

**IMPACT OF OFFICIAL DEVELOPMENT ASSISTANCE ON
ECONOMIC GROWTH IN KENYA.**

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DECLARATION

This research project report is my original work and has not been presented in any other university for examination.

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This research project report has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

This research project is dedicated to my parents for their unconditional love, moral support and sacrifice when I was out to undertake my studies.

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I wish to thank my supervisor, Dr George Ruigu for his guidance, and encouragement.

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ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey-Fuller
DAC	Development Assistance Committee
ECT	Error Correction Term
ERS	Economic Recovery Strategy Paper
GDP	Gross Domestic Product
GNP	Gross National Product
ODA	Official Development Assistance
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
SAPs	Structural Adjustment Programs
ARDL	Autoregressive Distributed Lag
CUSUM	Cumulative sum

ABSTRACT

The demand for continued aid exists. Whether or not foreign aid is positive for the recipient country's economy remains inconclusive. Since attaining political independence in 1963, Kenya has continued to receive ODA inflows. The study sought to analyse the statistical association between economic growth and ODA inflows in Kenya in the period 1970-2016. The study borrowed from Solow (1957) theory of production that based output production on Labour (L) and Capital (K) as the fundamental factors of production in an aggregate production function. The ARDL Bounds test was used to investigate the long run relationship among the variables using time series data from World Development Indicators for the period 1970-2016. ARDL Bounds testing indicated there existed a long-run relationship between GDP, ODA, government expenditure, investment and policy variable (political regime). Government expenditure, investment and post narc political regime were positive and significant to GDP. ODA was positive and insignificant to GDP. The insignificant relationship was attributed to unsuitable aid programmes to the country, ineffectiveness of aid due to unpredictable aid, donor related factors, costly management of aid disbursements in addition to corrupt political regimes and poor policy implementation associated with ineffective institutions of governance. Scholars have argued that ODA was meant to improve the livelihoods and eradicate poverty. One recommendation of the study was for the Kenya government to re-look into suitability of projects, policy implementation through strengthening of institutions and continuous reforms on politics and governance. A comparative study of Kenya with other countries in East Africa region would be a basis of future research. It would widen the scope, enrich the study in addition to establishing clearer and detailed facts regarding the aid – growth relationship.

CHAPTER ONE

INTRODUCTION

As outlined in Development Assistance Committee (DAC) funds directed to countries in form of loans and have a grant factor, make up ODA. In addition are loans advanced by bodies such IMF as well as by states and local administrative units or by their policy making agencies. Transactions of this aid are principally to stimulate development in the economic and social spheres of the recipient country. ODA as a form of loan consists in part a 25% grant factor according to OECD (OECD, 2003). According to (Ram 2003) multilateral loans are regarded to be more altruistic in motive than bilateral aid. Bilateral aid leans more to self-interest drive (on the donor side) in order to meet its own strategic and economic interests in addition to the recipient countries having cultural, historical, trade relations and political connections.

Despite the absence of consensus on how AID impacts on Growth, aid does indeed work, but this does not imply either that it works in every country or in all situations (Boakye, 2008). ODA remains the largest origin of external finance for purposes of development. Alvi, et al; (2008) argue that gathering together of capital is the key requirement for sustainable growth in an economy. American Marshall Plans and other growth models had similar opinion of gathering wealth to have tenable growth in the economy. When a large sum of funds is given to Kenya, poverty is expected to decline. Kenya's failure to replicate the Asian economies is a situation that is an area of thought for many policy makers. However, donors have been criticized in that they interfere in Kenya's policies in addition to the failure of providing the accurate quantity and quality of aid. Corruption in government institutions of aid receiving countries was also to blame. Donor procedures for releasing aid are also cumbersome. The Kenyan government, in turn, has responded by making pleas to donors and by not budgeting for aid which might not even be disbursed.

Volatility and unpredictability of aid are other factors which could affect the impact of aid in Kenya. ODA, as pointed by Mwege (2004), has been erratic regarding both the timing and volume. This phenomenon was due to the use of aid to promote political agenda specially to gain voting advantage from the electorate that is always changing. Aid targets promoting economic development in addition to raising the rate of growth to satisfactory and sustainable level (Guillaumont & Chauvet, 2001). The propositions of McGillivray (2005) on boosting economies of LDCs were based on foreign aid, where via public policy, aid would facilitate self-sustaining growth rate. When this level is achieved by the developing countries, they can substitute external aid by local saving. Though Kenya still utilizes aid to finance its

development agenda, it has been slowly shifting from dependence on aid to finance its budget and relying on its domestic revenues.

Chenery and Strout (1966) outlined three phases of development, with the first phase being depicted by inadequate financial resources, coupled with low investment levels that would not achieve growth. Aid covers for saving -investment disparities so as to archive growth target. There is a trade gap appearing in phase two, since export earnings are not adequate to cover costs on imports of capital equipment and raw materials. In this stage aalthough the savings–investment gap would be wiped out by structural rigidities; the foreign exchange gap still persists with a need for aid to cover cost of imports. This role of aid, according to Chenery and Strout (1966) is the two-gap model. As concluded the inflow of foreign capital, which is scarce in low-income countries, is the engine of growth and development.

1.1.1 Economic Growth in Kenya

The performance in Kenya's growth is marked by a history, with three periods. The period from 1963 to the beginning of 1980, depicted by high performance in the economy and remarkable achievements in the social spheres. Aid in this period was also high. The period 1980 to 2002 had low growth and losses in social welfare, macroeconomic imbalances and deepening poverty levels. It was characterized by donor sanctions and aid freeze.

ODA inflows experienced sharp decreases in the late1990s save from donors like Japan, which have increased consistently. The growth rate was around 4% of the GDP, which slowed down to 2%. Entry of new government in 2003 marked another phase in Kenya's economic growth with a resurgence of performance. This period also marked increase in ODA inflows. In 2004/2005 fiscal year, a re-commitment of many bilateral and multilateral donors increased aid to Kenya. In the 2004/2005 fiscal year, aid commitments to the budget rose to around 5% of the GDP. Many sectors of the economy experienced expansion, e.g., tourism transport and the construction sector with the growth rate approaching a high of 7.7% mark by the year 2007. It's worth noting that in the absence of donor support, (in 2004/2005 fiscal year) the budget deficits would have led to higher taxes, increased domestic borrowing, and reduction in government spending. To curb the budget deficit and also to prevent a downturn in economic growth, external resources played a vital role in overall macroeconomic performance and, to a reasonable degree, the overall development of the country (Uneze, 2011).

1.1.2 ODA Trends in Kenya

Kenya's aid inflow has been unpredictable since 1980. OECD-DAC showed a build-up in the 1980s, with a drop in the 1990s. The scenario in nominal terms was US\$ 393.4 million in 1980 to US\$ 1,120.5 million in 1989-90, then dropping to f US\$ 308.85 million in 1999, with an increment soon after a new government in December 2002 (Uneze, 2011). Increased aid flows since 2002 arose from increased government borrowing to provide funds for projects on infrastructure in addition to provision of grants to support government efforts in social and humanitarian actions such as droughts as agreed in Consultative Group (CG) meetings in 2003 and 2005 (UNDP, 2006). The increase in foreign aid, therefore, painted a picture of new donor confidence in the government's efforts to manage the economy in a better way curbing graft and corruption. (Herbertsson & Paldam, 2007).

In 2006, Kenya was placed 23rd position of 150 countries receiving aid. These aid disbursements were less compared to the high amounts of 1989- to 1993. The reduced aid was due to "aid freeze" in addition to the government slowly failing to meet its commitments on the terms of the loans as agreed with the donors. A succession was in the early 1980s, while a collapse ensued between the years 1991 to 2000. An improvement in the aid scenario was after 2003. The observed reduction in aid in the 1990s was an impression of the gap between Kenya and donors on the mechanism of Structural Adjustment Programmes. Aid to Sub-Saharan Africa, was also minimized as the Cold War was concluded (McCormick et al., 2007).

The ratio of ODA share to rate of development was 1.22 percent: 3.34. This was in the period 1980-2006. However, a substantial reduction was experienced was observed in developing countries even in Africa with a low of 0.77 percent in the 2000-06 net ODA inflows averaged 14.6 percent of the gross domestic income, declining to 2.52 percent in from 1999. A increase of 4 percent was noted in 2006. Thus, a scenario of Kenya's decline in dependency to ODA in its efforts to steer the economic growth. The 3-4 percentage of GNI, shows less reliance on foreign assistance in comparison to neighboring countries (Ojiambo, 2013). in timing as well as in volume funded. Donor procedures are also cumbersome about releasing of aid. Thus, volatility and predictability of aid have also affected aid effectiveness in Kenya. Aid is not always disbursed and matching grants not always available. Aid unpredictability and the decline of ODA to Kenya negatively impacts on forms and types of aid where there is a shift

from program aid (aid from multilateral donors) to project aid (aid from bilateral donors (Mwega, 2009).

Efforts towards tackling these problems are seen in the deliberations of The Paris Declaration of 2005, (OECD 2003) as well as the Rome Declaration of 2003. (OECD 2003). These declarations were aimed at harmonization and alignment of national capacity for ownership of aid via coordination. It was also targeted to eliminate duplication and excess costs on transactions. The Kenya's Joint Strategy (2007-2012) was stipulated to eliminate these problems. It was an agreement between the government and donors to create new and more effective working relations. In addition, it would also foster efforts towards growth and poverty reduction (Oduor & Khainga, 2009). However, notwithstanding the changed donor funding patterns, Japan ODA continues to increase through bilateral Government of Kenya channels. There are still significant ODA flows injected in the national financing gap.

1.1.3 Macroeconomic Policy Reforms in Kenya

The stabilization macroeconomic policies in Kenya date back in the early 1970's. This was after the rapid growth rate experienced in the 1960's started declining. With a saving-investment gap of 3.2% of the GNP in 1965 – 1969, an expansion of the gap proceeded to a high of 6% of the GNP in 1980's. Reliance on external resources in the 1980's was inevitable, and the cutback of aid with the advent of SAPS was a setback to economic growth (Kimura, Sawada & Mori, 2007). The Kenyan economy is exposed to exogenous shocks that are a factor to its earnings in the international markets. This is due to its openness and the reliance on few selected primary exports. In the early 1970s and 1980,'s a decline of economic performance was experienced due to adverse exogenous developments. These exogenous developments compromised by the oil crisis, the worldwide economic recession and the increased protectionism of developed countries.

Also, there was a drought in successive periods in the 70's e.g. 1979/1980, with a major one in 1983 – 1984 which saw agricultural production decline. The political climate was also not conducive for growth due to the coup attempt in 1982. With this picture of deteriorating economic performance, structural policy changes were necessary to bring economic stability and reinstate economic growth rate. This begun with policy conditionalities on trade and external financing specially to curb balance of payments problems which ensued due to the drastic run down of reserves from effects of the (OPEC) oil crisis.

The policies were spelled out in the 1974 – 1978, development plans, the 1975 Sessional Paper no.4 on Economic Prospects and Policies, and the 1980 – 1982 Sessional Paper no.4 of Economic Prospects and Policies. (Kenya, 2016).

Structural adjustments policies were introduced and incorporated into the development plans published in 1984, 1989 and the 1986 Sessional Paper of 1986 on Economic Management for Renewed Growth. This paper was based on the argument that economic policy was key to economic growth. It was geared towards restoring and sustaining the rapid growth rates experienced in 1960's. The key areas were in addressing the fiscal deficit; control inflation, restrain public indebtedness, increase savings and curb crowding out of private investments. It also advocated export promotion to reduce the foreign exchange gap. (Kenya, 2016).

In the 1990's macroeconomic policies were based on structural adjustments, sustained stabilization and economic liberalization. With the looming large external debt, monetary policies were introduced to contain inflation while ensuring adequate credit supply consistent with a viable Balance of Payments. The government embarked on economic liberalization including interest rates, coupled with a restructuring of the institutional framework governing the financial institutions (Kosack, 2003). Macroeconomic policy reforms started way back with the onset of SAPS (Structural adjustments programs) coupled with other donor conditionalities that are meant to restore macroeconomic stability in developing countries (Kosack & Tobin, 2006). This took effect in the 1990s. Transformation of the public finance system was emphasized in the policy frame work paper: The Economic Recovery Strategy for Wealth and Employment Creation (ERS) in 2003-2007. This aimed at fiscal sustainability, balance of public economy, restructuring, re allocations of growth and poverty alleviation (The Republic of Kenya, 2003).

In addition, other reforms were undertaken governing financial management and ethics, procurement and introduction of improved audits techniques. More so the reforming of institutions of governance, fighting corruption and better management of public finances. In June 2008, the government of Kenya unveiled the Vision 2030 with a focus on changing the picture of national development. Its aim was to transform Kenya into an economic powerhouse by raising individual income and sustaining a 10% GDP growth per annum. Republic of Kenya 2008. The pillars of the policy were political, social and economic. The vision 2030 was to be rolled out in phases with an injection of significant resources, foreign aid being one such source.

1.1.4 Investment in Kenya

Investment in Kenya is an important factor in developing the economy. Kenya mostly relied on aid for capital investment. The period with the highest financing in development projects was between 1970 and 1980s. This was through external grants, loans, and domestic tax revenue. However, a decline followed in the 1990s with the onset of SAPS of the World Bank and IMF. Measures to reduce development expenditure were put in place. The government of Kenya had to restructure its budget policy and public investment program. However, by the year 2002, investment in the public sector started improving. To date infrastructural projects especially on the road, housing and electricity supply have intensified, the most current being the investment in the standard gauge railway. Infrastructure was one of the foundations meant to anchor the country towards Vision 2030. (Sessional paper no.1 of 2012 on Kenya vision 2030)

1.2 Statement of the Problem

Justification of aid is basically to boost Gross Domestic Product (GDP) of the recipient nation. In this scenario, the country is usually facing problems of low domestic savings and low foreign exchange revenues. These gaps mean the countries can hardly meet their economic growth goals and have to solicit capital resources in the form of aid to prop up economic expansion (Guillaumont & Chauvet, 2001).

A number of studies explain that a negative relationship between the rate of growth and the recipient country results when aid is injected into the economy. This is attributed to the level of consumption which increases more than the domestic savings. The problem of absorptive capacity constraints is also envisaged in the aid recipient country. (Feeney & Mc Gillivray 2005), thus diminishing returns on the help.

The expectation of higher growth should not be automatic, but the productivity of the investment should be the point of focus (White, 1998). Kenya should put more effort if it has to wean itself eventually away from aid and not depend on it to boost its domestic investment. The role of macroeconomic stability is still paramount to the success of aid on growth. Through sound policies, problems which arise from the current aid scenarios e.g. aid unpredictability can be mitigated and consequently reduce the negative impact they have on growth. The government should gear its policies towards accumulating savings and boosting domestic investments to move away from aid dependency.

1.3 Objectives

The general objective was establish the effects of ODA on economic growth in Kenya.

The specific objectives were:

- (1.) To determine the impact of ODA on economic growth in kenya
- (2.) To offer policy recommendations based on the study findings.

1.4 Research Questions

The study purposed to find answers to queries as follows:

- (1) What is the impact of ODA on Economic growth in Kenya?

1.5 Significance of the Study

More than 50 years after independence in 1963, Kenya is still faced with economic challenges of low levels of income, high level of unemployment and high poverty levels among others. Official development assistance flows continue to be channeled to the country.

Kenya still depends on foreign aid to augment low domestic resources. Despite continued inflows of ODA, social-economic development is in a depressed state. This is attributed to many factors, among them social- political difficulties, unreliable policies, macroeconomic unsteadiness, and problems relating to governance. These factors give an indication of a policy framework which is lacking and questionable. Based on this scenario, studies of this nature would be timely and cannot be avoided. Also, from the year 2002 to date, current rapid economic growth has taken center stage, and as such studies analyzing the effect and performance of the ODA assume a vital significance not only for politicians and policy makers in Kenya but also for donors.

The study met some of the shortfalls of earlier empirical studies that investigated a group of countries. It also filled gaps of literature of existing studies on individual economies. This is by adopting an empirical model with more theoretical framework and applying more refined econometric methods for estimation. The results from this study gave insights particularly to those formulating policies, on whether ODA was an appropriate tool to spur progress in Kenya's economy. Use of statistics and facts in varying periods in addition to more refined empirical analysis approach, formed the basis of this research.

1.6 Limitations of the Study

The scope was limited to Kenya's scenario of foreign aid - growth interrelationship, and not applicable universally to all countries. The data in consideration was from 1970 to 2016. It was a macro and not a micro level investigation. The level of democracy influenced economic development of the country but was not a variable in the instrumentation of the model due to complexity in its quantification.

Different factors usually influence development of an economy, but in this study, the researcher concentrated on the question of whether ODA was significant on economic growth. Also, some control policy variables both monetary and fiscal were incorporated, in addition to a dummy variable to represent political era of single party rule and multiparty system, and thus, the preferred variables were determined on their suitability to the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

A scrutiny of theoretical as well as empirical literature was done. Theoretically, literature was on aid- growth relationship, highlighting on savings – investment factor. The empirical research reviewed several empirical studies that explained the aid-growth relationship not only on savings and investments but also other factors. Lastly, an overview of literature was presented.

2.1 Theoretical Literature

2.1.1 The Two Gap Model

As modelled by Chenery and Strout (1966), the requirement for aid became known as “two-gap model”. Saving gap was classified as the first gap which referred to the quantity of investment necessary to get a set level of growth with available domestic savings. Trade gap was the second classification which occurred when there is a disparity on import needs to attain a targeted output. It’s also known as the foreign exchange gap when it occurs as foreign exchange earnings. Although there is little disparity between savings and investment, as the trade gap enlarges, productive investment weakens due to capital goods shortage in the import equation. An aid recipient country, over time is presumed to have a gap.

The model’ gives foundation and upholds the proposition of limited investment growth based on the Harrod- Domar model. According to the model, a specific amount of investment would revamp growth. The conditions for the gap to be filled by foreign exchange necessitate that an investment is restricted in terms of incentives limited by liquidity and favourable to invest in. Aid can only cover costs on consumption when incentives to invest are poor. Foreign aid is unsuccessful in raising investment. How effective foreign aid in the gap model is, remains pegged to how much the investments yields. (White, 1992). There are other factors however which constrain the developing countries from being less aid dependent. This includes hostile political environment, poor governance, and poor policy. The two-gap model, therefore, as argued by other economic scholars could not be the only constraining factor for development.

2.1.2 The Big Push Theory

Sachs (2006), proposed that developing countries particularly underdeveloped countries require a “big push”, i.e. help from developed nations. He infers that foreign aid inflows to all

sectors, that is, social and production will influence growth positively. This view emanates from the “poverty trap” theory, a scenario where inadequate yield retards growth of developing countries. Sachs view of “big push” spells out that countries are too poor for saving to occur hence growth rate is impaired (Sachs 2006).

Boone and Easterly verified Sachs views and they found them erroneous. Despite injecting billions of dollars in the year 1970 and 1994, Easterly (2006, stunted growth rates were experienced in contrast to the “big-push” theory. Boone (1994) was of the view that the big push theory is erroneous because injecting funds only drives up purchasing power of poor households, consumption goes up, with nil private investments.

Aid is expected to boost the economic growth, however it has not. Productivity of investments where aid was pumped into was faulted and not efficiency of aid. If aid is pumped into good projects by a recipient country economic growth would occur (World Bank 1998). Solow’s model on growth allows swap where capital swaps with labour. The model purports that an economy reaches a stable state. This is where savings is equated by the requirement for investment to sustain a consistent fraction between capital and labour, with increases in labour force and productive capacity. At the stable level, growth rate does not increase even with more aid. But it implies that this growth rate is reached at a higher level of GDP which is a good outcome. The theorem is that there are stable returns to scale, technology $F(K, L)$, capital K and labour (foreign direct investment) with domestic investment solely financed out of domestic savings.

(A further derivation of this model was done in the chapter of methodology in this study since it formed part of the theoretical framework for modeling the econometric growth equation).

2.3 Empirical Literature Review

The aid-growth literature has evolved through time where arguments on the subject may either find a negative or a positive relationship of ODA and growth scale of country that is getting aid. Further literature has also emerged to bring in other country specific factors which may cause the relationship to be positive or negative. In this study, the literature was classified into three categories of thought, the first line of literature where aid and growth relationship is explained via its intermediary variables, proceeding with the second line of literature where the aid -growth relationship is explained as having direct causal relationship and the third line of literature which attempts to explain aid association to growth using other elements, namely governance, policy, in addition to patterns of political regimes.

2.3.1 The First Line of Aid Effectiveness Literature

The literature in this category explained the influence aid has on growth via intermediary parameters, the primary parameters being investments and savings. The findings of Chenery and Strout as discussed earlier gave basis to this proposition. There fore aid closes both trade and foreign exchange gaps. The implication is that growth is affected positively thereby boosting the savings and investments in a country. Early studies of Gomanee, Girma, Morrissey (2005) and Levy (1988) further contributed to this debate. They regressed a group of 34 over the periods, 1951 and the 1960s. The variables considered as explanatory parameters included foreign aid and investment among others. The effect of foreign aid was found to be substantial and whose effect on growth outweighed other parameters. In conclusion aid was preferred than domestic savings, foreign private investment since it would encourage growth and was skewed towards the pressure in the balance of payment.

This model, however, gave rise to an argument within the body of economists as well as researchers. They argued that growth was elevated by aid via enhancing savings, covering costs of investments, and accumulating stock of capital. These analysts further argued that aid also elevates output, especially if directed to sectors such health. In a study of the World Bank as a development agency, Hudson and Mason and Asher (1973) attempted to trace the history of this institution. Being a development agency and a guide to development policy, the study revealed that the World Bank successfully negotiated the lending for reconstruction in Europe and the lending for development in the less developed economies. According to their study, greater and beneficial outcomes resulted in areas where it concentrated its lending.

The debate on aid and savings has been the center of discussions with reference to the fiscal reaction due to capital injections to the economies that receive aid. Griffin (1970) suggested that aid could result to diminished savings. The outcome is due to its reaction on government spending patterns and creation of revenue. Further assertions rose from Heller's (1975) stating that foreign loans fail to elevate full expenditure completely, with a decline in borrowing and taxation. Government's purchasing power raises consequently reducing government investment .

Direct and indirect outcomes are created when aid is given to an economy. Mosley and Hudson (1978). Resources in the public sector may be utilized to cut taxation, cut borrowing, increase development expenditures and increase the recurrent expenditures. Changes in the relative prices is an example of indirect effect of ODA on the private sector of an economy of

a developing country (Mosley, 1987: 120). Mosley stated that the resources are directed from the public sector to finance developmental costs or redirected into unproductive ones like finance army expansion.

Fayissa and El-Kaissy (1999), did investigate a group of 77 countries covering 1971-1990. They found a positive association between foreign aid and economic growth for a developing country. This upheld the economic theory of foreign aid. The assertion is that ODA supplements capital accumulation where there is inadequate domestic capital. State intervention statistically weakened foreign aid outcomes.

An investigation of Cote d'Ivoire by Ouattara & Strobel (2008) proceeded by categorizing Official development assistance into different components, namely project, program, technical and food aid. By categorizing types of aid and applying auto regressive techniques, their findings noted that while aid on projects displaced public savings, aid for programs was neutral while technical support and aid given for food elevated public savings.

2.3.2 The Second Line of Literature

These studies hypothesized a direct aid-growth association. Empirical support for this argument is not detailed much in literature. The works of Kourtellos, Tan and Zhang (2007) involved a summary of literature for a decade. They applied a meta-analysis and regression analysis on a sample data of 68 papers containing 545 direct estimates.

The finding was in the model, with the problem of correlation yet to be tackled.

2.3.3 The Third Line of Literature

Several factors continue to explain the Aid- Growth debate. These include; policy, institutions, governance, negative shocks, political regime, the pattern of aid and aid unpredictability. An assessment by World bank in 1998 of countries with good macroeconomic policies on trade, money and fiscal aspects yielded a report, which showed that such economies had better success. The report by Burnside and Dollar in 2000 illustrated that the determinants as to whether sound policies would be in existence in a certain environment were the donor and the aid recipient. The conclusions from their study depicted that for favourable outcomes in developing economies, sound policies are a prerequisite while unfavourable outcomes resulted from unfit and inadequate policies. The approach by Burnside and Dollar was a better attempt to provide an explanation of why previous empirical work showed aid to have a little impact. It also provided specific criteria for targeting aid.

Addison et al. (2005) on similar studies proposed the injecting of aid to eradicate poverty. Aid spent on uplifting the livelihoods of the society elevates the response of poverty to growth poverty elasticity of growth. Public expenditure on social amenities, infrastructure and on social welfare issues results to improved yields to those in poverty. An analysis by Bennesen and Meisner (2005) came to a conclusion that proper institutional governance touching on processes and procedures act as incentives that enhance productive capacity and earn higher returns in social as well as private sectors. This is in contrast to weak institutions which create a market for non-productive activities, resulting to inequalities in different sectors with the private ones being more advantaged and social ones performing dismally. A case for proper institutional management is that it would bridge gaps in the different sectors for efficient resource allocation.

Several research series continued to contribute in investigating the interaction between aid and other country-specific factors to substantiate the association between aid and growth. Collier and Dehn (2001) incorporated export price shock to the Burnside and Dollar (1997) analysis. They were for increased channeling of aid on countries with negative shocks as this would result to favourable consequence to development. Expansion of aid to countries, some scholars argue, may have inadmissible outcomes, primarily those connected to 'Dutch disease' This is as proposed by Meier and Stiglitz, (2001). Continued injections of aid to an economy can be likened to a discovery of enormous natural resource, whose effects to the economy include but not limited to the increase in value of of currency and inflated wages. This results to failures in both the market and employment as relates to international trade with a conflicting scenario being created in the export and import fields.

Doucouliaagos and Paldam (2006) did their analysis to examine: the pattern of aid effectiveness. They also sought to find out impact of learning by doing with reference to aid efficacy. A positive but insignificant association existed between aid and growth. This meant that despite 40 years of ODA, its effectiveness was negligible and the learning by doing aspect a failure. According to their study, Dutch disease on exchange rates had a lot to do with the ineffectiveness aid. Rajan and Subramanian (2008) on compiling results of their findings on the aid-growth relationship depicted dismal substantiation of an association in either direction of positive or negative link. The case that categories of aid worked well than others could not be verified. A good policy environment did not guarantee aid effectiveness. They proposed a

rethinking of the mechanism and instrumentation of aid to enhance its impacts positively into the future.

As regards political regimes, foreign aid can be a means by which dictators finance their political campaigns and their political allies through government spending. Boone (1996) sheds light on how political regimes can influence aid effectiveness in his paper “Politics and the effectiveness of foreign aid”. He did an investigation regarding social aspects such as education, health, life expectancy in order to find out how aid impacted on the people especially as regards poverty. Boone also sought to find out if recipient countries proper and legal systems of governments, that do not take advantage of foreign aid and hinder investments and consumption (Boone 1996).

Usually, aid is given to countries on basis of how the recipient country would in turn impact their trade or investment interests. A practical example is aid directed to former colonies of Britain and France. The Arab nations get aid from OPEC countries. (Ram 2003). As a result donors project their assistance for reasons which are mostly aligned to the benefits they reap from recipients. They could be focusing on politics or other resources inherent in that country. (Boone 1996). In Boone’s view, aid benefits few of the economically disadvantaged countries. According to him, its countries which are liberal that perform better and utilizing aid to improve social aspects such as reduction of infant mortality. Aid works to bring economic growth when shortage of capital can be offset in addition to policies that that are supported by the political governments in place.

Quibra (2014) argued that ineffective political and legal institutions that reduce aid effectiveness on economic growth are founded on political barriers, historical impediments and social restrictions defining an individual country. This implies that progress is a step by step process, and require resources that could be beyond the capacity of that country. Donors’ notion of extending aid with conditionalities may still not make aid effective.

In recent studies in Kenya, Ojiambo (2013) did an analysis on the issue of aid unpredictability and on aid effectiveness in Kenya. Unpredictable ODA has negative implications on growth. Some of them include lack of ownership of development projects coupled with the increase in the probability of fiscal and monetary instability (Bulir & Lane, 2002).

Girma and Morrissey (2005) analyzed the treatment of investment in framing a growth parameter representation. They differed with Burnside and Dollar (2000) in the treatment of aid variables. Aid was intended to affect growth via its treatment. The variables utilised in the study underscored the insufficiency of resources and the importation of capital in most poor countries. Another study based on aid allocation was done in West Africa by Uneze (2011). It sought to understand how foreign aid in the presence of other parameters that influence private investments will ultimately influence it. He investigated consequences on private investment arising from different sources, for instance bilateral. As an expansion to his investigation he went on to find out how aid uncertainty imprints on private investment. While multilateral aid affected private investment positively, bilateral aid affected it negatively. Country-specific studies have also been done in Kenya.

These include Mwega (2009), Oduor and Khainga 2009 and Ojiambo (2012). In these studies, the effectiveness of aid is looked at different dimensions to encompass other variables such as policy and predictability of aid. Ojiambo (2012) carried out a study on Kenya using time series parameters in the year 1966-2010 and employing a model based on Samuelson (1958). The findings indicated that foreign aid was positively associated to the growth and public. Growth and development are always the outcome looked forward to as a result of aid. More often than not, results are not appealing. The subject in question for foreign aid incapability is “productive investment”. Its only when economies that are channelled with aid inflows sink these funds into favourable technically viable programme that growth will be seen. (World Bank, 1998).

Deaton (2013), rationalized that micro approaches of directing aid effectiveness through projects that promote growth can only be brought to light through experimentation.

2.4 Overview of Literature

A scrutiny of the studies on the association between aid and growth nexus show, the subject, is still open for study. One must appreciate the wealth of information these studies have contributed to the debate. From the early studies which started with the two –gap model to the most recent studies that have extended such models or used other models to include other variables that investigate the relationship. As discussed earlier the rich writings on ODA and its relevance to development to the receiver employed statistical scrutiny with international referencing in contrast to a particular economic representation. (Mosley et al., 1987). The outcomes of these analysis were pegged to the choice of countries and years under scrutiny.

Complications to the choice of parameters and inspections thereof are oblivious to the conventionalized forms exclusive to a country.

Cassen et al (1986) concluded that individualized investigations disclose better outcomes of aid unlike the large scale which have misleading and indeterminate outcomes concerning aid and its eventualities to growth. This conflict is what Mosley (1987) referred to as the micro – macro paradox. According to Deaton (2013) determinative aid policies necessitates a comprehension of a country which would be obtained by narrowing down to its distinctive features inherent to the political and institutional structures. In addition, he, argued that the aid linkage to underlying political and justice institutions is crucial in archiving desired growth responses. This is the primal avenue to grip matters concerning aid eventualities.

Criticism of empirical literature was based on parameter choice, statistical figures; the quality and size, methodology and instrumentation which has prompted further research. This study illustrates some distinct features from prevalent work demonstrating the aid connection to economic growth by including aspects absent from previous empirical analysis in the case of Kenya.

It will include policy variables in the aid-growth relationship as control variables and provide a theoretical backing for the interpolation of these parameters in the design and framework. The inclusion of parameters representing policy makes clear the government capacity in managing its economic affairs. This will also show the prevailing macroeconomic climate and assist the government to formulate policies that will gear towards economic expansion. Analysts concedes that ODA as a variable in the model brings causation errors since causation may not be implied even though aid is associated or connected to growth. With declining ODA flows in the past decade, the Kenya government needs to pursue possible avenues to employ funds with proper policies in place coupled with ingenious ways to go out for more aid.

This examination moreover contributes to existing literature by looking at growth in Kenya across the periods of political regimes (pre- Narc, and post-Narc government era). Through the model specification, the study will incorporate these changes in economic growth. However, since results on aid-growth relationship vary, depending on econometric methods, periods of study, type of data used and variables included, the study on aid-growth relationship remains open to debate.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section provides the design and data that was employed in achieving objectives of this study. The chapter covered the empirical model that was adopted to carry out estimation, in addition to pre-estimation and diagnostic tests that validates the use of the model for estimation.

3.2 Research Design

The examination was quantitative and empirical. It was adopted to extend the existing models and methodologies that previously used descriptive and systematic research design. Autoregressive Distributed Lag (ARDL) advanced the interpretation points of data over specified period. Causality checks were done to determine the causation connection of ODA to economic growth in Kenya.

3.3 Sources of Statistical figures

Data employed to carry out analysis was from secondary sources. Statistics and figures originated from yearly statistics of 1970 -2016 based on The World Bank Development indicators.

3.3 Theoretical Framework

The examination nominated a model by Solow (1957) who argues that a yield is a product of two fundamental elements; Labour (L) and Capital (K) in a combined output representation whose assumptions state elasticity of substitution is one. Deviation from the model stemmed from the conventional growth model expressed to take the Cobb Douglas process.

$$Y(t)=K(t)^\alpha [A(t)L(t)]^{1-\alpha} \dots\dots\dots(1)$$

t = period

$0 < \alpha < 1$ = elasticity of output on capital,

Y (t) = total production.

A = labor-augmenting technology or “knowledge”.

AL = represented effective labor.

Assumptions : Elements of production utilized to full capacity.

A (0), K (0), and L (0) were given.

n and g = exogenous growth rates of labour and technology respectively.

$$L(t) = L(0)e^{nt}$$

$$A(t) = A(0)e^{gt}$$

$$\dot{k} = sY - \delta K$$

Where k is defined as $k = K/AL$

Denoting the change of capital labour ratio in period t

$$y = k^\alpha$$

Where $y = f(k)$ denoting output of effective labour input.

From the first equation where

$$\dot{k} = \frac{\dot{K}}{k}$$

$$\dot{k} = sY - \delta K \dots\dots\dots (2)$$

δk -represents the component of change in capital stock per unit of effective labour as s is increased.

\dot{k} at time (t) will be

$$\dot{k}(t) = sf[k(t)] - [n + g + \delta]k(t) \dots\dots\dots (3)$$

Equation 3 describes capital evolution per unit of effective labour. Rewriting it in the Cobb Douglas form

$$\dot{k} = sY - (n + g + \delta)k \dots\dots\dots (4)$$

This is how it evolves;

An increase in s resulted into a shift in actual investment (y) leading to an upward shift that resulted into an increase in (k^*) . (k^* stands for the balanced growth path value).

Consequently, \dot{k} rose until it equated k^* .

Saving (s) build-up of steadily raises capital (k) however, an increase in s to a certain level led to a constant k .

In the same scenario, an elevation in s results to elevation of g to a certain level where further increases in s did not lead to an increase in g but maintained at a constant level. At steady state $\dot{k}=0$.

Balanced growth path value was therefore as follows;

$$s k^{\alpha} = (n+g+\delta) k^* \dots\dots\dots(5)$$

Rearranging equation (5) to solve for k^* and this gave

$$k^* = [s / (n+g+\delta)]^{1/(1-\alpha)} \dots\dots\dots(6)$$

Substitute in $y^* = k^* \alpha$ remember $y = k^{\alpha}$

$$y^* = [s / (n+g+\delta)]^{\alpha/(1-\alpha)} \dots\dots\dots(7)$$

To introduce government expenditure as a policy variable; the study considered Ramsey growth model in its underlying assumptions.

The balanced growth path was

$$\dot{k} = f[k(t)] - c(t) [n + g + \delta] k(t) \dots\dots\dots(8)$$

Where $f(k(t)) - c(t)$ is equal to actual investment

$k(t)$ = output in period (t)

$c(t)$ = Consumption in period (t)

Output-consumption=Actual investment

$$\dot{k} = f[k(t) - c(t)] - G(t) - (n + g)k(t) \dots\dots\dots (9)$$

Assumption of linearity, with respect to time, a linear growth equation of the following form is obtained.

$$gdp_t = \beta_0 + \beta_1 noda_t + \beta_2 gexp_t + \beta_3 cf_t + \beta_4 dum1_t + \beta_5 dum2_t + \varepsilon_t \dots\dots\dots (10)$$

Where:

gdp = real GDP measuring economic growth rate

noda= net assistance development aid received

gexp= government expenditure

cf = capital stock (as a measure of investment) the economy

Dum1 & dum2=periods of political regime (before Narc and Post Narc) represented by dummy variables

ε = error term

The equation was further specified into the ARDL model (section 3.4) to facilitate the investigation.

Table 3.1 Definition of the Variable and the Expected Signs

Abbreviation	Name	Unit	Description	Expected Sign
gdp	Real GDP per capita growth rate	Yearly %	Is the percentage annual growth rate of the total market value for goods and services per capita that are produced.	Positive (expected sign of the lagged variable)
noda	Official Development assistance	% of GDP	Net official Development Assistance relative to GDP. aid that is provided by Nongovernmental organizations inclusive that given for social welfare	Positive
cf	Investment	Annual Percentage of GDP	Expenditure on capital goods to raise output.	Positive
gexp	Public Expenditure	Percentage of GDP	Public final expenditure relative to GDP.	Positive

Dummy1&	Dummy	1 or 0	Changes in political regimes Pre- narc& post- narc	Negative
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Economic growth is affected by several factors that define a population and are country specific eg population, investment, government expenditure, inflation, exports, imports and policy factors.etc. In this study, investment, government expenditure and political regime were selected as control variables. This was based on literature review, research objectives and research methodology. In addition, there was consideration of other key aspects that the study found relevant in explaining economic growth in relation to ODA in a country specific case. The political dummies represent two political regimes that are significant in economic growth of Kenya. The Pre-Narc (Moi Era) when Kenya was characterised with SAPs and inconsistent though higher aid flows compared to the other regimes. In addition, it had intervals of very low GDP growth rates despite the higher aid. The other regime was Post- narc (Kibaki & Uhuru) the period when we had lower aid flows, higher government expenditures and consistent higher GDP growth rates.

3.4 Model Specification

In time series analysis, series have features that requires keen choice of suitable method of analysis to avoid spurious results. Using OLS or other similar methods on non-stationary series may produce unreliable outcomes. To accommodate such features, Auto-regressive Distributed Lag model. (ARDL) was employed in the investigations. The model is econometrically advantaged since it can be applied on non- stationary series. In addition, it can simultaneously assess the parameters in the long run and short run representation. of the model taking into account the ECM in the lagged periods.

ARDL assesses parameter in time series whose integration order is dissimilar (unlike a VAR model) that is order 1, order 2 or a blend of order 1 and 2. Integration is the unit root process of making non stationery series stationary which is statically shown as I(d). The ARDL comprises past values of the dependent variable and past values of independent variables. The lag orders of the lagged variables do not necessarily have to be the same

Generalized specification is as follows;

$$y_t = y_{01} + \sum_{i=1}^p d_1 y_{t-1} + \sum_{i=0}^q b_i x_{t-1} + \varepsilon_{it} \dots \dots \dots (11)$$

y = dependent value, x_t the independent variable I (0) or I (1)

b and d = multiplicative factors,

$Y_0 = \text{constant}$,

$I=1, \dots, k$; p, q are optimal lag orders

$\varepsilon = \text{residue value}$

Y_t can be a vector meaning that any variable is utilized as a dependent parameter depending on the research question and objective. This study concentrated on Y_t as being the only dependent variable being examined in this investigation:

As per specified linear equation, (equation 10);

$$gdp_t = \beta_0 + \beta_1 noda_t + \beta_2 g \exp_t + \beta_3 cf_t + \beta_4 dum1_t + \beta_5 dum2_t + \varepsilon_t \dots \dots \dots$$

The ARDL model is specified as

$$gdp_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \delta gdp_{t-1} + \sum_{i=1}^{q_1} \alpha_2 noda_{t-1} + \sum_{i=1}^{q_2} \alpha_3 g \exp_{t-1} + \sum_{i=1}^{q_3} \alpha_4 cf_{t-1} + \sum_{i=1}^{q_4} \alpha_5 dum1_{t-1} + \sum_{i=1}^{q_5} \alpha_6 dum2_{t-i} + \varepsilon_{it}$$

Where target (dependent) variable is gdp taking the p lag order and the other independent variables take the lag order of q, starting with $q_1, \dots, q_k \dots$ with k being the selected lag structure suitable for the model.

3.5 Time series analysis

As highlighted earlier, time series data possess features that complicate the choice of examination and interpretation of data. These include non-stationarity, trends, structural breaks caused by outliers and autoregressive nature of the series. Accommodation of such features in analysis would make the model produce robust results especially in a country specific study. Fundamentally, estimation of time series in this study was to be centered on unit root testing and cointegration. The unit root testing would determine the order of integration and the later to examine whether there is a long-run relationship among the parameters.

3.5.1 Unit root testing

To start with, unit root testing was done and the order of integration was established. This was done using the help of Augmented Dickey-Fuller (ADF). As discussed earlier, it was not a prerequisite to difference an ARDL model for stationarity. Thereby unit root was done to eliminate parameters that were integrated of order 3 where for I (d) is I (3).

3.5.2 Optimal lags Determination

The lags selection suitable for the analysis of model was done by the basis of the various information criteria. As per the generalized form of ARDL model (equation 11), the dependent and independent variables take the optimal lags p, q ranging 0, 1.....to k. When using the information criteria in determining the lag structure, the guideline is to choose the criteria that is asterisked and has the lowest figure. In this study the maximum lag structure of parameters as per ARDL (p, q) was derived from the AIC benchmark.

3.5.3 Estimation of the ARDL (p,q)model

From generalised ARDL representation, in equation (11) the short-run form is set out as below:

$$gdp_t = \alpha_0 + \sum_{i=1}^p \alpha_1 \delta gdp_{t-1} + \sum_{i=1}^{q_1} \alpha_2 noda_{t-1} + \dots$$

$$\sum_{i=1}^{q_2} \alpha_3 g \exp_{t-1} + \sum_{i=1}^{q_3} \alpha_4 cf_{t-1} + \sum_{i=1}^{q_4} \alpha_5 dum1_{t-1} + \sum_{i=1}^{q_5} \alpha_6 dum2_{t-1} + \varepsilon_{it} \dots\dots\dots$$

(12)

3.5.4 ARDL Bounds Testing

In order to eliminate spurious results, cointegration was performed. It also established whether there was correlation in the time series parameters in the long term. relationship of variables that would form a long-term equilibrium relationship despite the fact that there is deviation from balance in the short run. The ARDL bounds test which was introduced by 1999 by Pesaran and Shin while more comprehension was by Pesaran et al 2001. Besides it's applicability to stationary series as well as non-stationery series, it also allows the estimation of the parameters in the long term and short-term movements. At the same time considering the error correction term in the past period. It's suitable for small samples.

The outcomes of the dependent parameters in the past periods and those of the explanatory variables illustrate the effects to the equilibrium association in the short term and the long

term. To perform bounds testing for cointegration where *gdp* is our target variable and the independent variables are, *noda*, *gexp*, capital formation and *dummy1*, the ARDL (p, q_1, q_2, q_3, q_4) equation for cointegration was specified as ;

$$\begin{aligned} \delta gdp_t &= \beta_0 + \beta_1 gdp_{t-1} + \beta_2 noda_{t-1} + \beta_3 gexp_{t-1} + \beta_4 cf_{t-1} + \beta_5 dum1_{t-1} + \beta_6 dum2_{t-1} + \\ &\sum_{i=1}^p \alpha_i \delta gdp_{t-i} + \sum_{i=1}^{q_1} \alpha_2 noda_{t-i} + \sum_{i=1}^{q_2} \alpha_3 gexp_{t-i} + \sum_{i=1}^{q_3} \alpha_4 cf_{t-i} + \sum_{i=1}^{q_4} \alpha_5 dum1_{t-i} + \sum_{i=1}^{q_5} \alpha_6 dum2_{t-i} + \varepsilon_{it} . \end{aligned}$$

..... (13)

Notes:

The short-run coefficients are $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6$

The long-run coefficients are $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$

The disturbance (white noise) term is ε_t

The hypothesis:

$$H_0 = b_{1i} = b_{2i} \dots = 0 \dots \text{where } i = 1, 2, 3, 4, 5,$$

$$H_1 : b_{1i} \neq b_{2i} \neq b_{3i} \neq 0 \dots$$

The critical values were integration of order one for lower limit and integration of order two for the upper limit. The guideline was for calculated F value to be larger than the upper and lower limit crucial values, meaning the alternate hypothesis would be accepted, hence concluding that there existed a long run balance relationship among the parameters. However, less calculated F than the higher and lower crucial values, the null of no cointegration was accepted. A value of F that would lie in between the boundaries was inconclusive.

3.5.5 E C Model for Cointegrated Series

Since the examination of the parameters by bound testing evidenced existence of integration, the cointegrating relationship consequently necessitated the inclusion of Error Correction Model. The ECM depicted the parameters in the short run and the mechanism which reinstated them to the long-run relationship and how they affected the changes on them in the preceding period. The rate at which the mechanism attains the balance is the speed of adjustment.

The ECM representation is written as;

$$\begin{aligned} \delta gdp_t = & \alpha_0 + \sum_{i=1}^p \alpha_1 \delta gdp_{t-1} + \sum_{i=1}^{q_1} \alpha_2 \delta noda_{t-1} + \sum_{i=1}^{q_2} \alpha_3 \delta g \exp_{t-1} + \\ & + \sum_{i=1}^{q_3} \alpha_4 \delta cf_{t-1} + \sum_{i=1}^{q_4} \alpha_5 dum1_{t-1} + \sum_{i=1}^{q_5} \alpha_6 dum2_{t-1} + \lambda ECT_t + \varepsilon_t \end{aligned}$$

..... (.14)

Where:

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6$, refers to the values of parameters in the short-run as the system converge to the balanced state.

λ , refers to the rate at which the mechanism works to bring equilibrium

ECT_{t-1} , refers to long-run representation.

Causation in the short term is measured via t statistics of the independent parameters, while that of the long-term causation, t statistics on the past period values of the error-correction term.

3.5.6 Diagnostic tests for the time series

The model was subjected to further tests to find out the appropriateness of ARDL representation, whether it was well fitted and the coefficients stable.

(a) **Heteroschedasticity**: It's a check on the residuals to ensure that the model used is able to explain the pattern on the response of the variable Y that eventually shows up in the residue. Presence of Heteroschedasticity means the variance is not independent of the value of the predictor variable. The Breusch Pagan test was applied. The Ho (null hypothesis) was at a P value of 5 %. A model with a P value above 0.05 was free from heteroschedasticity.

(b) **Serial Correlation LM test**: The association connecting a parameter and its past values is referred to as serial correlation. LM test is a test that belongs to the category of asymptotic tests. (Lagrange multiplier test.) It allows checking of autocorrelation of variables with higher lag orders where a Durbin Watson statistic could not be valid. According to the test, the null "no serial correlation" was tagged to a certain to lag order of p and p being a value defined initially. This study used LM test since the model is an ARDL(p,q) model which could assume higher values of lag p, and q that is > than 1

3.5.7 Reliability of the Model

To tests whether the parameters were steady and reliable, the cumulative sum of recursive residuals, abbreviated as CUSUM and CUSUM squares was conducted. Cusum is a sequential analysis used for monitoring change detection and it's based on residuals that were recurring. (Brown et al 1975). It's a graphical tool applied to investigate changes within the parameters of the representation over time using the recursive residuals. Stable coefficients show a random walk about the origin. Stability is indicated when the graphical plot of Cusum stays within the significance limit of 5%. The Variables and model become unstable if the plot is outside the 5 % critical lines. Cusum test can give indications of structural breaks.

3.5.8 Causality Tests

To further investigate causality of the dependent variable and explanatory variables, granger causality checks were done with the help of Wald Test.

The Wald test is carried out by enforcing limitations on the estimated values in the long-run representation of economic growth, net official development assistance, government expenditure, investment and political dummy variables. Likewise, the causation at the short-run would be arrived at by taking limits of the variables of the parameters assuming the past values add up to zero. The guideline is to reject the null hypothesis of no granger causality if the probability of the F and t statistics is less than 5%.

When making statistical inductions concerning relationship between series and effects of series to each other over time different methods are applied such as granger causality. This was postulated by Granger in 1969 as a hypothetical test for deciding whether one series is important in predicting the other .Causality is linked to the concept of cause and effect .However as far as granger causality is concerned it is the precedence of occurrence of one series to another over time .Given two variables X and with a long term association between them, X could have effects on Y , or Y could have effects on X and further Y and X could impact each other, that is where the relationship could be in either direction. In this study causation could be implying that X causes Y (noda or any other independent variable in the model could make the occurrence of gdp probable) that X is a probabilistic cause of Y or lagged variables of X and lagged variables of Y would explain to some degree the occurrence of Y.

We note that the presence of a connection between parameters it does not always imply causation or direction of causality.

It is in the error correction model that we can deduce direction as perceived by granger causality. This is used in both restricted and unrestricted models with the objective of establishing whether the independent variable gave statistically significant information concerning the dependent variable. The study used Wald test to test granger causality. To ascertain the presence of an association tying together economic growth to official development assistance in the economy.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This section provides results and a discussion of the outcomes and data examined. The examination was carried out has to assess whether ODA impacts economic growth in the economic scenario of Kenya. This chapter starts with the preliminary data findings by providing the descriptive statistics, to complex time series analysis.

4.2 Data Features

The features of the data used were namely the mean, which was utilized in determining the central point of relative frequency distribution; kurtosis depicts the relative flatness of a distribution in comparison to one that is normally distributed. Skewness depicts levels of asymmetry pertaining to a certain distribution around its mean while the standard deviation determines the spread of several observations. Other statistics utilized include minimum and maximum values.

Table 4.1: Descriptive Statistics

	GDP	NODA	GEXP	CF	DUM1	DUM2
Mean	4.550411	5.924115	16.55600	19.08269	0.510638	0.297872
Median	4.300562	4.639133	16.77135	19.11945	1.000000	0.000000
Maximum	22.17389	16.98248	19.80338	25.07647	1.000000	1.000000
Minimum	-4.655447	2.446328	13.64089	15.38790	0.000000	0.000000
Std. Dev.	4.236499	3.248817	1.760691	2.112302	0.505291	0.462267
Skewness	1.801516	1.657315	-0.056492	0.275043	-0.042563	0.883960
Kurtosis	9.117115	5.247876	1.758162	3.046996	1.001812	1.781385
Jarque-Bera	98.70184	31.41112	3.045064	0.596907	7.833340	9.029019
Probability	0.000000	0.000000	0.218159	0.741965	0.019907	0.010949
Sum	213.8693	278.4334	778.1322	896.8865	24.00000	14.00000
Sum Sq. Dev.	825.6047	485.5213	142.6016	205.2438	11.74468	9.829787
Observations	47	47	47	47	47	47

Skewness analysis depicts that gdp, noda were asymmetrical towards the right around its mean. Contrary to this, gexp and dum1 are inversely skewed. Gdp and noda depict a

peaked curve since their kurtosis value is above 3 with gexp, dum1 and dum 2 having flat peaks. The Jacrque-Bera statistic estimates the variations between skewness and kurtosis whether it matches that of a normal distribution. Probability statistic of more than 0.05 depict a normal distribution while a lower value depicts deviation from the normal. From the Table 4.1, notably gdp and noda depict very low probability in relation to the Jacque-Bera statistic. The high maximum value of 22 .17 gdp was experienced in 1971 in Kenya, while the deviations in noda to take high values was as a result of a series of loans which were extended to Kenya between 1986 and 1989. It depicts a scenario when Kenya affirmed its commitment to economic reforms. As such these characteristics though appearing as outliers were considered legitimate data points for the study and therefore used as they were (Orr et al 1991). Further in the analysis, stability tests were done to test whether there are structural breaks affecting the model due to these features of the series.

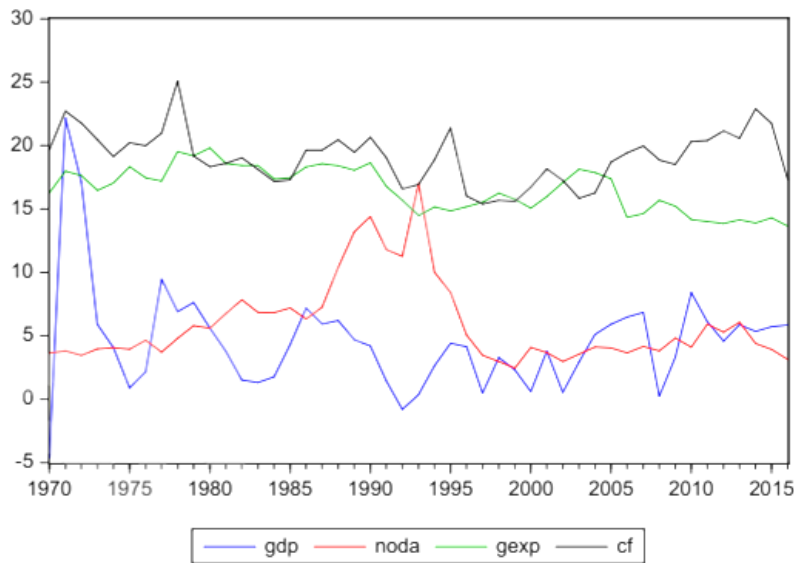
4.3 Coefficients of Correlation

Table 4.2: Coefficients of Correlation

	GDP	NODA	GEXP	CF	DUM1	DUM2
GDP	1.000000	-0.200590	0.133969	0.515905	-0.324794	0.099581
NODA	-0.200590	1.000000	0.124697	0.004142	0.520298	-0.318222
GEXP	0.133969	0.124697	1.000000	0.062216	0.285657	-0.548879
CF	0.515905	0.004142	0.062216	1.000000	-0.467000	0.105076
DUM1	-0.324794	0.520298	0.285657	-0.467000	1.000000	-0.665348
DUM2	0.099581	-0.318222	-0.548879	0.105076	-0.665348	1.000000

The correlation coefficient test was conducted to find out the link connecting the variables. As depicted in Table 4.2, correlation was at average to lower range in the range of -1 to 1 between the variables, which was considered suitable for the analysis. It's notable that NODA and dum1 have a negative correlation with GDP while CF and GEXP and DUM2 depict a positive relation.

Figure 1: Graphical representation of the Series



Consistency with the methodology was maintained by economic growth- ODA relationship being analysed with consideration of the properties of the series. In a graphical representation the nature of the relationship of the series could be figured out as non-stationary and with no clear visible trend properties. Hence the stationarity check to find existence of unit root was carried out with assumption of a constant and at 1st difference of the variables. The test was only to ascertain order of integration since ARDL model could be applied with non-stationary series as long as they were either, of order one, order zero or a combination of the two.

4.4.1 Testing for Unit Root

Outcomes are as shown below in table 4.3.

Table 4.3: Augmented Dickey-Fuller Test Statistic for Unit Root

Null Hypothesis: Unit root (individual unit root process)

Series: GDP, NODA, GEXP, CF, DUM1, DUM2

Sample: 1970 2016

Exogenous variables: Individual effects

User specified lags: 1

Method	Statistic	Prob.**
ADF - Fisher Chi-square	124.971	0.0000
ADF - Choi Z-stat	-9.66399	0.0000

Series	Prob.	Lag	Max Lag	Observation
D(GDP)	0.0000	1	1	44
D(NODA)	0.0007	1	1	44
D(GEXP)	0.0000	1	1	44
D(CF)	0.0000	1	1	44
D(DUM1)	0.0007	1	1	44
D(DUM2)	0.0004	1	1	44

To get white noise, a lag of 1 for dependent parameter was utilised. The probability values associated with each individual series as listed in the Table 4.3 are 0 at 1% significance levels. Absence of unit root at 1st difference concluded that the series was integrated of order 1 or I order 2. This allowed progressing with analysis that involved application of the ARDL model to analyse the data. To start with, the lag length criteria suitable for the model is selected.

4.4.2 Lag length selection criteria.

To arrive at the optimal lag values which the dependent and independent variables could take in the ARDL (p, q) model, selection was based on various information criteria. Table 4.4 depicts the outcome. Given guideline is to select the lag that is asterisked and with low test statistic. The results showed that the optimal lag length criteria were 4 for either the p or q (dependent and independent variables consecutively). The Akaike Information criteria was preferred to the rest since it had a lower value of 4.27 at lag 4, compared to the Schwartz Information criterion which had a value of 4.63 at lag 0.

Table 4.4: Lag length selection

VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-88.42212	NA	4.738317	4.391726	4.637475*	4.482351
1	-88.05799	0.609696	4.885871	4.421302	4.708009	4.527031
2	-87.50984	0.892348	4.996939	4.442318	4.769983	4.563151
3	-87.07939	0.680708	5.140808	4.468809	4.837432	4.604746
4	-81.72018	8.225759*	4.207405*	4.266055*	4.675636	4.417096*

*Indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

4.4.3 Bounds Test of Cointegration

The next step in analysis was to establish the occurrence of a long term connection of the variables in the model representation, gdp, oda, gexp,cf and dum1 & dum2. (growth, ODA, government expenditure, investment and political regime). The method of cointegration test adopted was the Bounds testing in the ARDL representation.

ARDL method was applicable for being flexible which allowed application of variables with different orders as discussed earlier. The maximum lag length specification was based on AIC criterion while the F or t statistics were applied to demonstrate the presence of a long term association.

With reference to Pesaran et al 2001 as illustrated in the table, part (b) the F and the t statistics shows the values for comparison with pivotal values of bottom level and top level bounds. The joint hypothesis is that, where:

δ are the coefficients for gdp ,noda ,gexp cf, dum1 and dum2

$$H_0 : \delta_1 = \delta = 0 \dots \delta_k$$

$$H_1 : \delta_1 \neq \delta \neq 0 \dots \delta_k$$

The null hypothesis is that there is no association in the long term against the alternative that there exists a long-term association.

Table 4.5 ARDL Bounds Test of Cointegration

ARDL Long Run Form and Bounds Test
Dependent Variable: D (GDP)
Selected Model: ARDL (4, 0, 3, 0, 4, 2)
Case 3: Unrestricted Constant and No Trend

Levels Equation				
Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
NODA	0.062334	0.071445	0.872473	0.3916
GEXP	0.326944	0.133185	2.454808	0.0217
CF	0.280362	0.134177	2.089497	0.0474
DUM1	-1.136469	0.828313	-1.372028	0.1827
DUM2	1.492681	0.723950	2.061857	0.0502

$$EC = GDP - (0.0623*NODA + 0.3269*GEXP + 0.2804*CF - 1.1365*DUM1 + 1.4927*DUM)$$

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic k	12.11169 5		Asymptotic: n=1000	
		10%	2.26	3.35
		5%	2.62	3.79
		2.5%	2.96	4.18
		1%	3.41	4.68
			Finite Sample: n=45	
		10%	2.458	3.647
		5%	2.922	4.268
		1%	4.03	5.598
			Finite Sample: n=40	
		10%	2.483	3.708
		5%	2.962	4.338
1%	4.045	5.898		

Actual Sample Size 43

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-7.777754	10%	-2.57	-3.86
		5%	-2.86	-4.19
		2.5%	-3.13	-4.46
		1%	-3.43	-4.79

As per Pesaran et al (2001) bottom level and top level bounds for asymptomatic critical values at 5 percent level of significance were 2.62 and 3.79 for F statistic and 2.86 and 4.19 for t statistics. The Bounds test for cointegration showed that when the dependent variable was gdp, an F statistic of 12.11, and a t statistic of -7.77 was obtained. Taking only the absolute value of this statistics,

there by rejecting the null because both are above $I(0)$ and $I(1)$ pivotal values of the bottom level and top-level bounds. It was evident that there was a long-term connection among the parameter. The coefficients are as illustrated in the long -run representation of the ECM below.

$$EC = GDP - (0.0623*NODA + 0.3269*GEXP + 0.2804*CF - 1.1365*DUM1 + 1.4927*DUM2).$$

Further test to examine the association between the parameters was done with the help of Wald test.

Table 4.6: Wald test to confirm Long-run relationship.

Statistic	Value	df	P- value
F-	4.395737	(5, 24)	0.0055
Chi-sq	21.97868	5	0.0005

Null Hypothesis Summary:		Hypothesis:	
Normalized Restriction (= 0)		Value	Std. Err.
C(3)		0.136664	0.104807
C(4)		-0.316069	0.078718
C(5)		0.097400	0.113907
C(6)		0.832658	0.415413
C(7)		-0.390912	0.450593

The expression $C(3) = C(4) = C(5) = C(6) = C(7) = 0$ is the null hypothesis of joint association of variables $noda$, $gexp$, cf , $dum1$ and $dum2$ to gdp in the long term. Joint F statistics were correlated to Pesaran table pivotal boundary limits. As seen in Tabulation 4.4 (bounds test of cointegration) the lower 2.62 and upper limits were 3.79. The values of F in the wald test is shown as 4.395 and significant at 1% level. Consequently, the null is rejected in conclusion that a long-term association was present connecting the variables jointly to gdp .

The series in the model were related in a combined linear fashion. Any disturbance in the short-run which would impact on the shifts of particular series away from equilibrium would eventually be adjusted in the long term for the set up to close in back to equilibrium. Inference of causality arising out of independent variables towards the variable gdp can be deduced from the outcomes. The coefficient of $noda$ was positive and insignificant showing that a percentage change of gdp would be caused by 0.0623 units of $noda$, which is statistically equivalent to a nil value by reason of p-value being equal 0.3916. ODA therefore was inconsequential or statistically insignificant to gdp in the period 1970- 2016. Coefficients for expenditure,

investment and post–narc political era (dum2) were positive and significant to GDP. The pre-narc political era was negative in addition to being insignificant to gdp .

4.4.4 Error Correction Form

The ECM outcome is as illustrated below as estimated in the ARDL model.

Table 4.7: ARDL Error Correction Regression

ARDL Error Correction Regression

Dependent Variable: D (GDP)

Selected Model: ARDL (4, 0, 3, 0, 4, 2)

Case 3: Unrestricted Constant and No Trend

ECM Regression

Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.29304	1.121935	-9.174359	0.0000
D(GDP(-1))	0.634206	0.113549	5.585310	0.0000
D(GDP(-2))	0.179406	0.081666	2.196828	0.0379
D(GDP(-3))	0.316069	0.065668	4.813149	0.0001
D(GEXP)	0.832658	0.272871	3.051475	0.0055
D(GEXP(-1))	-0.069124	0.256388	-0.269607	0.7898
D(GEXP(-2))	1.405540	0.266069	5.282622	0.0000
D(DUM1)	3.547890	1.569708	2.260223	0.0332
D(DUM1(-1))	-2.505646	1.569182	-1.596784	0.1234
D(DUM1(-2))	3.188173	1.016033	3.137863	0.0045
D(DUM1(-3))	-1.822411	1.050405	-1.734961	0.0956
D(DUM2)	2.775347	2.364213	1.173899	0.2520
D(DUM2(-1))	-7.769812	2.342250	-3.317243	0.0029
CointEq(-1)*	-1.562565	0.166750	-9.370687	0.0000
R-squared	0.830243	Mean dependent var	-0.001114	
Adjusted R-squared	0.754146	S.D. dependent var	2.562306	
S.E. of regression	1.270486	Akaike info criterion	3.573935	
Sum squared resid	46.80994	Schwarz criterion	4.147349	
Log likelihood	-62.83961	Hannan-Quinn criter.	3.785393	
F-statistic	10.91022	Durbin-Watson stat	2.040155	
Prob(F-statistic)	0.000000			

The results for table 4.7 depicted the estimated coefficients of the short-term dynamics and the error correction term EC term that measured the rate at which the system corrected itself to regain equilibrium. The EC term represented by **CointEq (-1) *** was negative as expected with an associated coefficient of -1.5625. This implied that 156.25% of any shifts into imbalance are adjusted in a cycle. The coefficient -1.5793 (speed of adjustment) is highly significant implying that in the long term there was strong causal association of variables to each other.

4.4.5 Diagnostic and Stability Tests

Figures and tables below show outcomes of tests on how reliable the model was for making inferences.

Normality test

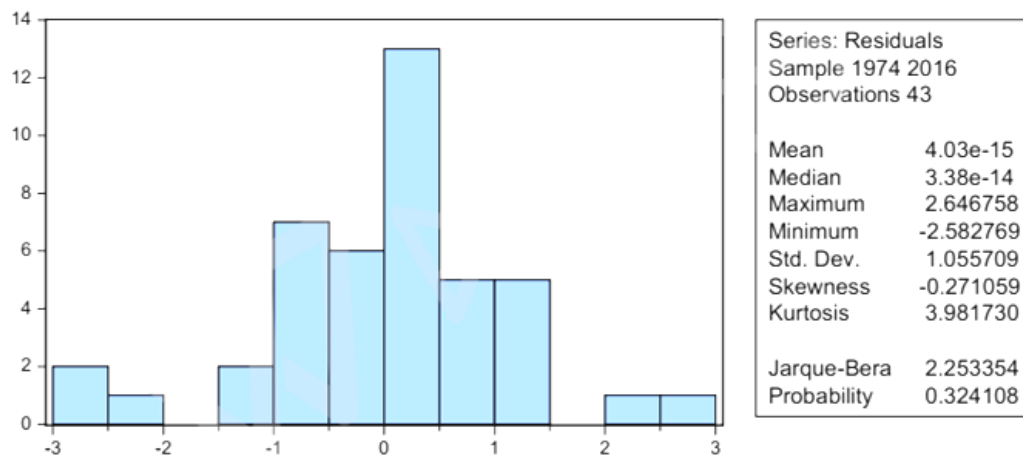


Figure 2: Histogram

Table 4.8: LM Test for serial correlation and Heteroschedasticity test

Breusch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.232531	Prob. F(2,22)	0.7944
Obs*R-squared	0.890167	Prob. Chi-Square(2)	0.6408

Heteroskedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoscedasticity

F-statistic	0.391493	Prob. F(18,24)	0.9773
Obs*R-squared	9.759934	Prob. Chi-Square(18)	0.9395
Scaled explained SS	4.532844	Prob. Chi-Square(18)	0.9994

4.4.6 Stability of the Model

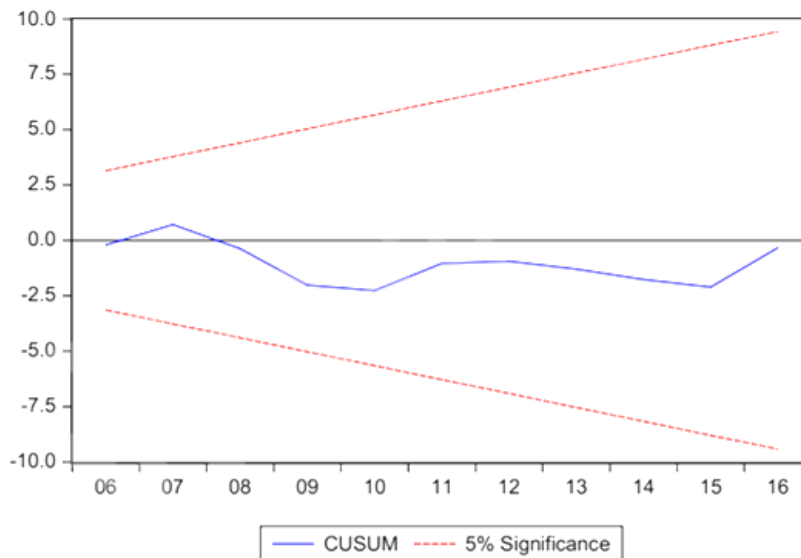


Figure 3: Cusum Test

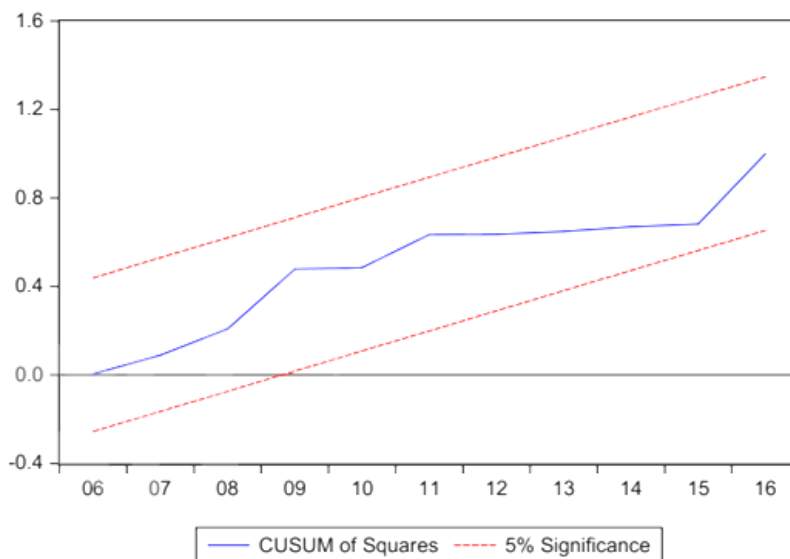


Figure 4: Cusum Squares

The model was subjected to diagnostic and stability tests to identify its suitability and stability. The results (Figure 2 and Table 4.8) shows that the model was well fitted and the cusum recursive tests (figure 3 &4) indicate stability throughout the sample period.

The F test statistic of 10.91 in Table 4.7(error correction results) is a high value with a probability value of 0.000 thus significant. These results show that NODA, GEXP, CF, DUM1 and DUM2 jointly can influence gdp. The high R squared of 0.82 means 82 % of the gdp variations can be determined jointly via explanatory parameters NODA, GEXP, CF, DUM1

and DUM2 while the rest 17% variations would be substantiated by parameters outside the model.

The histogram (figure 2) shows the residuals follow a normal distribution. The Jacqua-bera statistic is 2.25 with a probability of 0.324, exceeding 0.05 significance level. A statistic greater than 0.05 indicates normality.

The Breusch-Godfrey Serial Correlation LM Test results shows there is no serial correlation. The probability values of the F statistics and the chi square for the R squared are above 0.05 concluding absence of serial correlation. Similarly, the Breusch-Pagan-Godfrey test for heteroscedasticity results shows that F statistics and chi-square have probability values above 0.05, meaning the representation is homoscedastic.

Stability was assessed by the CUSUM Recursive tests where the graph depicts a model representation which is within the 5 % limits of the cusum borders and therefore stable and structurally free from breaks.

In conclusion, this model is suitable as a tool of inference and can be relied on to make inference. In addition, it's stable enough for policy formulation as evidenced through diagnostic tests and stability tests.

4.4.7 Causality

Long-Run Causality

Variable	F-statistic	Prob - Value
noda	0.7311	0.4010
gexp	0.6980*	0.0007
cf	4.9071**	0.0365
dum1	3.3611*	0.0193
dum2	2.810***	0.0610

Short-run causality

noda	1.7	0.2046
gexp	6.473*	0.0011
dum1	2.48***	0.0599
dum2	3.45**	0.0323

The Wald tests results (Appendix 2) depicted causal effects for both political regimes to gdp. in the short and long terms While gexp has causal effects both in the short term and

long term, cf has only long-term causality. Probability values of statistics and t statistics were at 5 % significance.

Wald test results for testing long run causality (Appendix) show that noda has no long run casual effects on gdp since the p-value is not significant. However, gexp, cf, and political dummy variables, dum1 and dum2 have causal effects.

4.4 Empirical Findings Discussion

The empirical results show that, though ODA is positively related to GDP, the relationship is inconsequential, meaning statistically insignificant. These findings are in line with the conclusion of Burnside and Dollar in their studies of the year 2000 who said the relationship of ODA to economic growth was ambiguous. Their study revealed either favorable or unfavourable consequences on economic growth depending on a country's policies. Kourtellos, Tan and Zhang (2007) in their study on aid growth relationship by applying a meta-analysis regression on outcomes from various studies found that aid adds up to very minimal insignificant influence which furthermore was negative. Easterly (2006) presented his statistical evidence to prove that financial aid though continuously being released, recipient countries did not show improvement in economic growth. This he argued was due to donor countries failing to offer the required type of aid that can impact on economic development. He further argued the donors instead gave bad policies and mechanisms of implementing the aid.

ODA insignificant influence as regards growth in Kenya in the long term could be attributed to aid ineffectiveness. Factors such as aid unpredictability (inconsistent aid flows) negatively affect economic growth. This scenario is typical of Kenya due to the sanctions and conditions that donors have continuously imposed, sometimes withdrawing aid as and when their conditions are not met. Ojiambo (2013) having analyzed the factor of aid un-predictability concluded that such a characteristic would have adverse effects on the economy growth in the long-run. Volatility as well as unpredictability of aid are other factors which could affect the impact of aid in Kenya (Mwega 2004), and as such aid becomes insignificant and economically unyielding.

Looking at Pre- narc period from 1979 to 2002(Moi era) was characterized by low economic growth despite some lengthy period of high ODA inflows in 80s and early 90s, compared to the Post- Narc period. The negative and insignificant effect of this regime to GDP is typical to the low economic performance, low social outcomes and trade imbalances experienced in this

period. However, the ODA inflows were at times unpredictable with instances of aid freeze. Corruption in the institutions of governance was also rampant. Quibra (2014) argued that countries political and legal institutions that result to aid ineffectiveness are deeply entrenched and fashioned to its structural fabric of politics, history in addition to social restrictions which are explicit to a country.

The Post narc period which shows a significant positive effect to GDP is also evidenced by improved growth rate and social outcomes experienced during this period. ODA inflows were not high, showing decline to aid dependency. Improved governance in institutions and better management of available resources in addition to better policy implementation would explain the higher growth rates.

Causality tests further confirm that other parameters such as political regime in the model representation have influence, on GDP. There is a multiplicity of factors from politics and governance that impact development of a country. The study of World Bank (1998) concluded that corrupt regimes were an explanation to the disappointing performance of aid programmes. Boone (1996) asserted that political regimes that adopt devastating policies meant that aid would not be utilised properly for economic growth.

Expenditure and investment also show causal effects on GDP. As a result of declining donor inflows, aid recipient e.g., Kenya have resulted to internal borrowing to supplement the budget. The development of infrastructure to archive it long term development plans has necessitated borrowing from other sources and not depend on aid. Expenditure has continued to increase especially in the post-narc period.

CHAPTER FIVE

CONCLUSIONS AND SUGGESTIONS

5.1 Introduction

This section outlines the substantial outcomes of this investigation and further gives conclusions and the suggest policy measures. This has been accomplished with regard to the aims of the study which was to assess the effects of ODA on the economy of Kenya, in terms of growth and development.

5.2 Summary

It has always been thought needful to raise the amount of aid to developing economies to boost economic expansion despite the fact that more often than not, no positive results are seen. The debate both theoretically and in empirical studies has not been conclusive on the effects or role aid plays on economic expansion. Kenya development has not achieved great milestone in economic growth despite aid flows.

The pertinent issue of investigation was the connection between economic expansion and ODA. It explored this association with consideration of other control variables, namely investment, government expenditure and political regime. The scope was for the years 1970 - 2016. The ARDL model was adopted for analysis with application of ARDL bounds testing to establish cointegrating relationship. ARDL was selected due to its flexibility as it accommodates series which have features such as non stationarity, different orders of integration, order one or order zero. Ccausality was checked using Wald tests. In the long term, all parameters jointly explained the occurrence of GDP.

The effect of ODA to GDP though positive was insignificant. Wald test showed that ODA had no causal effects on GDP while investment, government expenditure, political dummy variables had causal effects. In the long -run, government expenditure, investment and post-narc political era yielded positive effects and notably significant on GDP. The pre-narc political era yielded negative effects which in addition were inconsequential to GDP in the long-term. The short-run model was promptly adjusting annually to the long-run model to maintain a stable equilibrium at a speed of 156.25 %. A scenario was noted concerning short run dynamics effects of GDP, ODA and other control variables. At different lags, they depicted a pattern of marginal effects, negative and positive on GDP, that later converged to a long-run stable equilibrium.

5.3 Conclusion

A deduction can therefore be made of existence of an insignificant association connecting economic expansion and growth to ODA in Kenya as demonstrated by this study. This study has laid much focus on official development assistance that was discovered to account for 90% of official aid spending. This was supported by Marshall Plan in 1950s which assumed that ODA induced growth of an economy in the recipient economies. Arguments have been put forward attempting to justify ODA flows into the developing economies, this range from eradicating poverty by improving livelihoods and encouraging an institutional environment defined by better policies. Theoretically, it can be argued that increasing ODA results into an improvement in the economy. On the other hand, empirical literature explaining the connection of ODA to economic expansion has not exhaustively done so.

The evidence in this study concurs with the proposition that ODA effects to the growth of an economy are insignificant. Macroeconomic factors such as investment and government expenditure positively impact on growth, political regimes also have either negative or positive impacts.

5.4 Policy Suggestions

A suggestion from the study was that ODA ought to be channeled into more productive sectors and projects in order to contribute towards development. This would provide a favourable conditions suitable for current investors in addition to attracting foreign investors.

The Kenya Government needs incorporate institutional frameworks as well as formulate policies that encourage all sectors of the economy, that is public and private to raise funds to finance development projects. In so doing, the country will be able to fund its own projects through public and private partnerships and thus minimize dependency from donors.

The Government of Kenya should carry out supervision and continuous monitoring of ODA to ensure that all the funds and resources are channeled towards the rightful projects. This will help in ensuring that projects funded through ODA achieve their expected gains and are sustainable in the long-run.

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APPENDIX

A) Data used

	GDP	NODA	GEXP	CF	DUM1	DUM2
1970	-4.655447	3.628490	16.25747	19.68184	0	0
1971	22.17389	3.811737	17.98029	22.70366	0	0
1972	17.08243	3.466084	17.63221	21.75923	0	0
1973	5.896580	3.956976	16.45224	20.44973	0	0
1974	4.065617	4.058967	17.03592	19.11945	0	0
1975	0.882203	3.941987	18.32540	20.21309	0	0
1976	2.153964	4.639133	17.46010	19.98005	0	0
1977	9.453798	3.707464	17.20523	20.96941	0	0
1978	6.912494	4.800646	19.51477	25.07647	0	0
1979	7.615226	5.796141	19.19578	19.17132	1	0
1980	5.591976	5.605093	19.80338	18.32276	1	0
1981	3.773544	6.749357	18.58875	18.61133	1	0
1982	1.506478	7.845004	18.43303	19.02778	1	0
1983	1.309050	6.842525	18.42165	18.11459	1	0
1984	1.755217	6.821222	17.38183	17.15324	1	0
1985	4.300562	7.200120	17.46029	17.27143	1	0
1986	7.177555	6.328427	18.31957	19.63593	1	0
1987	5.937107	7.245167	18.56876	19.62612	1	0
1988	6.203184	10.35935	18.40579	20.44688	1	0
1989	4.690349	13.18202	18.05661	19.45810	1	0
1990	4.192051	14.39438	18.64243	20.64820	1	0
1991	1.438347	11.78283	16.77135	19.03010	1	0
1992	-0.799494	11.26621	15.68227	16.58137	1	0
1993	0.353197	16.98248	14.47997	16.93762	1	0
1994	2.632785	9.989505	15.15493	18.87307	1	0
1995	4.406217	8.401050	14.84292	21.38559	1	0
1996	4.146839	5.044519	15.18057	16.00906	1	0
1997	0.474902	3.466197	15.53615	15.38790	1	0
1998	3.290214	2.973770	16.24996	15.67521	1	0
1999	2.305389	2.446328	15.75330	15.59143	1	0
2000	0.599695	4.086651	15.05429	16.70881	1	0
2001	3.779906	3.679633	15.97291	18.15156	1	0
2002	0.546860	2.980311	17.07800	17.23688	1	0
2003	2.932476	3.547865	18.13132	15.83821	0	1
2004	5.104300	4.111447	17.86007	16.25922	0	1
2005	5.906666	4.038981	17.38021	18.69911	0	1
2006	6.472494	3.656120	14.34700	19.42444	0	1
2007	6.850730	4.159991	14.62961	19.96473	0	1
2008	0.232283	3.801637	15.67398	18.86492	0	1
2009	3.306940	4.820501	15.21447	18.50505	0	1
2010	8.402277	4.093317	14.16325	20.32180	0	1
2011	6.111613	5.907520	14.01163	20.39084	0	1
2012	4.563200	5.297035	13.85794	21.15059	0	1
2013	5.879764	6.070035	14.13943	20.57021	0	1
2014	5.351840	4.393277	13.89102	22.88066	0	1
2015	5.713383	3.921439	14.29330	21.73015	0	1
2016	5.848665	3.134432	13.64089	17.27738	0	1

B) Wald Test Results of causality

a) Short -run

noda

Test Statistic	Value	df	Probability
t-statistic	0.855088	24	0.4010
F-statistic	0.731175	(1, 24)	0.4010
Chi-square	0.731175	1	0.3925

Null Hypothesis: C(5)=0
 Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(5)	0.097400	0.113907

gexp

Test Statistic	Value	df	Probability
F-statistic	6.938772	(4, 24)	0.0007
Chi-square	27.75509	4	0.0000

Null Hypothesis:
 C(6)=C(7)=C(8)=C(9)=0
 Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(6)	0.832658	0.415413
C(7)	-0.390912	0.450593
C(8)	1.474664	0.420440
C(9)	-1.405540	0.330338

cf

Test Statistic	Value	df	Probability
t-statistic	2.215203	24	0.0365
F-statistic	4.907124	(1, 24)	0.0365
Chi-square	4.907124	1	0.0267

Null Hypothesis: C(10)=0

Null Hypothesis Summary:

Normalized Restriction (= 0)			
	Value		Std. Err.
C(10)	0.438084		0.197762
dum1			
Test Statistic	Value	df	Probability
F-statistic	3.361131	(5, 24)	0.0193
Chi-square	16.80566	5	0.0049

Null Hypothesis: C(11)=C(12)=C(13)=C(14)=C(15)=0

Null Hypothesis Summary:

Normalized Restriction (= 0)			
	Value		Std. Err.
C(11)	3.547890		2.198790
C(12)	-7.829342		2.584869
C(13)	5.693819		2.341022
dum2			
Test Statistic	Value	df	Probability
F-statistic	2.810260	(3, 24)	0.0610
Chi-square	8.430779	3	0.0379

Null Hypothesis: C(16)=C(17)=C(18)=0

Null Hypothesis Summary:

Normalized Restriction (= 0)			
	Value		Std. Err.
C(16)	2.775347		3.031432
C(17)	-8.212749		3.613229
C(18)	7.769812		3.275580

**b) Long run
Wald Test:**

gexp
 Test Statistic Value df Probability

F-statistic	6.473493	(4, 24)	0.0011
Chi-square	25.89397	4	0.0000

Null Hypothesis:
 $C(4)=C(11)=C(12)=C(13)=0$
 Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
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C(4)	-0.316069	0.078718
C(11)	3.547890	2.198790
C(12)	-7.829342	2.584869
C(13)	5.693819	2.341022

noda
 Test Statistic Value df Probability

t-statistic	1.303952	24	0.2046
F-statistic	1.700290	(1, 24)	0.2046
Chi-square	1.700290	1	0.1923

Null Hypothesis: $C(3)=0$
 Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
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C(3)	0.136664	0.104807
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Dum1
 Test Statistic Value df Probability

F-statistic	2.484469	(5, 24)	0.0599
Chi-square	12.42235	5	0.0294

Null Hypothesis: $C(6)=C(14)=C(15)=C(16)=C(17)=0$
 Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
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C(6)	0.832658	0.415413
C(14)	-5.010585	1.760966
C(15)	1.822411	1.260365
C(16)	2.775347	3.031432
C(17)	-8.212749	3.613229

Dum2
 Test Statistic Value df Probability

F-statistic	3.453170	(3, 24)	0.0323
Chi-square	10.35951	3	0.0157

Null Hypothesis: $C(7)=C(18)=C(19)=0$
 Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(7)	-0.390912	0.450593
C(18)	7.769812	3.275580
C(19)	-10.29304	4.820068