

An Empirical Analysis of Gender Earnings Gap in the Ghanaian Informal Sector Using the 1998/1999 Ghana Living Standards Survey

Isaac Addai

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

Abstract: This study used the 1998/1999 Ghana Living Standards Survey (GLSS 4), a new nationally, representative survey carried out by the Ghana Statistical Service (GSS) and applied the decomposition to empirically analyse the phenomenon of gender gap in earnings in the informal sector labour market. The findings suggest the existence of discrimination in gender earnings in the Ghanaian informal sector labour market and that females in the Ghanaian informal sector labour market are on average and *ceteris paribus* more skilful by 36%. However, males having sample average female characteristics earn on average and *ceteris paribus* 87% more in log monthly wages than their female counterparts.

Key words: Gender gap, earnings, living standards survey, in formal sector, labour market, discrimination

INTRODUCTION

The quest for recognition by operators in the informal sector as an integral part of the Ghanaian economy and also as major contributors to the Gross Domestic Product (GDP) is yet to be seen and acknowledged by the policy makers in Ghana. This is so because under the guise of decongesting the cities, periodic crackdowns on the activities of the operators in the informal sector in Ghana are embarked upon. Most times, merchandise of the informal sector operators are confiscated by the officials of the metropolitan or municipal or district authority concerned. Owners of these confiscated merchandises are in some cases prosecuted and fined and are allowed to go away or jailed. In spite of the frequent crackdown and the deterrent measures imposed on earlier operators in the informal sector in the various cities and towns of Ghana, economic activities in the informal sector bounced back in a matter of few days. The informal sector activities after having bounced back are characterized by booming business and transactions at those places where there were crackdowns earlier on. In Ghana as in most developing countries, the distorted view of labour market policy in favour of the formal sector needs to be addressed since the formal sector in recent times have come to form only a small part of the labour market (Canagarajah and Mazumdar, 1997). The need to ensure equality in all fields of endeavours in Ghana has caught the attention of policy makers in recent times. Various affirmative action programmes and policies at the national and international levels for the country had been organised and drawn. However, not

much effort have been put in by policy makers by way of legislating effective policies to bridging the gap in earnings between males and females in the informal sector labour market in Ghana. This problem might be due to the lack of empirical research upon which effective policy recommendations could be based. The issue of the existence of the gender gap in earnings however is not a peculiar phenomenon to the Ghanaian economy. The issue of differences in earnings between males and females exist in many countries. Unfortunately in the Ghanaian informal sector labour market, just like many other countries in the sub-Saharan African region not much research on the gender earnings gap in the informal sector has been conducted. One is not therefore in a position to tell how acute the earnings differential is in the Ghanaian informal sector labour market. Unlike the formal sector, it is the informal sector in Ghana which employs a large percentage of women and the vulnerable. Because the informal sector in Ghana employs the majority of women and the vulnerable in the economy, the ability of the sector to be able to generate and sustain employment cannot be overlooked. The inability of the formal sector to create and sustained wage employment in Ghana has led to unemployment among the youth, especially among those with higher educational qualifications who seek the non-existent white collar jobs. The sustained growth of the informal sector in Ghana holds the key to generating new employment opportunities. While there have been growth in the informal sector in Ghana in recent times particularly, the retail and wholesale sub-sectors (McKay and Aryeetey, 2007), empirical study is yet to be conducted on the existence of gender pay gaps in this

sector. This limitation has to be overcome when one considers the fact that gender policies to regulate the operation of the informal sector labour market in Ghana are not pronounced and are also not enforced. The situation is exacerbated by the unregulated nature of the informal sector labour market as well as the customary beliefs and practices of Ghanaians most of which do not favour females or women.

Country background: Ghana, a founding member of the Economic Community of West African States (ECOWAS) and the African Union (AU), respectively is the first country in sub-Saharan Africa to gain independence from Great Britain. It is a republican unitary state in West Africa which has La Cote d'Ivoire to its western border. The Burkina Faso to its Northern border, Republic of Togo to its eastern border and the Gulf of Guinea to its southern border. The 2000 population and housing census put the total population of Ghana at 18.9 million in and is projected to grow annually at 2.1% until 2015 (McKay and Aryeetey, 2007). Ghana has diverse ethnically groups like Gas, Ewes, Dagombas, Gonjas and the Akans. At the time of its independence 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 and Aryeetey, 2007). However, soon after independence came a period of economic and political downturn. The periods, 1966-1981 were characterized by frequent changes of governmental power and management of the economy. These periods were marked by frequent coup d'etats staged by military juntas and civilian connivance in some instances. As a result of this economic downturn, the World Bank by 1982, ranked Ghana at the 21 position out of 44 African countries surveyed (Canagarajah and Mazumdar, 1997). This was in a sharp contrast to the economic situation where Ghana on the attainment of independence was hailed as a source of inspiration for other African countries (McKay and Aryeetey, 2007). Although, the economy of Ghana had its fair share of economic shocks in the form of oil price increases and severe drought occurring in the years 1975-1977 as well as the drought happening again in the 1982-1983, coupled with the repatriation of about one million Ghanaians from neighbouring Nigeria in the early 1980's, the massive involvement of the state in the management of economic operations, mismanagement and corruption in public places and excessive public expenditure have all in no small way, contributed to the rapid economic decline of the Ghanaian economy (Canagarajah and Mazumdar,

1997). In 1983 however, the government acting on the International Monetary Fund (IMF)/World Bank initiative, launched the Economic Recovery Programme. The Economic Recovery Programme (ERP) aimed at the stabilization of the national economy and the implementation of structural adjustment programmes to augment the gains made under the Economic Recovery Programme (ERP) (Canagarajah and Mazumdar, 1997). Significant economic gains in the exchange rate front, improvement in fiscal balance between the periods 1984-1992 occurred within the economy but the economic gains took a nosedive once again following the transition to democracy in 1992 when the government came under pressure to fulfill electoral promises of the 1990s (McKay and Aryeetey, 2007).

The informal sector: Typical of a developing economy, two forms of economic activities namely the formal and informal sector activities, respectively exist side by side in Ghana. The distinction between formal and informal employment opportunities had over the years been based on the difference between workers who earn monthly salaries (wage-earners) and the workers who are self-employed and enjoy no monthly salary opportunities (Hart, 1973). The formal sector in Ghana operates under the support of accepted rules and regulations which are enacted and implemented by the government (Ray, 1998). The formal sector has organized and recognized associations like the Ghana Trade Union Congress (TUC), Ghana National Association of Teachers (GNAT) and other similar bodies. The Ghanaian informal sector on the contrary, represents a loose combination of usually small scale organizations and self-employed persons who operate independently of the many of the regulations and benefits that exist in the formal sector (Ray, 1998). Employees in the Ghanaian informal sector mostly do not have access to the privileged facilities that exist in the formal sector. The Ghanaian informal sector does not stick to the requirement of paying of minimum wages and do not have retirement plans and benefits or compensation for employees in case of termination of appointment (Ray, 1998).

Pioneering work on the informal sector employment in Ghana was conducted at a suburb called Nima in the national capital of Accra by the research of Hart (1973). The formal sector is defined with reference to wage earners as opposed to the informal sector of self-employed workers (Hart, 1973). The distinction between the formal and informal employment opportunities is based essentially on the difference between wage-earning and self-employment. That is to say whether or not labour is recruited on a permanent and regular basis for fixed rewards or labour is not recruited on a permanent and

regular basis (Hart, 1973). A typology of income opportunities in the informal sector employment in Ghana comprising primary and secondary activities, tertiary enterprises, small-scale distributions, other services and private transfer payments are spelt out (Hart, 1973).

Data description: This study used data obtained from the Fourth Round of the Ghana Living Standards survey 1998/1999 (GLSS 4). The Ghana Living Standards survey 1998/1999 (GLSS 4) was conducted by the Ghana Statistical service with technical and financial assistance from the World Bank and the European Union. The survey was a nation wide survey which collected detailed information on a variety of topics on demographic characteristics of the population, educational level, health and employment status. The survey also dealt with the migration, housing conditions, household agriculture and non-farm businesses of the respondents (User's guide, Ghana Living Standards Survey 1998/1999 (GLSS 4).

The data used for this study comprise a sub-sample of 7,538 observations out of which 6226 of the respondents worked in the informal sector and 1312 respondents worked in the formal sector. The 3,530 out of the 6226 respondents working in the informal sector are females and the remaining 2696 are males. The 6226 respondents who participate in the informal sector market aged 15 years and older is defined to represents currently loose combination of small scale organizations and self-employed persons operating independently of the many of the formal regulations and benefits that exists in the formal sector market.

MATERIALS AND METHODS

The Oaxaca decomposition methodology using male earnings as the base: This section in estimating the gender gap in earnings in the Ghanaian informal sector labour market used the (Oaxaca, 1973) decomposition methodology. The decomposition measure the difference in earnings by decomposing the difference in earnings into a part attributed to skill or endowment and another part of earning difference attributed to discrimination or treatment which is based on gender characteristics. This section in analysing and estimating the male-female wage differential in earnings firstly used the male earnings structure as the base. That is the decomposition of the difference in earnings in the informal sector labour market is undertaken by firstly comparing female earnings based on the female earnings structure and secondly comparing the earnings of females based on their males counterparts'

earnings structure. This section draws heavily on the references it entails. The (Oaxaca, 1973) decomposition is modelled as follows:

$$\frac{W_m}{W_f} \neq \frac{W_m^\circ}{W_f} \tag{1}$$

Where:

W_m°/W_f = The ratio that prevails in the absence of discrimination

W_m/W_f = The observed male/female wage ratio

m and f = Refers to males and females in the labour market, respectively

In the absence of discrimination in earnings in the market:

$$\frac{W_m^\circ}{W_f} = \frac{MP_m}{MP_f} \tag{2}$$

Where:

MP = The marginal product of males and females, respectively

Unfortunately however:

W_m°/W_f = The unknown expression. A general wage equation is therefore expressed as follows:

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

Where:

W = The represents the predicted mean wage for a group

β_j 's = The estimated parameters from the regression

\bar{Z} = The vector containing individual traits like age, educational level, gender, marital status etc

An Ordinary Least Squares (OLS) regression estimate of the wages for each group will therefore take the form of expression. Thus:

$$W_m = \beta_{0m} + \beta_{1m} \bar{Z}_m + u_i \tag{4}$$

Represents the male wage structure and:

$$W_f = \beta_{0f} + \beta_{1f} \bar{Z}_f + u_i \tag{5}$$

Represents the female wage structure. The difference in mean wage is therefore given as:

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

Expressing Eq. 6 in a natural logarithm form gives:

$$\Delta \ln(W_{m-f}) = \ln(W_m) - \ln(W_f) = (\beta_{0m} + \beta_{1m} \bar{Z}_m) - (\beta_{0f} + \beta_{1f} \bar{Z}_f) \tag{7}$$

Equation 7 can be decomposed into a part based on the individual productivity characteristics ($\Delta \bar{z}_m$) and a part based on market earnings to the individual traits ($\Delta \beta_m$) (Borjas, 2008). After some manipulation, Eq. 7 can be specified as:

$$\Delta \ln (W_m \cdot W_f) = (\beta_{0m} - \beta_{0f}) + \bar{z}_f (\beta_{1m} - \beta_{1f}) + \beta_m (\bar{z}_m - \bar{z}_f) \quad (8)$$

Given:

$$\Delta \ln (W_m \cdot W_f) = [(\beta_{0m} - \beta_{0f}) + \bar{z}_f (\beta_{1m} - \beta_{1f})] + [\beta_m (\bar{z}_m - \bar{z}_f)] \quad (9)$$

The first group term of Eq. 9 presents the part of earnings difference due to market returns to gender and is known in the literature as discrimination effect. The second grouped term is the difference in earnings which is due to differences in individual traits that are estimated in the labour market (Borjas, 2008). It is also known in the literature as the endowment effect. The model however, yields different results if males are assumed to be discriminated against.

RESULTS AND DISCUSSION

From Table 1, 362% (0.62613072612855/0.17310089798588) × 100 of the monthly log earnings differential in the Ghanaian informal sector is described by the estimated returns based on gender characteristics. This referred to in the literature as discrimination in earnings. The differences in productivity and other characteristics determining differences in gender earnings in the informal sector is however a negative number of -262% (-0.45302982814267/0.17310089798588) × 100 = -262%.

The estimate of 0.62613072612855 which is the total earnings differential due to discrimination and is thus explained as the female sample average ceteris paribus unequal treatment or discrimination in the informal sector labour market. It suggests that males in the informal sector labour market who have sample average female characteristics earn $[e^{0.62613072612855} - 1] \times 100 = 87\%$ more than females with matching level of characteristics. The total earnings differential due to skill is $[e^{-0.45302982814267} - 1] \times 100 = -36\%$. Thus, according to the data, males in the informal sector who have sample average female characteristics are less skillful by 36%. That is females are more skillful in the Ghanaian informal sector than their male counterparts on

average and ceteris paribus. Despite females being more skillful than their male counterparts in the Ghanaian informal sector, they are offered less compensation which reduce the amount by which females mean wage exceed that of males, notwithstanding females accounts for 57% of the informal sector labour force.

Male and female labour market outcomes in Ghana and West Africa are determined by both the operation of the labour market itself and outside the labour market and in social standing and parental investments in schooling for girls and boys (Glick and Sahn, 1997). In the Ghanaian informal sector labour market according to this dissertation, employers hire fewer females than males in non traditional female jobs. However, females are hired more in traditional female occupations of manufacturing (accounting for 17%) and trade (accounting for 36%). Thus, females participate more in areas where pay and prospects for promotion or advancement are difficult (Date-Baah, 1986). These demand side factors prevalent in Ghanaian informal sector labour market results in discrimination in hiring against females.

CONCLUSION

This dissertation used the 1998-1999 Ghana Living Standards Survey (GLSS 4) as part of the few efforts to empirically analyse the issue of gender gap in earnings in the Ghanaian informal sector labour market. The findings using the male wage structure as the base, suggest the existence of a significant gender gap in returns in earnings (discrimination) in the informal sector labour market in Ghana when it is compared to the modest gender gap in returns to earnings (discrimination) prevailing in the formal sector. Though there are limitations with regards to the methodology used for the calculation of the gender gap in earnings for this dissertation for example, the use of age as a proxy for labour force experience, the conclusion that there exists a significant gender gap in returns (discrimination against females) in earnings, notwithstanding females being more skilful in the informal sector labour market cannot be ignored. The selection of females into the informal labour market depends among other things on their domestic responsibilities and the traditional attitudes and beliefs prevalent in Ghana towards females ability to working outside the home. Unfortunately, data limitation prevented this dissertation from a deeper analysis of selectivity bias using the Heckman selection procedure to determine the selection of females into the informal labour market in Ghana just as in Newell and Reilly (2001). The results of this study however, necessitates increasing females enrollment in the basic and medium educational levels in Ghana and

Table 1: Gender earnings gap by sector in Ghana

| Logarithm form | Informal | Formal |
|--|-------------------|------------------|
| $\Delta \ln (W_m \cdot W_f) = \ln (W_m) - \ln (W_f)$ | 0.17310089798588 | 0.20036788327856 |
| $\beta_m \times (\Delta \bar{z})$ | -0.45302982814267 | 0.11571992141240 |
| $\bar{z}_f \times (\Delta \beta) + \Delta$ in constant | 0.62613072612855 | 0.08464796186616 |

Computed from the data of Ghana Living Standard Survey 1998-9

organizing social advocacy policies to help females to aspire to get more education to be able to work in the formal sector where returns to education is higher and where female participation also currently accounts for only 25%, compared to female participation rate of 57% in the informal sector.

RECOMENDATIONS

The urgent need to educate females so as to enable them get access to formal sector employment must however be pursued cautiously. This is because unemployment rate are high for the educated individuals through out Africa and have the tendency to worsen in

the years ahead given the probability of weak growth of the formal sector (Glick and Sahn, 1997). Hence, the employment effect of increasing female enrolment in education at the basic and medium education levels supply side factors like cultural taboos that forbid women from working outside the home, the implementation of sustained financial incentives to encourage women to set up their own business in the informal sector based on their skills and governmental affirmative policies to reduce the gender earnings gap in returns in the informal sector labour market in Ghana as well as examining employers attitude towards hiring in the informal sector labour market in all, remains high agenda for future research.

APPENDIX 1

Estimation of Oaxaca decomposition for difference in earnings due to skill in the informal sector

| Variables | Male wage coefficient estimates β_m | Gender differences $(\bar{Z}_m - \bar{Z}_f) = \Delta\bar{Z}$ | Mean male characteristics \bar{Z}_m | Mean female characteristics \bar{Z}_f |
|-----------|---|--|---------------------------------------|---|
| age | 0.0493891 | 0.68169 | 38.942880 | 38.261190 |
| agesqr | -0.0005935 | 55.736 | 1655.6800 | 1599.9440 |
| basicedu | -0.0012105 | 0.1430578 | 0.4124629 | 0.2694051 |
| mediumedu | 0.2315495 | 0.0500618 | 0.0919881 | 0.0419263 |
| married | 0.3975385 | 0.0744013 | 0.7633531 | 0.6889518 |
| reg1 | 0.8142254 | 0.0001198 | 0.1120178 | 0.1118980 |
| reg2 | 0.6444282 | -0.033098 | 0.1057122 | 0.1388102 |
| reg3 | 1.3544050 | -0.0595535 | 0.0704748 | 0.1300283 |
| reg4 | 0.3980079 | -0.0052627 | 0.1120178 | 0.1172805 |
| reg5 | 0.6446498 | 0.0136847 | 0.1550445 | 0.1413598 |
| reg6 | 0.9009257 | -0.0159014 | 0.1772997 | 0.1932011 |
| reg7 | 1.3216470 | 0.0007375 | 0.0834570 | 0.0827195 |
| reg8 | 0.4562169 | 0.0547289 | 0.0949555 | 0.0402266 |
| reg9 | 0.7481410 | 0.0095277 | 0.0211424 | 0.0116147 |
| Agric | -1.1675150 | 0.3079209 | 0.7325668 | 0.4246459 |
| manuf | -0.1826306 | -0.0905683 | 0.0830861 | 0.1736544 |
| trade | 0.2353297 | -0.2892925 | 0.0752967 | 0.3645892 |
| frtrade | 0.0309921 | -0.0182221 | 0.0307864 | 0.0490085 |
| Fclerk | 0.2203356 | -0.0179593 | 0.0318991 | 0.0498584 |
| hhs2_4 | -0.0193465 | -0.0626035 | 0.3297478 | 0.3923513 |
| hhs5_10 | 0.0770683 | -0.0028146 | 0.5144659 | 0.5172805 |
| hhover10 | 0.5615436 | -0.0077141 | 0.0344955 | 0.0422096 |
| age25_35 | 0.1211976 | -0.0396491 | 0.3189911 | 0.3586402 |
| age36_50 | 0.1057687 | 0.0153264 | 0.3850148 | 0.3696884 |
| over50 | 0.2045103 | 0.0190161 | 0.1836053 | 0.1645892 |

Computed from the data of Ghana Living Standard Survey 1998-9

APPENDIX 2

The Oaxaca decomposition for difference in earnings due to skill in the informal sector

| Variables | Male wage coefficient estimates β_m | Gender differences $(\bar{Z}_m - \bar{Z}_f) = \Delta\bar{Z}$ | Wage differential due to skill $\beta_m \times (\Delta\bar{Z})$ |
|-----------|---|--|---|
| age | 0.0493891 | 0.68169 | 0.033668055579 |
| agesqr | -0.0005935 | 55.736 | -0.033079316 |
| basicedu | -0.0012105 | 0.1430578 | -0.0001731714669 |
| mediumedu | 0.2315495 | 0.0500618 | 0.0115917847591 |
| married | 0.3975385 | 0.0744013 | 0.02957738120005 |
| reg1 | 0.8142254 | 0.0001198 | 0.00009754420292 |
| reg2 | 0.6444282 | -0.033098 | -0.0213292845636 |
| reg3 | 1.3544050 | -0.0595535 | -0.0806595581675 |
| reg4 | 0.3980079 | -0.0052627 | -0.00209459617533 |
| reg5 | 0.6446498 | 0.0136847 | 0.00882183911806 |
| reg6 | 0.9009257 | -0.0159014 | -0.01432597992598 |

Appendix 2: Continue

| Variables | Male wage coefficient estimates β_m | Gender differences $(\bar{Z}_m - \bar{Z}_f) = \Delta\bar{Z}$ | Wage differential due to skill $\beta_m \times (\Delta\bar{Z})$ |
|-----------|---|--|---|
| areg7 | 1.3216470 | 0.0007375 | 0.0009747146625 |
| reg8 | 0.4562169 | 0.0547289 | 0.02496824909841 |
| reg9 | 0.7481410 | 0.0095277 | 0.0071280630057 |
| agric | -1.1675150 | 0.3079209 | -0.3595022695635 |
| manuf | -0.1826306 | -0.0905683 | 0.01654054296998 |
| Trade | 0.2353297 | -0.2892925 | -0.06807911723725 |
| Ftrade | 0.0309921 | -0.0182221 | -0.00056474114541 |
| Fclerk | 0.2203356 | -0.0179593 | -0.00395707314108 |
| hhs2_4 | -0.0193465 | -0.0626035 | 0.00121115861275 |
| hhs5_10 | 0.0770683 | -0.0028146 | -0.00021691643718 |
| hhover10 | 0.5615436 | -0.0077141 | -0.00433180348476 |
| age25_35 | 0.1211976 | -0.0396491 | -0.00480537576216 |
| age36_50 | 0.1057687 | 0.0153264 | 0.00162105340368 |
| over50 | 0.2045103 | 0.0190161 | 0.00388898831583 |
| Total | | | -0.45302982814267 |

Computed from the data of Ghana Living Standard Survey 1998-9

APPENDIX 3

Estimation of Oaxaca decomposition for difference in earnings due to discrimination in the informal sector

| Variables | Male wage coefficient estimates β_m | Female wage coefficient estimates β_f | Gender coefficients estimates difference $(\beta_m - \beta_f) = \Delta\beta$ | Mean female characteristics \bar{Z}_f |
|---------------------------|---|---|--|---|
| Change in constant | | | | |
| age | 0.0493891 | 0.0880923 | -0.0387032 | 38.261190 |
| agesqr | -0.0005935 | -0.0009002 | 0.0003067 | 1599.9440 |
| basicedu | -0.0012105 | 0.1047974 | -0.1060079 | 0.2694051 |
| mediumed | 0.2315495 | 0.5835488 | -0.3519993 | 0.0419263 |
| married | 0.3975385 | 0.0049077 | 0.3926308 | 0.6889518 |
| reg1 | 0.8142254 | 0.4077270 | 0.4064984 | 0.1118980 |
| reg2 | 0.6444282 | 0.3564758 | 0.2879524 | 0.1388102 |
| reg3 | 1.3544050 | 1.0596030 | 0.2948020 | 0.1300283 |
| reg4 | 0.3980079 | 0.0835699 | 0.3144380 | 0.1172805 |
| reg5 | 0.6446498 | 0.3262835 | 0.3183663 | 0.1413598 |
| reg6 | 0.9009257 | 0.7802451 | 0.1206806 | 0.1932011 |
| reg7 | 1.3216470 | 1.0587190 | 0.2629280 | 0.0827195 |
| reg8 | 0.4562169 | 0.0696319 | 0.3865850 | 0.0402266 |
| reg9 | 0.7481410 | 1.1053680 | -0.3572270 | 0.0116147 |
| agric | -1.1675150 | -1.2206100 | 0.0530950 | 0.4246459 |
| manuf | -0.1826306 | 0.0050856 | -0.1877162 | 0.1736544 |
| Trade | 0.2353297 | 0.2177989 | 0.0175308 | 0.3645892 |
| Ftrade | 0.0309921 | 0.0882141 | -0.0572220 | 0.0490085 |
| Fclerk | 0.2203356 | 0.1639400 | 0.0563956 | 0.0498584 |
| hhs2_4 | -0.0193465 | 0.1629533 | -0.1822998 | 0.3923513 |
| hhs5_10 | 0.0770683 | 0.1107103 | -0.0336420 | 0.5172805 |
| hhover10 | 0.5615436 | 0.1919559 | 0.3695877 | 0.0422096 |
| age25_35 | 0.1211976 | -0.0413623 | 0.1625599 | 0.3586402 |
| age36_50 | 0.1057687 | -0.1343790 | 0.2401477 | 0.3696884 |
| over50 | 0.2045103 | -0.2108022 | 0.4153125 | 0.1645892 |

Computed from the data of Ghana Living Standard Survey 1998-9

APPENDIX 4

The Oaxaca decomposition for difference in earnings due to discrimination in the informal sector

| Variables | Gender coefficients estimates difference $(\beta_m - \beta_f) = \Delta\beta$ | Mean female characteristics \bar{Z}_f | Wage differential due to discrimination $\bar{Z}_f \times (\Delta\beta) + \Delta$ in constant |
|---------------------------|--|---|---|
| Change in constant | | | |
| age | -0.0387032 | 38.26119 | -1.480830488808 |
| agesqr | 0.0003067 | 1599.944 | 0.4907028248 |
| basicedu | -0.1060079 | 0.2694051 | -0.02855906890029 |
| mediumed | -0.3519993 | 0.0419263 | -0.01475802825159 |
| married | 0.3926308 | 0.6889518 | 0.27050369639544 |
| reg1 | 0.4064984 | 0.111898 | 0.0454863579632 |
| reg2 | 0.2879524 | 0.1388102 | 0.03997073023448 |
| reg3 | 0.2948020 | 0.1300283 | 0.0383326028966 |
| reg4 | 0.3144380 | 0.1172805 | 0.036877445859 |
| reg5 | 0.3183663 | 0.1413598 | 0.04500419649474 |

Appendix 4: Continue

| Variables | Gender coefficients estimates difference (β_m, β_f) = $\Delta\beta$ | Mean female characteristics \bar{Z}_f | Wage differential due to discrimination $\bar{Z}_f \times (\Delta\beta) + \Delta$ in constant |
|-----------|--|---|--|
| reg6 | 0.1206806 | 0.1932011 | 0.02331562466866 |
| reg7 | 0.2629280 | 0.0827195 | 0.021749272696 |
| reg8 | 0.3865850 | 0.0402266 | 0.015551000161 |
| reg9 | -0.3572270 | 0.0116147 | -0.0041490844369 |
| Agric | 0.0530950 | 0.4246459 | 0.0225465740605 |
| Manuf | -0.1877162 | 0.1736544 | -0.03259774408128 |
| Trade | 0.0175308 | 0.3645892 | 0.00639154034736 |
| Ftrade | 0.0827195 | 0.0490085 | 0.00405395861575 |
| Fclerk | 0.0563956 | 0.0498584 | 0.00281179438304 |
| hhs2_4 | -0.1822998 | 0.3923513 | -0.07152556351974 |
| hhs5_10 | -0.0336420 | 0.5172805 | -0.017402350581 |
| hhover10 | 0.3695877 | 0.0422096 | 0.01560014898192 |
| Age25_35 | 0.1625599 | 0.3586402 | 0.05830051504798 |
| Age36_50 | 0.2401477 | 0.3696884 | 0.08877981897668 |
| Over50 | 0.4153125 | 0.1645892 | 0.068355952125 |
| Total | | | 0.62613072612855 |

Computed from the data of Ghana Living Standard Survey 1998-9

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