches. The shortcoming of these studies is that a general multi-country analysis cannot be taken to represent the same outcome to Kenya. Further, these countries are from the Continent of Asia and America and even if some are in Africa they may not represent Kenya because they may not have a similar economic environment.

On Public Education Expenditure Structure, many studies looked at effects of public expenditure on economic growth (e.g. Alfranca & Galindo, 2000) or effects of public education expenditure on economic growth. For the latter, the studies include Hong-Sang Jung and Erik Thorbecke (2003), Blankenau, Simpson and Tomljanovich (2007), Yousif Khalifa Al- Yousif (2008) Namchul (2000) Chandra Abhijeet (2010), Musila and Ballassi (2004) and Dauda (2009). All these studies fail to highlight the effects of public education expenditure structure (convergence between development expenditure and recurrent expenditure) on economic growth.

On energy expenditure structure, most studies either looked at impact of energy consumption and economic growth (e.g. Ebohon, 1999; Ezzo, 2010; Danatana et al, 2012) or impact of a single component of energy expenditure (consumption) on economic growth. Studies that used the latter approach include Shiu and Lam (2004), Odularu and Okonkwo (2009) and Ansgar et al, (2010). In general these studies never looked into the structural changes in energy expenditure on economic growth. Specifically, they never looked at how changes in expenditure on electricity and petroleum relate to economic growth since those are the major components of commercial energy in most economies in the world including Kenya. Another shortcoming is that some studies were cross country (e.g. Ezzo, 2010 and Ansgar et al, 2010) that excluded Kenya. This is because findings of a cross country study cannot be taken to represent one country which is not part of those studies.

On wage employment structure, the most outstanding shortcoming is that many studies looked at the effects of wage structure on economic development rather than effects of wage employment structure on economic growth. The most outstanding differences between the two is that the former aspect entails wage differentials due to level of education, age, experience, skills, gender or industry while the latter entails the category of employer; whether employed in the public sector or private sector (Katz & Autor, 1999).

5. Research Gaps

Most of the previous studies had been done to examine effects of a single variable on economic growth instead of two variables that can be used to determine a structural change. For instance, effects of exports on economic growth, effects of imports on economic growth, effects of public education recurrent expenditure on economic growth, effects of public education development expenditure on economic growth, effects of expenditure on electricity on economic growth, effects of expenditure on petroleum on economic growth and effects of either public wage employment or private wage employment on economic growth. Among those researches, they never looked at structural changes but looked at specific components that would have been used to determine structural changes and at the same determine the effects of structural changes on economic growth. For instance, On Public Education Expenditure Structure, many studies looked at effects of public expenditure on economic growth (e.g. Alfranca & Galindo, 2000) or effects of public education expenditure on economic growth. For the latter, the studies include Hong-Sang Jung and Erik Thorbecke (2003), Blankenau, Simpson and Tomljanovich (2007), Yousif Khalifa Al- Yousif (2008) Namchul Lee (2000) Chandra Abhijeet (2010), Musila and Ballassi (2004) and Dauda (2009). All these studies fail to highlight the effects of public education expenditure structure (convergence between development expenditure and recurrent expenditure) on economic growth

For those studies that were close to this research, most of them had conflicting conclusions. In other instances, some studies were cross country in nature but not country specific. In that case conclusions about cross country analysis cannot be generalized to represent the economic phenomena of a single country that was not among those under study.

6. Research Methodology

This research used causal research design. Since this study used secondary panel data, the target population was the Kenyan economy for the financial period 1977/1978- 2016/2017. This research design was used because it is usually used to describe characteristics of the population under study and the causal relationship between independent variables and dependent variables respectively (Shields, Patricia & Rangarjan, 2013). The target population for balance of trade and economic growth was extracted from World Bank database while data concerning public education expenditure, energy expenditure and wage employment was drawn from national surveys of

Kenya National Bureau of Statistics. The study used Statistical Package for Social Sciences (SPSS Version 21.0) and Stata to process and estimate the results of correlation and causal relationship between variables.

6.1. Model

The study also employed time series multiple regression method to develop a model that would establish the relationship between structural changes and Kenya's economic growth. For this study, the following regression equations were used to test the significance of the study hypotheses:

$$Y = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \varepsilon_t$$

Where,

Y= Economic growth

X₁= Balance of Trade Structure (BOTS) derived as monetary value of Exports divided by Monetary value of Imports

X₂= Public Education Expenditure Structure (PEES) derived as Public Education Development Expenditure divided by Public Education Recurrent expenditure,

X₃ = Energy Expenditure Structure (EES) derived as expenditure on electricity divided by expenditure on petroleum

X₄ = Wage Employment Structure (WES) derived as Private Wage Employment divided by Public Wage Employment.

ε = Error Term

t=Specific time period under study

- β_0 = Constant term;
- β = Responsiveness coefficient of the independent variable to the respective dependent variable i.e.
- β_1 =Responsiveness BOTS to Economic growth (annual GDP growth rate)
- β_2 = Responsiveness coefficient of PEES to Economic growth (annual GDP growth rate)
- β_3 = Responsiveness coefficient of EES to economic growth (annual GDP growth rate)
- β_4 =Responsiveness coefficient of WES to economic growth rate (annual GDP growth rate)

In addition, Granger causality test was conducted to determine the causality between balance of trade structure and economic growth, Public education expenditure structure and Economic growth, Energy expenditure structure and economic growth and wage employment structure and economic growth. Output tables were used to present the results which was followed by an analytical discussion of the resulting findings.

Before conducting the Granger causality test, Augmented Dickey-Fuller Unit Root Test was conducted to determine stationarity from which Johansen Co-integration Test was done. If the test revealed that there was no co-integration, then unrestricted VAR test was to be carried out from which Granger causality test would be done. If the Johansen test revealed existence of Co-integration, then Vector Error Correction (VECM) model, stability condition of VECM estimates was to be used in VEC diagnostic test to test for stability of Causality between independent variables and dependent variable.

7. Results and Discussion

7.1. Descriptive Analysis

Descriptive Statistics					
Variable	N	Minimum	Maximum	Mean	Std. Deviation
Balance of Trade Structure	40	.2846	.9443	.553648	.1399523
Public Education Expenditure Structure	40	.0139	.1798	.081889	.0364981
Energy Expenditure Structure	40	.0093	9.5750	1.289221E0	2.6737247
Wage Employment Structure	40	.7791	2.4653	1.462896E0	.4988765
Annual GDP Growth Rate.	40	-.7995	9.4538	4.156752E0	2.5103564
Valid N (listwise)	40				

Table 1: Results of Descriptive Summary

A summary of the results of the descriptive statistics is presented in Table 1 below

7.2. Augmented Dickey-Fuller Unit Root Test

In econometric analysis, a series integrated of order zero [I (0)] is said to be stationary. In many econometric studies, most macroeconomic time series are not stationary at levels (Engle and Granger, 1987). This is because non-stationary series have infinite variance asymptotically which leads to invalid asymptotic analysis because they face spurious and inconsistency regression problems. In this study, Augmented Dickey-Fuller unit root test was used to examine the properties of time series data. In recognition of this, it was deemed essential to test for stationary of variables to obtain more reliable results. The results of the Augmented Dickey Fuller tests for variables at levels and first differences are presented in Table 2

Variable	ADF Test Statistic Z(t) (At Level)	ADF Test Statistic Z(t) at 1 st Dif (L ₁)	Critical value Z(t) at 1% ADF	Critical Value Z(t) at 5% ADF	P- value for Z(t)	Order of Integration
Balance of Trade Structure	-3.576	-	-3.655	-2.961	0.0062	I(0)
Public Education Expenditure Structure	-2.935	-	-3.655	-2.961	0.0414	I(0)
Energy Expenditure Structure	-2.703	-5.979	-3.655	-2.961	0.0000	I(1)
Wage Employment Structure	-4.271	-5.979	-3.655	-2.961	0.0000	I(1)
Annual GDP Growth Rate	-3.696	-	-3.655	-2.961	0.0042	I(0)

Table 2: Results of Augmented Dickey-Fuller Unit Root Test

The test revealed that at 5% critical values, Balance of Trade Structure, Public education expenditure structure and annual GDP growth rate were stationary at level with p-values of 0.0062, 0.0414 and 0.0042 respectively while Energy expenditure structure and Wage Employment Structure were stationary after first differencing both having probability of 0.0000 respectively as shown in Table 2.

7.3. Johansen Co-integration Test

Since in Johansen Test variables must be stationary, from the variables under study, Balance of trade structure, Public education expenditure structure and annual GDP growth rate were already stationary at level but energy expenditure structure and wage employment structure were non-stationary that became stationary after first differenced. Therefore the VAR co-integrating model comprised both variables at level and at first difference to undertake Johansen Test of Co-integration.

VEC Rank BOTS, PEES, D_EES, D_WES. Trend (Constant)Max Trend: Constant Sample:1979-2016 Number of Obs=38 Lags=2					
Maximum Rank	parms	LL	Eigen value	Trace Statistic	5% Critical Value
0	30	-51.471891	-	93.1207	68.52
1	39	-32.410637	0.63330	54.9982	47.21
2	46	-16.503423	0.56709	23.1837	21.68
3	51	-8.7495535	0.33509	7.6760	5.41
4	54	-6.2434483	0.12357	2.6638	1.76
5	55	-4.9115514	0.06770		
Maximum Rank	parms	LL	Eigen value	Max Statistic	5% Critical Value
0	30	-51.471891	-	38.1225	33.46
1	39	-32.410637	0.63330	31.8144	27.07
2	46	-16.503423	0.56709	15.5077	10.97
3	51	-8.7495535	0.33509	5.0122	4.07
4	54	-6.2434483	0.12357	2.6638	1.76
5	55	-4.9115514	0.06770		

Table 3: Johansen Test for Co-integration with Trend (Constant)

➤ The hypothesis set was

- H₀: No cointegration,
- H₁: There is cointegration

The cointegration rule used was that using Trace Statistic, when the trace statistic is more than the 5% critical value at maximum rank (0), the study rejects the null hypothesis but if trace statistic is less than 5% critical value, the study does not reject the null hypothesis but reject the alternative hypothesis. Since trace statistic (93.1207) > critical value at 5% (68.52) at rank (0), the null hypothesis was rejected. Therefore the conclusion was that the variables were cointegrated at rank (0).

At Maximum rank (1) the hypothesis used was

- H₀: There is one co-integration
- H₁: There is no one co-integration

Similarly if trace statistic is more than the critical value at 5% of the statistic, the study had to reject the null hypothesis. From Table 416, the race statistic (54.9982) is more than critical value at 5% (4.3) hence the study rejected the null hypothesis hence concluded that variables are not co-integrated at maximum rank (1)

At maximum rank (2), the hypothesis used was

- H₀: There are two co-integrations
- H₁: There are no two co-integrations

At maximum rank (2), the trace statistic (23.1837) is less than the 5% critical value (29.68) hence the study concluded that there were two co-integration. For maximum ranks (3) and (4) the trace statistics, 7.676 and 2.6638 respectively were less than 5 % critical values of 15.41 and 3.76 respectively hence concluded that ranks (3) and (4) were three and four co-integrated respectively. From Table 16, this meant that there was no long run association-ship between independent variables (Balance of trade structure, public energy expenditure structure, first-differenced energy expenditure structure and first-differenced wage employment structure) and annual percentage change in Gross Domestic product at maximum ranks (0) and (1) respectively.

Since variables have no co-integration between them, the study run the Vector Autoregressive (VAR) model (specifically unrestricted VAR model) unlike the VECM model that is used when variables are integrated.

Using the second model (maximum statistic) in Table 3, it confirmed the findings of trace statistics from maximum ranks (0) to (5) since at all maximum ranks, values of maximum statistics were more than 5% critical values. The conclusion was that in the long run the variables are not co-integrated.

- From Table 3, Maximum rank 0 denotes no cointegration among variables while 1 means one cointegration, 2 means two cointegration, 3 means three cointegration, 4 means four cointegration and 5 means five cointegration

7.4. Granger Causality Test

Since the variables were already transformed to be stationary and found to have no co-integration, Granger causality test was done to determine the causality between independent variables and dependent variable. From the VAR the following granger causality output table (Table 4) was used

The Hypotheses used were;

→ On Balance of Trade Structure (BOTS)

H0: Lagged BOTS does not Granger-cause Economic Growth, H1: Lagged BOTS Granger-causes Economic Growth

→ On Public Education Expenditure Structure (PEES);

H0: Lagged PEES does not Granger-cause Economic Growth, H1: Lagged PEES Granger-causes Economic Growth.

→ On Energy Expenditure Structure (EES);

H0: Lagged EES does not Granger Cause Economic Growth., H1: Lagged EES Granger Causes Economic Growth.

→ On Wage Employment Structure (WES);

H0: Lagged WES does not Granger Cause Economic Growth, H1: Lagged WES Granger-causes Economic Growth.

If looked at separately, the study established that there is a long run bidirectional causality between balance of trade structure and economic growth, public education expenditure and economic growth and wage employment structure and economic growth since they all had bidirectional p-value of 0.000 at lag 6.

Lag	Equation	Excluded	Chi2	df	prob>Chi2	Prob>Chi2 (AGGR as a cause)
1	AGGR	BOTS	.02648	1	0.871	0.011 0.666 0.267 0.301
	AGGR	PEES	.03521	1	0.851	
	AGGR	EES	.20317	1	0.652	
	AGGR	WES	1.3749	1	0.241	
	AGGR	ALL	2.9429	4	0.567	
2	AGGR	BOTS	5.0096	2	0.082	0.068 0.597 0.280 0.107
	AGGR	PEES	2.5389	2	0.281	
	AGGR	EES	2.1476	2	0.342	
	AGGR	WES	4.7443	2	0.093	
	AGGR	ALL	14.076	8	0.080	
3	AGGR	BOTS	10.31	3	0.016	0.173 0.493 0.040 0.067
	AGGR	PEES	1.3083	3	0.727	
	AGGR	EES	11.534	3	0.009	
	AGGR	WES	7.355	3	0.061	
	AGGR	ALL	24.739	12	0.016	
4	AGGR	BOTS	5.1022	4	0.277	0.284 0.787 0.108 0.000
	AGGR	PEES	1.3289	4	0.856	
	AGGR	EES	11.294	4	0.023	
	AGGR	WES	5.2062	4	0.267	
	AGGR	ALL	25.974	16	0.054	
5	AGGR	BOTS	13.249	5	0.021	0.004 0.094 0.002 0.000
	AGGR	PEES	4.2192	5	0.518	
	AGGR	EES	26.578	5	0.000	
	AGGR	WES	17.277	5	0.004	
	AGGR	ALL	54.669	20	0.000	
6	AGGR	BOTS	123.4	6	0.000	0.000 0.000 0.184 0.000
	AGGR	PEES	57.911	6	0.000	
	AGGR	EES	257.72	6	0.000	
	AGGR	WES	176.19	6	0.000	
	AGGR	ALL	431.81	24	0.000	

Table 4: Results of Granger Causality Wald Tests at Different Lags

The study also established that in the long run, energy expenditure structure granger-causes economic growth (p-value of $0.000 < 0.05$) but economic growth does not granger cause energy expenditure structure (p-value of $0.184 > 0.05$)

After combining the four independent variables altogether, the study also found that jointly, all the four independent variables combined do not Granger Cause Economic Growth for Lag 1 and 2 (since their p-values are 0.567 and 0.080; > 0.05) but they jointly Granger-cause economic growth from Lag 3,4, 5 and 6 since their p-values are 0.016, 0.054, 0.000 and 0.000 respectively which are less than 0.05. In realizing the benefits of formulating critical economic policies on

7.4.1. In this study, AGGR means Annual GDP Growth Rate.

International trade, education, energy and wage employment in an economy are never realized within a short period, this study relied on the results of lag 6 were taken to represent the long-term causality between the four independent variables and economic growth.

7.5. Hausman Test

Due to panel nature of the data used in this study, Hausman Test was used to choose between Fixed Effects Model (FEM) and Random Effects Model (REM). The Null Hypothesis stated that Random Effects Model is better than Fixed Effects Model while the alternative hypothesis stated that Fixed Effects Model is better than Random Effects Model. The deciding rule was that for the Hausmann test, if p-value of FEM is more than 0.05 then the study accepts the Null hypothesis but if the p-value is less than 0.05 the study rejects the null hypothesis and accepts the alternative hypothesis. From Table 5, since the P-value is 0.000, the study reckoned the researcher to reject the null hypothesis and accept the alternative hypothesis. This concludes that in this study, Fixed Effect model is appropriate and the best. The results have been summarized in Table 5 below.

Variables	Pool Effect	Fixed Effect	Random Effect
Intercept	2.644916	2.405165	2.644916
Balance of Trade Structure	0.0044319	-1.637681	0.0044319
Public Education Expenditure Structure	5.62451	12.79788	5.62451
Energy Expenditure Structure	-0.1697216	-0.5076933	-0.1697216
Wage Employment Structure	0.8665051	1.54817	0.8665051
Hausman Test	-	95.45 (P-value=0.0000)	-
R ²	0.1064	0.1045	0.1064
No. of Observations	40	40	40

Table 5: Results of Different Panel Data Regression Models

7.6. Correlation Matrix

This study used correlation matrix to find out if linear relationship exists between individual independent variable and economic growth. From Table 6 below, there was; negative linear association between Balance of trade structure and economic growth ($R=-0.164$); positive linear association between Public Education Expenditure Structure and economic growth ($R=0.151$); negative linear association between Energy Expenditure Structure and economic growth ($R=-0.267$) while a good and Positive linear association was established between Wage Employment Structure and Economic growth ($R=0.266$).

		BOTS	PEES	EES	WES	AGGR
BOTS	Pearson Correlation	1	-.213	.241	-.602**	-.164
PEES	Pearson Correlation	-.213	1	-.175	.220	.151
EES	Pearson Correlation	.241	-.175	1	-.419**	-.267
WES	Pearson Correlation	-.602**	.220	-.419**	1	.266
AGGR	Pearson Correlation	-.164	.151	-.267	.266	1
	N	40	40	40	40	40

Table 6: Correlation Matrix

7.7. Regression Analysis

7.7.1. Regression Results According to Fixed Effects Model

Since Fixed Effects model was found to be appropriate, the regression results used were according to Fixed effect model.

Model		Coefficients Beta	Std. Error	T	Sig
1.	(Constant)	2.405165	3.059779	0.79	0.438
	Balance of Trade Structure	-1.637681	3.33202	-0.49	0.626
	Public Education Expenditure Structure	12.79788	9.919458	1.29	0.206
	Energy Expenditure Structure	-0.5076933	0.1665958	-3.05	0.005
	Wage Employment Structure	1.54817	1.175173	1.32	0.197

Table 7:Regression Coefficients of Fixed Effects Regression Model

As per Table 7, the equation ($Y = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \varepsilon_t$) Where possible rounding figures to four decimal places, becomes;
 $Y = 2.4052 - 1.6377X_1 + 12.7979X_2 - 0.5077X_3 + 1.5482X_4$

Where,

Y is real GDP Growth Rate as a proxy to Economic growth

X_1 is Balance of Trade Structure (BOTS) derived as monetary value of Exports divided by monetary value of Imports.

X_2 is Public Education Expenditure Structure (PEES) derived as Public Education Development Expenditure divided by Public Education Recurrent expenditure,

X_3 is Energy Expenditure Structure (EES) derived as expenditure on electricity divided by expenditure on petroleum

X_4 is Wage Employment Structure (WES) derived as Private Wage Employment divided by Public Wage Employment.

The regression above established that taking all factors constant and taking changes in balance of trade structure, public education expenditure structure, energy expenditure structure and wage employment structure to be constant at zero, GDP growth rate will be 2.4052%. The findings presented also show that holding other factors constant and taking all other independent variables at zero, a unit increase in balance of trade structure would lead to 1.6377 decreases in the scores of GDP growth rate and a unit increase in the public education expenditure structure would lead to 12.7979 increase in GDP growth rate. Further the findings show that a unit increase in energy expenditure structure would lead to 0.5077 reduction in GDP growth rate. The study also found that a unit increase in wage employment structure would lead to 1.5482 increase in GDP growth rate.

The study also established that of all the four independent variables, only energy expenditure structure significantly contributes influences economic growth. This is evident in Table 31 where energy expenditure structure has a p-value of 0.005 which is less than 0.05. On the other hand the study found that balance of trade structure; public education expenditure structure and wage employment structure were not significant in explaining changes in economic growth since they had p-values of 0.626, 0.206 and 0.197 respectively which are below 0.05

In this study, it is of great importance to note that an increase in the structure does not literally mean to increase, but it means the change in ratio of one component of a structure versus the other component. For instance an increase in wage employment structure may result from increase in private wage employment while public wage employment remains constant or a reduction in public wage employment while there is constant or more growth in private wage employment since wage employment structure is derived by dividing private wage employment by Public wage employment. Similarly, an increase in public education expenditure structure may result from an increase in development expenditure while recurrent expenditure remains constant or a reduction in recurrent expenditure while development expenditure remains constant or increases since public education expenditure structure is derived by dividing development expenditure by recurrent expenditure.

An ambiguous situation arises in the negative relationship between balance of trade structure and economic growth. In this case, the only strategy of reducing balance of trade structure is either reducing exports while imports remain constant or increase or retaining exports at a constant level and increasing imports. It's from this ambiguity that this study looked at some of the possible explanations from the past studies especially from the inter-temporal approach of the current account balance theory;

According to Yang (2011), Sadiku (2015) and DK Das (2016) current account balance is the outcome of forward-looking dynamic saving and investment decisions that are driven by expectations of productivity growth, government spending, interest rates and private consumption expenditure among others. This approach recognizes that saving and investment decisions result from forward looking calculations based on the expected values of various macroeconomic factors that cannot be predicted with high level of accuracy. The inter-temporal approach assumes that the current account deficits should always reflect increase in private investment and not decline in savings and a bigger current account deficit should not be a cause for concern as long as the fiscal account is balanced (Edwards, 2001). For a small open economy with low capital accumulation like most developing countries in general and Kenya in particular, with access to international capital markets, will run current account deficits for a sustained period of time in order to build its capital stock while maintaining its long-run rate of domestic consumption. In the long run the output will grow towards long-run level and return on capital converge, making the current account improve as net exports will be surplus, to pay for accumulated interest obligations on external debt (Debelle and Faruqee, 1996). Therefore, from the above explanation, an increase in imports is necessary since Kenya is a developing country, needs more imports of capital goods which is an overflow of technology into the country that in the long run will stabilize its productivity and output whereby it will improve on its exports. This therefore justifies the Kenyan case being more import dependent in the short-term to accumulate capital goods before being a net exporter in the long term as an economic strategy.

Another ambiguous finding of this study is the negative relationship between energy expenditure structure and economic growth. Just like the case of balance of trade structure, in the short run, its necessary to incur more expenditure on petroleum before generating enough electricity. On the other hand, in the short run an increase in costs incurred in Electricity generation leads to a negative relationship with economic growth since the benefits of industrialization are never realized instantly in comparison to expensive capital intensity investment that is usually involved. This explanation is also supported by interdependence hypothesis of Pre-requisite, Conservation, Neutrality, and Interdependence Hypotheses Theory. The Interdependence hypothesis assumes a bidirectional relationship between energy consumption and economic growth in an economy. Therefore, with this hypothesis, increase in energy consumption result in increase in real GDP and vice-versa while a decrease in real GDP results in a decrease in energy consumption and vice versa, though not instantly (Mehra, 2006).

8. Recommendation

In view of the stated findings and conclusions, the study makes some recommendations in order to improve the current structural changes. They are based on balance of trade, public education expenditure, energy expenditure and wage employment.

8.1. Balance of Trade

Since Kenya is still a developing country, the study recommends an increase in imports of capital goods and reduction of importation of consumer goods. This is because the importation of capital goods increases productivity in an economy, creates employment and in the long run increased income in an economy. On the other hand increased productivity may necessitate exportation hence fill the balance of payments problems in the long run.

8.2. Public Education Expenditure

Since public education expenditure has both a positive and significant relationship with economic growth, this study recommends that the government should increase the number of learning institutions in the country even though this has the implication of increasing both development expenditure and recurrent expenditure. The study also recommends that the government should employ and remunerate well all the employees in the academic sector to motivate them to be efficient and improve the quality of education. This, the study notes is a sure way of developing a skilled and efficient manpower in Kenya that will be capable of exploring relevant research and development initiatives that can exponentially improve efficiency in production to compete with tech intensive economies of the world.

8.3. Energy Expenditure

Thought there is a negative but significant relationship between energy expenditure and economic growth, this study recommends that the Kenyan government should increase its electricity generation and at the same time reduce the cost of electricity to both domestic consumers and commercial/industrial consumers. This can result in reduction in prices goods and services since many producers transfer high costs of production emanating from high electricity cost to consumers of their goods and services. Therefore, increasing electricity generation and reducing the cost of electricity can stimulate industrialization in the country. On the other hand, this study recommends that as much as importation of petroleum is necessary, the best strategy of boosting exports is processing crude petroleum and exporting its products to the neighboring countries in a bid to raise revenue in form of foreign exchange.

8.4. Wage Employment

Since the inability of the public sector to accommodate more employees like the private sector, this study recommends that the government should come up with policies that create conducive environment for investment. Improved and increased investments in an economy lead to the growth of the private sector which in turn creates more employment which in turn leads to increase in income in the economy. As an additional strategy, this study recommends that the government should attract foreign investors but regulate on the number and type of foreign employees that can be allowed to be employed in those respective firms.

8.5. Suggestions for Further Research

There is need to undertake further studies in order to establish reasons for inconsistency in the granger causality between structural changes and economic growth between lags 1,2,3,4 and 5. This is because, for instance, balance of trade structure does not granger cause economic growth at lags 1, 2 and 4 yet it granger causes economic growth at lag 3 and 5. Another area which needs further research is the relationship between private education expenditure and economic growth since this study only looked at the public sector expenditure on education.

9. References

- i. Abhijeet, C. (2010). "Does Government Expenditure on Education Promote Economic Growth? An Econometric Analysis," MPRA Paper 25480, University Library of Munich, Germany.
- ii. Alfranca, O., Galindo, M. A., and Sánchez-Robles, B. (2003). "Economic Growth and Income Distribution in the OECD Countries," in *Globalization and the Political Economy of Trade Policy*, Edited by Paraskevopoulos, C.; Kintis, A. and Michelis, L. APF Press, Toronto.
- iii. Ansgar, B., Dreger, C. and D.H. Frauke, D. H. (2010). *Energy Consumption and Economic Growth: New Insights into the Cointegration Relationship*. Ruhr Economic Papers, New Delhi, India.
- iv. Aschauer., D. A. (1989). "Back of the G-7 Pack: Public Investment and Productivity Growth in the Group of Seven," Working Paper Series, Macroeconomic Issues, Federal Reserve Bank of Chicago.
- v. Asafu-Adaye, J., (2000). The Relationship between Energy Consumption, Energy Prices and Economic Growth: Time Series Evidence from Asian Developing Countries. *Journal of Energy Economics*.
- vi. Baiyegunhi., L. & Sikhosana, A. M. (2012), "An Estimation of Import Demand Function for Wheat in South Africa: 1971-2007," *African Journal of Agricultural Research*.
- vii. Barro, R. J. (1990). Government Spending in Simple Model of Endogenous Growth. *Journal of Political Economy*, USA.
- viii. Barro, R. J. and Rachel M. McCleary, M., (2003). "Religion and Economic Growth." *American Sociological Review*.
- ix. Barro, R. J. and Sala-i-Martin, X. (1997). "Technological Diffusion, Convergence, and Growth". *Journal of Economic Growth*.
- x. Barro, R. J., Mankiw, G. N. and Sala-i-Martin, X. (1995), "Capital Mobility in Neoclassical Models of Growth". *American Economic Review*.

- xi. Barro, R. J., and Sala-i-Martin, X. (1992). Public Finance in Models of Economic Growth. *Review of Economic Studies*, USA.
- xii. Castro–Zuniga, H. (2004). Export-led Growth in Honduras and the Central American Region. Thesis, Louisiana State University.<http://etd.lsu.edu/docs/available/etd-12032004-070104>
- xiii. Caves R., Frankel J. & Jones R. (2004) *World Trade and Payments: An Introduction*, Addison Wesley.
- xiv. Cortright, J. (2001). *New Growth Theory, Technology and Learning: A Practitioner’s Guide* (Reviews of Economic Development Literature and Practice No.4), U.S. Economic Development Administration, Washington, DC.
- xv. Dantanna, Y.U., Abdullahi, Y.Z. and Inuwa, N. (2012). Energy Consumption - Economic Growth Nexus in Nigeria: An Empirical Assessment Based on ARDL Bound Test Approach. *European Scientific Journal*.
- xvi. Dauda Y. A. and Akingbade W. A. (2011). Technological Change and Employee Performance in Selected Manufacturing Industry in Lagos State of Nigeria; *Australian Journal of Business and Management Research*.
- xvii. Das D.K, Ahmadzadeh, R., Sindhu, S.S. RN Sahoo, R.N. and Prasad, K.V. (2016). Energy Efficient Campus Landscaping for Mitigation of Climate Change Effects; *Indian Journal of Agricultural Sciences*.
- xviii. Debelle, Guy and Faruqee, H., (1996). What Determines the Current Account? A Cross-Sectional and Panel Approach. IMF Working Paper, SSRN: <https://ssrn.com/abstract=882958>
- xix. Dicken P. (2010); *Global Shift: Mapping the changing Contours of the World Economy*, London; Sage Publications.
- xx. Dietrich A. (2012). "Does growth cause structural change, or is it the other way around? A Dynamic panel data analysis for seven OECD countries, Revisited," *Empirical Economics*, Springer.
- xxi. Dietrich A, (2009). "Does Growth Cause Structural Change, or Is it the Other Way Round? A Dynamic Panel Data Analyses for Seven OECD Countries," *Jena Economic Research Papers 2009-034*, Friedrich-Schiller-University Jena.
- xxii. Dietrich, A. and Krüger, Jens J., (2010). "Long-run sectoral development: Time-series Evidence for the German Economy," *Structural Change and Economic Dynamics*, Elsevier, vol. 21(2).
- xxiii. Ezzo Loesse J. (2010). "Threshold Cointegration And Causality Relationship Between Energy Use And Growth In Seven African Countries," *Energy Economics*, Elsevier, vol. 21(2).
- xxiv. Freeman, C., and Louca F. (2001). *As Times Goes By: From the Industrial Revolution to the Information Revolution*. Oxford: Oxford University Press.
- xxv. Frimpong, J. M. and Oteng-Abaiya, E. F. (2006), "Aggregate Import Demand and Expenditure Components in Ghana: An Econometric Analysis," MPRA Paper No. 599.
- xxvi. Ghosh, S. (2004), "Import Demand of Crude Oil and Economic Growth: Evidence from India," *Journal of Energy Policy*.
- xxvii. Hellmann T., Pesenti P. and Van Wincoop E. (1991). Wages, Profits and the International Portfolio Puzzle" ; *European Economic Review* n.2,volume 40
- xxviii. Hye, Q. M. A. (2011), "Growth and Raw Material Imports Nexus: An Empirical Study of Pakistan’s Agricultural Sector," *Journal of Agricultural Research*, Vol. 49(3): 407-418
- xxix. Ikiara J., (1990). *Industrialization in Kenya; In search of a strategy*; Kenya, Heinemann Publishers, Nairobi.
- xxx. IMF (2016). *IMF Annual Report 2016 "Finding Solutions Together"* IMF Headquarters, Washington D.C.
- xxxi. IMF (2013), *Growth Resuming, Dangers Remain;* World Economic and Financial Surveys, International Monetary Fund, Publication Services, Washington D.C.
- xxxii. IMF (2012). 'Debt Relief under the Heavily Indebted Poor Countries (HIPC) Initiative.' A Factsheet, Washington, DC.
- xxxiii. IMF (2012b). '100 Percent Debt Cancellation? A Response from the IMF and the World Bank'. A factsheet, Washington, DC. IMF (International Monetary Fund) (various years). *International Financial Statistics Yearbook* 1996 -2012. Washington, DC: .
- xxxiv. IMF-Kenya (2009) *Selected Growth Performance Issues In Kenya* , Prepared By Mr. Kalinga (Head), Mr. McIntyre, Mr. Cheng (All AFR), Ms. Aylward (PDR), Robert Tchaidze And Ms. Lusinya (FAD) Approved By African Department December 9, 2004 International Monetary Fund Publication Services 700 19th Street, N.W. Washington, D.C.
- xxxvi. IMF.,(2008). "Making the Global Economy Work for All" Annual Report 2008, https://www.imf.org/external/pubs/ft/ar/2008/eng/pdf/ar08_eng.pdf
- xxxvii. International Energy Agency (IEA), 2002. *Energy and Poverty In: World Energy Outlook 2002*. Available from: http://www.iea.org/textbase/nppdf/free/2002/energy_poverty.pdf
- xxxviii. IMF., (2001). *Conditionality in Fund-Supported Programs--Overview –* [IMFwww.imf.org/external/np/pdr/cond/2001/eng/overview/](http://www.imf.org/external/np/pdr/cond/2001/eng/overview/)
- xxxix. Jumbe., C. (2004). *Co integration and Causality between Electricity Consumption and GDP: Empirical Evidence from Malawi*, Energy Economics, Elsevier publishers.
- xl. Kanu , S.I., & Ozurumba, , A. B. (2014), *Capital Formation on the Economic Growth of Nigeria*, *Global Journal of Human-Social Science: Economics* Volume 14 Issue 4 Version 1.0 International Research, Global Journals Inc. (USA)
- xli. Keller K. L., (2001). "Mastering the Mix: Micro and Macro Perspectives on Programs." *Journal of Economics and Marketing Management*.
- xl.ii. Li-Yang L., Ng, C.T. & Cheng, T.C.E.,(2011). "Optimal Production Strategy Under Demand Fluctuations: Technology Versus Capacity," *European Journal of Operational Research*, Elsevier, vol. 214(2).
- xliii. KNBS (2017). *Kenya’s Economic Survey, 2016-2017*, GOK, Government Press, Nairobi.
- xliv. Lucas, R. E., (1988), "On the Mechanics of Economic Development". *Journal of Monetary Economics*.

- xliv. Maingi, J. (2010). The Impact of Public Expenditure on Economic Growth in Kenya. Thesis, Nairobi, Kenyatta University.
- xlvi. Malik, S., Hayat, M. K., & Hayat, U., (2010). External Debt and Economic Growth: Empirical Evidence from Pakistan; International Research Journal of Finance and Economics. ISSN 1450-2887 Issue 44.
- xlvii. Mankiw, G. N., Romer, D. and Weil, D.N. (1992). "A Contribution to the Empirics of Economic Growth". Quarterly Journal of Economics, 107 (2), 407-437.
- xlviii. Mehra R., (2006). "Recursive Competitive Equilibrium," NBER Working Papers 12433, National Bureau of Economic Research, Inc. Turkey
- xlix. Mehmet M. & Sevgi, S.P. (2014). The Effect of Education Expenditure on Economic Growth: The case of Turkey - Social and Behavioral Sciences, Elsevier Publishing Turkey.
1. McCallum, B. T., (2003). "Multiple-solution Indeterminacies in Monetary Policy Analysis," Journal of Monetary Economics, Elsevier Publishing.
 - li. Musila, J.W. & Balassi, W. (2004). The impact of Educational Expenditure on Economic Growth in Uganda: Evidence from time series data. The Journal of Developing Areas.
 - lii. Namchul L. (2011). Education and Economic Growth In Korea, 1966 To 1997. Journal of Applied Business Research (JABR).
 - liii. Narayan, P. K. & Narayan, S. (2005), "An Empirical Analysis of Fiji's Import Demand Function," Journal of Economic Studies.
 - liv. Odularu, O. G. & Okonkwo, C. (2009). Does Energy Consumption Contribute to Economic Performance? Empirical Evidence from Nigeria. Journal of Economics and International Finance.
 - lv. Obstfeld M.O. & Rogoff R Ed., (1994). The Inter-temporal Approach to the Current Account; Gene Grossman and Kenneth Rogoff, e. Handbook of International Economics.
 - lvi. OECD (2012), Reading for Change: Performance and Engagement across Countries, OECD, Paris
 - lvii. Onuonga, S.M. (2012). The Relationship between Commercial Energy Consumption and Gross Domestic Income in Kenya. Journal of Development Areas, Vol 46 No. 1 Published by Tennessee State University College of Business.
 - lviii. Onuonga, S.M, Etyang, M.N, & Mwabu, G (2011). Demand for Energy in the Kenya manufacturing Sector. Journal of Energy and Development, vol 34, available also in this web site: <http://www.scribd.com/doc/54298613>
 - lix. OECD (Several years), Worldwide Economic Perspectives of Development and Growth; Programme for International Assessment and Database, OECD, Paris.
 - lx. Patricia M. Shields A. (2013). A Playbook for Research Methods: Integrating Conceptual Frameworks and Project Management. Stillwater, OK: New Forums Press
 - lxi. Pavelescu F. M. (2007). Gross Capital Formation and Economic Growth during Early 2000's In Eu-Member and Candidates States, Journal of Economics and International Finance.
 - lxii. Richard C, Jeffrey F. & Jones R. (2004) World Trade and Payments: An Introduction, Addison Wesley.
 - lxiii. Romer, P. (1986). "Increasing Returns and Long Run Growth". Journal of Political Economy.
 - lxiv. Rebel A. C. & Mehran, H. (1991). "The Effect of Changes in Ownership Structure on Performance: Evidence from the Thrift Industry," Finance and Economics Discussion Series, Board of Governors of the Federal Reserve System (U.S.).
 - lxv. Sadiku L.S, Fetai M., Sadiku, M. & Berisha N. (2015). The Persistence of Current Account Deficits of FYR of Macedonia, In The Economies of Balkan and Eastern Europe Countries in the changed World. Elsevier Publishing.
 - lxvi. Shiu, A., & Lam, P.L. (2004). Electricity Consumption and Economic Growth in China. Energy Policy 32, 47-54.
 - lxvii. Silva, E.G. & Teixeira, A.A.C. (2008). "Surveying Structural Change: Seminal Contributions and a Bibliometric Account." Structural Change and Economic Dynamics.
 - lxviii. Solow, R.M., (1956). A Contribution to the Theory of Economic Growth, Quarterly Journal of Economics.
 - lxix. Swamy Gurushri G. (1994). Structural Adjustment in the 1980s : Kenya. Policy, Research Working Paper; no. WPS 1238. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/771151468774952469/Structural-adjustment-in-the-1980s-Kenya>
 - lxx. Tanzi V. & Zee H.H. (1997). "Fiscal Policy and Long-Run Growth" IMF Staff Papers,
 - lxxi. Thorbecke E, and Jung Hong-Sang J., (2003). The Impact of Public Education Expenditure on Human Capital, Growth, and Poverty in Tanzania and Zambia: a General Equilibrium Approach Zambia: Journal of Policy Modeling, 25, (8), 701-725
 - lxxii. Toman, Michael, M. and Jemelkova, Barbora, B.(2003). "Energy and Economic Development: An Assessment of the State of Knowledge," Energy Journal; Discussion Papers, Resources For the Future.
 - lxxiii. WB, (2017). World Development Report 2017: Governance and the Law: Main report (English) Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/774441485783404216/Main-report>
 - lxxiv. WB, (2017). World Development Report: Development indicators and phases in Africa: Main Report (English) Washington, D.C.: World Bank Group.
 - lxxv. WB (2013). Handbook of statistics, Washington, DC
 - lxxvi. WB, (Several Years). World Development Reports, The International Bank for Reconstruction and Development / The World Bank. 1818 H Street NW. Washington DC 20433. <https://siteresources.worldbank.org/INTWDRS/Resources>
 - lxxvii. Yousif -Khalifa Al-Yousif, Y. (2008). Education Expenditure and Economic Growth: Some Empirical Evidence from the GCC Countries. The Journal of Developing Areas.