The Ghana Living Standards Survey Round Six Household Heads Annual Gender Earnings Gap: An Empirical Analysis

Isaac Addai

Department of Accounting Studies, College of Technology Education, University of Education, Winneba, P.O.BOX 1277, Kumasi, Ghana

Abstract: - **The existence of differential earnings between male and female is taken as a universal phenomenon in almost all countries regardless of the nature and structure of the economic system. Research on gender earnings gap in Ghana is relatively a very new area of social research. One is not therefore in a position to tell how acute the gender earnings differential is in the Ghanaian economy. This paper is an attempt to contribute to bringing into the limelight the social phenomena of gender earnings gap in Ghana through empirical evidence by estimating the Household Heads gender earnings gap in Ghana based on data from The Ghana Living Standards Survey Round Six (GLSS6).The paper used a formalized method to analyze the log annual earnings differential between male and female Household Heads to determine what portion of their earnings differential is due to skills and discrimination. The findings suggests that males Household Heads in Ghana from the GLSS 6 data with sample average female characteristics earn 63% more than female Household Heads in Ghana with matching level of characteristics,** *ceteris paribus*.

Key words: **GLSS 6, household head, global, gender, earnings, Oaxaca decomposition**

I. INTRODUCTION

The occurrence of gender earnings gap is an old age phenomena which is even mentioned in the Old Testament of the Bible with the worth of females evaluated as three-fifths of the worth of males. "Set the value of a male between the ages of twenty and sixty at fifty shekels of silver, according to the sanctuary shekel, and if it is a female set her value at thirty shekels" (Leviticus (NIV), 27: 2-4).Empirical evidence abounds that shows that gender earnings gap exists in both the developed and developing countries. Grey-Bowen and McFarlane (2010) posit that gender discrimination in earnings is in part, cultural stemming from the belief that men are superior to women in terms of skills, leadership and managerial abilities.

Beginning with Becker (1957) labour market discrimination model, discrimination in earnings due to discriminatory tastes of employers, co-workers, or customers have been well documented in the social studies literature (Oaxaca (1973), Oaxaca and Ransom (1994), Mincer (1974), Mincer and Polachek (1974), Date-Baah (1986), Newell and Reilly (2001), Pham and Reilly (2007), Addai (2011), Baah-Boateng (2012)Takahashi, Takahashi and Maloney (2015) Takahashi and Takahashi(2011), and the European Union (2012). Weichselbaumer and Winter-Ebmer (2005) performed a meta-analysis of more than 260 studies on the international gender earnings gap, and they conclude that the gender earnings gap is a global issue.

With renewed interest in the gender earnings gap globally in the 21st century, social researchers began to compile and submit the Global Gender Gap Report. The Global Gender Gap Report was first published in 2006 by the World Economic Forum. The Global Gender Gap Index (2015) ranks 145 economies according to how well they are leveraging their female talent pool, based on economic, educational, health-based and political indicators. With a decade of data, this edition of the Global Gender Gap Report (2015) shows that while the world has made progress overall, stubborn inequalities remain. An index or score of 1 indicates equality. Out of the 145 countries sampled, Iceland ranked first, with an index of 0.881, followed by Norway, with a score of 0.850 and Finland with a score of 0.850 in the third place. A number of countries in Africa fare relatively well in the 2015 report. This is largely due to the participation of females in the workforce. Through these economic activities, African women have had greater access to income and economic decision-making. Unfortunately though, they are often presented in low-skilled and low paid sectors of the economy, Addai (2011).Rwanda is the only African country that falls within the first 10 ranked countries at the sixth position with a score of 0.794. Namibia with an index of 0.760 ranked sixteenth out of the 145 countries followed by South Africa with an index of 0.759 ranking seventeenth out of the 145 countries. Ghana scored 0.704 to place sixty-third out of the 145 countries, The Global Gender Gap Report (2015).

Research on gender earnings gap in Ghana is relatively a very new area of social research. One is not therefore in a position to tell how acute the earnings differential is in the Ghanaian economy. The objective of this paper is an attempt to contribute in bringing into the limelight the social phenomena of gender earnings gap in Ghana through empirical evidence by estimating the Household

Heads gender earnings gap in Ghana for policy consideration and formulation. The purpose of the current paper is therefore to explore the factors that are associated with the Household Heads earnings in Ghana based on the gender and other characteristics. The structure of the paper is now outlined; there are seven sections. The next section describes the data source. The third section describes the country's background, the fourth part of the paper deals with the description of the variables used and the subsequent section deals with the Oaxaca decomposition statistical modeling used for estimating Household Heads gender income gap and the penultimate section deals with the empirical results. A final section offers a summary and some conclusions. This paper uses incomes and earnings interchangeably.

Data Used for the Study

The Ghana Living Standards Survey Round Six (GLSS6) like previous rounds focuses on the household as the key socio-economic unit and provides valuable information on the living conditions and well-being of households in Ghana. The sixth round of the GLSS was conducted by the Ghana Statistical Service (GSS) from 18th October 2012 to 17th October 2013.The survey covered a nationally representative sample of 18,000 households in 1,200 enumeration areas. Of the 18,000 households, 16,772 were successfully enumerated leading to a response rate of 93.2 percent. Detailed information was collected on the Demographic characteristics of households, Education, Health, Employment, Migration and Tourism, Housing conditions, Household Agriculture, Household Expenditure, Income and their components and Access to Financial Services, Credit and Assets. The GLSS 6 has emerged as one of the most important tools in the welfare monitoring system and together with other surveys like the Core Welfare Indicators Questionnaire (CWIQ) and the Ghana Demographic and Health Survey (GDHS) has provided a wealth of information for understanding living conditions in Ghana, particularly as the country is undergoing rapid transition as an oil-producing middle income country. Ghana has conducted five rounds of living standards surveys since 1987. The second, third and fourth rounds, occurred in 1988, 1991/92 and 1998/99 respectively. The fifth round of the Living Standards Survey (GLSS 5) was also implemented in 2005/06. The GLSS 6 is based on Survey-Based Harmonized Indicator Program (SHIP). The SHIP seeks to eliminate the bottleneck of analyzing household survey data by extracting from existing household surveys about 200 SHIP variables that have the same definition and variable names. These variables include household consumption, access to infrastructure (water, electricity, education and health care), status of employment, education, and health. The GLSS 6 data consists of 16,772 Household Heads respondents comprising 12,043 male household heads and 4,729 female household heads. For the purpose of this paper, a usable sample of 16,044 respondents Household Heads who reported earning income comprising 11,508 male household heads and 4,536 female household heads representing 96 % of data were utilized. Given the structure of the GLSS 6, the paper used a rich array of individual-level variables constructed from the survey responses which *inter alia*, include total household wage, remittances income, rental income, miscellaneous income and net income from agricultural activities, household size, household number, and sex of household head.

Country's Background

The Republic of Ghana which is located in West Africa, is bordered by the Gulf of Guinea in the south, and is also bordered by Cote d'Ivoire in the west, Burkina Faso in the north and Togo in the east. The Ghana Statistical Service (GSS) (2012) reported that Ghana covers a total area of 238,533 square km comprising 227,533, land coverage and 11,000, water coverage. Emerging as a merger of the British colony of the Gold Coast and the Togoland trust territory, Ghana in 1957 became the first sub-Saharan country in colonial Africa to gain its independence and in July, 1960 attained a Republican status. At the time of its independence on 6th March 1957, Ghana was bequeathed with enough foreign exchange reserves by its colonial master and Ghana's per capita income at the time of its independence made it a middle income economy. Its per capita income was comparable to the level of per capita that was obtained in countries such as South Korea and Malaysia (McKay & Aryeetey, 2007). However, soon after its independence from England came successive periods of economic and political downturns. Ghana is well endowed with natural resources. Gold and cocoa continue to be the major sources of foreign exchange, along with individual remittances. Oil production at Ghana's offshore Jubilee Field began in mid-December 2010 and is expected to boost economic growth. The domestic economy continues to revolve around subsistence agriculture including forestry and fishing. The agriculture sector remains the largest sector employing 41.6% of the economically active population aged 15 years and older. The next major industrial activities are wholesale and retail trade (18.9%) and manufacturing (10.8%) (Ghana Statistical Service, 2012).The economy of Ghana is an agrarian with no significant structural change and growth after 50 years of independence. However, relative peace and stability had been achieved in the social and political front when the Ghanaian state is compared to its immediate neighbours in the West African sub-region in particular and the continent of Africa in general, Addai (2011). Ghana's population for the 2010 Census stands at 24,791,073 with an estimated growth rate of 2.5% (Ghana Statistical Service, 2012). Anecdotal estimate peg the Ghanaian population at thirty million in 2019.

Description of Data

The description and summary statistics of the GLSS 6 variables used in the study are presented in Table 1.

Table 1: Description of Variables

Variable	Description
TOT_HH_INC_NET	Total household head income (Net)
totincome	Natural log of TOT_HH_INC_NET
WAGE_HID	Total household head wage income
REMIT_INC	Household head remittances income
RENT_INC	Household head rental come
INC_OTHER	Household head other (miscellaneous) income
AGINC_NET	Household head net income from agric
HHSEX	Sex of household head
nh	Household Number
hhsize	Household size

II. STATISTICAL METHODOLOGY

In modelling the gender earnings gap among Ghanaian Household Heads using the GLSS 6 data, the Oaxaca (1973) earnings decomposition model is used. The model measure the difference in earnings by decomposing the difference in the Ghanaian Household Heads earnings into a part attributed to skill and another part attributed to discrimination based on gender characteristics. The Oaxaca (1973) decomposition is modelled as:

$$\frac{Wm}{Wf} \neq \frac{Wm^o}{Wf}, \tag{1}$$

Where $\frac{Wm^o}{Wf}$ is the ratio that prevails in the absence of

discrimination. $\frac{Wm}{Wf}$ is the observed male/female Ghanaian

Household Heads earnings ratio and m and f refers to males and females Ghanaian Household Heads respectively. In the absence of discrimination in earnings in among the Ghanaian Household Heads,

$$\frac{Wm^o}{Wf} = \frac{MPm}{MPf} \tag{2}$$

where MP, is the marginal product of males and females Ghanaian Household Heads respectively. Unfortunately however, $\frac{Wm^o}{Wf}$ is an unknown expression. A general wage equation is therefore expressed as follows:

$$W = \beta_0 + \beta_1 \overline{Z} + u \tag{3}$$

Where W represents the predicted mean earnings for a group. $\beta_{j's}$ are the estimated parameters from the regression, $\overline{Z}$ is a

vector containing individual household wage, remittances income, rental income, miscellaneous income, net income from agricultural activities, household size, household number, and sex of Household Head. An ordinary least squares (OLS) regression estimate of the earnings for each group take the form of expression (3).

Thus, $W_m = \beta_{0m} + \beta_{1m} \overline{Z}_m + u_i$ (3')

Expression (3') is the male Ghanaian Household Head earnings structure and expression (3") also

$$W_f = \beta_{0f} + \beta_{1f} \overline{Z}_f + u_i \tag{3"}$$

gives the female Ghanaian Household Head earnings structure. The difference in mean earnings is therefore given as:

$$\Delta W_{m-f} = W_m - W_f = (\beta_{0m} + \beta_{1m} \overline{Z}_m) - (\beta_{0f} + \beta_{1f} \overline{Z}_f) \tag{4}$$

Expressing equation (4) in a natural logarithm form gives:

$$\Delta \ln(W_{m-f}) = \ln(W_m) - \ln(W_f) = (\beta_{0m} + \beta_{1m} \overline{Z}_m) - (\beta_{0f} + \beta_{1f} \overline{Z}_f) \tag{5}$$

Equation (5) is decomposed into a part based on the individual Ghanaian Household Head productivity characteristics ($\Delta \overline{Z}_{mf}$) and a part based on the Ghanaian Household Head market earnings to the individual traits ($\Delta \beta_{mf}$). After some algebraic manipulation, equation (5) can be specified as:

$$\Delta \ln(W_{m}-W_f) = (\beta_{0m} - \beta_{0f}) + \overline{Z}_f(\beta_{1m} - \beta_{1f}) + \beta_m(\overline{Z}_m - \overline{Z}_f) \tag{6}$$

given:

$$\Delta \ln(W_{m}-W_f) = [(\beta_{0m} - \beta_{0f}) + \overline{Z}_f(\beta_{1m} - \beta_{1f})] + [\beta_m(\overline{Z}_m - \overline{Z}_f)] \tag{6'}$$

The first group term of equation (6') presents the part of earnings difference due to market returns to gender and is known in the social studies literature as the 'discrimination' effect. The second grouped term is the difference in earnings which is due to differences in individual Ghanaian Household Head traits estimated in the labour market. In calculating the gender earnings gap among the Ghanaian Household Heads, the summary statistics for the log total net income for the mean pooled model, the mean male and female Ghanaian Household Headssub-sample characteristics respectively are used. A standard Mincer, (1974) earnings function with the log total net earnings as the dependent variable estimation procedure is adopted in estimating the log total net earnings function among the Ghanaian Household Heads.

III. EMPIRICAL RESULTS

The regression analysis was performed separately for the pooled sample, male and female sub samples respectively

using the STATA (version 14) statistical software package. The reported mean pooled model, the mean male sub-sample and the mean female sub-sample characteristics statistics are presented in Table 2.

Table 2 Mean Income Statistics of Ghanaian Household Heads From the GLSS 6 Data

Variable	Pooled Sample	Male Sub-Sample $(\overline{Z}_m)$	Female-Sub Sample $(\overline{Z}_f)$	$(\overline{Z}_m)$ - $(\overline{Z}_f)$
totincome	8.034	8.211924	7.583004	0.62892
WAGE_HID	5246.762	6039.602	3227.773	2811.829
REMIT_INC	256.0567	172.6346	468.5018	-295.8672
RENT_INC	438.1955	513.5044	246.412	267.0924
INC_OTHER	129.5847	150.9737	75.11467	75.85903
AGINC_NET	1247.953	1518.358	559.3334	959.0246
HHSEX	.718042	1.00	0.00	N/A
nh	8.007036	8.006228	8.009093	-0.002865
hhsize	4.264429	4.62501	3.346162	1.278848
Sample size	16,044	11,508	4,536	

The Ghanaian Household Heads pooled and sub-samples Mincerian earnings function estimates are also presented in Table 3. Table 4 immediately follows and shows the Oaxaca (1973) decomposition in Household Heads earnings due to endowment or skill. Table 5 also presents the Ghanaian Household Heads Oaxaca (1973) decomposition in earnings due to discrimination. The total Ghanaian Household Heads gender earnings gap is computed and presented in Table 6.

Table 3Ghanaian Household Heads Earnings Estimates from the GLSS 6 Data

Variable	Pooled Sample	Male Sub-Sample	Female-Sub Sample	$(\beta_{m} - \beta_{f})$ = $\Delta\beta$
constant	7.169071	7.672323	6.972468	0.699855
WAGE_HID	.0000262* (0.000000489)	.0000235 (0.000000508)	.0000591 (0.00000167)	-0.0000356
REMIT_INC	.0001268* (0.00000716)	.0001457 (.0000122)	.0001086 (0.00000845)	0.0000371
RENT_INC	.0000215* (0.00000221)	.0000205 (0.00000221)	.0001461 (.0000275)	-0.0001256
INC_OTHER	.0000524* (0.00000434)	.0000515 (0.0000048)	.0000522 (0.00000953)	-0.0000007
AGINC_NET	.0000262* (0.00000111)	.000024 (0.00000113)	.0000879 (0.00000501)	-0.0000639
HHSEX	.4564898* (.022239)	N/A	N/A	
nh	-.0007855 (.0022529)	-.0005667 (.0026475)	-.0010856 (.0040151)	0.0005189
hhsize	.073036* (.0036055)	.0666065 (.0039392)	.080951 (.0085862)	-0.0143445
R^2	0.26	0.23	0.32	
Sample size	16,044	11,508	4,536	

*denote statistical significance at the 0.05 level respectively using two-tailed tests.

(White, 1980) Standard errors in parentheses

Table 4 Ghanaian Household Heads Oaxaca Decomposition for Difference in Earnings Due to Skills

Variable	Male Income Coefficient Estimates β_m	Gender Differences $(\overline{Z}_m - \overline{Z}_f) = \Delta\overline{Z}$	Income Differential Due to Skill $\beta_m(\Delta\overline{Z})$
WAGE_HID	.0000235	2811.829	0.0660779815
REMIT_INC	.0001457	-295.8672	-0.04310785104
RENT_INC	.0000205	267.0924	0.0054753942
INC_OTHER	.0000515	75.85903	0.003906740045
AGINC_NET	.000024	959.0246	0.0230165904
nh	-.0005667	-0.002865	0.0000016235955
hhsize	.0666065	1.278848	0.085179589312
Total			0.1405500680125

From Table 4, the total earnings differential due to skill is $[e^{0.140}-1] \times 100 = 15$percent. That is males Household Heads who have sample average female characteristics earn 15% on average and *ceteris paribus.*

Table 5 Ghanaian Household Heads Oaxaca Decomposition for Difference in Earnings Due to Discrimination

VARIABLE	Gender Coefficients estimates difference $(\beta_{m-}\beta_f) = \Delta\beta$	Mean Female Characteristics $\overline{Z}_f$	Income Differential due to Discrimination $\overline{Z}_f \times(\Delta\beta) + \Delta$ in Constant
change in constant			0.699855
WAGE_HID	-0.0000356	3227.773	-0.1149087188
REMIT_INC	0.0000371	468.5018	0.01738141678
RENT_INC	-0.0001256	246.412	-0.0309493472
INC_OTHER	-0.0000007	75.11467	-0.000052580269
AGINC_NET	-0.0000639	559.3334	-0.03574140426
nh	0.0005189	8.009093	0.0041559183577
hhsize	-0.0143445	3.346162	-0.047999020809
Total			0.4917412637997

In Table 5, the market difference in returns between males and females Household Heads indicate that returns to males Household Heads in Ghana from the GLSS 6 data exceeds that of their female counterparts. The estimate of 0.492 is the total earnings differential due to discrimination and is explained as the female Household Head sample average *ceteris paribus* unequal treatment or discrimination. It suggests that males Household Heads in Ghana from the GLSS 6 with sample average female characteristics earn $[e^{0.492}-1] \times 100 = 63\%$ more than female Household Heads in Ghana from the GLSS 6 data with matching level of characteristics, *ceteris paribus.*

IV. CONCLUSION AND RECOMMENDATIONS

The questions addressed by this paper are important from a policy perspective in Ghana. The paper findings indicate that gender earnings gap still prevails in Ghana and is an indication that Ghana will not get a higher index score in the next global gender reports. Very little empirical information currently exists to help reducing gender earnings gap in the country albeit the fact that labour market discrimination is a universal phenomenon. This paper seeks to ameliorate the thorny social issue of gender earnings gap by further bringing to the fore light, the thorny issue of gender earnings gap in Ghana 58 years (as at 2015) after its independence from its colonial master based on empirical evidence. An analysis of selectivity bias using Heckman (1979) selection procedure to determine the selection of females Household Heads as respondents in the GLSS 6 was however not pursued and remains an agenda for future research.

REFERENCES

[1]. Addai, I. (2011). An empirical analysis of gender earnings gap in the Ghanaian informal sector using the 1998/1999 Ghana living standards survey,*Current Research Journal of Social Sciences* 3(4): 347-352, Maxwell Scientific Organization.
[2]. Baah-Boateng, W. (2012).Labour market discrimination in Ghana: A genderdimension. University of Ghana, Accra.
[3]. Becker, G.S. (1957). The economics of discrimination,Chicago: University of Chicago Press.
[4]. Date-Baah, E. (1986). Sex segregation and discrimination in Accra-Tema: Causes and consequences. in: Anker, R. and Hein, C. (Eds.), sex inequalities in urban employment in the third world, St. Martin's Press, New York.
[5]. Ghana Living Standards Survey Round Six (2014). Ghana Statistical Service, August, Accra.
[6]. Ghana Statistical Service (2012) *2010 Population and Housing Census.*Accra: Sakao Press Ltd.
[7]. Global Gender Gap Report (2015). World Economic Forum, The Global Gender Gap Report 2015, World Economic Forum, Geneva, 2015. Retrieved on 2nd February, 2016. Website: http://www.weforum.org/reports/global-gender-gap-report-2015.
[8]. Grey-Bowen, J. & McFarlane, D. (2010) 'Gender compensation discrimination: An exploration of gender compensation gap and the higher education connection', *Journalof Business Studies Quarterly*, 2(1): 65–82.
[9]. Heckman, J. (1979). "Sample Selection Bias as a Specification Error." *Econometrica*47: 153–161.
[10]. McKay, A, and Aryeetey, E., (2007). "Growth with poverty reduction, but increased spatial inequality: Ghana over the 1990s", in chapter 3 of M. Grimm, and S. Klasen (eds), *Determinants of Pro Poor Growth: Analytical Issues and Findingsfrom Country Cases,* Palgrave-Macmillan.
[11]. Mincer, J. &Polachek, S. (1974). Family investments in human capital: earnings of women.*Journal of Political Economy*, 82(2): 96-108.
[12]. Mincer, J. (1974).Schooling, experience, and earnings. New York: Columbia University.
[13]. New International Version (2010).New Jersey, Prentice Hall.
[14]. Newell, A. & Reilly, B. (2001).The gender pay gap in the transition from communism; some empirical evidence, *Economic Systems*, 25 (4): 287- 304.

[15]. Oaxaca R.L., Ransom, M.R. (1994). On discrimination and the decomposition of wage differentials, *Journal of Econometrics* 61 1(March), 5-21

[16]. Oaxaca, R., (1973). Male-female wage differentials in urban Labor markets, *International Economic Review* 14(3), 693-709.

[17]. Pham, T-H &, Reilly, B. (2007).The gender pay gap in Vietnam, 1993–2002: A quantile regression approach. *Journal of Asian Economics* 18: 775– 808.

[18]. STATACorp (2016) *StataStatistical Software: Release 14*. College Station, TX: StataCorp LP.

[19]. Takahashi, A.M., & Takahashi.S.& Maloney, T. (2015). Gender salary and promotion gaps in Japanese academia: Results from science and engineering, *Discussion Paper* 11522 (5), Kobe University.

[20]. Takahashi, A.M., & Takahashi.S. (2011). "Gender salary differences in economics departments in Japan" *Economics of Education Review*, 54(2):224-244.

[21]. The European Union. (2012). European Commission: Gender in research and innovation.Publications Office of the European Union.

[22]. Weichselbaumer, D & Winter-Ebmer, R. (2005). 'A meta-analysis of the international gender wage gap', *Journal of Economic Surveys*, 19(3): 479–511.

[23]. White, H.(1980). A heteroscedasticy-consistent covariance matrix estimator and a direct test for heteroscedasticity, *Econometrica* 48: 4(May), 817-838.

AUTHOR

Isaac Addai is a Social Scientist, and a Lecturer at the Department of Accounting Studies, University of Education, Winneba