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# Determinants of Gender Income Inequality in Selected Sub-Saharan African Countries

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**Abstract**
While there has been a reduction in the global gender wage gap in the last few decades, considerable income gaps biased against women still exist and several causal factors have been identified. However, previous studies have been concentrated mostly on developed countries. This study analysed the factors responsible for gender income inequality in seven selected sub-Saharan African countries. The analysis of the result showed that gender income inequality was significantly influenced by tertiary education ($t=7.85$, $p<0.05$), population growth ($t=-3.98$, $p<0.05$), and government expenditure ($t=6.29$, $p<0.05$) in the selected sub-Saharan African countries. There has been slow decline in gender gap in education and occupation while gender income inequality is stalled.
**Keywords:** Gender, Income Inequality, Panel Data.

## 1. Introduction

Income inequality is the existence of disproportionate distribution of total national income among households that is; the share going to rich persons in a country is far greater than that going to poorer persons (NOU, 2008). It is a measure of the relative difference in income received by individuals in the population from the lowest to the highest, or, the disparity in the levels of income among individuals in the economy (Oluwatayo, 2008). Income inequality can be vertical (which affects individuals in any society) or horizontal (which affects groups of individuals e.g. a particular culture, location, village, state, or environment).

Gender gap is defined as the discrepancy in opportunities, status, attitudes, etc. between men and women. Inequality between men and women causes lack of opportunity and poverty which is detrimental to development (Duflo, 2005). Gender wage gap measures the differences in earnings between male and female in paid employment in the labour markets. It compares the differences in overall income earned by men and women (CONSAD Research Corporation, 2009). This paper examines the determinants of gender income inequality in selected sub-Saharan countries. It is structured into 5 sections, following this introduction in section 1, section 2 reviews the literature, section 3 addresses the methodology, and section 4 focuses on presentation and interpretation of result while section 5 concludes the paper.

### 1.1 Statement of the Problem

Historically, men and women have worked in notably different occupations and as a result, the percentage of workers who are female varies greatly among occupations. Researchers have used several terms to characterize this phenomenon which include; occupational selection, occupational sorting, occupational segregation, and occupational crowding. Globally because women in formal employment have disproportionately worked in occupations with relatively low wages (e.g. teachers, nurses, secretaries, retail sales clerks) and men have disproportionately worked in occupations with comparatively high wages (e.g. executives, managers, doctors, lawyers, engineers, scientists), the average and median earnings of women in general has been much lower than the average and median earnings of men, (CONSAD Research Corporation, 2009). Women are still greatly under-represented in most of the highest paying professions, especially in the private sector (Jackson, 2004).

The gender wage gap (2011) shows that worldwide, men and women live in quite different working worlds and even though the gap has reduced in the last decades there is still a considerable income gap in favour of men, particularly in developing countries. This wage gap may be caused by factors like: the respondents' age; level of education; country and region of work; occupation and trade union membership. Gender differences are also analyzed in terms of the conditions prevailing in the working environments of men and women, the levels of satisfaction with their lives, pay, job, leisure time and division of household tasks etc.

In Kenya, gender income inequality has been a grave economic issue. Women in Kenya are only making large contributions to the economy through the agricultural and informal sector while men dominate the formal sector. Women in Kenya constitute between 65 and 75 percent of workers in the cut flower sector, more than three quarters of workers in the textiles sector, and about a third of the estimated workforce in tourism (Amanda et al., 2007).

Worldwide, outside of the agricultural sector, in both developed and developing countries, women are still averaging slightly less than 78% of the wages paid to men for the same work, a gap which refuses to close in even the most developed countries. This may be as a result of the fact that the number of women represented in well paid jobs and managerial positions is much smaller than that of men, (Augusto and Saadia, 2005). While existing studies and publications on determinants of gender income inequality has been done in developed countries, few of these has been done in developing countries and of those in developing countries none has focus on gender income inequality.

The forgoing raises the following question; what factors are responsible for gender income inequality in SSA? The objective of the study is to analyze the factors responsible for gender-income inequality in SSA.

1.2 Justification of the Study

Income inequality adversely affects people's quality of life leading to a higher incidence of poverty, impeding progress in health and education and contributing to crime and social vices. In addition, high income inequality reduces the pool of people with access to resources, threatens a country's stability, may discourage certain basic norms of behaviour of economic agents such as trust and commitment (Todaro and Smith 2003; NOU, 2008).

The ongoing global economic crisis has increased the number of unemployed women worldwide by up to 22 million in 2009 and making decent work for women increasingly difficult. The recession is pushing women into jobs that are vulnerable and unstable, adding to the burden that they are already paid less than men in a shrinking employment market, (The Gender Wage Gap, 2011). Women, all over the world are significantly concentrated in occupations with low pay, such as those found in the service, commercial, healthcare and social care sectors (Lofstrom, 2009). As at 2008, 1.2 billion of the 3 billion workers in the world were women and were working in agricultural and service sector of the economy. Thus, indicating the existence of global gender pay gap.

Due to the patriarchal nature of many developing countries, women are repeatedly experiencing income inequality and poverty. Poor women are often marginalized and disadvantaged with respect to income inequality (Edwards, 2010). Despite decades of anti-discrimination laws and changes in the policies of companies and businesses worldwide, women are still not earning as much as men in the workplace, that is, despite all efforts to equalize earnings, a persistent wage gap continue to exist between women and men (Nyu, 2011).

## 2. Literature Review and Theoretical Frame Work

2.1 Gendered Nature of the Labour Market

Attention to women's economic role and economic differences by gender started in the 1960s and there were feminist critiques of received economic theories in the 1970s and 1980s. Feminist economic historians (Connelly et al., 2000, Ruwanpura, 2004, Suzanne MacKenzie, 1984) carried out historical studies of the ways that race, class and ethnicity have situated women differently in relation to production. Feminist economists criticised mainstream established theory, methodology, and policy approaches. This started from microeconomics of the household and labour markets and spread to macroeconomics and international trade, leaving no field in economics untouched. Feminist economists pushed for and produced gender aware economic theory and analysis which broadened the focus of economics, (Connelly et al., 2000)

2.1.1 Orthodox Theory

Economists have provided explanations for the gendered nature of labour markets. Neo-classical economists' interpretation of segregated labour markets is based on the rationality of employers and workers. Workers seek appropriate employment after taking into account their endowment levels, constraints and preferences; likewise as profit maximising agents, employers will pay workers the worth of their marginal product. Interactions of these two factors are argued to result in competitive-efficient labour markets. Neo-classical economists believe that female employees ought to be equally represented in the formal job sector and that inequality in the labour force should decline with growth.

A key limitation of neo-classical theory is that it does not go further to look at the underlying mechanisms hindering women from making different choices (Ruwanpura, 2004). Assumptions of orthodox economics are unrealistic and biased in favour of men's interest as they tend to legitimize a conventional gender division of work (Robeyns, 2000). Feminist economics has added a new dimension to the criticism of orthodox economics. It questions the role of the market in providing optimal solutions for everyone (Beneria, 2002). As women are perceived as the main persons responsible for the reproductive economy independent of their entry into the labour market, the consequence is that they shoulder the double burden of responsibilities at home and at work. Whereas the negative effects of their domestic roles on their health and well-being have been well-studied (MacDonald et al., 2005; Floro, 1995), disproportionately less research has been conducted at the macro-level on the labour force reproduced by women through the caring economy (Walters, 1995).

2.1.2 Modernization Theory

Modernization theory emerged in the 1930s, with the early development initiatives of colonial rulers and economists, and gained momentum in the post war and postcolonial periods. Modernization aimed to turn economies and societies into replicas of the industrialized, high mass-consumption, democratic societies of the Western world. In economics, the modernization approach has been closely linked to mainstream neoclassical economics, which dominates economic policy in the United Kingdom and the United States and emphasizes the benefits of the free market. Prominent early writers of this school included Walter Rostow and Arthur Lewis. Modernization was the dominant approach underlying development research and policy in the post world war II period and continues to guide development efforts today (Connelly et al., 2000).

2.1.3 Dependency Theory

Karl Marx provided many of the concepts and analytical tools commonly used to discuss unequal social relations. He believed that differing material interests, based on one's economic status and the way one earned a living, resulted in differing perceptions of social reality and relegated individuals and families to social classes. Conflict between these classes was seen as the driving force underlying political and social strife. Marx believed that the contradictions within capitalism would eventually lead to overproduction, under consumption, depression, and the overthrow of capitalism by the working class (Connelly et al., 2000).

Dependency theory dominated leftist development scholarship in the late 1960s and early 1970s. Dependent development can actually erode, not merely limit, women's status**.** Most liberals and neoclassical economists rejected the dependency approach. For example, Raul Prebisch recognized that deteriorating terms of trade affected accumulations of capital and consequently the rate of economic growth (Connelly et al., 2000).

Gender inequalities at work have a negative economic impact on the society as a whole. One prominent issue that feminist economists investigate is how the Gross Domestic Product (GDP) does not adequately measure unpaid labour predominantly performed by women, such as housework, childcare, and the care of the sick and elderly. Unpaid time spent in the reproduction and maintenance of human resources is a major constraint to women's labour force participation. Therefore, women are not in a favourable position in the labour market since patriarchal ideologies influence perceptions about women workers. Patriarchal culture and norms relegate women into a secondary, inferior status in the family and society (Ruwanpura, 2004).

2.2 Feminist Theories of Gender and Work

Considerable research has been devoted to gender and work in the context of shifting division of labour globally. More recent feminist research has addressed the restructuring of work and its impact on gender relations as an effect of neo-liberal economic adjustments. The intersection between Marxism and feminism is a good place to start the theoretical debates about gender and work.

First wave feminism (focusing on the promotion of equal contract, marriage, parenting and proper rights for women) dates back to 1700s and the publication of *A Vindication of the Rights of the Women* by Mary Wollstonecraft and passed through the Declaration of Sentiments in 1848 by American women but major efforts towards women's emancipation started in the mid-1980s (Mehdi, 2008). Second wave feminism started early 1980s and it was largely concerned with the issue of equality between men and women, that is, ending discrimination. Third wave feminism began in the early 1990s as a reaction to the failure of second wave feminism and it focused on micro-politics and used post-structuralist interpretation for gender and sexuality.

There are four main strands to feminist theory the liberal, Marxist, radical and socialist feminist theory. Liberal feminist views developed during the 1800s and the focus was on women's lack of rights and opportunities based on family, gender, race, religion, and unequal distribution of wealth. It simply demands that everyone receive equal consideration without discrimination on the basis of sex. Liberal feminists seek to remove barriers that prevent equal access to jobs by women, not only to provide economic equality, but to provide access to higher-paying jobs for women (Hawthorne and Klein, 2006) and focused on reform through education. Liberal feminist theory states that in order to achieve gender equity biological differences should be ignored. Liberal feminists criticized housework because it is unpaid and denotes that women are dependent on men and devalued since their work is outside the meaningful sphere of public economic production (Ferguson and Hennessy, 2010). The main contribution of liberal feminism has been to show how much modern society discriminates against women by insisting that women and men must be treated differently (Hamilton, 2006).

The criticism of liberal feminism lies in the fact that institutional changes like the introduction of women's suffrage are insufficient to emancipate women. If women are no longer dependent upon individual men, they are still dependent upon a patriarchal state. Liberal feminism has also been criticized on the basis of its asking women to exchange their identity for masculine version (Goldstein, 2001). Additionally, it over emphasised the rational above the emotional neglecting that human being is intrinsically both rational and emotional. Liberal feminism also focuses on the individual which discredits the importance of the community (Hamilton, 2006).

Marxist feminism's foundation was laid by Friedrich Engels. Marxist feminist theory claims women's oppression was caused by the introduction of private property which led to the development of class systems and sexism. Women's subordination is seen as a form of class oppression, which is maintained because it serves the interests of capital and the ruling class. Marxist feminists contend that the oppression of women will resolve when there is a revolution to redistribute property to society as a whole. Marxist claims that the individual is heavily influenced by the structure of society, such that people's opportunities, wants, and interests are seen to be shaped by the mode of production that characterizes the society they inhabit. Marxist feminists view contemporary gender inequality as determined ultimately by the capitalist mode of production. Marxist feminists have extended traditional Marxist analysis by looking at domestic labour as well as wage work.

One of the criticisms of Marxist feminist theory is that it is a product of males and therefore has a patriarchal character. They argue that women's oppression would be to treat patriarchy not as a subset of capitalism but as a problem in its own right. They also supported the more radical political programme of liberating women through socialist revolution with a special emphasis on work among women and in materially changing their condition after revolution.

Radical feminism that emerged in the 1970s also took issue with the Marxist feminism. Radical feminism emphasizes the patriarchal roots of inequality between men and women. They view patriarchy as dividing rights, privileges and power primarily by gender, and as a result oppressing women and privileging men. Radical feminist theory is derived from a female-centred world view that challenges patriarchal systems. The perspective is that the oppression of women is caused by cultural institutions and cannot be resolved by changing those institutions and for oppression to be resolved, gender discriminations and gender roles must be abolished.

Socialist feminist theory proposes that the patriarchal family, motherhood, housework and consumerism are the basis of women's oppression. They consider the oppression of poor, working class women, third world women and women of colour as detrimental to women's progress.

Early development initiatives which preoccupied economists and colonial officials in the 1930s largely ignored women. Development planners in the 1940s and 1950s designed projects aimed to modernize colonies all over the globe. Many of these projects failed but this did not undermine most development experts' faith in modernization. After colonial rule was swept away by decolonization, the newly independent governments hired many of these former colonial development experts to help them fulfil electoral promises, particularly the promise that independence would bring economic development and prosperity for all. Both Third World leaders and Western development specialists assumed that Western development policies would position Third World economies for a "take-off" but few questioned whether this prosperity would extend equally to all classes, races, and gender, (Connelly et al., 2000).

In the United States, women involved with development issues lobbied to bring the issue of equality to the attention of US policy makers. These women challenged the assumption that modernization should automatically increase gender equality. They began to use the term women in development (WID) in their efforts to influence the policies of the United States Agency for International Development (USAID). Their efforts resulted in the Percy Amendment in 1973, which required gender-sensitive social-impact studies for all development projects, with the aim of helping to integrate women into the national economies of their countries. The emphasis on equal opportunity for women came out of liberal feminism (Connelly et al., 2000).

To enhance women's access to development, WID staff called for more accurate measurements of women's lived experiences and for improvements in women's access to education, training, property, credit and for more and better employment. To achieve these goals, they maintained that women must be integrated into development projects and plans and they must have a say in policy design and implementation. They argued further that until this happened, development policies would continue to undermine women's status in the Third World. To induce modernization technocrats to pursue these goals, these experts promised that women-oriented policies would enhance women's efficiency and consequently enhance economic development (Connelly et al., 2000).

Presently, contemporary feminists have pursued the issue of equal employment opportunities for women. As a consequence, more women moved from payless care of children and elderly to do mostly the same work in the market or for the government, although, the care work is still today largely in women's territory (Mikkola, 2005). In conclusion, liberal feminist theory is the preferred theoretical framework for this paper because it emphasizes gender equality and equal consideration for men and women without discrimination at all levels. It is also important because it focused on reform through education and recommends access for women to higher-paying jobs. However, it falls short on considerations of underlying constraints which militate against gender equality.

As stated earlier, a major reason for the male-female wage differential is occupational gender segregation whereby most occupations that are disproportionately filled by women tend to be relatively low-paying occupations while male-dominated occupations tend to offer higher wages. Hence gender occupational segregation means that most secretaries, nurses, and elementary school teachers are women while most engineers, surgeons, and chemists are men.

Women's employment tends to be clustered in lower-paying and less productive sectors, including subsistence-level agriculture and unpaid family work (Lawson and Gilman, 2009) thus women are predominantly employed in low wage jobs or extremely small scale ventures which push them into segregated occupation and repetitious manual production (Fatile et al., 2010). If women select these low-paid occupations (either because that is what the society or culture expects them to do or to take care of their family) then the lower wage is the result of choice (culturally), not discrimination. If women are crowded into these occupations as a result of barriers to their entry into higher-paying male-dominated professions, then this part of the wage differential is the result of labour market discrimination. It is expected, however, that as the proportion of women in male-dominated occupations continues to increase, the wage differential is likely to narrow (Economics Resource Center Policy Debate, 2003).

2.3 Gender composition of the Labour Market

Differences in employment in the labour market by gender are important explanations of the extent of the gender earnings gap. The tendency of men and women to work in different occupations, and the associated tendency of predominantly female occupations to be lower paid and lower valued than men's, have a major effect on the gender pay gap in general. Gender segregation is the tendency of women and men to work in different sectors and occupations. Often there is gender segregation in the labour market with either men or women dominating a particular sector. There are two types of gender segregation namely: Horizontal segregation is the under (over) representation of a certain group in occupations or sectors not ordered by any criterion. Horizontal segregation refers to the concentration of women and men in separate professions or sectors of economic activity (Faisal, 2011).

Vertical segregation refers to the under (over) representation of a clearly identifiable group of workers in occupations or sectors at the top of an ordering based on 'desirable' attributes e.g. income, prestige, job stability etc, independently of the sector of activity. Under-representation at the top of occupation-specific ladders was subsumed under the heading of 'vertical segregation' as such it is now more commonly termed 'hierarchical segregation. Vertical segregation is referred to as the "glass ceiling" which indicates the existence of visible or invisible obstacles that lead to a certain rarity of women in power and decision making positions in public organizations, enterprises but also in associations and trade unions. This phenomenon of existing barriers that prevent the ascension of women is completed by the concept of "sticky floor". This concept describes the forces that tend to maintain women at the lowest levels in the organisational pyramid (Wille, 2010).

Horizontal and vertical segregation are detrimental to women's participation in the labour market. While horizontal segregation prevents women from entering traditional "male occupations", vertical segregation impacts on women's career development opportunities preventing them from reaching managerial positions (United Nations 2005).

Table 1: Employment shares by sector and sex, world and regions (%) Males

| Males | Agriculture | | | | Industry | | | | Services | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2007 | 2010 | 2011 | 2000 | 2007 | 2010 | 2011 | 2000 | 2007 | 2010 | 2011 |
| World | 38.1 | 33.4 | 32.4 | 32.8 | 24.0 | 26.2 | 26.1 | 25.9 | 37.9 | 40.4 | 41.5 | 41.3 |
| Developed Economies and European Union | 6.0 | 4.5 | 4.4 | 4.4 | 36.4 | 34.8 | 32.0 | 31.5 | 57.6 | 60.7 | 63.7 | 64.0 |
| Central and South-Eastern Europe (non-EU) and CIS | 26.0 | 20.2 | 21.2 | 19.7 | 30.1 | 34.2 | 29.9 | 32.9 | 43.9 | 47.5 | 48.9 | 47.5 |
| East Asia | 41.0 | 33.7 | 30.6 | 32.2 | 27.0 | 31.0 | 32.3 | 31.0 | 32.1 | 35.3 | 37.1 | 36.7 |
| South-East Asia and the Pacific | 48.6 | 43.5 | 41.6 | 42.5 | 18.4 | 20.9 | 20.7 | 20.9 | 33.1 | 35.6 | 37.6 | 36.6 |
| South Asia | 53.4 | 46.3 | 44.9 | 44.4 | 17.3 | 21.6 | 22.8 | 23.0 | 29.3 | 32.1 | 32.4 | 32.5 |
| Latin America and the Caribbean | 25.2 | 21.6 | 20.9 | 20.8 | 26.2 | 28.2 | 28.1 | 27.9 | 48.6 | 50.2 | 51.0 | 51.3 |
| Middle East | 20.0 | 16.4 | 14.3 | 14.1 | 26.6 | 28.0 | 28.1 | 28.2 | 53.5 | 55.6 | 57.5 | 57.7 |
| North Africa | 29.9 | 27.5 | 27.1 | 27.2 | 21.6 | 23.9 | 25.0 | 25.1 | 48.5 | 48.6 | 47.9 | 47.7 |
| Sub-Saharan Africa | 65.2 | 62.5 | 61.6 | 61.9 | 9.7 | 10.5 | 10.4 | 10.4 | 25.1 | 27.0 | 28.0 | 27.2 |

Source: ILO (2012). Global Employment Trends 2012. Preventing a deeper jobs crisis, ILO, pp.90-98.

Table 2: Employment shares by sector and sex, world and regions (%) Females

| Females | Agriculture | | | | Industry | | | | Service | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2007 | 2010 | 2011 | 2000 | 2007 | 2010 | 2011 | 2000 | 2007 | 2010 | 2011 |
| World | 44.1 | 38.6 | 36.4 | 36.2 | 14.8 | 15.9 | 16.0 | 16.2 | 41.0 | 45.5 | 47.5 | 47.6 |
| Developed Economies and European Union | 4.7 | 3.2 | 2.9 | 2.9 | 15.5 | 12.8 | 11.0 | 10.7 | 79.7 | 84.0 | 86.1 | 86.3 |
| Central and South-Eastern Europe (non-EU) and CIS | 25.5 | 19.3 | 19.8 | 20.3 | 17.9 | 17.3 | 17.6 | 18.2 | 56.6 | 63.5 | 62.7 | 61.6 |
| East Asia | 55.8 | 45.3 | 40.3 | 39.3 | 10.0 | 22.6 | 24.1 | 24.7 | 25.2 | 32.2 | 35.6 | 36.0 |
| South-East Asia and the Pacific | 51.2 | 45.0 | 43.8 | 43.9 | 13.7 | 14.8 | 14.8 | 15.0 | 35.1 | 40.2 | 41.4 | 41.0 |
| South Asia | 74.9 | 70.1 | 69.1 | 68.8 | 11.3 | 14.2 | 15.1 | 15.3 | 13.8 | 15.7 | 15.8 | 15.9 |
| Latin America and the Caribbean | 12.5 | 10.3 | 9.1 | 9.0 | 13.8 | 13.8 | 13.6 | 13.5 | 73.7 | 75.8 | 77.3 | 77.5 |
| Middle East | 35.6 | 32.2 | 29.8 | 29.9 | 12.6 | 15.2 | 13.2 | 13.1 | 51.8 | 52.7 | 56.9 | 57.0 |
| North Africa | 32.8 | 35.2 | 33.3 | 32.7 | 10.9 | 11.1 | 10.9 | 11.0 | 56.3 | 53.8 | 55.8 | 56.4 |
| Sub-Saharan Africa | 67.5 | 63.5 | 62.4 | 62.1 | 5.7 | 6.2 | 6.2 | 6.2 | 26.7 | 30.4 | 31.4 | 31.7 |

Source: ILO (2012). Global Employment Trends 2012. Preventing a deeper jobs crisis, ILO, pp.90-98.

Tables 1 and 2 below show the percentage distribution of men and women in the agricultural, industry and services sectors by region. Comparing the two tables, more women (as in Table 2) compared to men (as in Table1) are still found in the agricultural and services sectors with the percentage distribution of males and females in the industrial sector being rather low. The rate of male and female employment in key sectors varies also within regions. However, the agricultural sector has the largest number of employees in the world as at year 2000 but this shifted to services by 2011 while in the Sub-Saharan Africa region agriculture is still having the largest employment share of all the sectors up to the year 2011 (ILO, 2012).

Owing to both vertical and horizontal occupational segregation, gender wage gap persist in all sectors and throughout the world and is a factor associated with women's high rate of participation in part-time work. The reasons for horizontal and vertical segregation include gender stereotyping and persistence of traditional gender roles.

2.4 Causes of Gender Income Inequality

Gender wage gap, the observed difference between wages paid to men and wages paid to women, has been a source of both political controversy and economic research throughout the past several decades. Six factors have been identified to individually and collectively account for gender wage gap which are: occupation, human capital development, work experience, career interruption, motherhood, and sectoral employment, (CONSAD Research Corporation, 2009). Olusi (2006) identified the major determinants of income as, employment status and resources ownership patterns among individuals.

Gender inequality occurs along a number of trajectories; one of the most pivotal is unequal access to and control over material resources that generate income (Seguino, 2008). Rehman, et al. (2008) summarized the factors causing income inequality as: economic growth, (this has a double effect; that is, at one dimension income inequality is good for economic growth by reducing the cost of mobilizing capital, but on the other hand bad for economic growth due to limiting the poor access to financial markets), inflation, government consumption, population growth, education.

Studies of gender wage gap have generally divided possible determinants of the wage gap into two groups: those related to human capital, and those related to labour market related institutions and rigidities (Cassells et al., 2009). UNDP (2006) identified two reasons for the gender wage gap; these are occupational segregation and gender discrimination in the labour markets. Some researchers have concluded, based on the available empirical evidence that the narrowing of the gender wage gap is largely due to narrowing of the gap in human capital development between men and women (CONSAD Research Corporation, 2009). Lars Jonung and Jarmo Kontulainen (2008) identified the determinants of income inequality in a country include social and political forces as well as economic. Olaniyan and Awoyemi (2005) pointed out that several factors that cause income inequality have been identified in the literature to include: the level of education, age distribution of household heads, gender, household size and location (geopolitical zones) and urban-rural disparity.

Yasmeen et al. (2011) cited Levy (2010) who suggested that income inequality exists as a result of trade and technology which shift the demand for workers from unskilled and semi-skilled to highly skilled labour and that improved infrastructure propel people to access national markets instead of local ones. Economic Research Center Policy Debate (2003) citing Mincer and Polachek (1974) indicated that much of the gender wage differences are as a result of changes in educational attainment and work experience while Groshen (1991) found that gender wage difference can be explained by differences in occupational choice. Thus, empirical evidence shows that most of the male-female wage differential is due to gender-related differences in occupational choice, educational attainment, and prior work experience. Education, gender, marital status and race are the main factors contributing to earnings inequality between men and women.

Occupational segregation can be defined as the extent to which women and men are differently distributed across occupations (Cassells et al., 2009). Findings from empirical studies on gendered occupational segregation presented interesting findings. Lawanson (2008) pointed out that women are excluded from certain occupational categories due to formal barriers as well as informal barriers to entry. The formal barriers which continue to hinder the entry of women into such occupational categories include: lack of educational or technical training, labour laws and trading customs. The informal barriers include: customs and religious practices, difficulties in combining domestic and labour market activities, management and worker attitudes etc. In many societies, cultural, religious or family norms continue to confine women to certain roles and are barriers to their participation in economic life on an equal basis with men. Traditionally, women perform the reproductive functions in the family, including caring for children and the elderly; the resulting division of household labour makes it difficult for women to be engaged in full-time jobs in the labour market. Furthermore, employers often underestimate the productive potential of women and consequently pay them less and confine them to lower-grade occupations (UN, 2004).

How long run influences on inequality also depends on factors such as the degree of economic freedom and competition, development of the financial sector, level of education, degree of economic openness, nature of tax regime and the extent of political freedom. It should therefore be noted that many of these factors also affect economic growth and are in turn facilitated, if not induced, by economic growth, social development and government policies (Bhandari et al., 2010) and greater presence of some of these factors implies a high level of development.

The ITUC-report mentions workplace discrimination and occupational segregation as explanations for occupational segregation. Employers often underestimate the productive potential of women and consequently confine them to lower-grade occupations (UN, 2004). The fact that a higher proportion of women than men are employed in (often lower paid) part-time work or below their education level may contribute to the gender pay gap. Given that women have disproportionately worked in occupations with relatively low wages and men have disproportionately worked in occupations with comparatively high wages, the average and median earnings of women in general has been much lower than the average and median earnings of men.

In summary, there is a lack of consensus in literature about the effect of gender inequality on economic development. The process of growth may produce different inequality outcomes. So, the factor which determines the rise and fall in inequality does not seem to be economic growth rate or the stage of development but the distribution of economic resources.

## 3. Methodology

There are several factors identified by previous researchers that may affect gender income inequality. These include: access to education;, employment rate;, poverty rate;, population growth;, trade and technology;, inflation rate;, work experience;, government consumption;, motherhood;, career interruption;, extent of political freedom;, labour market discrimination;, mobility or migration; etc. but due to the complexity of incorporating too many variables when using panel data and the non availability of data on some of the variables only the gross enrolment, population growth, government consumption expenditure and inflation rate of the selected countries will be employed for the analysis of the determinants of gender-income inequality using a panel fixed and random effect method of estimation.

Most studies on gender income inequality and development have adopted Blinder (1973) and Oaxaca (1973) decomposition of wage gap where wages are estimated separately for individuals ‘i’ of the different groups ‘g’ (males (m) and females (f)) see Atal et al. (2009), Khitarishvili, 2009. This measure split the gender pay gap into two or more parts, a part that can be attributed to observed differences in characteristics between men and women and one that is due to differences in the returns to identical characteristics. However, a better measure would have the earnings of women in the denominator in which case the gender pay gap would indicate by how many percentage points the earnings of women have to increase in order to be equal to those of men. Thus the equation this study is given by:

$LOG(GI_{(m/f)it}) = \beta_{1i} + \beta_2 LOG(Y_{(it)}) + \beta_3 Y^{\wedge}2_{(it)} + \beta_4 X + \mu_{it}$ ……………….. 1

where $GI_{(m/f)it}$ is the dependent variable, X is the matrix of the control/explanatory variables (i.e. enrolment in education (RTE, RSE, RPE), population growth (POP), inflation rate (INF), government consumption expenditure(GEXP)) and $\beta_4$ is a column vector of parameters which are associated to control/explanatory variables, and the error term μ is independently and normally distributed as $N(0, \sigma^2)$.

Table 3: Variable Description and Expected sign

| VARIABLE | DESCRIPTION | EXPECTED SIGN |
|---|---|---|
| Dependent | | |
| GI | Estimated yearly earnings of male divided by Estimated yearly earnings of female | |
| Independent | | |
| GDP per capita | Gross Domestic Product per capita in constant US dollars for year 1990-2008 | + |
| $(\text{GDP per capita})^2$ | Variable above squared | - |
| RTE | Male's gross enrollment at Tertiary divided by female's gross enrollment Tertiary | + |
| RSE | Male's gross enrollment at secondary divided by female's gross enrollment at secondary | + |
| RPE | Male's gross enrollment at primary divided by female's gross enrollment at primary | + |
| POP | Male population divided by female population | - |
| INF | Depreciation in the value of money | |
| GEXP | Government consumption expenditure | + |

3.1 Measurement of Variables

3.1.1 Gender Income (GI): Gender income is the income a person (male /female) earns from all jobs done. It includes wages and salaries, proceeds from farm produce, professional fees, profits, remittances and gifts (HDRN, 2008). As a rule, it is usually calculated by dividing the average annual earnings of women by the average annual earnings of men. It does not include comparisons of wages in similar jobs. The gap is commonly measured as the ratio of the earnings of women and the earnings of men, which indicates the proportion of the male earnings that the female earnings represent. When the ratio is calculated for all men and women who are paid wages or salaries or for all wage and salary earners who work full-time and year-round, the measure is often called the raw gender wage gap (CONSAD Research Corporation, 2009).

3.1.2 Labour Force: This is the share of economically active population that falls between ages 15 and 65 years. Labour Force Participation Rate: Labour force participation rate is the proportion of the population ages 15 and older that is economically active comprising of all people who supply labour for the production of goods and services during a specified period. Labour force participation provides an insight to how economic development creates job opportunities for and provides income to males and female, lending them bargaining power within the home and increasing their social standing. Female (Male) labour force participation rate is the rate given for each province by the ratio of the number of female (male) labour force participants 15 years of age and over to the total female (male) population 15 years of age and over. This measure reflects the percentage of women and men in a country participating in the labour force. Male and Female labour force is derived by multiplying the male and female labour force participation rate by the total labour force respectively that is:

Male labour force = male labour force participation rate x total labour force

Female labour force = female labour force participation rate x total labour force

Adopting HDRN (2008) approach in calculating gender income of male and female respectively, the formula becomes:

$$\text{Male estimated income} = \frac{\text{Total GDP US \$}}{\text{Male labour force (15 years +)}}$$

$$\text{Female estimated income} = \frac{\text{Total GDP US \$}}{\text{Female labour force (15 years +)}}$$

Thus;

$$GI_{(m/f)it} = \frac{\text{Male estimated income}}{\text{Female estimated income}}$$

3.1.3 Development indicator ($Y_{it}$): Gross Domestic Product per capita at purchasing power parity is used as a proxy for development indicator. GDP per capita at PPP is gross domestic product converted to US dollars using purchasing power parity rates.TANSEL (2002), Hass (2007) and some other researchers have used per capita gross domestic product as a proxy to measure of the level of development.
3.1.4 Development indicator squared ($Y^\wedge 2_{it}$): This is the square of Gross Domestic Product per capita at purchasing power parity.
3.1.5 Enrolment in Education: This is the number of persons enrolled at different levels of education. This study will employ the enrolment rate at primary, secondary and tertiary levels of education for male and female separately. Thus; Tertiary Enrolment in Education ($RTE_{it}$) is the number of those enrolled at tertiary levels of education. Secondary Enrolment in Education ($RSE_{it}$) is the number of those enrolled at the secondary level of education. Primary Enrolment in Education ($RPE_{it}$) is the number of those enrolled at primary level of education. Thus;

$$RTE = \frac{\text{Men's gross enrolment at tertiary level}}{\text{Female gross enrolment at tertiary level}}$$

$$RSE = \frac{\text{Men's gross enrolment at secondary level}}{\text{Female gross enrolment at secondary level}}$$

$$RPE = \frac{\text{Men's gross enrolment at primary level}}{\text{Female gross enrolment at primary level}}$$

3.1.5 Population growth ($POP_{it}$): Population growth rate is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship who are generally considered part of the population of the country of origin except for refugees not permanently settled in the country of asylum. The consequence of increased population growth is that it may alter the distribution of income.

$$POP_{it} = \frac{\text{Male population growth}}{\text{Female population growth}}$$

3.1.6 Inflation ($INF_{it}$): Inflation is a phenomenon when the value of currency of a country exceeds the production which raises the general price level and lowers purchasing power of the currency. Inflation results in depreciation in the value of money. Money, which is a measure of value by changes in itself, causes many hardships to the different classes.
3.1.7 Government Consumption Expenditure ($GEXP_{it}$): this includes all government current expenditures for purchases of goods and services (including compensation of employees).
Data on total GDP in current US $, male and female labour force; enrolment in education, population growth, and government consumption expenditure was obtained from World Development Indicator, 2011 while inflation data was obtained from World Development Indicator, 2010 and the development indicator (GDP at PPP) data was obtained from Human Development Indicator data, 2010.
3.2 Methods of Estimation
Quantitative method of data analysis was employed for this research study. This is achieved by running a regression model of the panel fixed and random effect method of estimation using equation 1.
Due to paucity of data, seven countries for which the requited data could be obtained were selected out of the 53 countries in Sub-Saharan Africa to carry out this research work. . These countries are Burkina Faso, Cameroon, Kenya, Nigeria, Rwanda, Sierra Leone, and South Africa. According to HDR (2009), four of this countries fall within medium income countries (Cameroon, Kenya, Nigeria and South Africa) and the remaining three are from Low Income Countries (Burkina Faso, Rwanda and Sierra Leone). As stated earlier, due to the fact that most sub-Saharan African countries do not generate enough data on the variables that could ideally be used for this research work, consequently the variables for which data are available were employed to achieve the objectives of the study. The variables are; GDP per capita; enrolment in primary; secondary and tertiary school (male and female); labour force; labour force participation rate; estimated earned income; and government consumption expenditure.

**4 .Analysis and Interpretation of Results**
This section presents the result and its interpretation. The method of presentation and analysis is simply through tabulation of the results at the end of which a brief discussion and econometric significance of the empirical results are made. After carrying out the panel fixed and random effect analysis, the Hausmans test carried out to verify which of the two test is more efficient shows that panel fixed effect test is more preferable. Thus, this study will only present the result for panel fixed effect method of estimation.
4.1 Interpretation of Results

Table 4 Result of Panel Fixed Effect Method of Estimation

Dependent Variable: LOG (GI)

| Independent Variables | Coefficient | t-Statistics | Probability |
|---|---|---|---|
| LOG(Y(-1)) | -0.374786 | -4.626067 | 0.0000 |
| Y^2(-2) | 3.15E-08 | 1.832164 | 0.0696 |
| RTE(-2) | 0.123564 | 7.852028 | 0.0000 |
| RSE | -0.031738 | -0.397142 | 0.6920 |
| RPE | -0.306879 | -2.893477 | 0.0046 |
| D(POP) | -28.81851 | -3.979433 | 0.0001 |
| INF(-2) | 0.002010 | 3.320762 | 0.0012 |
| GEXP | 0.012165 | 6.288595 | 0.0000 |
| Constant = 1.697261<br>R-squared = 0.860833<br>F-statistic = 49.04306<br>Durbin-Watson stat = 1.930836 | | | |

Source: Author's computation (2012)

LOG (GI) = 1.69726149945 - 0.374785510064*LOG(Y(-1)) + 3.15051926853e-08*Y^2(-2) + 0.123564110685*RTE(-2) - 0.0317378447283*RSE - 0.306878593527*RPE - 28.8185116531*D(POP) + 0.0020100685148*INF(-2) + 0.0121654928188*GEXP

From the analysis, of the coefficient of education, only the ratio of tertiary education is positive while others are negative. This implies that higher level of education or skill an individual acquire the higher the income because more opportunity will be open for a well-educated person in a formal and well paid job. This support the findings by The Council of Economic Advisers in 1998 which state that human capital, which includes education and labour market experience, is often viewed as the most important determinant of wages and that an additional year of schooling is estimated to increase wages by 5 to 15 percent.

Population (POP) has a negative relationship with gender income inequality which is as expected. An increase in population of female relative to male population will reduce per capita income of female if the growth rate is not proportional to that of the gross domestic product. Inflation which a priori is expected to be negative is positive while government consumption expenditure (GEXP) is positive as expected.

Examining the causes of gender income inequality, under the panel fixed effect test, ratio of tertiary school enrolment (RTE) is positively related and statistically significant in determining gender income inequality in the long run. This implies that the quality of human capital plays an important role in determining the income earned by people.

Another factor which is expected to determine gender income inequality according to literature is the ratio of secondary school enrolment (RSE). Under the panel fixed effect test, RSE is negatively related and statistically insignificant in determining gender income inequality in the long run. This implies that in the long run secondary education will have no effect in determining gender income because the more people are educated, the less access people with lower education have to good jobs, therefore making those with secondary school education to have a low pay jobs.

The ratio of primary school enrolment (RPE) under the panel fixed test it is negatively related and statistically significant which means that primary education only will have a negative effect on the income people earn in the long run. By implication, people with only PSE will not have access to good jobs, therefore making them to be highly concentrated in low pay jobs.

Population (POP) satisfies the a priori expectation under panel fixed. This implies that the higher the population in a given country or economy, the less the income earned by the people. In other words, more people will be chasing the few economic resources available in the economy. Inflation (INF) does not fulfil the a priori expectation under panel fixed effect tests because it has a positive relationship with gender income. Government consumption expenditure (GEXP) coefficient under the panel fixed tests is positive and highly significant. This follows the a priori expectation and implies that an increase in (GEXP) will reduce gender income inequality because there will be more money in circulation, more employment opportunities etc provided by government.

**5. Conclusions**

This study adopted the model used by Hass (2007) and Berik (2002) to analyze the determinants of gender-income inequality by incorporating some variables that are likely to cause gender income inequality as examined in the literature by some researchers who have mainly studied income inequality see ITUC Report, 2008; Schober and Winter-Ember, 2009; CONSAD Research Corporation, 2009; Cassells et al., 2009; UNDP 2006 etc.

The findings of the study showed that to a considerable extent the ratio of enrolment in tertiary school, population growth, and government consumption expenditure exhibit significant influence on gender income inequality. The ineffectiveness of primary and secondary education can be linked to the increase demand for human capital (education) at higher levels which restrict people having such certificates getting a well paid job and constrained them to low pay jobs. Education, being a measure of human capital, is hypothesized to be positively correlated with income, and therefore welfare. It follows that the more educated a household is, the less the probability that the household will fall into poverty.

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