THE GENDER WAGE DIFFERENTIAL IN MALAWI'S FORMAL LABOUR MARKET

Master of Arts (Economics) Thesis

By

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DECLARATION

I the undersigned hereby declare that this thesis is my own work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

Tamara Esther Mughogho

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Signature

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Date

CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

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DEDICATION

I dedicate this work to my mother, Christina Munjoma-Mughogho and my late father, Spider Kajera Mughogho. Finally, I dedicate this to God almighty my greatest source of strength and inspiration.

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ABSTRACT

This study was aimed at analyzing the distribution of wages along gender lines in Malawi. In particular, the study aimed at estimating the gender wage gap, examining the trends in the gender wage gap between 1998 and 2005 and evaluating the effect of education on the gender wage gap. This study was also aimed at unearthing possible sources of the gender wage gap.

The study applied the Human Capital Theory as a modeling framework to determine wages. The study used the Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973) and Cotton's decomposition (Cotton, 1988) techniques to estimate the gender wage gap in Malawi. Furthermore, Heckman's (1977) two step procedure was used to correct for selectivity bias. Cross section data was used in the study obtained from the Integrated Household Surveys 1 and 2 of 1997/98 and 2004/05 respectively.

The study found that there is an insignificant wage gap in 1998 and 2005 with females earning more than males. The study also showed that the wage gap had widened between 1998 and 2005. In essence the study found that there was no significant wage differential between men and women in Malawi's formal labor market. However, the study found that there was a significant wage gap in the private sector of Malawi's labor market.

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LIST OF ACRONYMS AND ABBREVIATIONS

CEDAW:	Convention on the Elimination of All Forms of Discrimination against Women
ECAM:	Employers Consultative Association of Malawi
FPE:	Free Primary Education
GABLE:	Girls Attainment in Basic Literacy and Education
IHS:	Integrated Household Survey
ITUC:	International Trade Union Confederation
JCE:	Junior Certificate of Education
MCTU:	Malawi Congress of Trade Unions
MDG:	Millennium Development Goal
MSCE:	Malawi School Certificate of Education
NSO:	National Statistical Office
PSLC:	Primary School Leaving Certificate
USAID:	United States Agency for International Development
WTO:	World Trade Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

Variations in wages are caused by a wide array of factors including differences in education, experience, location, sector of employment and gender. Recently, there has been increasing interest in the issue of gender wage gaps around the world. Studies carried out the world over generally show that women are disproportionately affected in terms of earnings (Plasman *et al.*, 1999; Addabbo and Favaro, 2006; Kabubo-Mariara, 2003).

Furthermore, Sebaggala (2007) found that, in most labor markets, both in developed and developing countries, lower wages are paid to female workers than male workers. A report by the International Trade Union Confederation (ITUC) in 2008 showed that women all over the world, regardless of whether they are in Shangai or New York, find that their paycheck contains on average 16 per cent less than male co-workers. This figure was derived by applying a standard method across 63 countries. The average pay gaps ranged from 12.9 per cent in Brazil to 23 per cent in Poland. Countries with large pay gaps include the United States of America (USA) and Britain and countries with small wage gaps include Germany and Sweden (Blau and Khan, 2003).

Many scholars, in accordance with the Human Capital Theory, posit that education plays a key role in determining earnings (Becker, 1975; Mincer, 1974). This is because different levels of earnings reflect the decision of individuals to invest in human capital

and the decision to acquire skills. As such, it is widely believed that women tend to earn less than men because they have, on average, lower educational attainment than men (Siphambe and Obuseng, 1999). In essence, women are thought to be paid less because of factors often referred to as premarket differences. These are a result of fewer incentives faced by women to invest in schooling and post schooling training, more focus on home oriented careers and the lower likelihood of women to work overtime or choose occupations which offer high pay, but long hours, due to traditional home responsibilities (Hertz *et al.*, 2009).

In some cases, however, it has been shown that differences in the earnings between men and women exist even if they have the same levels of education and experience. The most sobering findings of some studies is that more educated women find themselves on the wrong side of an even bigger pay gap, this being the 'glass ceiling effect' and reflects discrimination (Jellal and Nordman, 2009). Labor market discrimination is where employers base hiring decisions, wage offers and promotions on other than productive characteristics of the employer (Ehrenberg and Smith, 1991). Discrimination in the labor market can take several forms which are, wage, employment, occupational and human capital discrimination. Wage discrimination occurs when the prices paid by employers for given productive characteristics are systematically different for different demographic groups (Marshall and Briggs, 1989). Employment discrimination occurs when some groups bear the disproportionate share of employment and occupational discrimination occurs when specific groups are denied the chance to work in certain occupations even if they are capable. Human capital discrimination occurs when certain groups have less access to productivity enhancing opportunities (Ehrenberg and Smith, 1991). The issue of wage discrimination on a gender basis poses serious welfare implications and is an issue of policy concern in most countries. However, a limited number of studies on the matter

have been done in developing countries including Malawi. This is despite the fact that policies designed to counter gender discrimination are recommended to help reduce poverty. For instance, Goal 3 of the Millennium Development Goals (MDGs) is specifically aimed at reducing gender inequalities (Klaveren *et al*., 2009). Hence there is a need to understand the extent and sources of gender pay gaps in order to come up with appropriate policy solutions.

1.2 Employment Statistics in Malawi

There are minimal disparities in labor force participation rates between men and women. Labor force participation rates stand at 94 percent for men and 93 percent for women. The figures for Malawi also illustrate that more women seek employment compared to males and that agriculture, hunting and forestry are the leading sectors of employment for both men and women in Malawi. A majority of the women wage earners are mostly found in agricultural and technical related professions (National Statistical Office (NSO), 2005). However, Makwemba (2008) noted that there is gender inequality in the access to employment both in the public and private sector in favor of males.

1.3 Problem Statement

There has been rising interest in promoting gender equality and women empowerment in Malawi. For instance, the Constitution of Malawi (1994) upholds the principle of equal rights for men and women (section 13) and prohibits any discrimination based on gender including in the workplace (section 23)[1] . Furthermore, the Government of Malawi is a signatory to conventions and declarations concerning women such as the Convention on

[1] Klaveren *et al*. (2009)

the Elimination of All Forms of Discrimination against Women (CEDAW)[2]. In terms of human capital enhancement, the Government of Malawi has put in a lot of effort in enhancing women's human capital with programmes such as Girls Attainment in Basic Literacy and Education (GABLE) and Free Primary Education (FPE) (Riddell, 2003). These programmes have resulted in an overall increase in educational attainment of females to levels almost at par with males' (Kadzamira, 2003).

Despite these efforts and the social and policy importance of the issue of wage differentials[3], the position of women in the labor market remains vague. It remains unknown whether or not women are treated fairly in the labor market seeing that very few studies on the issue have been done. The study which has been done shows that, women earn less than their male counterparts in Malawi's rural labor market (Akinifessi, 2002). However, the extent, significance and the effect education has on the gender wage gap is not well established in Malawi's formal labor market. Therefore, it remains unclear whether or not there is discrimination in Malawi's formal labor market. Furthermore, the impact of education on the gender wage gap is not clearly determined. More importantly, little is known on whether or not there have been changes in the gender wage gap over the years. Therefore, investigating the issue of gender wage differentials in Malawi is imperative because it would help understand the labor market.

[2] Ngwira *et al*. (2003)
[3] Differential and gap are used interchangeably in this research. Wages and earnings are also used interchangeably.

1.4 Objectives of the Study

The main objective of the study is to explore the nature of the gender distribution of earnings in the labor market in Malawi.

The specific objectives of the study are as follows:

i. To estimate the differences in earnings between males and females in the total labor market
ii. To analyze trends in gender wage differentials between 1998 and 2005
iii. To examine the gender wage gap effect of education on the gender wage gap
iv. To investigate if there is labor force discrimination

1.5 Hypotheses

This study shall investigate the following hypotheses:

i. There are no significant differences in earnings between males and females
ii. There have been no changes in the gender wage gap between 1998 and 2005.
iii. Educational attainment has no impact on the gender wage gap
iv. There is no labor force discrimination

1.6 Significance of the Study

The continuing and strikingly large wage disparities between men and women remain an issue of concern on their sources and remedies. If differences in wages are due to discrimination they have the potential to limit human and economic development of millions of people. Furthermore, with discrimination, women's human capital is not fully

realized. Therefore, eliminating discrimination would improve economic efficiency (Kabubo-Mariara, 2003). Income inequality in any form is a cause of social concern because it can mean that some portion of an economy's working population falls below some socially determined minimum standard such as a poverty line (Jacobsen and Skillman, 2004). This study has important social and economic worth as it may provide paths for appropriate policy and thus provide paths for women to get equivalent earnings as men.

1.7 Structure of the Thesis

The rest of the thesis is organized as follows: Chapter Two provides insight on the labor market in Malawi. Chapter Three reviews both theoretical and empirical literature. Chapter Four outlines the empirical framework employed in the study. Chapter five outlines the results of the study. Chapter six concludes the thesis and provides the relevant policy implications.

CHAPTER TWO

MALAWI'S LABOUR MARKET, EMPLOYMENT PATTERNS AND POLICY CONTEXT

2.1 Malawi's Labor Market Structure

Malawi's labor market can be classified into informal and formal sectors. These sectors have different characteristics based on earnings structures, nature and duration of contracts, seasonality and uncertainty of demand. The informal sector dominates the labor market with the formal sector making up only 12% of the labor market (Chirwa, 2000). However, discrimination against women is pervasive in both sectors and women generally have lower levels formal and informal employment opportunities (Makwemba, 2008; Klaveren *et al.*, 2009).

2.1.1 Malawi's Informal Labor Market

The informal labor market is characterized by short labor contracts, informal procedures and piece work also referred to as "ganyu" (Akinifessi, 2002). "Ganyu" is defined as, off own farm work mostly done by rural people on a casual basis covering a period of days or weeks (Whiteside, 2000). It is often non-permanent, daily paid and time rated. Remuneration varies with a third of the workers receiving cash, a third receiving food and a third receiving a combination of both. Demand for such labor is seasonal and uncertain in nature since the work is mostly agricultural based (Dimova *et al.*, 2000). "Ganyu" may be done for relatives, neighbors, smallholders or estates, with family labor often not compensated. "Ganyu" labor is largely made up of unskilled laborers (Whiteside, 2000). It is estimated that about 52% of all rural households in Malawi offer

"ganyu" services and that male headed households participate more in "ganyu" than female headed ones (NSO, 2005). This was attributed to the fact that, female headed households are labor constrained due to performing home based tasks based on traditional gender roles (Whiteside, 2000).

The large elastic supply of rural labour in Malawi keeps wage rates very low and makes it difficult to introduce measures to improve either payment or work conditions (Dimova *et al*., 2000; Whiteside, 2000). In essence, the workers in "ganyu" have little bargaining power and are forced to accept low wages. It is also important to note that wage determination in "ganyu" does not adhere to the conventional wage determination as suggested by theory (Akinifessi, 2002). Therefore the traditional relationship between human capital variables and earnings may not apply and consequently traditional wage determinants, such as education, may play a little role in the determination wages. This is because the informal sector gives little importance to education when setting wages and in job allocation (Whiteside, 2000).

Distinguishing the different types of labor markets in Malawi is imperative because, ignoring the informal labor market can result in overstatement of the rates of return to education (Chirwa and Zgovu, 2002). This is because, while the wage structure of the formal labor market reflects, the impact of education on worker productivity, "ganyu" labor markets lack pay scales and credentials.

2.1.2 Malawi's Formal Labor Market

Malawi's formal labor market is relatively smaller than the informal labor market. Labor contracts in this market are often permanent and long term. Remuneration of employees in this sector is mostly done on a monthly basis. Most formal employment is in urban areas and most of the employees of the formal sector are skilled and educated. However, a large proportion of the formal sector is employed in agriculture just like in the informal sector (NSO, 2005). The formal labor market is characterized by formal policies and guidelines which determine the conduct of the formal market. However, formal institutions and groups have minor roles to play in the informal sector and hence the informal sector is not subject to monitoring by the government.

2.2 Labor Force, Employment and Unemployment Rates by Gender

The labor force is defined as the population that furnishes the supply of labor for the production of goods and services (Yean, 2006). The labor force framework classifies the population above a certain minimum age for measuring economically active population into the employed, unemployed and the population not in the labor force.

The labor force participation rate or economic activity rate is the percentage of persons that are economically active out of all persons aged 15 years and above. In Malawi, the total labor force participation rate is 86 percent. There are negligible gender disparities in labor force participation rates as can be seen in Table 2.1 and women's labor force participation rates are higher than males. This is largely attributed to the fact that a majority of the labor force in Malawi are farmers. In terms of employment rates, it was reported that 99 percent of the women were employed while 99 percent of the men were employed.

Table 2.1: Labor Force, Employment and Unemployment Rates by Gender

	Male (%)	Female (%)
Labor Force participation Rates	94	93
Employment Rates	94.6	90
Unemployment Rates	5.4	10

Source: National Statistical Office (2005)

2.3 Employment Patterns by Gender

A majority of Malawi's wage earners are employed in the social and community services sector (35 percent), in agriculture, forestry and fishing (23 percent), in manufacturing (17 percent) and in the construction industry (12 percent) as shown in Table 2.2. A majority of women wage earners dominate the social and community services industry (45 percent) and in agriculture (18 percent). Mining and quarrying remains the smallest industry in the country with less than 1 percent of the total workers and poor representation of females in the sector.

Table 2.2: Employment Patterns by Gender

Sector of Employment	Male (%)	Female (%)
Agriculture	23	18
Mining and Quarrying	0.2	0
Manufacturing	20.1	7.4
Finance and Business	1.6	2.1
Social& Community Services	31.7	45.1
Professional and Technical	11.1	17.3
Admin and Managerial	1.3	1.2
Clerical and Related	5.1	11.6
Service	22.5	20.6
Production and related	19.7	8.2

Source: National Statistical Office (2005)

From the table above it is evident that men dominate the manufacturing, production, services and administrative occupations. This conforms to the gender role of expectations as well as patterns in women's educational attainment since the type of occupations pursued by women is influenced by their differential access to education (Semu and Chande-Binauli, 1997). This is because, in most cases, jobs which are mostly occupied by men require specific kinds of training and levels of education which most women do not have. Furthermore, Malawian culture determines tasks which can be performed by men and women even if the two are equally endowed and even if women are willing to occupy certain posts (Ngwira *et al.*, 2003). Women may thus be shut out from certain jobs believed to be performed better by male workers than by female workers. Women tend to dominate the lower ranks largely due to their low levels of education (Jurajda, 2005). They are subject to a repressive labor regimes characterized by low wages, salary

cuts, denial of maternity leave, long working hours and inadequate rates. Chirwa (1999) stated that female agricultural workers, domestic servants, sales ladies and secretaries are the ones who are worse off. In essence, segregation in occupation is a major determinant of the gender inequality in the labor force and the unequal treatment between men and women reduces the chances of women securing well paying jobs (Akinifessi, 2002). Therefore it is vital to take into account occupational factors when analyzing gender wage differentials.

2.4 Government Programmes towards Human Capital and Labor Market Policies

There are several policies and initiatives which government has put in place aimed at enhancing human capital. These policies have had a positive impact on educational attainment for both males and females and have narrowed the gap in educational attainment between the two sexes. The government has also put in place several guidelines and policies to guarantee that labor market conditions are desirable.

2.4.1 Government Policies and Programmes on Human Capital

The Government of Malawi has implemented several policies aimed at improving human capital. These have largely been aimed at increasing literacy levels for both males and females (Kendall, 2006). Education policy has broken several barriers for women and girls in obtaining formal employment because government efforts to improve the education women and girls have increased their ability to compete for the same jobs as men and have enhanced women's potential (Kadzamira, 2003).

2.4.1.1 Girls Attainment of Basic Literacy and Education (GABLE)

This programme was launched in 1991 with the objective of increasing girls' attainment in basic education (Ngwira *et al.*, 2003). The programme was funded by the United States Agency for International Development (USAID). Objectives of the policy included increasing the long term financial resource base of education, improving quality, availability and efficiency of primary education and to improving the relevance of primary education for girls. In essence, GABLE was a sector reform program aimed at promoting system wide changes in the education sector while addressing gender discrepancies in education (Kadzamira, 2003).

2.4.1.2 Free Primary Education (FPE)

This policy was introduced at the onset of multiparty democracy in 1994 with the aim of increasing overall primary school enrolment rates. The policy was a response to the continuing dismal school enrolment rates and rampant gender disparities. One major aim of FPE was to enhance gender equality in literacy levels and increase accessibility to formal education to meet the needs of the poor (Kadzamira and Rose, 2001). Specifically, FPE involved eliminating all forms of fees in public primary schools, providing learning materials, establishing more community schools and encouraging participation of girls in primary education (Riddell, 2003).

2.4.2 Trends in Girls Educational Enrolment (1990-2005)

Kadzamira and Rose (2001) stated that before 1994, basic education in Malawi was inadequate and unequally distributed across different regions and gender groups. However, the situation has improved a great deal over the years. Prior to the introduction of GABLE and FPE policies half the children of school going age did not attend school

and a majority of these were girls. Basic education was limited and unequally distributed across different gender groups. However, enrolment figures soon picked up after introducing the two programmes. The proportion of girls enrolled in primary schools steadily increased over the years. Table 2.4 below shows that from 2002 nearly half of the primary school enrolled children where girls.

Despite the impressive school enrolment at primary school levels, there has been negligible improvement in completion rates. High dropout rates and repetition have resulted in low survival rates. Survival rates are low for girls because after standard four girls tend to drop out more than boys. Girls are nearly twice as likely to leave school prematurely (Kadzamira, 2003). All in all, literacy levels for the entire population remain low. For instance, the second Integrated Household Survey of 2004/2005 showed that 76 percent of males were literate compared to 50 percent of females (NSO,2005).

Table 2.3: Trends in Girls and Boys Primary School Enrolment (1990-2005)

Year	Total	Girls	Girls (%)	Boys	Boys (%)
1990/1	1,400,682	633,319	45.2	767363	54.8
1991/2	1,662,583	760,718	45.6	901865	54.2
1992/3	1,795,451	847,974	47.2	947477	52.8
1993/4	1,895,423	912,126	48.1	983297	51.9
1994/5	2,860,819	1,345,311	47.0	1515508	53.0
1995/6	2,887,107	1,358,543	47.0	1528564	53.0
1997	2,905,950	1,384,782	47.7	1521168	52.3
1998	2,805,785	1,362,985	48.6	1442800	51.4
1999	2,896,280	1,395,937	48.2	1500343	51.8
2000	3,016,972	1,456,112	48.4	1560860	51.7
2001	3,187,835	1,544,506	48.4	1643329	51.5
2002	3,164,191	1,552,039	49.0	1612152	51.0
2003	3,067,843	1,522,463	49.6	1545380	50.3
2004	3,166,786	1,576,593	49.8	1590193	50.2
2005	3,200,646	1,593,558	49.8	1607088	50.2

Source: Kadzamira (2003)

2.4.3 Labor Market Policies

Regulation of wages in Malawi dates back to the pre independence era. Within a few years of independence Malawi introduced the National Wage and Salaries Policy in 1969 (Theu, 2008). This was aimed at containing wages for unskilled and semi skilled workers in order to encourage labor absorption and to create paid employment opportunities in the industrial and agricultural sectors. A wages advisory board was also set up after

independence. The major mandate of the board was to review, assess and regulate minimum wages.

These institutions were noted to be ineffective given that there have been a few changes in nominal statutory minimum wages with only eight changes between 1965 and 1992 and there have been weak institutional mechanisms for reviewing and setting wages (Chirwa, 2000; Bose and Livingstone, 1993; Theu, 2008). The poor performance of these institutions has been attributed to several factors. Firstly, minimum wage policies were only applicable to the formal employment sector which makes up about 12% of the total labor force. The informal labor markets operate freely from formal institutions and regulation. Secondly, there was poor enforcement of the minimum wage laws and no penalties were put in place for employers who violated the laws. Furthermore, most of the labor policies which existed were criticized because they were designed to retain people in the rural areas (Sparreboom, 1999).

As such, there is still a great deal of uncertainty on the effects of labor institutions and policies on the economy and employment creation in developing countries like Malawi. This has given rise to the debate on whether or not to deregulate labor markets. On one side, it is believed that institutional interventions in labor markets can distort the labor market. The other side argues that, labor market institutions and policies help reduce poverty and foster economic growth (Marshall and Briggs, 1989).

The Malawi labor force is currently governed by a number policies and acts which lay out the codes of conduct for the labor market. The current 6th Employment Act of 2000 establishes, reinforces and regulates the minimum standards of employment with the purpose of ensuring equity necessary for enhancing industrial peace and ensuring

economic growth. Some of the major issues highlighted in the act are on anti discrimination, equal pay and the setting of minimum wages (Klaveren *et al.*, 2009). The Act stipulates that no person shall discriminate against any employee on grounds of race, religion, sex, marital status and so on. The act also stipulates that every employer shall pay employees equal remuneration for work of equal value without distinction or discrimination of any kind on any basis (Government of Malawi, 2000).

Several institutions help oversee the enforcement of labor regulations and these include the Ministry of Labor and Vocational Training, the Employers Consultative Association of Malawi (ECAM) and several trade unions most of which are governed by the Malawi Congress of Trade Unions (MCTU).

2.4.4 Effects of other Policies on the Labor Market

One positive side of government policy which has helped women a great deal is trade liberalization policy. Economic theory argues for a decrease in the wage gap due to international trade. The increased competition as a result of opening up the market to free trade would eliminate a firm's excess profits, which would otherwise be used as a source that allows firms to discriminate (International Trade Union Confederation, 2008). Prior to trade liberalization in Malawi, men played active roles in trading while women were left behind. Therefore women had a limited chance to work and this kept women poorer. However, the gender barrier was reduced after the adoption of SAPs and Trade liberalization policies (Akinifessi, 2002).

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

Studies have shown that women with identical productivity characteristics as men receive different levels of earnings (Blau and Khan, 2003). The explanations which have been offered for such findings focus on qualifications or the labor market treatment of equally qualified individuals. Demand side theorists posit that employers are prejudiced against employing women with equal productive characteristics as men. On the supply side, women are believed to earn less because they have lower stocks of human capital as posited by the Human Capital Theory (Becker, 1975). Empirically, studies have been done the world over and most have employed the Blinder-Oaxaca wage decomposition methodology.

3.2 Demand Side Theories

A number of labor economics theories have been proposed which have attempted to explain why women receive lower wages. The competitive models of gender wage gaps include Becker's (1957) Personal Prejudice set of theories and Edmund's (1972) Statistical Discrimination Theory. The non competitive theories include the theory of Dual Labor Markets and the Monopsonist Power Model.

3.2.1 Personal Prejudice Theories

This set of theories refers to the personal prejudice against women that may be held by employers, customers or fellow employees. This set of theories were proposed by Becker (1957) and focused on the prejudice of agents in the labor market such as employers, workers and customers. It is also referred to as the 'tastes' theory. The basic idea is that some people are prejudiced and hence will be prepared to pay a price to avoid interaction with certain groups therefore affecting demand for these groups (Ehrenberg and Smith, 1991).

3.2.1.1 Becker's Model of Employer Discrimination

This model is based on the assumption that women have the same productive characteristics as males (Becker, 1957). The idea is that, if a male employer has preference for hiring males in high paying jobs, despite the availability of equally qualified women, they act as though women are less productive. This devaluing of productivity by employers is purely subjective, manifests personal prejudices which results in lower wages paid to women (Appleton *et al.*, 1999). The labor market equilibrium for men is assumed to hold when their marginal products equal their wages. However, the market equilibrium for women holds when their marginal products equal their wages plus a subjective component which is the extent to which productivity is subjectively devalued for women. Since marginal productivities are equal by assumption, this implies that wages for males will be greater than wages for females. Therefore women are forced to offer their services at lower wages than males to compete for jobs. The implication is that the profit maximizing employer hires women to a point where

their marginal product is equal to wages while a discriminatory employer ends their hiring short of that point (Ehrenberg and Smith, 1991).

3.2.1.2 Customer and Employee Discrimination

This view departs from the concept of employer discrimination in that discrimination emanates from fellow employees and customers. Customers may prefer service from males in certain professions which they regard as requiring more responsibility and believe that women should be confined to jobs which require less responsibility (Marshall and Briggs, 1989). Consequently, women who find jobs where preferences is for males must be willing to accept lower wages or be more qualified than the average male as their value to the firm is lower than that of an equally qualified male.

In the case of employee discrimination, male workers avoid situations where they have to interact with women in ways they consider to be inappropriate. They may resist taking orders from women or sharing responsibility with them. As a result the male employees have a higher tendency to quit and employers pay them higher wages to retain them (Jellal and Nordman, 2009). Studies which have been done on gender wage differentials have shown that discrimination underlies a substantial portion of the gender wage gap between male and female employees (Mendes, 2004; Sebaggala, 2007). Most of the discrimination faced usually emanates from employers.

3.2.2 Statistical Discrimination

This theory was put forward by Edmund (1972). The premise here is that employers pay all women according to the average productivity of female workers. When hiring, employers rarely know the actual productivity of applicants and have to guess their potential productivity. Factors like, education and experience are correlated with productivity. The employer supplements information on these correlates with a subjective element in making hiring decisions and uses group data (Jellal and Nordman, 2009). Thus individuals with same measured productive characteristics are treated differently depending on group affiliation. For instance, employers may believe that, women have weaker labor market attachment and less incentive to invest time and effort in education and careers due to their responsibility for family and household work. This leads to a systematic preference for males and lower wages to women with equal productivity (Hertz *et al.*, 2009).

3.2.3 Monopsonist Power Models

This model, as posited by Robinson (1969), states that discrimination exists because it is profitable firms to discriminate against women. This model assumes that the labor supply of men in each establishment is more elastic than that of women. A monopsonist firm thus sets wages below the marginal product. By differentiating wage gaps between groups with different elasticities of labor supply the monopsonist is able to obtain higher profits and pays women less (Barth and Olsen, 2009). The concept of a monopsonist firm has been questioned because of its assumption of a pure monopsony[4] and this seems at odds with markets in most countries. However, some recent models suggest that

[4] A single employer of labor in a market

employers may have market power, even when there are numerous employers in the market (Ransom and Oaxaca, 2008).

3.2.4 Dual Labor Markets

Dualists view the labor market as divided into two non competing sectors, primary and secondary. Jobs in the primary sectors offer relatively high wages, good working conditions and opportunities for advancement. Secondary sector jobs are low wage dead end jobs mostly held by women. Mobility between sectors is thought to be limited (Gerry *et al.*, 2004). Women historically entered and left the labor force frequently because of marriage or childbirth and thus were assigned to the secondary sector. Contradicting this is the concept of compensating differentials which posits that wages are lower in jobs with more desirable working conditions therefore men receive higher wages as compensation for more unattractive working conditions (Hansberry, 2004). Furthermore, Smith's theory of equalizing differences posits that women may select themselves into such less stressful occupations (Glinskaya and Mroz, 2000). In an investigation, which sought to examine the duality of the Japanese labor market, Hori (2009) found that occupational segregation accounts for only 5% of the Japanese gender wage gap.

3.3 Supply Side Theories

3.3.1 The Human Capital Theory

This theory links an individual's level of productivity to their education. Individuals are believed to earn higher production capacity through an increased education level (Becker 1975; Mincer, 1974). The basic assumption is that employers work in competitive markets and do not pay excessive wages.

This implies that individual earnings increase as the level of education increases. Increased education increases human potential and creativeness and the capacity for individuals to work, which in turn lead to increased earnings (Christie and Shannon, 2001). It has been shown that women induce their weaker labor market performance through their lack of labor force commitment and due to the unequal burden of home responsibilities and thus due to weak attachment, females invest less in human capital (Siphambe and Obuseng, 1999).

Human capital formation explains the link between education and workers productivity. Higher productivity is obtained through increased education levels therefore earnings increase as education increases. In Malawi there is both temporary and permanent employment and the informal sector does not subscribe to the Human Capital Theory (Akinifessi, 2002). Most empirical evidence shows positive returns to education. They have shown that with increased education people earn more (Christie and Shannon, 2001; Kabubo-Mariara, 2003; Theu, 2008).

3.4 Evaluation of Theories

The dual labor market theory is very applicable to the Malawian setting where women tend to be employed in certain professions traditionally viewed as the best for women such as teaching and secretarial. This is because tasks which can be done by men and women are determined by culture regardless of the fact that the two sexes can be equally endowed (Ngwira *et al.*, 2003). Therefore women may be continually assigned into such lower paying occupations. However, it is important to note that women may be assigned to certain low paying occupations because of their generally lower levels of education attainment and not necessarily by self selection into such occupations as suggested by Smith's theory of equalizing differences.

The personal prejudice theories are based on the assumption of perfectly competitive markets. This assumption may not apply for the Malawian context where a bulk of the labor market is imperfect in nature (Chirwa, 2000). Furthermore, the personal prejudice theories can be viewed as being more informative for the private sector where wage setting is more flexible and negotiable. Hence this theory may not apply in the government sector where the wage settings are predetermined and standard for individuals with comparable characteristics thus leaving no room for discrimination.

The Human Capital Theory is vital because it links earnings to education. This can provide a good explanatory framework as to why women may earn lower wages in Malawi since average educational attainment in Malawi is lower for females. Caution however should be taken in applying this theory to the Malawian setting because the dual nature of the labor market implies that the nature of contracts and type of employment determines relationships between human capital variables and earnings. For instance, the Human Capital theory may not apply to informal labor markets where education plays an insignificant role in the wage setting process (Whiteside, 2000; Akinifessi, 2003, Chirwa and Zgovu, 2001). The theory however, is valid in Malawi's formal labor market where education does determine the wage setting process. Since this analysis is done for the formal labor market the theory shall be used as a modeling framework in the determination of wages.

3.5 Empirical Literature Review

Different researchers have made their contributions to our knowledge of gender wage differentials. This section reviews such studies conducted worldwide.

3.5.1 Sources of Gender Wage Differentials

Blau and Khan (2003) found that the general wage structure of a country affects its gender pay gap. In particular, they found that a more compressed male wage structure and lower female net supply of labor are associated with a lower gender pay gap, thus concluding that a more egalitarian wage structure reduces the pay gap. This finding was used to explain the international differences in the gender wage gaps. Kidd and Shannon (1996) in a comparative study of the gender wage gap in Australia and Canada showed that Australia had a smaller wage gap than Canada. This was attributed to stronger union movement and a greater degree of centralization in the wage structure.

Most literature attributes the gender wage gap to both differences in human capital characteristics and labor market discrimination. In an analysis of the Portuguese female labor force participation, Cardoso (1996) concludes that gender wage differentials do not result exclusively from lower levels of female human capital and that disparities between male and female wages can also be due to the fact that women similar characteristics as men are paid less.

Nordman and Wolff (2009) used matched employer–employee data for 7 African countries to present comparative evidence of the magnitude of the gender wage gap in African manufacturing sectors. They used OLS regressions in male and female earnings. They found that the gender wage gap was significant for Morocco but insignificant for Benin, Kenya, Madagascar, Senegal and Uganda. They concluded that most African

countries have a gender wage gap attributable to both differences in levels of human capital between men and women and due to discrimination.

Appleton *et al.* (1999) conducted a study which examined the size and determinants of gender wage gap in three African countries, Ethiopia, Uganda, and Cote D'Ivoire. They concluded that differences between actual and pooled returns account for much of the gender wage gap in Ethiopia Uganda but rather less in Cote D'Ivoire. The results of the study were that, the gender wage gaps were found to be narrow. This was attributed to the fact that women were overrepresented in the paid public sector.

Nordman *et al. (*2009) analyzed the determinants of gender wage gaps in seven West African capital cities. These were, Cotonuou, Abidjan, Dakar, Lome, Niamey, Ouagadougou and Bamako. It was found that gender earnings gap was large in all cities of the sample and gender differentials in the distribution of characteristics usually explain less than half of the raw gender wage gap.

Siphambe and Obuseng (1999) examined the wage gap between men and women in Botswana's formal labor market. Oaxaca (1973) decomposition was used to determine the extent of the gender wage gap. Results from the study showed that part of the earnings differences are due to occupational segregation and that the earnings gap narrows as the level of education increases.

3.5.2 Trends in Gender Wage Gaps

Hansberry (2004) examined the male-female differentials in hourly wages in Russia from 1996 to 2002. They found that inequality in male and female earnings declined in that period and that most gender differentials accounted for big differences in rewards rather than differences in observable characteristic. In another study on Russia, Glinskaya and Mroz (2000) found that the gender wage trends that had been observed between 1992 and 1995 could not be attributed to traditional characteristics.

In a similar study, Liu *et al.* (2004) analyzed the changes in the gender wage gap in the urban sector of China during 1988-1999. It was found that the total gender wage gap had widened between 1988 and 1999 but that the divergence was small because the effect of increasing rewards to observed and unobserved skills dominated the effect of converging skill levels of males and females. Similarly, Johansson *et al.* (2003) analyzed the trends in the gender wage gap in Sweden through the 1980s and the 1990s. They did a cross sectional analysis and used decomposition analysis to examine the trends in the gap. They found that there was an increase in the wage differentials between the 1980s and 1990s. They also found that measured differences in qualification between men and women accounted for only two fifths and three fifths of the gender wage gap.

Baker *et al.* (1995) examined the male-female wage differential between 1970 and 1990 for Canada. The study found that gender differences in observable characteristics don't explain much of the earnings differential. It was concluded that discrimination accounts for roughly 30% point difference between male and female earnings. It was also found that the earnings differential was large at the high end of the earnings distribution thus reflecting the glass ceiling effect.

3.5.3 Educational Attainment and the Gender Wage Gap

Christie and Shannon (2001) conducted a study which examined the gender differences in educational attainment and the effect of these differences on the gender earnings gap for Canada. They used data from the 1986 and 1991 Canadian Census. To isolate the effects of education on the gap in earnings they adopted decomposition techniques associated with Blinder-Oaxaca and Cotton. Their results showed that, allowing for greater educational attainment did not help explain the earnings gap and that differences in the field of study were a little more helpful in explaining the gender wage gap.

To estimate the gender wage gap for Italy, Addabbo and Favaro (2006) used quantile regressions to derive the marginal distribution of female predicted wages and female counterfactual wages and to evaluate the distribution of the unexplained part of the wage gap. They found that the wage gap was not evenly distributed among female workers and that the wage gap was higher for women with low education levels.

Kabubo-Mariara (2003) analyzed the determinants of labor force participation and decomposed the gender wage gap across sectors in Kenya. Uncorrected Ordinary Least Squares (OLS) were used following the approach of Oaxaca (1973). Heckman's (1977) two step procedure was used to correct for sample bias. Labor market participation functions and wage equations for men and women by sector of employment were estimated for both public and private sector for men and women combined. The results indicated that the determinants of participation differ for different sectors and for males and females, confirming that there was heterogeneity in the labor market. Education and other demographic factors were found to be important determinants of the choice of sector for both males and females but more for women. The decomposition results suggested that favoritism towards men was pronounced in all sectors.

In a similar study for Uganda, Sebaggala (2007), found that the male-female wage gap was 39%. OLS was used to determine wages and Oaxaca (1973) and Neumark (1988) methodology to decompose the gender wage. It was found that returns to education where positive and significant for both females and males, however the trends favored females. It was also found that a larger proportion of the wage differential was attributable to discrimination.

Using parametric and semi-parametric estimated wage functions, Schafgans (1998) assessed the returns to education and the extent of discrimination in Malaysia. The study focused on discrimination between Malay and Chinese men and women and considered ethnic wage differentials by gender. Results from the study showed that there were increasing returns to education attainment among all ethnic groups for all men and women.

Plasman *et al.* (1999) in a study for Belgium, after estimating inter industry wage differentials by gender, found that there were significant inter industry wage differentials for men and women even after controlling for a large number of productivity related factors like education .

In a study for Malawi's rural labor market, Akinifessi (2003) investigated the rural wage distribution pattern with focus on the gender wage gap and returns to education. OLS results showed that the returns to education were higher for females compared to males. Following Oaxaca's (1973) wage decomposition it was found that wage gap does not exist in Malawi's rural labor market. Though men earn more than women the difference was found to be insignificant. A positive and significant relationship between education and earnings was also found.

In order to investigate the rates of return to education in Botswana, Siphambe (2008), employed the Human Capital Model and found that the average earnings of an individual increase with increases in education. It was also found that women on average earn less than their male counterparts for all levels of education. The inequality between genders was found to increase as the levels of education rose. In essence the gender wage gap was more pronounced at higher levels of education than lower levels. It was also found that the major explanation for wage gaps in the private sector was discrimination. However most of the gender pay differences in the public sector were due to differences in characteristics.

3.6 Evaluation of the studies

A major limitation of most of these studies is the lack of correction for selectivity bias which is a serious problem. Very few studies for Africa, have also attempted to determine sources of gender wage differentials. This thesis does not intend to reduce the significance of the above studies but aims to augment the latter literature. Though it is not the first to suggest gender wage differentials in the Malawi labor market, this thesis distinguishes itself by controlling for selectivity bias, providing a comparative analysis between two periods of time and seeking to determine the source of the gender wage differences.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

Mincer (1974) wage functions were estimated for both males and females based on the Human Capital Theory. To correct for selectivity bias, which is common in household data, Heckman's (1977) two step procedure was employed. Blinder-Oaxaca and Cotton decomposition techniques are used to decompose the gender wage gap.

4.2 Determination of Wages

Literature on Human Capital theory stipulates that education leads to higher earnings by enhancing workers' skills and improving productivity (Mincer, 1974; Becker, 1974).

4.2.1 The Human Capital Model of Wages

The Human Capital Model can be specified as follows.

$$\ln W_i = \beta_i x_i + \mu_i \qquad (3.1)$$

Where $\ln W_i$ is the natural log of observed workers monthly wages, x_i is a vector representing the individual characteristics such as education, experience, marital status and so forth. β_i is a vector of estimated coefficients for these variables which measure the percentage change in monthly wages from a unit change in the regressor (Gujarati, 2003). μ_i is a pure random shock affecting wages.

The model was specified as follows:

$$LNWAGE_i = \beta_0 + \beta_1 PSLC_i + \beta_2 JCE_i + \beta_3 MSCE_i + \beta_4 TERT_i + \beta_5 Exp_i + \beta_6 Expsq_i + \beta_7 MARRIED_i + \beta_8 UNMARRIED_i + \beta_9 AGRIC_i + \beta_{10} MINING_i + \beta_{11} MANUF_i + \beta_{12} UTILITIES_i + \beta_{13} CONST_i + \beta_{14} FINANCIAL_i + \beta_{15} Hours_i + \mu_i \quad (3.2)$$

4.2.1 Definition of the Variables

Table 4.1 below provides a summary of the variables included in the wage model.

Table 4.1: Definition of Variables

Variable	Definition
LNWAGE	Natural Logarithm of Wages
NONE^*	No Education
PSLC^	Primary School Leaving Certificate
JCE^	Junior Certificate of Education
MSCE^	Malawi School Certificate of Education
TERT^	Tertiary Education
Exp	Experience
Expsq	Experience Squared
Hours	Hours Worked
OTHMARR^*	Individuals either in Polygamous marriages, divorced or widowed
MARRIED^	Married Individuals
UNMARRIED^	Individuals Who Have Never Married
TRANSPORT^*	Transport and Communications sector occupation
AGRIC^	Agriculture sector occupation
MANUF^	Manufacturing sector occupation
FINANCIAL^	Financial and Business sector occupation
MINING^	Mining sector occupation
UTILITIES^	Utilities sector occupation
CONST^	Construction sector employees

Note: The Superscript ^ refers to dummy variables and * refers to base categories excluded in the model to prevent the dummy variable trap.

A) Dependent variable: LNWAGE

This variable is defined as the natural log of monthly wages. This is taken for every individual who has a job.

B) Explanatory Variables

Previous literature on wage determination has posited that a lot of factors determine wages. These factors are classified as economic, institutional and behavioral factors with most determinants being economic (Theu, 2008). Most labor economists agree that the major causes of variations in wages are schooling, experience, occupation and sector of employment. However, there is disagreement on the relative importance of each variable to wages. The explanatory variables used in this model are the following:

i) Exp: This is the number of years of experience for each working individual. This was approximated as age minus 15 years. Studies have shown that experience is positively related to wages (Addabbo and Favaro, 2006). A positive sign was therefore expected for this variable.

ii) Expsq: This is the squared years of experience. This helps us determine whether or not wages change at an increasing or decreasing rate with experience. A positive sign means that wages increase at an increasing rate with years of experience while a negative sign means that wages increase at a decreasing rate with experience. It was expected that wages change at a decreasing rate with experience. Therefore a negative sign was expected for this variable.

iii) Hours: These are the number of hours per week in which individuals work. Studies have shown that the hours individuals work positively affect wages (Kabubo-Mariara, 2003). Hence a positive sign was expected for this variable.

iv) EDUCATION: This set of dummy variables captures the maximum level of education for employed individuals. It has five categories. **NONE** is a dummy variable which takes a value of one for individuals with no education and zero otherwise. Similarly, **PSLC, JCE, MSCE** and **TERT**, take on values of one for individuals with a Primary School Leaving Certificate, Junior Certificate of Education, Malawi School Certificate of Education and individuals with tertiary education respectively and zero otherwise. Categorical variables were used instead of a continuous variable in order to be able to distinguish the returns to education for each level of education. The benchmark category used is **NONE**. In accordance with the Human Capital theory more education is associated with higher wages due to its effect on skills or possibly because it reveals something about the persons innate abilities (Christie and Shannon, 2001). Therefore, positive signs were expected for these variables.

v) MARITAL STATUS: This set of dummy variables captures individuals' marital status. The category **MARRIED** takes a value of one for individuals who are in monogamous marriages and zero otherwise. The category **UNMARRIED** takes on values of one for individuals who have never been married and zero otherwise. The base category captures individuals who are in polygamous marriages, widowed or divorced and is given as **OTHMARR**. A positive sign is expected for both categories. The dummy variable for marital status is included because marital status signals productivity to the labor market and affects potential tenure on the job, hence positively affecting earnings (Konstantopoulos and Constant, 2004).

vi) OCCUPATION: This set of dummy variables captures the sector in which an individual is employed. It is classified into seven categories: **AGRIC, MANUF, MINING, UTILITIES, CONST, FINANCIAL** and **TRANSPORT** which take on

values of one if individuals are employed in the agricultural, manufacturing, mining, utilities, construction, transport and communications and financial and business sectors. The dummies take on values of zero otherwise. The benchmark category is the **TRANSPORT** category. Wages vary across sectors of employment hence the inclusion of these variables. It is believed that women may on average earn less than males because they are mostly employed in sectors which generally pay less. The inclusion of these variables was imperative because, the type of employment may determine the relationship between human capital variables and the levels of earnings (Chirwa and Zgovu, 2001).

vii) μ: This is the error term that is used to capture the other determinants that have not been included in the model.

4.3 Decomposition of the Wage Gap.

To examine the extent of the gender wage gap and the effects of individual characteristics on the gap in wages, this study employed methods that were proposed by Blinder-Oaxaca and Cotton as follows:

$$\ln W_m = \beta_m x_m + \mu_m \quad (3.3)$$

$$\ln W_f = \beta_f x_f + \mu_f \quad (3.4)$$

Equation 3.3 is the wage function for males while equation 3.4 is the wage function for females. $\ln W_m$ and $\ln W_f$ are the log of wages for males and females respectively, x_m and x_f represent a vector of coefficients of personal characteristics for males and females

respectively and β_m and β_f are vectors of estimated coefficients for males and females respectively.

The gender wage gap is expressed as follows:

$$\ln \overline{W_m} - \ln \overline{W_f} = \overline{X_m}\beta_m - \overline{X_f}\beta_f \qquad (3.5)$$

The log of female wages is subtracted from the log of male wages. The decomposition can be shown below.

$$\ln \overline{W_m} - \ln \overline{W_f} = \beta_{\mathrm{m}}(\overline{X_m} - \overline{X_f}) + (\beta_m - \beta_f)\overline{X_f} \qquad (3.6)$$

Where $\ln \overline{W_m}$ and $\ln \overline{W_f}$ are the log mean wages for males and female respectively, $\overline{X_m}$ and $\overline{X_f}$ are vectors containing the respective means of the independent variables for males and females and β_{m} and β_f are the estimated coefficients. The first term of the right hand side captures the wage differentials due to differences in characteristics between males and females. The second term is the wage gap not attributable to these characteristics. This is referred to as the unexplained or the discrimination component. Basically it shows the wage gap between the two sexes where their characteristics are exactly the same. In Blinder-Oaxaca's decomposition the male wage structure is taken as the non-discriminatory benchmark. However it has been argued that the Blinder-Oaxaca decomposition can suffer from an index number problem which can be countered by the Cotton decomposition. Cotton's decomposition suggests that a weighted average of male and female wage coefficient estimates (β_c) may be a more reasonable no-discrimination proxy.

Cotton's decomposition is as follows:

$$\ln \overline{W_m} - \ln \overline{W_f} = (X_m - X_f)\beta_c + [X_m(\beta_c - \beta_{\mathrm{m}}) + X_f(\beta_c - \beta_{\mathrm{f}})] \quad (3.7)$$

Where the first term is the explained component, now evaluated using β_c rather than β_{m}, the second term is the unexplained component of the gender wage gap. Cotton's method was therefore used to triangulate the findings from the Blinder-Oaxaca decomposition.

Studies have shown that the wage gap in the private and public sector may be different with most results finding that women are discriminated against in the private sector (Siphambe and Obuseng, 1999). As such the wage gap for the private sector and public sector was estimated in order to allow comparisons in the two sectors.

4.4 Determining the Sources of the Gender Wage Gap

Determining the sources of discrimination was done using a technique which allows the discrimination component to be further disintegrated to reflect the contribution of each of the personal characteristics to both the explained and the unexplained component.

4.5 Correcting for the Selection Bias

Sample selection bias arises from using non-randomly selected samples to estimate behavioral relationships. It is mainly as a result of self selection by individuals. Sample selection bias may prevent the estimates of the determinants of observed wages from coinciding with the true determinants of wages offered to men versus women. This can affect the understanding of discrimination (Konstantopoulos and Constant, 2004).

This study used the two stage procedure as advocated by Heckman (1977) to correct for specification bias. The first stage involved the estimation of a labor force participation function to derive the inverse Mills ratio. The labor force participation was specified as a probit follows:

$$LFP_i = \beta_0 + \beta_1 age_i + \beta_2 agesq_i + \beta_3 RURAL_i + \beta_4 Other_i + \beta_5 NORTH_i + \beta_6 SOUTH_i + \beta_7 PSLC_i + \beta_8 JCE_i + \beta_9 MSCE_i + \beta_{10} TERT_i + \mu_i \quad (3.8)$$

LFP is the dependent variable which takes two values, yes or no depending on whether the respondent participated in the labor force or not.

The independent variables are defined as follows: '**age**' is the age of the individual. An individuals' age determines whether or not an individual will participate in the labor force hence the inclusion of the variable in the equation. '**agesq**' is the squared age of the individual and this variable is included to help determine whether or not labor force participation rates change at an increasing or decreasing rate with age. '**RURAL**' is a dummy variable which takes on a value of one for individuals who reside in rural areas and zero for individuals in urban areas, the base category for this is '**URBAN**' which captures individuals residing in urban areas. Location may affect an individual's decision to participate in the labor force or not hence the inclusion of the variable. **Other**' reflects the amount of income earned by households which is not their wages. '**SOUTH**' is a dummy variable for individuals residing in the southern region, '**NORTH**' is a dummy variable for individuals residing in the northern region and '**CENTRAL**' (base category) captures individuals residing in the central region. '**PSLC**', '**JCE**', '**MSCE**', '**TERT**' are dummy variables for education which take on values of one for individuals with a

Primary School Leaving Certificate, Junior Certificate of Education, Malawi School Certificate of Education and tertiary education respectively and zero otherwise. The base category for this is '**NONE**'.

The second stage of Heckman's (1977) uses the inverse Mill's ratio, obtained from the step above, in OLS estimation of earnings function as regressors to correct for specification bias.

4.6 Correcting For Heteroscedasticity

A common problem with cross section data is heteroscedasticity where the error terms do not have a constant variance. Failure to correct for heteroscedastic disturbances therefore, results in OLS estimates which are no longer the Best Linear Unbiased Estimators. That is, among all the unbiased estimators, OLS does not provide the estimate with the smallest variance (Gujarati, 2003). To test for heteroscedasticity the Breusch-Pagan-Godfrey test is used. The test statistic is given as follows.

$$\theta = \frac{1}{2}(ESS) \tag{3.9}$$

Assuming the error terms are normally distributed θ follows a chi-square distribution with (m -1) degrees of freedom.

$$\theta_{asy} \chi^2_{m-1} \tag{3.10}$$

The hypotheses for the test are as follows:

H_o: Homoscedasticity
H_a: Heteroscedasticity

4.7 Data Source and Estimation

The study used cross section data collected by the NSO during the Integrated Household Surveys 1 and 2. The first household survey was conducted with the collaboration of the World Bank from 1997 to 1998. The survey collected information pertaining to demographic characteristics like labor force participation, health, nutrition and so forth. The second household survey used a sample drawn using a two stage stratified sampling procedure from a sample frame using 1998 Population and Housing Census enumerate areas. The first household survey collected data from a representative sample of 12,960 households while the second survey collected data from a representative sample of 11,280 households. The focus of this study is on individuals who have formal salaried employment.

The primary objectives of these surveys were to provide a complete and integrated data set to better understand the target population of households affected by poverty. According to Christie and Shannon (2001) the advantages of using household data is that it provides detailed educational information on educational attainment. Another advantage is that it provides a large sample size and statistical reliability. Such data also permits analysis at different levels of aggregation Baker *et al.* (1995). The descriptive statistics, econometric analyses and diagnostic tests were conducted using STATA Version 10 software.

CHAPTER FIVE

EMPIRICAL RESULTS AND DISCUSSION

5.1 Introduction

The data used in this study is taken from the first and second Integrated Household Surveys of 1997/98 and 2004/05 respectively. The first integrated household survey was conducted from November 1997 to October 1998. The second survey was conducted from March 2004 to April 2005. The data for 1998 was collected in monthly rounds of 60 enumeration areas over a period of 12 months in order to account for seasonal effects during that year. The sampling frame used for the 2004/05 survey was the two-stage stratified sampling procedure from a sampling frame using 1998 Population Census Enumeration Areas. The 1998 survey and the 2005 survey collected data from 12,960 households and 11,280 households respectively and the two data sets have been analyzed separately. This study focuses on workers employed in formal salaried employment who are between the ages of 16 and 60 years inclusive which is the formal working age.

5.2 Descriptive Statistics

The table below shows the mean and standard deviations of the variables used in the wage functions.

Table 5.1: Descriptive Statistics

	1998				2005			
	Male		Female		Male		Female	
Variable	**Mean**	**StdDv**	**Mean**	**StdDv**	**Mean**	**StdDv**	**Mean**	**StdDv**
LNWAGE	6.51	1.675	6.53	1.06	7.77	1.08	7.78	1.149
Exp	6.6	18.01	6.84	17.89	7.29	16.99	5.64	16.75
Hours	38.39	18.13	38.51	18.08	37	19.3	33.6	19.4
NONE*	0.45	0.49	0.451	0.5	0.64	0.48	0.66	0.47
PSLC	0.24	0.42	0.23	0.4	0.12	0.33	0.10	0.47
JCE	0.059	0.26	0.057	0.233	0.13	0.33	0.10	0.3
MSCE	0.042	0.20	0.04	0.21	0.087	0.28	0.085	0.33
TERT	0.005	0.002	0.002	0.052	0.01	0.1	0.006	0.082
MARRIED	0.479	0.499	0.487	0.499	0.5	0.5	0.51	0.49
UNMARRIED	0.484	0.499	0.367	0.482	0.4	0.49	0.3	0.46
OTHMARR*	0.036	0.18	0.14	0.33	0.09	0.28	0.17	0.37
AGRIC	0.642	0.479	0.639	0.48	0.235	0.459	0.232	0.46
MINING	0.023	0.15	0.023	0.151	0.001	0.038	0.0017	0.04
MANUF	0.063	0.244	0.063	0.242	0.11	0.312	0.104	0.306
UTILITIES	0.18	0.136	0.021	0.145	0.012	0.11	0.018	0.133
CONST	0.03	0.17	0.025	0.158	0.119	0.324	0.125	0.331
TRANSPORT*	0.002	0.05	0.002	0.042	0.037	0.189	0.034	0.183
FINANCIAL	0.023	0.148	0.023	0.153	0.014	0.119	0.194	0.137

Notes: PSLC, JCE, MSCE, TERT refers to Primary School Certificate of Education, Junior Certificate of Education, Malawi School Certificate of Education and Tertiary Education.
The superscript * stands for base categories excluded in the wage regressions to prevent the dummy variable trap.

The dependent variable in the regression is the natural logarithm of monthly wages. The mean log wages for the male respondents are 6.51 or MK1, 492 in real terms while the mean log wages for the female are 6.53 or MK1, 859 per month for 1997/98. It is evident that women earned about 2 percent more than men. In 2005 the mean log of wages for the female sample was 7.78 or MK4, 901 while the mean log wages for males was 7.77 or MK 4,825 per month. This gives a wage gap of about 1 percent in favor of females. This brings about the conclusion that for both 1997/98 women and 2004/05 the gender wage is biased towards women. The statistical significance of these gaps will be determined in subsequent sections.

In 1998 the average work experience for males was 6.6 years that of females was 6.8 years. By 2005 the average work experience for males had risen to 7.29 years while that of women had declined to 5.69 years. The descriptive statistics show that women's years of experience have declined over the years while the average work experience for males has increased.

In the 1998 sample, 48 percent of the males and 49 percent of the females reported to being in a monogamous marriage, while 48 percent males and 36 percent females were reported to be unmarried. In the 2005 sample, 50 percent of the males and 51 percent of the females reported to being in a monogamous marriage, while 40 percent males and 30 percent females were reported to be unmarried. In 1998, 9 percent and 17 percent of the men and women, respectively, reported being in polygamous marriages, divorced or widowed. In 2005, 3 percent of the males and 14 percent females were reported as being in polygamous marriages, divorced or widowed. From the trends it can be seen that there have been no significant changes in marital status.

The 1998 sample shows that about 45 percent of males and females had no education and that about 24 percent males and 23 percent females reported that they had primary school education. In terms of secondary school education about 6 percent of the males and females had secondary school education while 4 percent of the male and female sample had a Malawi School Certificate of Education. Only 5 percent of the male sample was reported to have university education compared to 2 percent of the females.

In 2005, it was reported that 64 percent of males had no formal education whatsoever compared to 66 percent of the women. In terms of primary school attainment only 12 percent of the males and 10 percent of the females were reported to have completed primary school education. The figures reflect the fact that there are high levels of illiteracy in Malawi with females' illiteracy rates being slightly higher than those of their male counterparts. Education in Malawi is characterized by rampant rates of school dropout by both girls and boys from standard four going upwards which result in poor completion rates (Kadzamira, 2003). From the sample 13 percent and 12 percent of the males and females respectively had a Junior Certificate of Education. In terms of completion of secondary school, 8.7 percent and 8.5 percent of the males and females respectively had a Malawi School Certificate of Education.

From the trends in the two years it can be seen that women in general have lower levels of educational attainment than men. However the differences between men and women are not that large. It is also important to note that the proportion of women with higher levels of education is very low. This is reflective of the fact that women are less likely to stay in school longer and are more likely to drop out of school. This is due to Malawian culture which underplays the importance of education for females based on traditional gender roles (Ngwira *et al.*, 2003).

The largest sector of employment in Malawi is the agricultural sector for both years of the study. The agricultural sector employed 64 percent males and 63 percent females in 1998 while the sector employed about 23 percent males and females in 2005. The sector which reports the lowest number of employees is the mining sector probably because it is relatively new and not as established as the other sectors. The figures for 1998 showed that about 2.3 percent of both males and female were employed in the mining sector and about 0.1 percent of the males and females were employed in that sector in 2005. The figures generally show that there are no major differences in sectoral occupation between men and women in Malawi. The trends in labor force participation between the two sexes are very minimal and this could have implications on the significance of occupational factors in explaining gender wage differentials.

5.3 Determination of Wages for Male and Females

The Mincer (1974) wage functions for males and female are estimated using ordinary least squares. The Breusch-Pagan test for heteroscedastity was conducted the results for which are provided in Appendix One. The results of the test show that there is heteroscedasticity in the wage regressions for 2005 at 1% level of significance and that there is no heteroscedasticity in the 1998 sample. As such, the 2005 regressions provided below were therefore corrected for heteroscedasticity using robust standard errors. In order to control for selectivity bias, Heckman's (1977) two step procedure was used. A labor force participation function was estimated from which an inverse mill ratio was estimated. The inverse mills ratio is included in the wage regressions. It can be seen that the inverse mills ratio is insignificant for both male and female wage functions for both 1998 and 2005. This implies that there is no problem of selectivity bias in the data set. The labor force participation function is available in Appendix 2.

The results show that the coefficient of determination (R^2) ranges between 0.14 and 0.16 and between 0.24 and 0.26 for the 1998 and 2005 wage functions respectively. This implies that the models adopted explain between 14 percent and 26 percent of the total variation in wages. The models generally have high F statistics ranging between 16 and 86 implying that there is very high joint statistical significance of the coefficients. Essentially, all the models fit the data rather well.

5.3.1 Results of Ordinary Least Squares for 1998 Wages

The results of the OLS equation for the 1998 wage regressions are given in Table 5.2.

Table 5.2: Results of Ordinary Least Squares for 1998 Wages

	MALE		**FEMALE**	
	Coeff	**t-Stat**	**Coeff**	**t-Stat**
Cons	5.66***	62.38	5.72***	82.05
Exp	0.001	0.26	0.002*	1.02
Expsq	-0.0001	-0.26	-0.0001	-0.64
Hours	0.014***	14.79	0.01***	12.76
Education				
PSLC	0.38***	14.18	0.4***	15.84
JCE	0.42***	9.04	0.40***	8.09
MSCE	0.49***	6.71	0.61***	8.65
TERT	1.29***	7.66	1.52***	6.28
Occupation				
AGRIC	0.18***	6.0	0.15***	5.06
MINING	-0.47***	-10.63	-0.5***	-11.20
MANUF	-0.93***	-9.07	-0.84***	-8.4
UTILITIES	-0.74***	-8.08	-0.59***	-7.49
CONST	0.052	0.85	0.015	0.19
FINANCIAL	0.19***	3.24	0.06	0.8
Marital Status				
MARRIED	0.06	0.96	0.02	0.7
UNMARRIED	0.03	0.47	0.07*	1.52
Inmills	0.209	0.14	0.46	0.3
	N= 6572		**N= 6986**	
	F: 85		**F: 86.07**	
	P>F: 0.00		**P>F: 0.00**	
	R^2: 0.16		**R^2: 0.14**	

Notes: Superscripts ***, ** and * indicate significance at 1%, 5% and 10% levels respectively.

From the results in Table 5.2 it can be seen that there is a positive relationship between an individual's level of experience and their wages as expected. Experience insignificantly determines earnings for males but significantly determines earnings for females at the 10 percent level of significance. The results also show that the rate of change in earnings with changes in experience is higher for females. According to Akinifessi (2002), who also found similar results, the explanation for this could be that, because literacy levels for women are lower than men's, years of experience are often counted for the female as a means of closing the gap in educational attainment. The results also show that wages increase at a decreasing rate with rising experience. This is shown by the negative coefficient for the variable of experience squared. This finding is similar to that of Addabbo and Favaro (2006) who found that experience was positively related with wages in Italy but that wages increased at a decreasing rate with changes in experience. The results also above illustrate that there is a positive relationship between hours worked per week and earnings. This relationship is statistically significant at 1 percent level of significance for both sexes.

For all the education dummies, it can be seen that there is a positive relationship which exists with wages as expected and as postulated by the Human Capital Theory. The dummy variables are all significant at 1 percent levels of significance for both the male and female wage functions. This finding of a positive and significant relationship between wages and education concurs with the results of Akinifessi (2002), Kabubo-Mariara (2003), Sebagala (2006), and Theu (2008).

The rate of return to education is calculated as follows;

$$r_k = \frac{b_k - b_{k-1}}{n_k} \tag{5.1}$$

Where r_k is the return to education for a particular level of education calculated in the wage regressions the rates of return are based on the wage models, b_k is the coefficient of that level of education, b_{k-1} is the coefficient of a preceding level of education and n_k is the number of years of schooling at the k^{th} level. The rates of return are thus given in Table 5.3.

Table 5.3: Rates of Return to Education

LEVEL	MALE	FEMALE
PSLC	0.0475	0.05
JCE	0.004	0.001
MSCE	0.00583	0.01667
TERT	0.05333	0.06067

The table above shows that rates of return to education are higher for females than males for individuals with a Primary School Leaving Certificate, Malawi School Certificate of Education and individuals with tertiary education. Several studies have also established that women have higher returns to education than males (Chirwa and Zgovu 2001; Siphambe, 2008; Psacharapoulos, 1985). It can also be seen that returns to education increase by level of schooling, that is, returns for tertiary education are higher than those for secondary school education and so on. This is in line with the results from Siphambe (2008). However, this contradicts the finding of Psacharopoulos (1985) who found that returns to education decline by the level of schooling reflecting diminishing returns to schooling.

The results of the wage regressions also suggest that the wages in the financial, agricultural and construction sectors are higher than those in the transport and communications sector which is the base category. However, wages in the mining, manufacturing and utilities sector are lower than those in the transport and communications sector. The results illustrate that sectors of employment are significant determinants of earnings for all sectors except the construction sector for men and the construction and financial sectors for female employees.

Married men are seen to earn more than their unmarried counterparts and those in the baseline category[5]. This result is similar to that of Kabubo-Mariara (2003) and Jacobsen and Skillman (2004) which showed that married men in all sectors earn more than their unmarried counterparts. The reason for this is that married men are often viewed as being more stable than unmarried men (Siphambe and Bakwena, 2001). Furthermore, married men are more likely to have more work experience than unmarried men. However, it can be seen that unmarried women earn significantly more than married women just as was found in the study by Sebaggala (2006). This could be because employers may view single women as being more stable and may prefer them to married women who may be more attached to performing family roles and whose labor supply may be intermittent

[5] This refers to individuals who are in polygamous marriages, divorced or widowed.

5.3.2 Results of Ordinary Least Squares for 2005 Wages

The results of the OLS equation for the 2005 wage regressions are given in Table 5.4.

Table 5.4: Results of Ordinary Least Squares for 2005 Wages

	MALE		**FEMALE**	
	Coeff	**t-Stat**	**Coeff**	**t-Stat**
Cons	7.17***	49	6.97***	39.96
Exp	0.013*	1.7	0.02***	3.6
Expsq	-0.0002*	-1.77	-0.001***	-4.48
Hours	0.008	0.51	0.004*	1.68
Education				
PSLC	0.21**	2.34	0.28**	2.51
JCE	0.48***	6.10	0.31***	3.2
MSCE	0.85***	8.04	0.93***	6.18
TERT	1.41***	5.47	1.14***	3.78
Occupation				
AGRIC	-0.35***	-4.09	-0.23**	-2.36
MINING	0.42***	4.91	0.63***	5.73
MANUF	-0.06	-0.77	-0.037	-0.32
UTILITIES	0.28*	1.97	0.42*	1.67
CONST	-0.212**	-2.27	-0.51***	-4.15
FINANCIAL	1.55***	3.28	1.46***	4.92
Marital Status				
MARRIED	0.08	0.8	0.33**	2.73
UNMARRIED	0.084	0.69	0.64***	4.15
Inmills	0.58	0.7	0.75`	0.6
	N= 965		**N= 785**	
	F: 21.9		**F: 16.14**	
	P>F: 0.00		**P>F: 0.00**	
	R^2: 0.26		**R^2: 0.24**	

Notes: The t-statistics are based on robust standard errors. Superscripts ***, ** and * indicate significance at 1%, 5% and 10% levels respectively

The results for 2005 show positive and significant relationships between wages and levels of education. The returns to education are given in the table below. It is evident that, just as in 1998, there are positive returns to education for both men and women and that returns for women are lower for holders of JCE. However the results for 2005 show that returns for women are lower than for men for individuals with tertiary education (see Table 5.5). It is also important to note that returns to education for both males and females are lower for primary school and tertiary education in 2005 than in 1998. This can be attributed to the fact that over time the average rates of return to education in general tend to decline because of changes in the labor market that devalue their labor market (Siphambe and Bakwena, 2001).

Table 5.5: Rates of Return to Education for 2005

LEVEL	MALE	FEMALE
PSLC	0.02625	0.035
JCE	0.027	0.003
MSCE	0.030833	0.05167
TERT	0.037333	0.014

The variables for experience and hours worked are again found to be positively related to wages in both male and female wage functions. Just as in 1998 a quadratic relationship exists between experience and earnings since the coefficient for experience squared is again negative.

Unlike the 1998 findings, for 2005, earnings for unmarried men are higher than those of married men. Unmarried women, just as in 1998, earn significantly more than married women. The results signify that for 2005, earnings in the agriculture, manufacturing and

construction sectors are lower than those in the transport and communications sector. This is unlike the findings for 1998 where earnings in the agriculture and construction sectors were more than in the transport and communications sector.

5.4 The Gender Wage Gap in Malawi

The Blinder-Oaxaca decomposition uses the male coefficient as a benchmark for the decomposition while the Cotton decomposition uses the weighted average of both male and female coefficients as a benchmark and is hence often considered as being more appropriate. The results for both decompositions have been given in the table below. Wages have also been decomposed for the private and public sector in order to compare the wage gaps for the two sectors. The wage functions for private and public sectors are given in Appendix 3.

Table 5.6: Blinder-Oaxaca and Cotton Decompositions (The T-statistics are in parentheses)

	1998			2005		
	PRIVATE	**PUBLIC**	**TOTAL**	**PRIVATE**	**PUBLIC**	**TOTAL**
Wages						
Male	6.54	6.43	6.51	7.65	8.41	7.77
Female	6.51	6.45	6.52	7.58	8.45	7.78
Blinder-Oaxaca						
Explained	0.04(2.03)**	0.008(0.31)	0.001(0.11)	0.029(0.66)	0.096(1.3)*	0.034(1.01)*
Unexplained	-0.016(-0.46)	-0.032(-0.57)	-0.016(-0.8)	0.045(0.7)	-0.126(-1.06)*	-0.046(-0.88)
Cotton						
Explained	0.036(2.5)**	0.0077(0.39)	0.004(0.48)	0.025(0.66)	0.109(1.98)*	0.0625(1.97)*
Unexplained	-0.01(-0.32)	-0.031(-0.6)	-0.019(-1.12)*	0.049(0.8)	-0.14(-1.26)*	-0.074(-1.46)*
Total	**0.025(0.73)**	**-0.02(-0.45)**	**-0.015(-0.85)**	**0.075(1.12)***	**-0.03(-0.26)**	**-0.012(-0.21)**

5.4.1 The Gender Wage Gap for the 1998 and 2005 Total Sample

Table 5.6 shows that the mean log wages for the male wage earners were 6.51 while those of female wage earners were 6.53 in the 1998 total sample. This implies that in 1998 there was a negative, albeit insignificant, wage differential of 0.015 or 1.5 percent in favor of females. This gives the interesting conclusion that, in 1998 women were not disadvantaged in the labor market and that men were disadvantaged. However, the wage gap is insignificant at all levels. The result that women were advantaged in the labor market in 1998 is consistent with that of Akinifessi (2002) who found that female employees in the private sector of Malawi's rural labor market earned more than male employees. A wage gap of -0.05K/hr was found, however this was found to be statistically insignificant. Akinifessi (2002) offered several reasons for this finding. Firstly, the wage setting procedure and the decision to employ workers was less bureaucratic and depended more on the preferences of the employer. For instance, some employers opted for female workers with the belief that they are easier to manage.

For the 2005 total sample the mean log wages for females is 7.78 while that for males is 7.77 thus giving the wage gap of 0.012 or 1.2 percent favoring females. The 2005 wage differential is not significant, however, given the t-statistic of 0.2. Therefore using the 2-t rule of thumb the study fails to reject the hypothesis that there are no significant differences in earnings between men and women.

Therefore, it can be concluded that the labor market in Malawi, is equitable in terms of wages. There is no gender wage gap in Malawi's formal labor market. Malawi's labor force is characterized by minimal differences in labor force participation rates between men and women which could be the reason for this finding. The Malawi labor market is equitable and there is no evidence of labor force discrimination and hence the study fails

to reject the hypothesis that there is no labor force discrimination. The results found in the study make intuitive sense, since in Malawi, the government is the largest sector of employment and the government pay scheme is relatively standardized compared to the private sector pay scheme leaving no room for discrimination. Furthermore, Malawi's labor market has a very strong institutional setting provided by the 6th Employment Act of 2000 which stipulates that no person shall discriminate against any employee on grounds of race, religion, sex, marital status and so on. The act also stipulates that every employer shall pay employees equal remuneration for work of equal value without distinction or discrimination of any kind on any basis (Government of Malawi, 2000).

Given that the wage differential in 1998 was about 2 percent while that in 2005 was about 1 percent, the hypothesis that there have been no changes in the wage gap can be rejected. According to Baker *et al*. (1995) and Philips (1982), differences in the earnings gap over time are supposed to reflect related changes in the mean characteristics of male and female workers and could also be due to changes in the trends in the labor force participation rates of the two groups.

From the results it can be seen that Cotton and Blinder –Oaxaca decompositions are not very different suggesting that the index number problem was non-existent in the Blinder-Oaxaca decompositions. For both the Cotton and Blinder-Oaxaca decompositions it can be seen that a larger component of the wage gap is accounted for by the explained component suggesting that individual characteristics contribute more to wage determination.

5.4.2 Private and Public Sector Wage Decompositions

The results for both 1998 and 2005 show that men earn more than women arising in a gender wage gap of 2.5 percent in 1998 and 7.5 percent in 2005. Whereas the wage gap

for 1998 is insignificant, the gap for 2005 is statistically significant at 10 percent level of significance. In the public sector, however, results for both years show a negative wage gap which favored females. Evidently, results for both years show that wages in the private sector are more favorable for men and that those in the public sector are more favorable for women and that the wage gap in the private sector of Malawi by 2005 had increased by more than twice its amount in 1998. These results make intuitive sense since the government wage setting structure is not as malleable as the private sector's. In the private sector women are more likely to be discriminated against in the wage setting process in forms highlighted by the demand side theories of wage discrimination. For instance, employers may be biased against women because they view women's participation in the labor force as intermittent due to family and child bearings roles (Ehrenberg and Smith, 1991). Wage setting in the private sector is at the discretion of the employer and prospective employees are able to bargain for wages with employers as such wages are not fixed for given levels of employment. As such employers in the private sector are free to set wages differently for men and women.

The finding that the private sector has a larger wage gap, which favors males, than the government sector is similar to the finding by Kabubo-Mariara (2003) who found that the wage gap in the private sector in Kenya was more than twice that of the public sector and Appleton *et al.* (1999). On the same note Lucifora and Meurs (2004) found that women were better of being in the public sector because they were not discriminated against. According to Siphambe and Bakwena (2001) a major explanation for wage gap in the private sector is discrimination. They found that women face discrimination in the private sector of Botswana and earn more in the public sector, thus giving rise to the conclusion that, as countries strive to privatize their activities, the issue of gender inequality in wages also comes to focus. The public sector wage gap structure is fairly standardized allowing

for little or no room for new workers to negotiate pay packages hence entry levels are well defined. This is because all policies including those on equality are developed in the public sector. Furthermore, the recruiting and promotion framework in government does not stand for pay differences which cannot be justified by characteristics between men and women. In the private sector, however, the hiring and promotion system is very much decentralized and can afford to offer different wages to men and women (Siphambe and Bakwena, 2001).

There are several factors which explain wages for the public and private sector. Wage levels are a result of collective and individual bargaining between employees (and their representatives) and with management (and owners) of firms. In the public sector laws and negotiations decide wages. In firms and organizations, however, wages are paid to employees usually depending on working time and/or on results (production made or objectives reached).

In the 2005 sample, both components of the decomposition are positive. The explained component accounts for 38% of the wage gap while the unexplained component accounts for about 60% of the wage gap. Thus it can be seen that for 2005, the wage gap in the private sector is largely attributed to the discrimination component.

5.4.3 Detailed Wage Gap for the Private Sector

A detailed decomposition of the private sector wage gap for 2005 was computed to examine the specific contributions of the explanatory variable was computed. This was aimed at examining the effect of education on the gender wage gap.

Table 5.7 Private Sector Detailed Decompositions for 2005

	Explained	***Unexplained***
AGRIC	0.001	0.02
MINING	0.0001	0.001
MANUF	-0.001	-0.006
UTILITIES	0.001	-0.003
CONST	0.00001	-0.001
FINANCIAL	-0.001	0.002
Total Occup	***0.00011***	***0.013***
PSLC	0.001	-0.01
JCE	-0.0007	0.002
MSCE	-0.002	-0.001
TERT	0.003	-0.001
Total Educ	***0.0013***	***-0.01***
Exp	0.0004	-0.04
Expsq	-0.000	0.01
MARRIED	-0.00004	0.017
UNMARRIED	0.006	-0.02
Hours	-0.005	0.07

*Note: The Negative Sign Means Males are Disadvantaged.

From the results given in the table it can be seen that the education dummies each account for less than 0.01 of the explained and unexplained components of the wage gap. In total, education accounts for 0.013 of the explained component of the gender wage gap 2005. Therefore the study fails to reject the hypothesis that the education component explains very little of the wage gap for the private sector. In this study the years of experience explain virtually none of the wage gap. The occupational dummy variables explain very little of the gender wage gap as well.

CHAPTER SIX

CONCLUSION, SUMMARY OF FINDINGS AND POLICY IMPLICATIONS

6.1 Conclusion

This study was aimed at analyzing the gender distribution of earnings in Malawi. In particular this study was aimed at estimating the gender wage gap in Malawi, evaluating the impact of education on the gender wage gap and examining the trends in the wage gap between 1998 and 2005. The study was also aimed at unearthing the possible sources of the gender wage gap.

The study used data from the first and second Integrated Household Surveys of 1998 and 2005 respectively. The theoretical foundation used in the determination of wages was the Human Capital Theory. This theory states that individuals earn higher production capacity through increased education levels, implying that earnings increase as the levels of education increase. Blinder-Oaxaca and Cotton decomposition techniques were used to decompose the gender wage gap and Heckman's (1977) two step procedure was used to correct for selectivity bias.

The major conclusion of the study is that there is no gender wage differential in Malawi's formal labor market hence there is no labor force discrimination.

6.2 Summary of Findings

The results of the study have shown that there is a positive and significant relationship between wages and education. More importantly it has been shown that there are positive returns to education and that returns to education for females are greater than those for men.

The results for 2005 indicate that women earned more than men by 1.2 percentage points. The average male wages for 2005 were MK4, 825 while the average female wages were MK4, 901 per month. In essence women earn more than men by MK76 per month. The wage gap, however, was found to be statistically insignificant. Therefore, the study failed to reject the hypothesis that there are no significant differences in earnings between men and women. This outcome is largely attributed to the fact that labor force participation rates and employment rates between men and women are more or less equal. This implies that the Malawi labor market is not discriminatory.

The 1998 results show that there was a wage gap of 2 percentage points in favor of females. Males on average earned MK 1,492 while women on average earned MK1, 859 per month. The wage gap for 1998 was also statistically insignificant. Evidently, the wage gap declined between 1998 and 2005 by about 1%. Therefore, the hypothesis that there have been no changes in the gender wage gap between 1998 and 2005 was rejected.

Decomposition results for the private sector have shown that there was a positive wage gap of about 2.5 percent in favor of males in 1998 and a positive wage gap of about 7.5 percent in 2005. Evidently, women earn less than men in the private sector and this has worsened from 1998 to 2005. The wage gap in the private sector in 2005 is also seen to be statistically significant, therefore implying that women are discriminated against in the

private sector. In the public sector, however, women earn more than men. In the private sector women are more likely to be discriminated against than in the public sector where wages are fairly standardized.

6.3 Policy Implications

The significance of the wage gap in Malawi's private sector calls for some policy action. Discrimination is an issue of concern to economists and policy makers for several reasons. It causes labor market failure and impairs the allocative and distributive functions of the labor market. Consequently, it negates the role of the labor market as an important vehicle for economic growth. Furthermore, it is a source of inequality in the distribution of income and wealth, discriminatory treatment of some population groups leads to lower wages and reduced employment opportunities, including few promotion opportunities. As a result, the population groups subject to discrimination earn less than they are supposed to and suffer a fall in relative living standards. Therefore, government could re-enforce laws prohibiting any forms of discrimination against women in the wage setting process in the private sector. Government would then have to follow up on its policies to ensure that they are being implemented.

Results for wage determination imply that education policies could influence wages received by men and women. This necessitates government's continued investment in education. The enhancement of education could be done through several budget initiatives, such as the continuation of the school feeding program. The findings of the study show that the general level of educational attainment for the total population is low as there are very high illiteracy rates in the nation. Policies aimed at increasing educational enrolment are not adequate and must be coupled with schemes to ensure that once a student enrolls in school they do not drop out and must complete their education.

6.4 Limitations and Directions of Further Study

The advantages of using household data cannot be understated as suggested in several studies (Christie and Shannon, 2001; Baker *et al.*, 1995). However, since there have been no recent household survey in Malawi, the study has had to make do with lack of recent data. Finding comparable data for 1998 and 2005 was also a major drawback in this study. For instance, the 2005 data set reported results for different forms of tertiary education such as university diplomas, non university diplomas and postgraduate degrees while the 1998 sample only had university education in the tertiary education segment. As such some of the intermediate forms of tertiary education from the 2005 sample were dropped in the study.

This study has investigated the wage gap in the formal sectors and distinguished between the private sector wage gap and the government sector wage gap. Future researchers could however delve into a comparative analysis of gender wage differentials between "ganyu" labor markets and the formal labor market.

REFERENCES

Addabbo, T. and Favaro, D. (2006), "Education and Wage Differentials by Gender in Italy," *A Paper Submitted at the AIEL 2006 Annual Conference*: Italy.

Akinifessi, A. I. (2003), "The Rural Labor Market and Wage Distribution in Malawi: A Gender Analysis," *Unpublished MA Thesis*, Department of Economics, University of Malawi: Malawi.

Appleton, S., Hoddintot, J. and Krishnan, P. (1999), "The Gender Wage Gap in Three African Countries," *Economic Development and Cultural Change Journal*, Vol. 47, No. 2, pp. 289-312.

Baker, M., Benjamin, D. and Grant, M. (1995), "The Distribution of Male/Female Earnings Differentials: 1970-1990," *The Canadian Journal of Economics*, Vol. 28, No. 3, pp. 479-501.

Barth, E. and Olsen, H. D. (2009), "Monopsonistic Discrimination, Worker Turnover and the Gender Wage Gap," *IZA Discussion Paper*, No 3930.

Becker, G. S. (1975), *Human Capital.*, Harvard University Press: Massachusetts.

Becker, G.S. (1957), *The Economics of Discrimination.*, University of Chicago Press: Chicago.

Blau, F.D. and Kahn, L. M. (2003), "Understanding International Differences in the Gender Pay Gap," *Journal of Labor Economics,* Vol. 21, No. 2, pp. 106-144.

Blinder, A. (1973), "Wage Discrimination: Reduced Form and Structure Estimates," *Journal of Human Resources,* Vol. 8, pp. 436-55.

Bose, S. and Livingstone, I. (1993), "The Labor Market and Wage Policy in Malawi," *In Chirwa, E.W. and Zgovu, E.K. (2001), "Does the Return to Schooling Depend on the type of Employment? Evidence from the Rural Labor Market in Malawi,"* University of Malawi and Wadonda Consult, Working Paper No WC/03/01, Zomba, Malawi.

Cardoso, A. R. (1996), "Women at Work and Economic Development: Who´s Pushing What?" *Review of Radical Political Economics,* Vol. 28, No. 3, pp. 1-34.

Chirwa, E.W. (2000), "Average Earnings and Minimum Wages in Malawi: Co integration and Causality," *University of Malawi and Wadonda Consult, Working Paper,* No WC/01/00, Zomba, Malawi.

Chirwa, E.W. and Zgovu, E.K. (2001), "Does the Return to Schooling Depend on the Type of Employment? : Evidence from the Rural Labor Market in Malawi," *University of Malawi and Wadonda Consult Working Paper*, No WC/03/01, Zomba, Malawi.

Christie, P. and Shannon, M. (2001), "Educational Attainment and the Gender Wage Gap: Evidence from 1986 and 1991 Canadian Census," *Economics of Education Review,* No. 20, pp. 165–180.

Cotton, J. (1988), "On the Decomposition of Wage Differentials," *The Review of Economics and Statistics,* Vol. 70, pp. 236-243.

Dimova, R., Michaelowa, K. and Weber, A. (2000), "'Ganyu' Labor in Malawi: Efficiency Problems and Determinants of Supply," *CIS Working Paper,* No. 52.

Edmund, P. (1972), "Statistical Theory of Racism and Sexism," *American Economic Review,* Vol. 62, pp. 659-661.

Ehrenberg, R. G. and Smith, R.S. (1991), *Modern Labor Economics: Theory and Public Policy 4th Edition*., HarperCollins: New York.

Gerry, C. J., Kim, B.Y. and Li, C. A. (2004), "The Gender Wage Gap and Wage Arrears in Russia: Evidence from the RLMS," *Journal of Population Economics*, Vol. 117, No. 2, pp. 267-288.

Glinskaya, E. and Mroz, T. A. (2000), "The Gender Gap in Wages in Russia from 1992 to 1995," *Journal of Population Economics,* Vol. 13, No. 2, pp. 323- 386.

Government of Malawi. (2000), "Employment Act" www.ilo.org, Accessed on 20th March 2010.

Gujarati, D. (2003), *Basic Econometrics 4th Ed.*, McGraw-Hill: New York.

Hansberry, R. (2004), "An Analysis of Gender Wage Differentials in Russia from 1996-2002," *William Davidson Institute Working Paper*, No 720.

Heckman, J. J. (1977), "Sample Selection Bias as a Specification Bias," *NBER Working Paper Series*, No 172.

Hertz, T., Campos, A. P., Zezz, A., Azzari, C., Winters, P., Quinones, E. and Davis, B. (2009), "Wage Inequality in International Perspective: Effects of Location, Sector, Gender," *A Paper Presented at the FAO-IFAD-ILO Workshop on Gaps, Trends and Current Research in Gender Dimensions of Agricultural and Rural Employment: Differentiated Pathways Out of Poverty*.

Hori, H. (2009), "Labor Segmentation and the Gender Wage Gap," *Japan Labor Review*, Vol.6, No. 1, pp. 5-20.

International Trade Union Confederation (2008), "The Global Gender Pay Gap," www.ituc-csii.org, Accessed on 13th November 2009.

Jacobsen, J. P. and Skillman, G. L. (2004), *Labor Markets and Employment Relationship: A Comprehensive Approach.*, Blackwell Publishing: USA.

Jellal, M and Nordman, C. (2009), "A Theory of the Gender Wage Gap," *MPRA Paper*, No 17409.

Johanssen, M., Katz, K. and Nyman, H., (2003), "Wage Differentials and Gender Discrimination Changes in Sweden: 1981-1996," *Acta Sociologica*, Vol. 48, No. 4, pp. 341-364.

Jurajda, S. (2005), "Gender Segregation and Gender Wage Gap: An East and West Comparison," *Journal of European Economics Association*, Vol.3, No. 2/3, pp. 598-607, MIT: Massachusetts.

Kabubo-Mariara, J. (2003), "Wage Determination and the Gender Wage Gap in Kenya: Any Evidence of Gender Discrimination," .*AERC Research Paper*, No 132.

Kadzamira, E.C (2003),"Malawi's Experience in Promoting Girls Education," *A Paper Presented at the Global Women's Action Network for Children Conference*, Dead Sea: Jordan.

Kadzamira, E. and Rose, P. (2001), "Educational Policy Choice and Policy Practice in Malawi: Dilemmas and Disjuncture's," *IDS Working Paper*, No 124.

Kendall, N. (2006), "Why Gender Equity in Education Reform," *A Report Submitted to The Educational Quality Improvement Programme, United States Agency for International Development*: USA.

Kidd, P. and Shannon, M. (1996),"The Gender Wage Gap: A Comparison of Australia and Canada," *Industrial and Labor Relations Review*, Vol. 49, No. 4, pp. 729-746.

Klaveren, M., Tijdens, K., Hughie-Williams, M., and Martin, N. (2009), "An Overview of Women's Work and Employment in Malawi," *Decisions for Life MDG3 Project Country Report*, No. 6.

Konstantopoulos, S. and Constant, A. (2004), "Gender Difference across the Earnings Distribution Evidence from NLS: 86 and HSB: 92," *IZA Discussion paper Series*, No 1425.

Liu, P.K., Zhang, J. and Kung, C.Y. (2004), "What has happened to the Gender Wage Differential in Urban China During1988-1999," *Research Grant Council Of Hong Kong Working Paper*, No wp1164b.

Lucifora, C. and Meurs, D. (2004), "The Public Sector Pay Gap in France, Britain & Italy" *IZA Discussion Paper*, No 104.

Makwemba, N. (2008), "Key Gender Issues in Labor Market and Production of Labor Statistics in Malawi," *Paper Presented at UNSD Workshop*. Maseru, Lesotho.

Marshall, F. R. and Briggs, V .M. (1989), *Labor Economics: Theory Institutions and Public Policy 6th ed.*, R.R. Donnelley& Sons Company: USA.

Mendes, R.V. (2004), "Decomposition of Gender Wage Differentials among Portuguese Top Management Jobs," *European Regional Science Association Conference Paper*, No ersa041

Mincer, J. (1974), "Schooling, Experience and Earnings," *National Bureau of Economic Research Working Paper*, No 53.

Mkandawire, T. (1997), "Malawi Agriculture, Poverty and Employment," *ILO/SAMAT Policy Paper*, No.9.

National Statistical Office, (1998), "Integrated Household Survey,"

National Statistical Office, (2005), "Integrated Household Survey," www.nso.malawi.net, Accessed on 5th December 2009.

Neumark, D. (1988), "Employers' Discriminatory Behavior and the Estimation of Wage Discrimination," *Journal of Human Resources*, Vol. 23, pp. 279-295.

Ngwira, N., Kamchedzera, G. and Semu, L. (2003), "Malawi: Strategic Country Gender Assessment," *Main Report Presented to the World Bank and UNDP*. Vol.1

Nordman, C. and Wolff, F.C. (2009), "Gender Differences in Pay in African Manufacturing Firms," Laboratoire D' *Economie et de Management Nantes-Atlantique Universities de Nantes Working Paper*, No EA4272.

Nordman, C., Robbilliard, A. S., Roubaud, F. (2009), "Decomposing the Gender Wage Gap and Ethnic Wage Gap in 7 West African Cities," *Développement, Institutions & Analyses de Long Terme Working Paper*, No DT/2009/07.

Oaxaca, R. (1973), "Male-Female Wage Differentials in Urban Labor Markets," *International Economic Review*, Vol. 14, pp. 693- 709.

O'Neill, J. (2003), "Recent Trends and Current Sources of the Gender Wage Gap in the U.S," *The American Economic Review*, Vol. 93, No. 2, pp. 309-14.

Petersen, T., Snartland, V., Becken, L. and Olsen, M. (1997), "Within-Job Wage Discrimination and the Gender Wage Gap: The Case of Norway," *European Sociological Review*, Vol. 13, No. 2, pp. 199-213.

Philips, P. (1982), "Gender Based Wage Differentials in Pennsylvania and New Jersey Manufacturing, 1900-1950," *The Journal of Economic History*, Vol. 42, No. 1, pp. 181-186.

Plasman, R., Rycx, F. and Tojeraw, I. (1999), "Inter Industry Wage Differentials and the Gender Wage Gap in Belgium: Evidence from Matched Employer-Employee Data," *De Economist,* Vol. 150, No. 5, pp. 555-568.

Psacharopoulos, G., (1985), "Returns to Education: A Further International Update and Implications," *The Journal of Human Resources*, pp. 583-604.

Ransom, M.R. and Oaxaca, R.L (2008), "New Market Power Models and Sex Differences in Pay," *IZA Working Paper,* No 540.

Riddell, A. (2003), "The Introduction of Free Primary Education in Sub-Saharan Africa," *Background Paper Prepared for the Education for All Global Monitoring Report.*

Robinson, J. (1969), *The Economics of Imperfect Competition, 2nd Edition*, London: Macmilla

Sebaggala, R. (2007), "Wage determination and Gender Discrimination in Uganda," *Economic Policy Research Centre Research Series,* No.50.

Semu, L. and Chande-Binauli, L (1997), "Women's Status in Malawi: A Case for Gendered Development," *Sustainable Social and Human Development in Malawi: Towards Poverty Alleviation? Issue1*. Centre for Social Research, University of Malawi.

Shannon, M and Kidd, P. M. (2001), "Projecting the Trend in the Canadian Gender Wage Gap 2001-2031: Will an Increase in Female Education Acquisition and Commitment Be Enough?" *Canadian Public Policy*, Vol. 27, No. 4, pp. 447-467.

Siphambe H. K. and Bakwena M.T. (2001), "The Wage Gap between Men and Women in Botswana's Formal Labor Market," *A Report Submitted to Central Statistics Office,* Government of Botswana.

Siphambe H. K. and Obuseng S. (1999), "The wage Gap between Men and Women in Botswana's Labor Market," *A Report Submitted to Central Statistics Office,* Government of Botswana.

Siphambe, H. (2008), "Rates of Return to Education in Botswana: Results from the 2002/2003 Household Income and Expenditure Survey Data Set," *South African Journal of Economics*, Vol. 76, No. 4, pp. 641-651.

Sparreboom, T. (1999), "Improving Labor Market Information in Southern Africa," *ILO/SAMAT Policy Paper,* No.10.

Theu, L.C. (2008), "A Human Capital Approach to the Determination of Wages in Malawi," *Unpublished MA Thesis,* Economics Department, University of Malawi: Malawi.

Whiteside, M. (2000), "'Ganyu' Labor in Malawi and its Implications for Livelihood Security Interventions – An Analysis of Recent Literature and Implications for Poverty Alleviation," *Agricultural Research and Extension Network Paper,* No 99.

Yean, T. S. (2006), "Gender Wage Differentials in Asia and Europe: An Overview of Issues and Findings," www.genderpanteion.gr, Accessed on 10th February 2010.

APPENDICES

APPENDIX 1: Results of the Breusch-Pagan Test

		Test Statistic	Degrees of Freedom	P-Value	Conclusion
1998	MALE	1421.8	14	0	Accept Null
	FEMALE	874.21	14	0	Accept Null
2005	MALE	6.53	14	0.011	Reject Null
	FEMALE	3.42	14	0.064	Reject Null

Note: The Null Hypothesis is that there is Homoscedasticity

APPENDIX 2: Labor Force Participation functions for 1998 and 2005

LFP	**1998**		**2005**	
	Coeff	**t-Stat**	**Coeff**	**t-Stat**
PSLC	-0.105***	-3.75	0.16	0.16
JCE	-0.94***	-14.7	-	-
MSCE	0.28***	4.38	-	-
TERT	0.97***	4.98	1.54*	1.31
Age	-0.0012	-0.6	-0.14*	-1.59
Agesq	-0.00001	-0.37	-0.002*	1.68
Other	-0.56***	16.24	-	-
RURAL	-0.21***	-4.7	-0.717	-0.79
NORTH	-0.079*	-1.7	-	-
SOUTH	0.466***	8	0.54	0.53
Constant	-0.29***	-8	0.54	0.53
	LR chi2(11): 77.0		**LR chi2(7): 17.31**	
	Prob>chi2: 0.00		**Prob>chi2: 0.01**	

Notes: The dummy variable for the North, Other, JCE and MSCE were dropped in the 2005 function. Superscripts ***, ** and * indicate significance at 1%, 5% and 10% levels respectively.

APPENDIX THREE: Wage functions for the Public and Private Sectors for 1998 and 2005

A. 1998 Functions

1998	PVT SECTOR		PUBLIC SECTOR	
	MALE	**FEMALE**	**MALE**	**FEMALE**
Cons	5.9(38)***	6.1(52)***	7(54)***	7(29)***
Exp	0.03(0.83)	0.003(0.64)	0.001(0.49)	0.001(0.18)
Expsq	-0.001(1.2)*	-0.00(-0.7)	-0.00(-0.38)	-0.00(-0.13)
Hours	0.07(4.7)***	0.005(3.2)***	0.001(0.85)	0.014(4.2)***
Education				
PSLC	0.9(13)***	1.0(13)***	0.49(10)***	0.26(1.71)*
JCE	0.34(5.7)***	0.38(6.11)***	0.17(2.7)**	0.19(2.11)**
MSCE	0.3(2.79)**	0.7(2.28)**	0.46(6.3)***	0.62(2.15)**
TERT	0.34(0.9)	1.24(2.2)**	0.35(1.77)*	0.7(0.18)
Occupation				
AGRIC	-0.28(-4.2)***	-0.26(-3.8)***	-0.017(-0.39)	0.002(0.02)
MINING	0.95(1.7)*	0.39(0.4)	0.037(0.07)	0.25(0.51)
MANUF	-0.27(-4.2)***	-0.25(-3.8)***	0.14(1.28)*	0.3(0.67)
UTILITIES	0.24(0.32)	2(2.53)**	0.62(1.94)*	-0.57(1.54)*
CONST	0.15(1.96)*	0.23(2.7)**	-0.47(-6.35)***	0.11(0.4)
FINANCIAL	-0.2(-1.39)*	-0.55(-3.4)***	-0.2(1.92)*	0.46(4)***
Marital Status				
MARRIED	0.11(0.9)	-0.02(-0.32)	-0.002(-0.02)	0.04(0.38)
UNMARRIED	0.1(0.8)	-0.015(-0.17)	0.042(1.2)*	0.02(0.2)
Inmills	0.03(0.9)	0.5(0.01)	0.16(0.3)	0.24(0.2)
	N=1178	N=1257	N=5620	N=700
	P>F=0.0	P>F=0.0	P>F=0.09	P>F=0.0
	R=0.21	R=0.2	R=0.34	R=0.4
	F=20	F=19	F=25	F=3

Notes: Superscripts ***, ** and * indicate significance at 1%, 5% and 10% levels respectively.

B. 2005 Functions

2005	PVT SECTOR		PUBLIC SECTOR	
	MALE	**FEMALE**	**MALE**	**FEMALE**
Cons	7.1(39)***	6.8(34)***	7.6(24)***	7.5(18)***
Exp	0.02(2)**	0.01(0.8)	0.1(0.87)	0.04(2)**
Expsq	-0.0(-2)**	-0.0(-0.9)	-0.0(-0.18)	-00(-1.6)*
Hours	0.04(3.4)***	0.07(3.9)***	0.03(0.9)	0.01(2)**
Education				
PSLC	0.28(2.5)**	0.18(1.2)*	0.02(1.1)*	0.23(-1.4)*
JCE	0.49(4)***	0.39(2.5)**	0.72(3.6)***	0.03(0.2)
MSCE	0.8(5.5)***	0.9(4)***	0.88(1.1)*	0.018(1.0)*
TERT	1.27(3.86)***	0.9(1.5)*	0.87(2.8)**	0.12(1.6)*
Occupation				
AGRIC	-0.17(-1.8)*	-0.5(-0.47)	0.02(0.15)	-0.28(-1.5)*
MINING	1.3(2.4)**			
MANUF	0.12(1.1)*	0.14(1)*	0.01(0.02)	0.88(1)*
UTILITIES	0.6(1.8)*	0.37(0.7)	0.06(0.45)	-0.9(-1.2)*
CONST	0.09(0.6)	0.43(2.4)**		
FINANCIAL	2.2(6)***	1.8(4.7)***	0.5(1.5)*	0.5(1.6)*
Marital Status				
MARRIED	0.08(0.7)	0.3(2.2)**	0.04(0.18)	0.09(0.4)
UNMARRIED	0.1(0.7)	0.27(2.2)**	0.4(0.18)	0.73(2.1)**
Inmills	0.05(0.42)	0.6(0.1)	0.3(0.4)	0.8(0.2)
	N=689	N=490	N=130	N=147
	P>F=0.0	P>F=0.0	P>F=0.09	P>F=0.0
	R=0.2	R=0.19	R=0.36	R=0.20
	F=9.5	F=6.8	F=4.3	F=12

Notes: Superscripts ***, ** and * indicate significance at 1%, 5% and 10% levels respectively.