

**ECONOMIC GROWTH AND GENDER INEQUALITIES IN LABOR FORCE
PARTICIPATION AND EDUCATION IN KENYA**

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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DEDICATION

I dedicate this research project to my family for their understanding, affection, support and encouragement while writing this proposal and throughout the masters course.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADF	:	Augumented Dickey Fuller
AIC	:	Akaike Information Criterion
AIDS	:	Acquired Immunodeficiency Syndrome
ECOSOC	:	Economic and Social Counsel
GDP	:	Gross Domestic Product
HIV	:	Human Immunodeficiency Virus
ICT	:	Information and Communication Technology
LM	:	Lagrange Multiplier
LR	:	Likelihood Ration
MDG	:	Millennium Development Goal
OECD	:	Organization for Economic Corporation and Development
OLS	:	Ordinary Least Squares
SIC	:	Schwarz Information Criterion
SMEs	:	Micro and Medium Enterprises
UN	:	United Nation
UNDP	:	United Nations Development Programme
UNESCO	:	United Nations Educational, Scientific and Cultural Organization
USAID	:	United States Agency for International Development
VAR	:	Vector Autoregressive
VECM	:	Vector Error Correction Model

ABSTRACT

The main development goal of Kenyan government is to raise economic growth and reduce gender inequality. However, majority of the Kenyans still remain in poverty and gender inequality is widening. To achieve its vision 2030, the government need deliberate win-win policies that aim at reducing gender inequality and raising economic growth. To provide the relevant information necessary for designing these policies, this study sought to investigate the effect of gender inequality in education and labor force participation on economic growth using time series data for the period between 1990 and 2012. The study used Autoregressive Distributed Lag model (ARDL) to examine how gender inequality is affected by the education system labor force participation on the growth of the economy. The key findings show that gender inequality in education had a negative effect on economic growth in both short and long run .The coefficient for gender inequality in education was -3.74730 implying that a unit rise in gender inequality in education would reduce economic growth by 3.75 percent. However, in the long run, gender inequality in education would reduce economic growth by 12 percent. On the other hand, gender inequality in labor force participation had no effect on economic growth. Further, other results from the study indicate that inflation had negative effect on economic growth in the short run and investment had positive effect on economic growth in the long run. Openness was found to have no effect on economic growth in both short and long run. The study recommends that the Kenyan government should focus on policies that ensure that the girl child has access to not only primary and secondary education but also institutions of higher learning in order to increase gender equality. Moreover, government should aim at increasing and attracting investment in various sectors of the economy and should stabilize and maintain low inflation rates that are conducive for economic growth.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The concept of gender is now a never-present concept in every part of the world. It refers to the societal attributes that are acquired behaviors obtained during socialization as part of any given society. Since this attributes are learned behaviors, they change sooner or later. Gender concept is distinct from sex which is the genetic difference between men and women which are common to everyone and remain the same over time (Reeves and Baden, 2000).

Gender equality is the similarity in handling of women and men based on the Declaration of Human Rights. Equality therefore means that both women and men are exposed to similar environment for achieving their maximum human rights and ability to contribute to political, economic, social and cultural development and both benefit without partiality from all results.

The gender concept is conceived as championing for equality and equity between boys, girls, men and women hence being fair to them. To ensure non partiality, actions must often be put in place pay off for past and present social disadvantages that limit women and men from operating on a level playing field. Therefore gender equity leads to equality and this permits women and men benefit from the same condition without any discrimination. Gender equality is therefore the equal appreciating by communities of both the resemblances and dissimilarities between women and men, and the differential responsibilities that they play. Gender equality does not imply then that women and men become the same, it means that one's privileges, liberties or prospects are not depended on their sexuality (Reeves and Baden, 2000).

Worldwide, women have been overwhelmingly disadvantaged than men in many ways including violence against women by their intimate partners; women's being less participation involved and represented in political spheres and decision-making structures; there are different economic prospects for both men and women whereby women are the majority among the poor; and when it comes to sex trade and human trafficking practices, women and girls are the highest victims (United Nations,2002). These forms of inequalities against women have resulted into their exclusion from mainstream development processes undertaken in various economies.

The unequal treatment of women as compared to men results in gender inequalities. The inequalities can be as a result of cultural practices and attitudes which result in the lower status of women relative to men. This is evident in lower numbers of women in representative organs, retrogressive traditional practices, violence, and inequitable access to property, lower literacy, health complications, patriarchal marital practices and overwhelming workload (United Nations, 2002).

In the recent past, gender inequality has lived at the center of the policy discussions about development. The policy interest corresponds to a similar degree of scholarly attention that has created a lot of research aimed at showing that cutting back gender inequality contributes to development for women as individuals as well as for women on the whole. The evidence has been applied to back up inequality-reducing strategies as a reasonable and successful instrument to directly and indirectly encourage development (Bandiera and Natraj, 2013).

In a patriarchal society such as Kenya's, women have historically been disadvantaged and marginalized. There is a clear division of labor that is determined by sex and each society defines what a man or woman should do. This division of labor creates not only gender inequalities in terms of work done but also disparities in the access and control of resources and decision making power (Njiro, 2003).

In reacting to the underlying inequalities against women, there has been a wave of agitation for inclusion of women in all aspects of economic development undertaken in various economies. These calls for institution which can make difference at various stages which involves having different attitudes and relationships, different policy approach and institution and legal structures, and changes in political decision-making structures. These changes can be done holistically through gender mainstreaming strategy whose main aim is to reduce gender inequalities in all areas of economic development.

Gender mainstreaming is described as the process of applying the principles of gender analysis and equity in problem identification, planning, programming and implementation of development programs for the benefit of girls, boys, men and women. It is an organizational approach to incorporate a gender lens to all aspects of an organization's policy and actions, by building gender capacity and accountability (Reeves and Baden, 2000).

In a development context, gender mainstreaming is considered as assessing the repercussion of any intended deed, such as laws, policies, strategies, or programs, for women and men in

any area and at all levels. It is regarded as an approach for making the fears and skills of both women and men an essential element of the plan, execution, assessment and appraisal of policies and programs in all spheres, be it political, economic and societal so that men and women profit equally. The aim of mainstreaming is to bring about gender equality (United Nations, 2002). The long-term strategic interests in gender mainstreaming therefore, relate to the place of women and men, and center on narrowing or eradicating gender-based inequalities in pay, schooling, labor force participation and participation in decision-making process.

Gender mainstreaming strategy was adopted by most development organizations and many governments to tackle the supposed letdown of past inequality reducing strategies such as women-specific projects. At the time, there was extensive agreement that the unsuccessfulness of women-specific projects in the 1970s and 80s was due to their marginalization. Gender mainstreaming was planned to cure this marginalization and to get gender equality concerns into the center of development processes. Gender mainstreaming is important in ensuring more helpful policy and laws, more efficient control, noticeable presence of gender equality in the mainstream of community and ensures diversity among women and men (Grigorian, 2007).

1.1.1 Overview of Gender Inequalities in Kenya

The Government of Kenya has made its pledge to deal with gender disparities by putting in place a National Gender and Equality Commission and putting in place Gender Desks in all ministries. Despite the fact that there is lack of updated sex-disaggregated data in the country, the data available show that women though keenly contributing economically, have gender-based constraints. Eliminating these constraints could offer a major boost to the country's economy. Nonetheless, Kenya still experiences gender inequalities in education and employment.

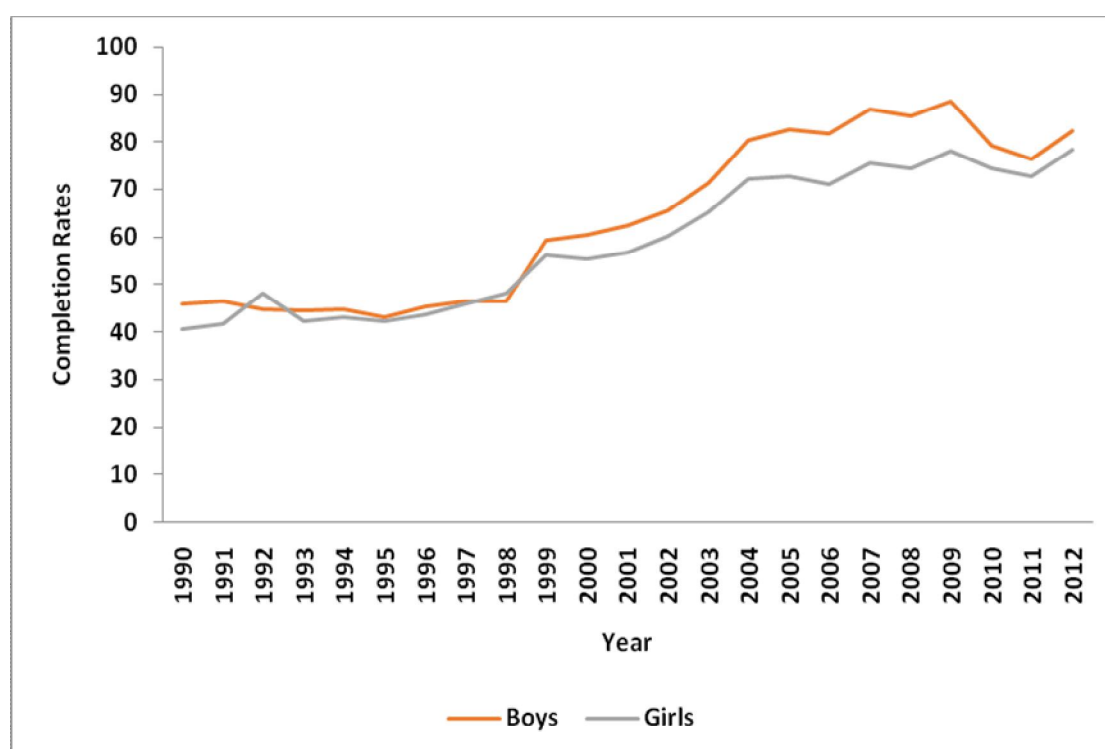
In Kenya, gender inequality take various forms; for instance, huge differences in the national share of income, employment, security, levels of investment, health care and public services are apparent across counties, especially parts of the population, ethnic communities and gender. In regard to income distribution, gender inequality is persistent with men owning more productive resources relative to their female counterparts (Njiro, 2003). On the other

hand, gender inequality in education worsens social inequality (Mulongo, 2013). Gender inequality in education and labor force participation are discussed as follows:

a. Gender Inequalities in Education

Inequalities in education manifest through the enrolment in institutions of learning, education completion rates, distribution of gender in different carriers among other indicators. In Kenya, enrolment in institutions of learning is generally higher for males than females despite the fact that female population in Kenya is slightly higher than that of males (Government of Kenya, 2012). Moreover, primary completion rates in Kenya indicate that generally more boys complete primary school as compared to girls (figure 1).

Figure 1: Primary School Completion Rates 1990-2012



Source: Ministry of Education Science and Technology (2013)

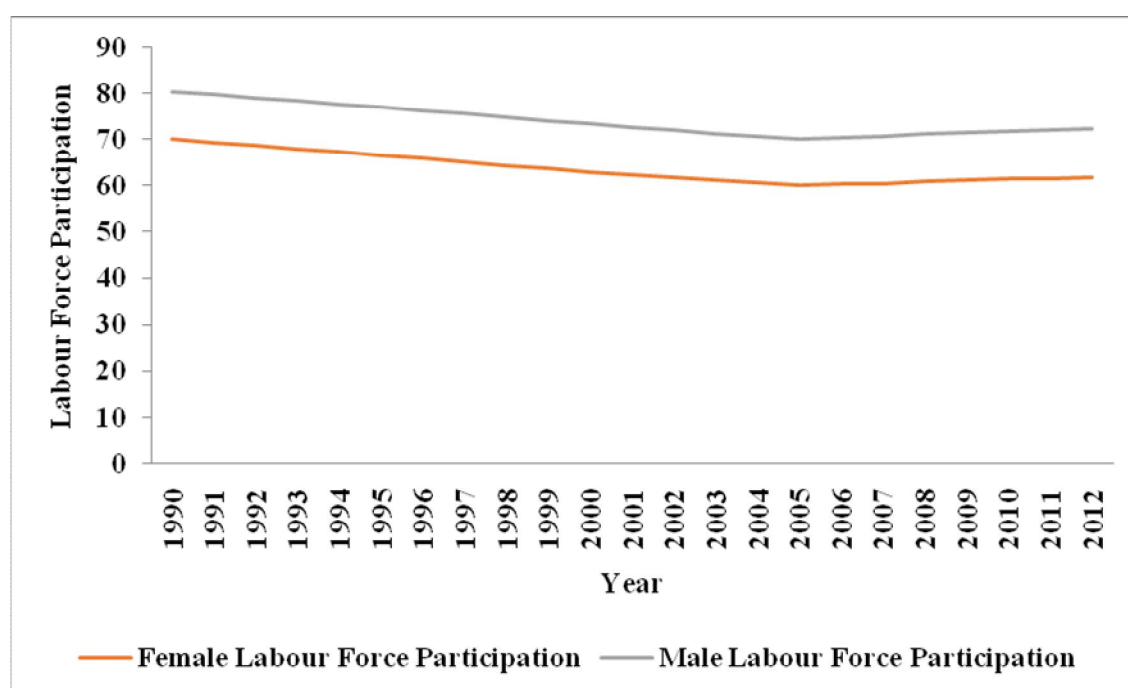
b. Gender Inequalities in Employment

In Kenya, estimates of the count of self-employed men and women depict an rising course, particularly in the 1990s. For example, between 1991 and 1999 male self-employment had increased by 30 per cent. However, the count of self-employed women increased by a higher

rate of 70 per cent (CBS, 1998, 1999). Now women account for almost half of the self-employed people in Kenya.

Gender inequalities in employment in Kenya can be analyzed based on various indicators such as, labor force participation of different genders, wage disparities between different genders, women participation in unpaid household and agricultural work among others. For instance, female labor force as a percentage of total labor force has been lower than male labor force participation since 1990 (figure 2). This suggests a higher female unemployment given that the population of females is slightly higher than that of males.

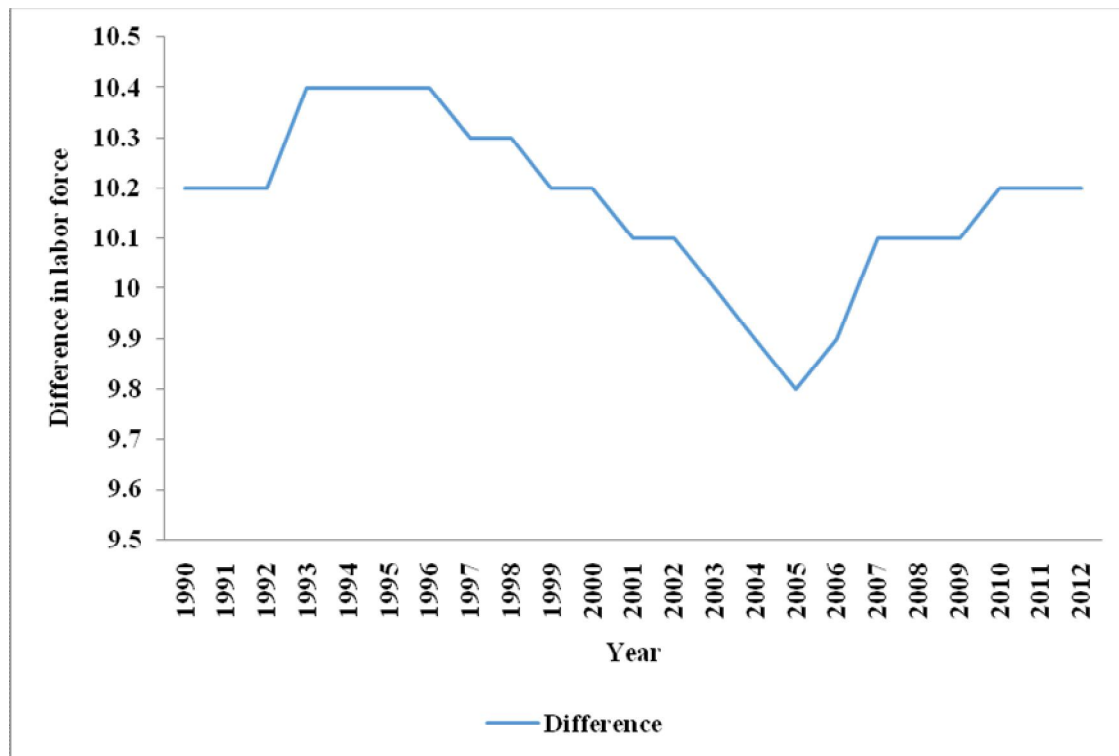
Figure 2: Labor Force Participation Rate 1990-2012



Source: World Bank (2012)

However, to unmask the gender difference in terms of labor force participation, the study estimates the difference between male and female labor participation rates. As shown in figure 3, in the early 1990 the gender gap rose sharply but had a moderate decline until year 2005 thereafter the gap has been rising with some fluctuations.

Figure 3: Difference in Labor Force Participation Rate 1990-2012



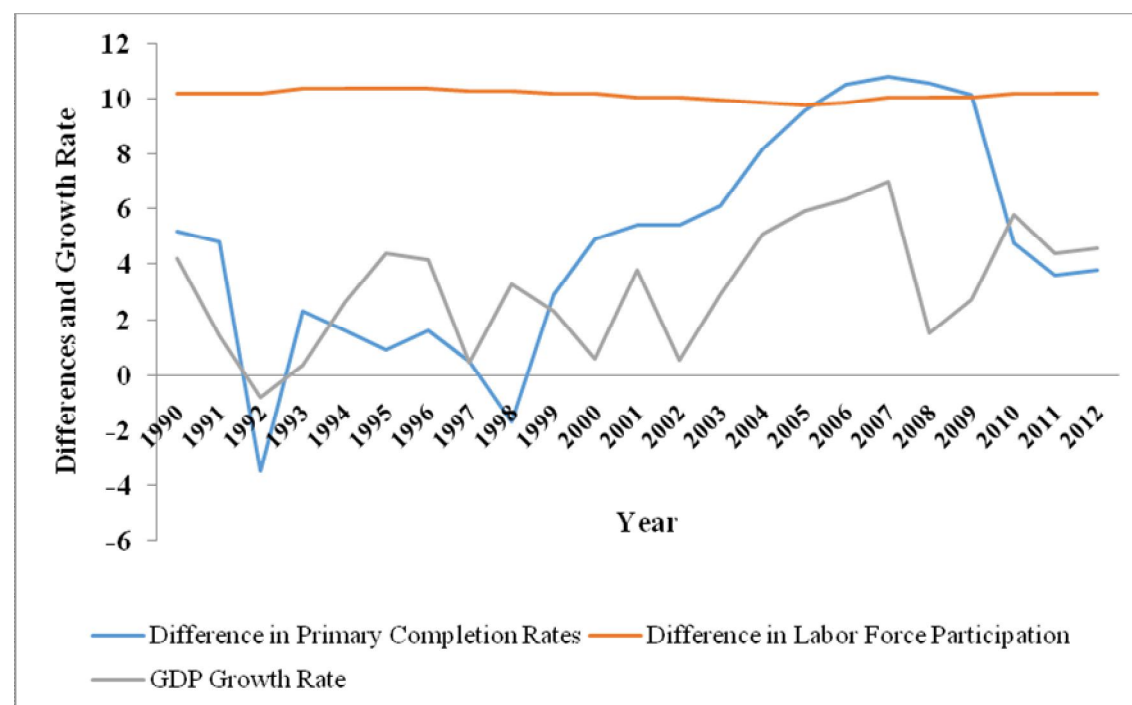
Source: Authors Construction

The rise in gender inequality in education and labor force participation could have devastating effects on the economy if appropriate measures are not put in place. World Bank (2007) recognized the need to examine the implications of gender-based inequality on economic growth since reducing gender inequality in education and labor force participation is critical in: achieving Kenya's real GDP growth target, increasing the level of employment particularly in the formal sector, making sure the level of poverty has tremendously reduced, promoting all agricultural based activities and exports, boosting financial sectors, eradicating the HIV/AIDs pandemics for women and eventually achieving Millennium Development Goals (MDGs).

As argued by (Andersson, 2010; Klasen, 1999; World Bank, 2001; Jacobsen, 2011; Lagerlof, 2003; Greenwood et al., 2005; Galor and Weil, 1996) there is a relationship between economic growth and gender inequality in education and labor force participation. In the Kenyan case, differences in primary school completion rates seem to move together with Gross Domestic Product (GDP) growth rate. However, difference in labor force participation seemed constant over the period between 1990 and 2012 (figure 4). This suggests that

investigating the trend between differences in education and labor force participation, and economic growth may provide relevant information that could be used in policy formulation.

Figure 4: Differences in Employment, Education and Growth Rate



Source: World Bank (2012)

This study aims at empirically investigating the relationship between gender inequalities in education and employment and economic growth so as to inform policy on the high impact area to target with gender equality policies.

1.2 Statement of the Problem

Most cross country literature has shown that gender disparities indeed have a negative impact on economic growth of a country. In the words of Jacobsen (2011), gender inequalities pervade the world. In the background of this study inequalities in education enrolment and completion rates at various levels and employment in labor force participation is eminent in Kenya.

These inequalities which are most often biased towards one gender have had adverse effects on growth of the economy since they not only directly affect economic growth but also indirectly through their impact on investment, savings, labor force growth, fertility rates and population growth among others (Klasen, 1999). On the other hand, gender inequality in labor force participation and education has been found to positively influence economic

growth (Greenwood et al., 2005). This suggests that there is mixed evidence on the effect of gender inequality in education and labor force participation thus the analysis of these effects could be country specific.

According to Kenya vision 2030, the country aims at growing at 10 percent per year in order to achieve the middle income status by 2030 (Government of Kenya, 2007). However, its Gross Domestic Product (GDP) growth rate of 5.3 per cent in 2014 is way below the targeted average growth rate of 10 percent (Government of Kenya, 2015). This poor performance could be explained by among other things, a large proportion of women been excluded from productive activities. Nonetheless, the government of Kenya is at the forefront in ensuring gender equity. The relationship between gender inequality and economic growth remains largely unknown. Thus knowledge of the relationship between gender inequality in education and labor force participation and economic growth is not only urgent but also paramount in devising win-win policies that reduce gender inequality and increase economic growth.

However, the extant literature in Kenya has not analyzed the effect of gender inequalities in education and labor force participation on economic growth taking into account the reverse causality (World Bank, 2007; Kiriti and Tisdell, 2003). Failure to account for reverse causality may lead to biased estimates (Greene, 2012). This study therefore accounts for reverse causality in estimating the relationship between economic growth and gender inequalities. The findings from this study will provide relevant information necessary for policy formulation.

1.3 General Objectives

The general objective of this study is to investigate the relationship between gender inequality in education and labor force participation and economic growth. The specific objectives are;

- i. To examine the relationship between gender inequality in education and economic growth.
- ii. To analyze the relationship between gender inequality in labor force participation and economic growth.
- iii. To give recommendations based on the findings of this study

1.4 Research Hypotheses

The following are the null hypotheses that this study seeks to test;

- i. There is no relationship between gender inequality in education and economic growth in Kenya.
- ii. There is no relationship between gender inequality in labor force participation and economic growth in Kenya.

1.5 Contribution of the Study

In the past few decades, a number of activities have been initiated by the government of Kenya and development partners aimed at ensuring gender equality and empowerment of women. The gender concern has featured as a major priority in Kenya's constitution, national development plan- Kenya Vision 2030 and the Millennium development Goals. However, its effect on economic growth still remains unknown. Thus the findings from this study will provide relevant information necessary for devising appropriate policies.

Additionally, the study seeks to establish specific areas of gender inequalities that can be targeted in policy to achieve greater gains in economic growth. The study therefore accounts for reverse causality in its estimation technique since reverse causality leads to biased estimates. Previous studies focusing on gender inequalities and economic growth did not account for reverse causality (World Bank, 2007; Kiriti and Tisdell, 2003).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents review of the literature on gender inequality and economic growth. Section 2.2 presents theoretical literature, section 2.3 presents empirical literature review and section 2.4 presents the summary of literature reviewed.

2.2 Theoretical Literature Review

A number of theories have been developed seeking to elucidate the effect of gender inequality on economic growth. These theories can be broadly classified based on the channels through which gender inequality influence economic growth. For instance, in their theory Galor and Weil (1996) argued that the production side of the economy comprises of physical strength and mental capabilities. Men and women have the same mental capability but men are gifted with added strength than women. However, mental capability plays a critical role in building physical capital thus an increase in capital intensity raises the wage earned by women since women have comparative advantage in mental labor input. An increase in relative wage rate for women lowers their fertility rate since women would switch from childrearing to employment. Reduced fertility rates reduce population growth that in turn increases capital per worker that ultimately raises economic growth. Galor and Weil (1996) concluded that gender inequality would have negative effect on economic growth of a country.

Lagerlof (2003) argued that families play a coordination game against each other regarding the human capital level of their offspring. The Nash equilibrium of this game is gender discrimination since it would be optimal for families to educate their sons more than their daughters because they believe that their daughters will be married more educated men who earn higher wages. Thus an effort for gender equity would increase the women's human capital leading to families getting more children. This would in turn increase the stock of human capital translating to higher economic growth.

On the other hand, Greenwood et al. (2005) argued that technological progress leads to introduction of labor-saving consumer durables that frees women from home production and

enables them to be part of labor market. Involvement of women in the labor market would raise production and thus raise economic growth of a country.

Esteve-Volart (2009) developed a theory that sought to explain how gender inequality in employment impact economic growth. The author argued that individuals are born with entrepreneurial talents and if women are excluded from participating in labor force then the stock of available talent in the economy reduces. Moreover, if women were barred from management positions, equilibrium wages and average talent for both men and women will reduce. The reduced number of talents would result to less innovation and slower adoption of technology thus economic growth would decline.

Mankiw, Romer and Weil (1992) developed a neoclassical growth model that incorporated education of male and female agents in the economy. This model argued that the output of an economy is determined by physical capital, stock of health capital, stock of education of male and female, level of technology and labor. The authors noted that the inequalities in education significantly influence economic growth of a country.

2.3 Empirical Literature Review

This section reviews empirical literature based on the two aspects of gender inequality that is, inequality in education and in labor force participation and economic growth.

2.3.1 Education, Gender Inequality and Economic Growth

There is solid empirical proof that gender inequality in education is injurious economic to growth of any country. The theoretical literatures hints that gender inequality will lessen average human capital, therefore damaging economic growth.

Andersson (2010) used the Solow's augmented growth model on cross country data to find out if an increase in human capital and a fall of gender disparities in the labor force participation impacts on developing country's rate of growth and social welfare. The study finds great evidence that there is a positive relation of high female and male primary school completion rates on the economic growth of a country.

Klasen (1999) utilizes spending in education as a share of GDP, initial fertility levels, and changes in these as instruments for levels of, and changes in, the female-to-male ratio of years of education. He found out that gender disparities heavily impact on economic growth rates. For Kenya, Klasen (2002) showed that by virtue of women not completing many years

of schooling during the 1960–92 periods as their men counterparts did attributes for almost a percentage point distinction between the long-run growth prospects of Kenya when match up to those of Asian high-performing Asian.

Dollar and Gatti (1999) in their work have shown from evidence that in countries where 10% of female have attained secondary education level, there is an increase of 10% of elder women with secondary education which increases per unit growth by 0.3% . If the Dollar and Gatti (1999) results are to be applied to Kenya it would mean that an annual increase in Gross Domestic Product growth rate of 3.5 percentage points if secondary education for female enrollment were increased to be the same as enrolment for their male counterparts.

USAID (2008) argued that quality, retention, and achievement are essential fundamentals of an education strategy planned to ensure that boys and girls maximize their potential. The report outlines the scope of equality in education as; equality of access, equality in the learning process, equality of educational outcomes, and equality of external results and recommends that gender issues should be well-known and dealt with at the highest level of government policy as well as politics. It further recognizes that there are several ways for tackling gender inequalities, which include enrollment policies and practices, the relevance of the curriculum, deployment of teachers, the surroundings of learning, safety and security, new technologies, and allocation of resources.

In a divergent view however, Ravi (2002) argued that gender aspect of education inequality most times accentuated as negating economic growth. There is however a strong discontent between the theoretical and micro-empirical studies on the other hand. The author thus argued that the narrow economic evidence can be interpreted to mean gender inequalities are not much, and as such do not essentially deter economic growth and that tackling gender disparities of power should be viewed as not of more priority than conservative economic interventions.

King and Hill (1993) approximated the statistical relation between female education and the gender disparity in registration in both primary and secondary on GDP per capita for years 1975 to 1985. The approximate relationship was statistically and economically important. He found out that, States with a female/male registration ratio lower than 0.75 have up to 25 percent lower GNP compared with like States with a smaller level of gender disparities in education.

Using a cross-section of 105 states, Klasen (2002) estimated the determinants of long-term growth rates between 1960 and 1992. The author found that both the initial female-male ratio and the development rate of this ratio for accomplished years of schooling are positively statistically related with economic development. The results were substantial; 0.4 and 0.9 percentage points of the variation in annual per-capita financial gain growth between East Asia and sub-Saharan Africa, South Asia, and the Middle East can be explicated by the differences in gender gaps in education in these areas. Prolonging the sample to year 2000 (Klasen and Lamanna, 2009) found the same results.

There are various factors that influence gender inequality in education. Some of these factors include; economic development, youth sex ratio, level of general education and public education expenditure. For instance, empirical evidence shows a positive statistical relation between gender equality and economic development implying that enhancing gender equality in education contributes to increase in economic development. Therefore it can be argued that the economic investment and market growth concurrently has a positive causal impact on gender equality which promotes affirmative relationship among two variables. Various researches have demonstrated proof to this development. Dollar and Gatti (1999) found proof showing growth per unit in income of the economy contribute to a fall in the rate of gender equality. Concentration was made on various dissimilar types of measures on gender inequality namely: participation and education achievement, advancement in health sector, indicators of economic and legal equality of women in community and amalgamation or association and quantity of women privileges and accreditation . There is a positive relationship between financial earning and gender equality (Easterly, 1997). Easterly study showed that it is not just a cross sectional relationship between income and gender equality in secondary education, it is also true for different countries as they grow.

The ratio between youth and sex rate, which is strictly analytical and numerical variables, ought ineffective to show how effective it is on the gender inequality in terms of education important as an independent variable to control for the consequences of shifts in the number of girls to boys in the population. For instance, if the youth sex ratio of a certain state reduces from 100 to 90 percent over some time, it is expected, in absence of a gender break, the student ratio to reduce from 100 to 90 percent also. The youth sex ratio is anticipated to have a positive outcome on the student ratio. Especially; growth in the youth sex ratio are awaited to result in growth of the student ratio (Chen, 2004).

There is an argument that education has a tendency to widen individual's views, reduce ethnocentricity, and hence raises one's suppleness of consenting to new ways of doing things and acting. As a result, the education level achieved by the general public acts a crucial part in growing acceptance of the concept of gender equality (Chen, 2004).

Public expenditure on education has the potential to raise females being registered in schools. In a country where the count of children surpasses the schools' capacity, an increase in government expenditure on education can expand the schools' capacity, if the enhanced spending is utilized to provide extra classrooms or even teaching staff. If gender disparities exist in a society, in most cases most of the students presently enrolled will be male and therefore female-to-male student ratio will be low. Additional capacity in schools means more children will get a chance to register in schools, so it is much likely that majority of the new enrolling students will be female since most of the males are already registered. This will lead gender equality since female-male student ratio will rise. Additionally, research has found that the registration of females in institutions of learning is especially responsive to the costs related with formal education. Therefore, if government spending on education is instead used to finance part or all of this cost, registration of females in schools will grow relative to that of males (Chen, 2004).

All the same, it is probable that the enhanced expenditure on public education is not utilized to develop the schools' capacity or sponsor school costs or to supply textbooks. For instance, where the additional government education expenditure is utilized for teacher training in order to progress the teacher quality, it is likely that the effects on gender equality will be lessened or not be there at all.

World Bank (2012) demonstrates a thorough report of today's' position of gender inequality. Importantly, inequalities in health and education have significantly lessened and, in some instances, have been eliminated completely. Nevertheless, these developments have not been followed by equality in the economic and political frontiers. These results proposes that differing policies are required to encourage equality in the economic and political frontiers showing the process of economic growth, as evident in today's wealthiest countries, due to past gender-equality policies and as such have not automatically developed this equality (Bandiera and Natraj, 2013).

Jacobsen (2011) argued that the main cost of gender inequality to be the inept under-participation of women in the production sector. The study by Jacobsen establishes that

women are paid less than men in the formal employment sector, are more prone to be poor, not contribute in the formal work sub sector, do most of the household duties, be less represented in elected office and in political and corporate appointments. The study argues that societies may not achieve their full potential if they do not invest equally in men and women, do not present them equal with opportunities to participate in more productive forms of employment, and do not present them with the same opportunities as men to progress to more prolific positions over time.

World Bank (2001) stated that without taking gender disparities into account economic growth and development cannot be effectively realized. This is so since low standards of living raises gender gaps and such gender gaps deter economic development. The report notes that women still suffer from inequalities. Their access to such resources as land, credit and training is limited. Despite their great contribution to different spheres of life as care-givers in the household and society, workers, knowledge-providers, and entrepreneurs, they are unable to get what they deserve. The World Bank Report further notes that gender discriminating societies are bound to experience less rapid economic growth and poverty reduction than societies that treat males and females more equally, and that social gender disparities produce economically inefficient outcomes (World Bank, 2001).

2.3.2 Employment, Gender Inequality and Economic Growth

Generally, it is agreed that women play an important role in any development process. However, they continue to be disadvantaged as a result of the general societal attitudes towards women. This is manifested in lower natural wages for women compared to that of men as it is believed that it is men who must support family while women support only themselves through acquisition of expensive jewelry (Forget, 1997). Others hold the conservative view that women are weaker and more imperfect than men and thus welfare may be maximized by keeping women's salaries lower than that of men. These conservative beliefs have seen women benefit marginally from development opportunities than their male counterparts (Boserup, 1970).

Bradshaw et al. (2013) argued that in many of cultures there are unequal gender relations within households with the male 'head' having more of control than the female counterparts. A working woman is often misunderstood as taking over the role of man in providing, making men hesitant and thus restraining women's participation in formal work through brutality or the threat of violence therefore negating any type of paid employment. They

further conclude that when women are in formal employment, they are less likely to be engaged in full time, in the informal sector, and worldwide women are remunerated less than men for similar work.

The OECD (2011) recommended that policymakers and society should recognize the value of household work and to tackle prejudiced social norms to change attitudes that put the main role of care on women and girls. Since societal norms are not easily change, this is a long-term goal. Yet in the short-run investing in physical infrastructure and improving access to information and the use new technologies will decrease the time spent in unpaid family care work and in travelling to work, and will thus add to eliminating barriers to women's access to labor markets. The more the burden of care is taken by women, the less they have access to a formal education or income generation activities. So women need to be supported in this work for their productive potential in the market to be realized.

Cuberes and Teignier (2000) looked at existing papers on theoretical macroeconomic literature that examined the link between gender inequality and economic growth. The study established that the existing theories in the area of gender inequality and economic development gives a several methods through which gender gaps may have a negative impact on economic growth or through which economic development decreases the gender inequalities. The paper found out that there was a heavy lack of models that can be used to estimate the impact of a given gender disparity on productivity.

Seguino (2000) illustrated that discrimination of wages among genders in export-oriented semi-industrialized countries could be promoting investment and growth in general. Female workers in export industries being paid less than the male counterparts might promote investment, exports and also growth of the economy in general. Anderson (2010) study on cross country data surprisingly found out that that the ratio of female to male contributing in the labor force shows a negative relation to economic growth. The results indicate that if the shares of female and male labor force participation are raised, economic growth will decline.

Similarly, Dollar and Gatti (1999) examined the relationship between gender inequality in education and development. Utilizing data from more than 100 countries, two-stage least squares estimation with five-year growth intervals, they found that bigger female secondary education achievement tends to contribute to higher growth rates, while male secondary accomplishments tends to results to smaller growth rates.

King and Hill (1993) utilized panel regressions for 152 countries within a period of 25 years from 1960-1985 and found that education inequality among genders impacts on the level of combined output. They found that a small female-male primary and secondary school registration ratio leads to with a smaller level of GNP, even after containing for the consequences of female education on GNP.

The causes for the negative results of gender inequality on economic growth are still uncertain. Nonetheless, there are diverse ways put forward via which gender inequality in education and labor force participation can have negative devastating impact on economic growth. As Klasen (1999) argued, three such probable channels are the selection distortion factor, the environment effect and the demographic transition effect.

Thus gender inequality in employment is affected by economic development, level of education, gender equality in education, the level of urbanization and unemployment among others. On economic development, economic growth may impact gender inequality in the labor place via the effects of the wages. Wages has propensity to grow with economic growth and this increases the opportunity cost of leisure. With the opportunity cost increasing, more people who were not working formerly will be brought into the labor force. In most communities where there are gender inequalities in labor force participation, most of the people not engaged in employment are female, and therefore it is likely majority of the new employees into the labor market would be female. As a result, with the economy growth, it is expected that gender equality in terms of labor force involvement rates would grow (Chen, 2004).

It is an argued that education widens individual's views, reduces ethnocentricity, and therefore increases one's suppleness of taking up new traditions and norms. As a result, the education accomplished by a given population acts a key part in growing acceptance of gender equality concept (Chen, 2004). Gender equality in education therefore is argued to have positive results on gender equality in labor market. Provided that education is given to increase one's human capital and hence productivity, it is intuitive that if more females are educated compared to men, then more women will be employed compared to men. People living in rural areas are ordinarily more conservative and hence have more fixed views with respect to traditional gender roles determined by customs and norms. With respect to this, growth in urbanization rates may contribute to higher levels of gender equality (Chen, 2004).

In a number of States, females tend to work as inferior wage earner of their families. In these instances, labor force engagement rates of female may augment in time of high unemployment if the sole wage earner is not employed. Likewise, companies may favor female employees during time of economic depression, since they are probable to take lower wages as likened to their male counterparts. Notwithstanding, majority of women particularly, in developed countries, engage in the labor market in a non-secondary earner capacity. In these countries, high levels of unemployment should not have consequences on gender equality in labor force participation (Chen, 2004).

World Bank research further point out that, should the Middle East and North Africa region have initiated the similar policies as were introduced in East Asia with respect to gender equality in education access and Labor force participation, it could have realized 0.7 percent faster growth per year in 1990s, corresponding to US\$424 billion. Should women have worked in the formal employment sector, this growth could have been synonymous with 20–25 percent rise in net family earnings (World Bank, 2003). However, this has not been the case for Africa and particularly Kenya; women have remained behind both in acquiring education and participating in the labor force until 2000s when government began to put in place deliberate measures to bring women in the mainstream. Research done in Uganda by the World Bank implies that the country could gain up to 2 percentage points of GDP growth a year by tackling gender-based disparities in education and labor force participation (World Bank, 2003).

Oriana and Ashwini (2013) assessed empirical evidence from cross-country studies on policies that reduce inequalities to review whether this evidence can be used to determine policy interventions. They argued that the evidence based on variations across countries is limiting to a country in the use for policy planning since it does not establish the causal relationship from inequality to growth. They also find out from evidence reviewed that gender inequalities in economic and political participation have persisted across the developed and developing world and that the higher income and accelerated economic growth due to exploiting women's talent has not ensued.

Even though, significant progress has been achieved in recent years toward narrowing the gender disparities in education within most countries, gender gaps have remained in economic and political participation across the developed and developing countries. The anticipated high income and accelerated economic development because of exploiting

women's endowments has not been achieved. Evidence from cross-country is useful to recognize combined patterns, but the utilization of this evidence is not suitable to steer policy planning, which needs accurate data on mechanisms at use at the micro level (Bandiera and Natraj, 2013).

A fresh genesis of micro level researches based on randomized controlled trials of natural and field experiments is giving some of this much sort evidence. Contrary to the macro level evidence, most micro level researches are planned to give evidence on the mechanisms by which gender equality betters economic efficiency. Hence, micro level research is more useful to give accurate policy guidance (Bandiera and Natraj, 2013).

2.3.3 Gender Equality and ICT

The unequalled characteristics of Information Communication and Technologies (ICTs) have made it to be a useful instrument for economic growth. Additionally, it makes them an valuable way via which gender equality can be mended. There are various ways in which a well instituted ICT infrastructure can result in improvements in gender equality.

Provided ICTs permit a better exchange of information and knowledge, enhanced accessibility and utilization of ICTs permit higher exposures to the traditions, norms, beliefs, and practices of different cultures and communities. As a result this increases awareness of matters surrounding gender inequality. With respect to this, ICTs can be a priceless instrument in altering people's attitude positively, towards women through spreading learning syllabus on gender equity (World Bank, 2003).

Education influences reduction in gender inequality as it seeks to widen an individual's views, decrease ethnocentricity, and hence step up one's suppleness of accepting new norms and customs. Women education is particularly significant in communities where gender prejudices that order strictly domestic responsibilities for women. In such instances lack of education has a tendency to promote gender inequality.

ICTs are capable of giving inventive methods for female to get and modernize their expertise so as to take part in the economy on more equal bases. For instance, ICTs permit different kinds and degrees of schooling to be obtained via distance learning. The flexible ways of admission and study periods and the possibility to reach females confronting social barriers that define their access to schools, make distance learning through ICT an assuring educational approach for female. Similarly, education is also crucial in amending the

capability of women in developing countries to take on full reward of the chances offered by ICTs, particularly those related to information technology. Presently, due to their low educational levels and restricted access to scientific and technical education, most women in societies with strong gender inequality tend to be badly placed to draw the full gains of these modern installations (World Bank, 2003).

ICT may permit economic chances for women in societies where they are expected to stay at home and are not allowed to interact or travel with men apart from close family. In such instances, computers, telephones and the Internet permit women to telecommute, and thus operate and interact with men without face-to-face interaction, and also without being in the same area (Daly, 2003). ICTs therefore are useful for telecommuting also in cultures where domestic functions are not enforced on women. For instance, most women in industrial societies those are gender classless remain home voluntarily, so as perform a bigger role in their children's nurturing. In such instances, ICTs make it possible for women to take part in the labor market without giving their presence in the home.

ICTs facilitate trade by enhancing the exchange of information, lowering transactions costs, getting over distance and therefore growing market coverage. These gains are particularly important to micro and small enterprises (MSE), which are reigned by women enterprisers (World Bank, 2003).

2.4 Summary of Literature Review

The literature reviewed in this study shows that there is a link between gender inequalities in education and employment and economic growth. Though there are a few studies that have found a positive relationship between economic growth and gender inequalities, other studies have shown that gender inequalities in education and employment affect economic growth negatively.

The conclusion essentially is that the role of both women and men in fostering economic growth cannot be wished away and that resources should therefore be distributed without discrimination of either gender to eliminate existing inequalities. Most of the studies that have been done on economic growth and gender inequalities are have used cross sectional data and have found diverse results. There are limited country studies using time series data to establish the relationship between gender inequalities and economic growth, for instance it is

still unknown how gender inequalities in education and labor force participation influence economic growth in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter presents research methodology that will be used in this study. Section 3.2 presents model specification, section 3.3 presents model estimation and section 3.4 presents estimation issues while section 3.5 presents types and sources of data.

3.2 Theoretical Framework

To examine the relationship between gender inequality and economic growth, the study follows neoclassical growth model developed by (Mankiw, Romer and Weil, 1992) and its modification by Knowles (2002). This model assumes that real output (Y) is determined by physical capital (K), the stock of female education (SEF), stock of male education (SEM), stock of health capital (X), level of technology (A) and labor (L). This relationship is presented in equation 3.1.

$$Y_t = K_t^\alpha SEF_t^{\beta_f} SEM_t^{\beta_m} X_t^\varphi (A_t L_t)^{1-\alpha-\beta_f-\beta_m-\varphi} \dots \dots \dots (3.1)$$

The authors assumed that the type of production function is Cobb-Douglas and exhibits constant returns to scale and has diminishing marginal products of each factor. Equation 3.1 can be transformed into effective unit of labor hence accumulation of physical capital, female and male education and health can be derived as:

$$\dot{k}_t = s_{kt} y_{kt} - (n_t + g + \delta) k_t \dots \dots \dots (3.2)$$

$$\dot{sef}_t = s_{seft} y_{kt} - (n_t + g + \delta) sef_t \dots \dots \dots (3.3)$$

$$\dot{sem}_t = s_{semt} y_{kt} - (n_t + g + \delta) sem_t \dots \dots \dots (3.4)$$

$$\dot{x}_t = s_{xt} y_{kt} - (n_t + g + \delta) x_t \dots \dots \dots (3.5)$$

Where n , g and δ denote growth rate of labor, growth rate of technology and rate of depreciation respectively, s_{kt} , s_{sef_t} , s_{semi} and s_{xl} are fractions of output invested in physical capital, female education, male education and health respectively. These accumulation equations can be used to derive steady state which when rearranged results into a theoretical model as shown in equation 3.6.

$$\ln(Y_i/L_i)^* = a + \ln A_{i0} + \alpha / (1-\alpha) \{ \ln(s_{kt}) - \ln(n_i + g + \delta) \} + \beta_f / (1-\alpha) \ln(sef_i^*) + \beta_m / (1-\alpha) \ln(sem_i^*) + \varphi / (1-\alpha) \ln(x_i^*) + \varepsilon_i \dots \dots \dots (3.6)$$

This equation could be estimated using Ordinary least Squares (OLS) approach if there is an assumption that inequality in labor participation and gender inequality in education do not have a causal effect with economic growth.

3.3 Model Specification

Based on theoretical framework, the study modifies equation 3.6 so as to include gender inequality in education and in labor force participation. However, the study recognizes that gender inequality in education and inequality in labor force participation may influence economic growth and at the same time economic growth may influence gender inequality in education and in labor force participation. This indicates that there could be causality effect. Moreover, the study would like to distinguish the long run and short run effect of gender inequality in education and in labor force participation and economic growth. To account for causality effects simultaneous equation models could be used (Greene, 2012). Nevertheless, the study would like to account for causality and at the same time estimate the long run and short run effects.

According to Johansen (1991) Johansen multivariate cointegration approach could be used to estimate the short run and long run relationships. Thus model 3.6 could be transformed into estimation model as shown in equation 3.7.

$$Y_t = A_1 Y_{t-1} + \dots + A_i Y_{t-i} + \dots + A_p Y_{t-p} + \beta X_t + \varepsilon_t \dots \dots \dots (3.7)$$

Where: Y_t is the vector of endogenous variables which include; GDP growth rate, inflation, openness, investments, gender inequality in education and inequality in labor force participation in time t . X_t denotes a vector of deterministic variables such as constants, trends

and seasonal terms while A_i and β are matrices of coefficients to be estimated. ε_t denotes a vector of innovations, i denotes the lag length and p denotes the maximum lag length.

To distinguish whether model 3.7 should be estimated as a Vector Autoregressive model (VAR) or Vector Error Correction model (VECM) Engle-Granger (1987) suggested that for a VECM to be used, the endogenous variables need to be integrated of order one while for a VAR the endogenous variables should be covariance stationary. Moreover, if variables are integrated of order one and order zero Autoregressive Distributed Lag (ARDL) model would be appropriate. Thus the choice of whether to use a VAR, VECM or ARDL was based on the unit root results.

3.4 Estimation Issues

The study conducted various diagnostic tests before running the model. This is to ensure that time series assumptions are not violated. There are both pre and post estimation test that will be conducted. The pre estimation tests include:

3.4.1 Lag Length Determinations

The study used likelihood ratio (LR) test to test select the lag length to be used in the VAR, VECM or ARDL. The selection of appropriate lag length ensures that the residuals do not have significant autocorrelation since autocorrelation leads to inconsistent least square estimates (Enders, 1995). The study complimented the LR test with Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) statistics. These lag selection criteria enables one to select the smallest lag order without much loss in the degrees of freedom.

3.4.2 Test for Stationarity

The study tested for the presence of unit root in the series. According to Gujarati (2008) a stationary series is a series that has constant mean and variance over time and the value of covariance between the two time periods depend only on the gap between the two time periods and not the actual time at which the covariance is calculated, otherwise the series is nonstationary. Estimating an Ordinary Least Square (OLS) model with non stationary series would result to spurious results (Gujarati, 2008). The commonly used techniques for testing for unit root are Augmented Dickey-Fuller (ADF) and Phillips-Peron. ADF test has a null hypothesis of a presence of unit root, that is, the series integrated of order one. Though

Phillips-Peron has a different specification as that of ADF, this study used ADF to test for presence of unit root for the variables used in the analysis.

3.4.3 Cointegration Test

To determine the long run relationship between variables, the series must be integrated of order one. Given that variables are integrated of order, it is then possible to test for the number of long-run equilibrium relation(s) among the variables (Johansen, 1991). This is done by use of trace or maximum eigen values. The null hypothesis of the trace statistic is that there are r cointegrating relations against the alternative that states that there are k cointegrating relations. The null hypothesis for the maximum eigen values is that there are r cointegrating relations against the alternative hypothesis of $r+1$ cointegrating relations. However, if the series are integrated of order one and order zero then ARDL approach will be used to estimate the long and short run relationships.

3.4.4 Autocorrelation Test

Running a model in the presence of autocorrelation the estimates are unbiased, consistent and asymptotically normally distributed but they are not efficient. Thus it is important to test for serial autocorrelation in order to ensure that the estimates are efficient. Among other tests of autocorrelation such as Runs test, Durbin-Watson tests and the Breusch- Godfrey test, this study used Breusch- Godfrey test since it overcomes the constraints of the tests such as Durbin-Watson test (Gujarati 2008).

3.4.5 Normality Test

Running a model with residuals that are not normally distributed will result to invalid inference of t and F statistics. To ensure that the residuals used are normally distributed, the study uses Jarque-Bera test to test for normality of the residuals. The null hypothesis of Jarque-Bera is that there is no skewness in the series and the kurtosis is mesokurtic. This implies that for normally distributed residuals the Jarque-Bera statistic is equal to zero (Gujarati 2008).

Other tests that the study conducted include ARCH effects, Ramsey RESET test and test for stability of parameters.

3.5 Types and Sources of Data

The main source of data used in this study was sourced from World Development Indicators (World Bank, 2012). This dataset comprises time series data for various macroeconomic indicators of Kenya. Specifically, data from the period between 1990 and 2012 on economic growth, inflation, exports and imports, investments and male and female labor participation rates and education was sourced from World Development Indicators. Data on male and female primary school completion rates was sourced from Kenya Ministry of Education, Science and Technology.

CHAPTER FOUR

EMPIRICAL RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the diagnostic, regression results and their interpretation. Section 4.2 presents the descriptive statistics, section 4.3 present diagnostic results and finally section 4.4 present regression results.

4.2 Descriptive Statistics

The study found that the mean GDP growth rate over the period between 1990 and 2012 was 3.2015 with a standard deviation of 2.1466 (Table 4.1). On the other hand, the mean for gender inequality in labor force participation was 0.085 with maximum and maximum values of 0.0680 and 0.1147 respectively. Gender inequality in education had a mean of -0.0138 and a standard deviation of 0.0062 while the mean for inflation, openness and investments was 13.51, 56.21 and 18.41 respectively.

Table 4.1: Descriptive Statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
GDP growth rate	3.2015	2.1466	-0.79949	6.9933
Gender inequality in labor force participation	0.0850	0.0149	0.0680	0.1147
Gender inequality in education	-0.0138	0.0062	-0.0290	-0.0072
Inflation	13.5094	10.3440	1.5543	45.9789
Openness	56.2125	10.0720	38.6503	76.3512

Investments	18.4087	2.3609	15.0038	24.1641
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4.3 Diagnostic Tests

The study tested for various diagnostic tests and the results are discussed as follows:

4.3.1 Lag Length Determinations

The study sought to find out the lag length of each variable used in the analysis. Selection of lag length is critical in analysis of time series data since it enables the research to use residuals that do not have significant autocorrelation. Gujarati (2008) argues that failure to effectively account for autocorrelation leads would lead to inconsistent least square estimates. This study uses both the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) statistics to test for the lag length of each variable. The results in Table 4.2 shows that GDP growth rate, gender inequality in education and in labor force participation, inflation, openness and investments all have a maximum lag of 1.

Table 4.2: Lag Length Determination

Variable	Maximum Lag
GDP growth rate	1
Gender inequality in labor force participation	1
Gender inequality in education	1
Inflation	1
Openness	1
Investments	1

4.3.2 Test for Stationarity

The study used ADF to test for unit root in each series. This is because running non-stationary series would lead to spurious results (Gujarati, 2008). Table 4.3 present results for unit root at levels and at the first difference both with intercept and trend. The results shows

that GDP growth rate and investment are integrated of order zero. Gender inequality in labor force participation and gender inequality in education are integrated of order one suggesting that they are stationary at the first difference. Additionally, inflation and openness are integrated of order one suggesting that these variables are stationary after the first difference. This finding refutes the use of Johansen cointegration to test for the long run relationships between variables. For the Johansen cointegration test to be implemented, variables must be integrated of order one (Johansen, 1991). Given that some variables are integrated of order zero and other at order one then VAR and VECM will also not work. The study therefore adopts Autoregressive Distributed Lag Model (ARDL) bounds testing approach (Pesaran et al., 2001) to estimate the relationship between gender inequality in labor force participation and education on economic growth.

Table 4.3: Test for Unit Root

	Level		First difference		Decision
Variables	Intercept	Trend	Intercept	Trend	
GDP growth rate	-2.9474 (0.0560)	-4.0025 (0.0243)	-5.6871 (0.0001)	-5.5202 (0.0012)	I(0)
Gender inequality in labor force participation	-2.1953 (0.2081)	-0.8471 (0.9600)	-0.2120 (0.0923)	-1.7958 (0.0670)	I(1)
Gender inequality in education	-2.2410 (0.1988)	-2.2202 (0.4552)	-4.7504 (0.0013)	-4.6046 (0.0081)	I(1)
Inflation	-2.6233 (0.1035)	-2.8367 (0.2000)	-5.1160 (0.0000)	-4.9867 (0.0001)	I(1)
Openness	-0.2251 (0.9215)	-2.0771 (0.5294)	-4.5161 (0.0020)	-4.3988 (0.0115)	I(1)
Investments	-3.5375 (0.0167)	-3.6227 (0.0510)	-5.1320 (0.0005)	-5.5292 (0.0000)	I(0)

H_0 There is unit root; the values in the brackets are the P values

4.3.3 Multicollinearity

The study tested for multicollinearity using the correlation matrix as shown in Table 4.4. Gujarati (2008) noted that severe multicollinearity may inflate the standard errors of the

estimates and therefore it should be accounted for. The test for severe multicollinearity is that the correlation coefficient should be less than 0.8 (Gujarati, 2008). As shown in Table 4.4, gender inequality in education, inflation, openness, investments and gender inequality in labor force participation had correlation coefficient greater or equal to 0.8 implying that the variables used do not suffer from severe multicollinearity.

Table 4.4: Results for Multicollinearity

	GLFP	GIE	Inflation	Openness	Investment
GLFP	1.0000				
GIE	0.2530	1.0000			
Inflation	0.4870	0.2101	1.0000		
Openness	-0.0851	0.0976	-0.2055	1.0000	
Investments	0.4610	0.3411	0.1203	-0.1454	1.0000

Where; GLFP denotes gender inequality in labor force participation and GIE denotes gender inequality in education

4.4 ARDL Regression Results

Based on the diagnostic results the study uses ARDL to analyze the effect of gender inequality on economic growth in Kenya. ARDL bounds test approach was developed by Pesaran et al. (2001) and is commonly used in cases where series are integrated of order zero and order one. This study chooses this approach since the ARDL bounds testing approach does not require variables to be integrated of the same order and it solves the problem of serial correlation and endogeneity by specifying appropriate lags. Additionally, ARDL bounds testing approach can be used to estimate long run and short run parameters simultaneously (Pesaran et al., 2001). The study estimated both short and long run effects of gender inequality on economic growth in Kenya and the results are discussed as follows.

The study conducted post estimation tests that are presented in the appendices. The study tested for presence of heteroscedasticity using Breusch-Pagan test and found a test statistic of 3.850670 with a p value of 0.696876 (Appendix 1). The insignificant test statistic implies that

the model does not suffer from heteroscedasticity, that is, the variance of the residual is constant. Appendix 2 presents the test for normality whereby the result shows that the residuals are normally distributed. Breusch-Godfrey test for autocorrelation had a test statistic of 1.068355 with P value of 0.466 implying that the residuals in one period are not related with the residuals from another period. The study also tested for ARCH effects and found a test statistic of 9.64368 with a P value of 0.209681 while the test statistic for RESET specification test was 0.048238 with p value of 0.83 respectively implying that the model does not suffer from ARCH effects and functional misspecification. Finally, the study tested for parameter stability and found Harvey-Collier value of 0.325209 with p-value 0.7502 that suggests that the model parameters are stable. These tests suggest that the results from ARDL are robust.

The short run ARDL results are presented in Table 4.5. The results show that the short run model has an R squared of 0.628057 implying that about 63 percent of the variations in economic growth are explained by gender inequality in education and labor force participation, inflation, openness and investments in Kenya. This finding is supported by the F statistic of 3.940030 with a significant p value of 0.016191 suggesting that jointly all the independent variables; gender inequality in education and labor force participation, inflation, openness and investments significantly influence economic growth in Kenya. The study reported various criteria used to choose the maximum lag of variables and the following are the information criteria results. The Akaike criterion, Schwarz criterion and Hannan-Quinn had a value of 89.82720, 97.13885 and 91.41401 respectively.

The results further show that gender inequality in labor force participation, openness and investment have no significant effect on economic growth. However, gender inequality in education has a coefficient of -3.74730 that is significant at 10 percent level. This finding suggests that a unit rise in gender inequality in education reduces economic growth by 3.75 percent. This finding could be explained by the fact that an increase in gender inequality in education implies that lesser women/ girls are educated as compared to their male counterparts. This implies that a huge number of women would not participate in economic activities that require high education consequently excluding them from mainstream development processes necessary for economic development. This result supports Bandiera and Natraj (2013) finding that reducing gender inequality enables women to contribute fully to economic development of a country. Additionally, the findings is in support of Dollar and

Gati (1999) who found that a 10 percent rise in the share of adult women with secondary education increases per capita growth by 0.3 percent growth.

The study found that inflation significantly reduces economic growth in the short run. The coefficient for inflation is -0.0993843 with a p value of 0.0980 that is significant at 10 percent level. This finding implies that an increase in inflation by one unit would lead to 0.0994 reduction in economic growth in Kenya. This finding suggests that an increase in inflation leads to rise in cost of living and erodes resources that can be used for generating more wealth for an individual or for a country as a whole. Erosion of returns to investments would discourage investors from investment in the country thereby reducing economic growth.

The study found that the coefficient for error correction model was 0.777536 with a p value of 0.0394 implying that the ECM is statistically significant at 10 percent level. This finding suggests that variables could be related in the long run.

Table 4.5: ARDL Short Run Results

	Coefficient	Std. Error	t-ratio	p-value
Constant	-0.362882	0.622053	-0.5834	0.5689
Δ GLFP	-110.493	203.448	-0.5431	0.5956
Δ GIE	-3.74730	2.1333	-1.7566	0.0681*
Δ Inflation	-0.0993843	0.0560593	-1.773	0.0980 *
Δ Openness	0.146376	0.182240	0.8032	0.4353
Δ Investments	0.302132	0.259562	1.164	0.2639
ECM	0.777536	0.342217	2.272	0.0394 **
Mean dependent variable	0.008756	S.D. dependent variable		2.472855
Sum squared residual	45.48872	S.E. of regression		1.802552
R-squared	0.628057	Adjusted R-squared		0.468653
F(5, 16)	3.940030	P-value(F)		0.016191

Log-likelihood	-37.91360	Akaike criterion	89.82720
Schwarz criterion	97.13885	Hannan-Quinn	91.41401
rho	-0.035178	Durbin's h	2.051118

ARDL (1, 1, 1, 1, 1) OLS Results, Dependent variable: Δ GDP growth rate, *, ** and *** denotes 10%, 5% and 1% level of significance, GLFP denotes gender inequality in labor force participation and GIE denotes gender inequality in education.

As indicated before, the study estimated the long run relationship between variables and found that some variables had long run relationship. The results for long run relationship are presented in Table 4.6 where the R squared is 0.495119 suggesting that half of the variations in economic growth are explained by the independent variables; gender inequality in education and labor force participation, inflation, openness and investments. Additionally, the F test had a value of 3.138123 that had a p value of 0.036644 indicating that jointly all the independent variables influence economic growth. Thus jointly gender inequality in education, gender inequality in labor force participation, inflation, openness and investments determine economic growth in the long run. As for the case of short run relationship, the study reported values of three information criteria that were used namely; Akaike criterion, Schwarz criterion and Hannan-Quinn. Akaike criterion, Schwarz criterion and Hannan-Quinn had values of 92.56256, 99.10882 and 94.10466 respectively.

The study found a long run relationship between gender inequality in education and economic growth in Kenya. The coefficient for gender inequality in education was - 11.6712 with a p value of 0.0159 that is significant at 5 percent level. This finding suggests that widening gender inequality in education lowers economic growth of a country. A unit rise in gender inequality in education lowers economic growth by 12 percent. As compared to short run, the effect of gender inequality in education in the long run is larger by about 8 percentage points. This suggests the importance of reducing gender inequality in education in contributing to economic growth. This finding supports Bandiera and Natraj (2013) and Dollar and Gati (1999) who argued that reducing gender inequality in education positively impacts on economic growth of a country.

The study sought to investigate the long run effect of investment on economic growth in Kenya. The study found that the coefficient for investment was 0.368390 with a p value of

0.0888 that is statistically significant at 10 percent level. This suggests that an increase in investment would lead to an increase in economic growth. For instance, a one unit increase in investment would lead to about 0.4 increase in economic growth. Increased investments plays a critical role in creating jobs and expanding economic opportunities in a country thereby increasing the rate of wealth creation, that is, increases economic growth of a country. Further the study found that gender inequality in labor force participation, inflation and openness do not have long run relationship with economic growth in Kenya.

Table 4.6: ARDL Long Run Results

	Coefficient	Std. Error	t-ratio	p-value
Constant	-4.01224	11.1365	-0.3603	0.7234
GLFP	-28.1788	76.0347	-0.3706	0.7158
GIE	- 11.6712	6.0529	-1.9282	0.0159**
Inflation	-0.0633497	0.0451806	-1.402	0.1800
Openness	0.0634511	0.110182	0.5759	0.5727
Investments	0.368390	0.203285	1.812	0.0888 *
Mean dependent variable	3.138058	S.D. dependent variable		2.174948
Sum squared residual	50.15409	S.E. of regression		1.770489
R-squared	0.495119	Adjusted R-squared		0.337343
F(5, 16)	3.138123	P-value(F)		0.036644
Log-likelihood	-40.28128	Akaike criterion		92.56256
Schwarz criterion	99.10882	Hannan-Quinn		94.10466
rho	0.148388	Durbin's h		1.669256

ARDL (1, 1, 1, 1, 1) OLS Results, Dependent variable: GDP growth rate, *, ** and *** denotes 10%, 5% and 1% level of significance, GLFP denotes gender inequality in labor force participation and GIE denotes gender inequality in education

The study found that gender inequality in education had significant effect on economic growth in both short and long runs while inflation had short run effect on economic growth and investment had long run effects on economic growth. Gender inequalities in labor force participation and openness have no effect on economic growth in both short and long run period.

CHAPTER FIVE

SUMMARY, CONCLUSION & RECOMMENDATIONS

5.0 Introduction

This chapter presents summary of the findings in line with the objectives of the study. Based on the findings, we draw a conclusion and make recommendations on the way forward and eventually present an area of future research.

5.1 Summary

This study sought to examine the effect of gender inequality in education and in labor force participation on economic growth in Kenya using time series data for a period between 1990 and 2012. The study reviewed various literature on gender inequality and economic growth and found a dearth of literature focusing on gender inequality and economic growth in Kenya. To achieve its objectives, the study used ARDL model to examine the short and long run relationship between gender inequality and economic growth.

The study found that gender inequality in education and inflation negatively influenced economic growth in the short run. An increase in gender inequality in education had a negative effect on economic growth in Kenya. In the long run, gender inequality in education was also found to have a negative effect on economic growth while investment had positive effect. Gender inequality in labor force participation and openness were found to have no significant effect on economic growth in both short and long run periods.

5.2 Conclusion

The study used ARDL to examine the effect of gender inequality in education and labor force participation on economic growth in Kenya. The study found that in the short run, gender inequality in labor force participation, openness and investment did not statistically influence economic growth. Gender inequality in education was found to have a negative effect on economic growth. The coefficient for gender inequality in education was -3.74730 implying that a unit rise in gender inequality in education would reduce economic growth by 3.75 percent. However, in the long run, gender inequality in education would reduce economic growth by 12 percent. This finding complements the results by Bandiera and Natraj (2013) and Dollar and Gati (1999) who found that increase in gender inequality in education reduces economic development of a country. On the other hand, a unit increase in inflation was found

to reduce economic growth by 0.0994 percent in the short run. This finding suggests that a rise in cost of living erodes resources that can be used for wealth generation of a country. Finally the study found that an increase in investment would increase economic growth by 0.4 percent in the long run. Thus investments plays a critical role in creating jobs and expanding economic opportunities of a country.

5.3 Policy Recommendations

The study found that gender inequality in education plays a critical role in influencing economic growth in both short and long run. Inflation and investments were also found to significantly influence economic growth in Kenya. Based on these findings the study recommends the following:

The Kenyan government ought to deliberately formulate policies aimed at reducing gender inequality in education. Such policies should focus on ensuring that the girl child has access to not only primary and secondary education but also university and institutions of higher learning in order to increase gender equality.

Moreover, the Kenyan government should aim at increasing and attracting investment in various sectors of the economy since investments increases economic growth. Some of the investments that government can focus on are investing in infrastructure such as schools, roads and electricity among others.

Finally, the government through central bank should focus on ensuring stable and low inflation rates since high inflation hurts the public through higher prices of goods and services. Stabilization policies will also reduce uncertainties that emanate from fluctuations in inflation rate that discourages investments.

5.4 Area for Further Research

This study focused on examining the effect of gender inequality in education and labor force participation on economic growth in Kenya. This study did not focus on gender inequality and economic growth for East Africa Community (EAC) due to time and data constraints. Future studies should therefore analyze the relationship between gender inequality and economic growth for EAC since these countries have a convergence criteria whereby they target at synchronizing their development policies such as gender equality policies.

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APPENDICES

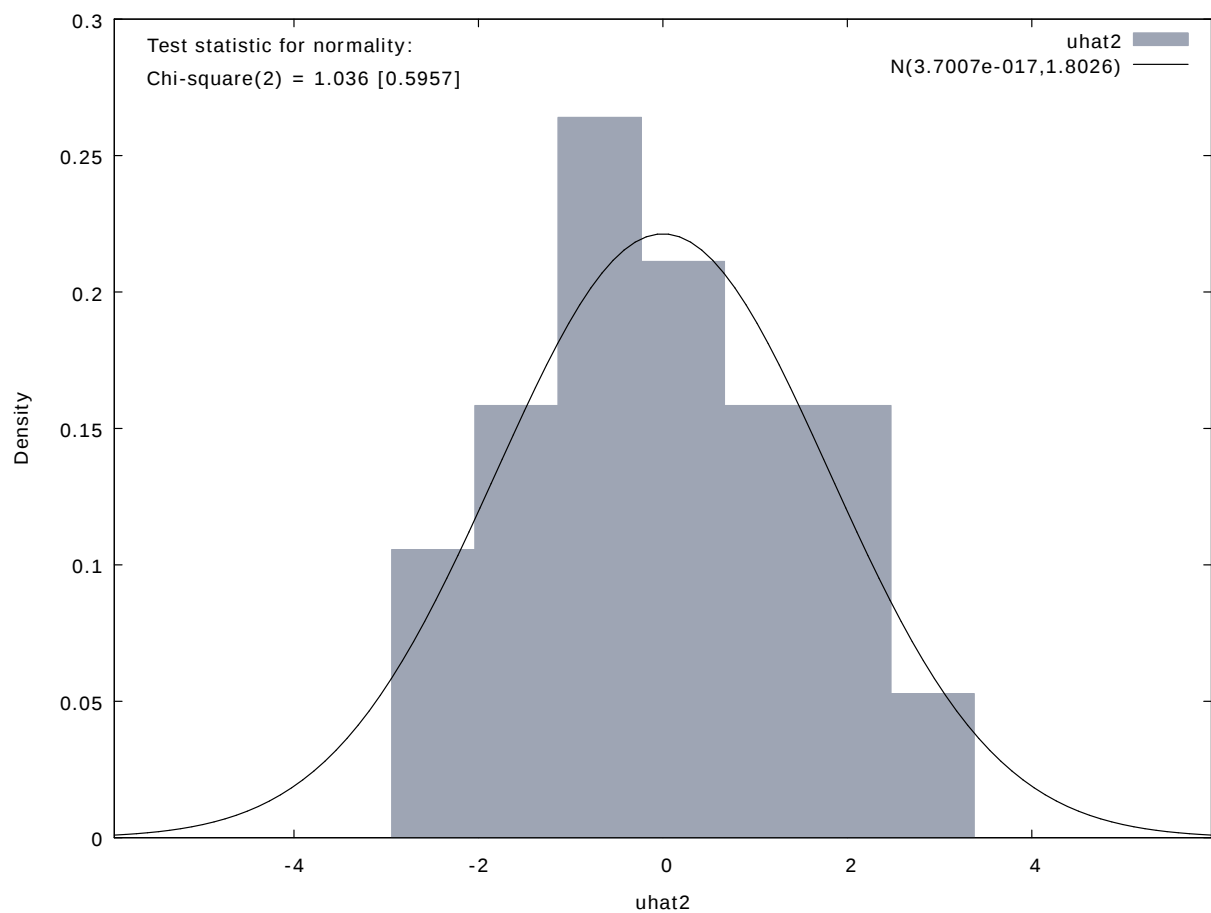
Appendix 1: Test for Heteroscedasticity

Breusch-Pagan test for heteroscedasticity

Test statistic: $LM = 3.850670$

P-value = $P(\text{Chi-square}(6) > 3.850670) = 0.696876$

Appendix 2: Test for Normality



Appendix 3: Test for Autocorrelation

Breusch-Godfrey test for autocorrelation

Test statistic: $LMF = 1.068355$,

P-value = $P(F(7, 7) > 1.06836) = 0.466$

Alternative statistic: $TR^2 = 10.847005$,

P-value = $P(\text{Chi-square}(7) > 10.847) = 0.145$

Ljung-Box Q' = 5.88615,

P-value = $P(\text{Chi-square}(7) > 5.88615) = 0.553$

Durbin-Watson statistic = 2.05112,

P-value = 0.39654

Appendix 4: Test for Autoregressive Conditional Heteroscedasticity (ARCH)

Null hypothesis: no ARCH effect is present

Test statistic: LM = 9.64368,

P-value = $P(\text{Chi-square}(7) > 9.64368) = 0.209681$

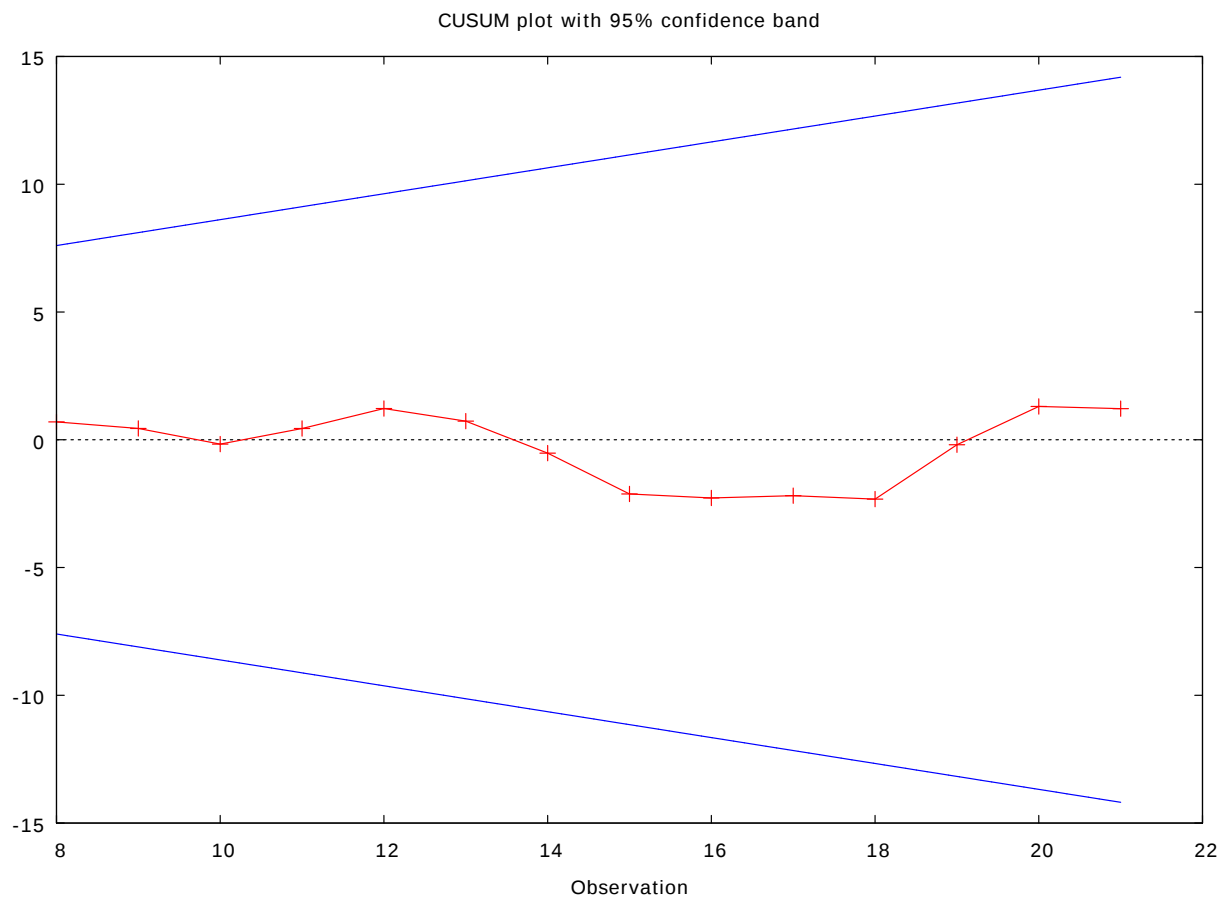
Appendix 5: Test for Model Misspecification

RESET specification test

Test statistic: F = 0.048238,

P-value = $P(F(1, 13) > 0.0482375) = 0.83$

Appendix 6: Test for stability of parameters



CUSUM test for stability of parameters

Mean of scaled residuals = 0.161927

Sigma hat = 1.86303

Harvey-Collier $t(13) = 0.325209$ with p-value 0.7502