

## **Effects of Minimum Wage on Gendered Employment in Kenya**

*Evelyn Iminza Bengal*

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**THE KENYA INSTITUTE FOR PUBLIC POLICY  
RESEARCH AND ANALYSIS (KIPPRA)**

**YOUNG PROFESSIONALS (YPs) TRAINING  
PROGRAMME**

# Effects of Minimum Wage on Gendered Employment in Kenya

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*Social Sector Division*  
Kenya Institute for Public Policy  
Research and Analysis

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## **Abstract**

*This study utilizes time series data to analyze the effects of minimum wage on females and males in formal employment in Kenya. Time series data from 1973 to 2009 is analyzed for long run and short run effects of minimum wages on males and females in formal employment. The results show that in the short run, minimum wage has a significant positive effect on female employment but the effect is significantly negative for male employment. In the long run, minimum wage has significant negative effect on both male and female employment. However, the long-run effect on female employment is not statistically significant. An increase in minimum wages has a smaller impact on female employment than male employment.*

*Adjusting the minimum wages upwards is good in checking the gender disparities in employment in the short-run. However, the adjustments should be spread in such a way that the short-run positive effect on female employment is maintained in the long-run, while minimizing the negative effect on the male employment. Currently, the practise in Kenya is that adjustment is done every year mainly because of political agenda as opposed to policy. To minimize the long-run effects, the adjustment frequency should be reviewed to at least three years between adjustments. Nevertheless, minimum wage legislation in itself is a more general policy. A targeted policy to deal with the specific problem of the gender disparity in employment should be complemented with it in order to balance the number of males and females in formal employment in Kenya.*



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## **Abbreviations and Acronyms**

GDP	Gross Domestic Product
ILO	International Labour Organization
KKV	Kazi Kwa Vijana
OVC	Orphaned and Vulnerable Children
USA	United States of America



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# 1. Introduction

## 1.1 Background

Minimum wage may be understood as the minimum sum payable to a worker for work performed or services rendered, within a given period. It can be calculated on the basis of time or output, which may not be reduced either by individual or collective agreement, it is guaranteed by law and may be fixed in such a way as to cover the minimum needs of the worker and his or her family, in the light of national economic and social conditions (International Labour Organization, 1992). The minimum wages exclude certain bonuses, benefits or allowances and are payable, in cash or kind, directly or indirectly.

Most countries in the world have put in place minimum wage regulations. This is in line with International Labour Organization (International Labour Organization, 1928) Convention No. 26. The regulations normally take the form of either a single national minimum wage or a system of legally backed industry or region minima. Critics of a national minimum wage argue that because of differences in the levels of wages and standards of living, the relative value of a national minimum wage will vary across regions and sectors within a single country. On the other hand, a system of minima differentiated by industries, skills and/or regions is likely to dilute the potential of a minimum wage to address discrimination embedded in labour market institutions. Those who root for minimum wages argue that a minimum wage established by law provides a basic guarantee for self-sufficiency, thus a sufficient income for full-time workers to acquire essential goods and services. It is argued also that it prevents those employers who hold a dominant market position to take advantage of certain types of employees like women, low-qualification workers, long term unemployed, and individuals with little or no working experience.<sup>1</sup>

A minimum wage can act as a strategic instrument in countering the labour market distortionary effects and smooth out some of the imbalances caused on the one hand by sex segmentation of labour supply (and divergent reservation wage positions) among men and women and, on the other, by the interaction of industry wage setting

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<sup>1</sup> <http://www.proessay.com/argumentative-essay-topics-and-conroversial-essay/minimum-wage/the-minimum-wage-as-a-tool-to-combat-discrimination-and-promote-equality.html> accessed on 21/07/2011.

systems and sex segregation on the demand side of the labour market (Rubery and Grimshaw, 2009).

However, since Card and Krueger (1995) and Katz and Krueger (1992) published their empirical findings which cast doubt on the presumed negative relationship between minimum wages and employment, debate has raged as to the implications of their research for neo-classical labour market theory.

Minimum wages affect the wage distribution in both the formal and, especially, the informal sector, both at the minimum wage and multiples of the minimum. The minimum wage does not uniformly benefit low-wage workers. In countries where the minimum wage is relatively low compared to mean wages, the minimum wage affects the more disadvantaged segments of the labour force, namely informal sector workers, women, young and older workers, and the low skilled.<sup>2</sup>

The mechanism in which a minimum wage has an impact on employment is complex and depends on many factors such as relative level of the wage, the structure of the labour market and the economic environment. The impact depends on the ability of enterprises to absorb labour cost increases through lower profits or higher product prices; it also depends on the extent of employers' monopsony power. Labour markets do not operate under conditions of perfect competition, they experience substantial frictions because it is costly for workers to change jobs and for employers to find workers. Bargaining power between the two is unevenly distributed.

Women are considered as those most likely to be paid at or near the minimum wage, hence the most likely to be affected by any change in minimum wage legislation.

## **1.2 The Kenyan Scenario**

Minimum wage regulations were introduced in Kenya in 1932. This was based on the needs of single males who lived in urban areas without family responsibility (Bigsten, 1984). Minimum wages are specified in the National Wage Policy that was put in place before independence and are guided by the Regulation of Wages and Conditions of Employment Act (Cap 229). The objectives of these have been to reduce poverty and

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<sup>2</sup> Nicolai K. and Wendy C. (2006), "Do Minimum Wages in Latin America and Caribbean Matter? Evidence from 19 Countries," World Bank Policy Research WPS 3,870.

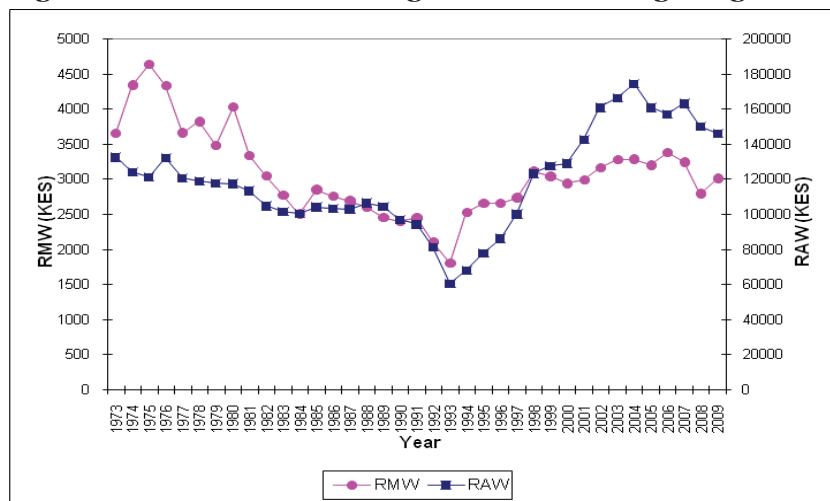
to protect and promote the living standards of workers (Omolo and Omiti, 2004). Minimum wages also eliminate unfair competition in the labour markets and, in some cases, they are used in promoting social justice, economic growth and stability.

The Kenyan Government continues to use minimum wage policy as a way of shielding the low-skilled workers from the rising cost of living. However, how well the regulations are enforced and the degree to which they guarantee a reasonable living still varies (Omolo and Omiti, 2004). There are many minimum wage orders that vary by occupation, sector of activity and location. Most of these orders are updated annually.

The trends in real minimum wages and real average wages as shown in Figure 1.1 indicate that both declined from 1976 to mid 1990s, then started to rise in early 2000s. The downward trend is back on since mid 2000s (Figure 1.1). The steady rise in the real minimum wages had not equalled the initial peak in the 70s, when the first decline happened. It also shows that since the late 1990s, the real minimum wage is set at a lower level compared with the real average wage. This implies that the most affected are the more disadvantaged segments of the labour force, including the informal sector workers, the low skilled, women, young and older workers.

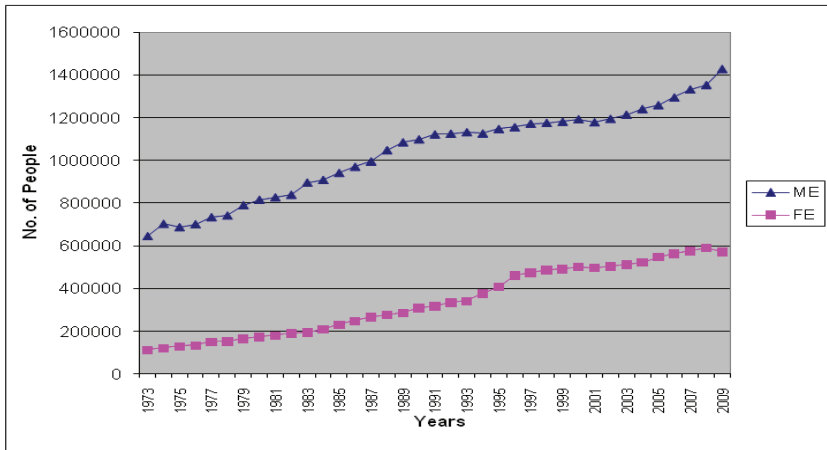
In Kenya, female labour participation does not match the male participation, yet the women constitute the majority in the labour force.

**Figure 1.1: Real minimum wages and real average wages**



Source: Government of Kenya, Economic Surveys, 1973-2009

**Figure 1.2: Male and female employment in Kenya**



Source: Government of Kenya, *Economic Surveys, 1973-2009*

The number of females in wage employment has increased steadily over the years, but not as high as the males. The female participation remains lower than the male as shown in Figure 1.2.

### 1.3 Statement of the Problem

In appreciating the fact that both females and males are affected by the imperfections in the labour market, there is need to contribute to the understanding that minimum wage regulations affect differently female and male employment.

Despite the fact that minimum wage laws exist in most countries in Africa, there is very little research on the wage and employment effects by gender. This has raised concerns in policy circles since minimum wage is a very active policy tool—being re-negotiated regularly—and labour markets are particularly sensitive to the negative impacts of excessive labour market regulations (World Bank, 2006).

The bulk of existing literature is from the developed countries in Europe and USA (Brown, Gilroy and Kohen, 1982; Abowd, Kramarz and Margolis, 1999; Currie and Fallick, 1993). Since the labour market conditions between these countries and developing countries in Africa are not the same, the results based on these studies cannot be applied to the African markets, especially Kenya. The studies for Kenya include: Varndemoortle and Ngola (1982); Omolo and Omiti (2004); Manda, Kosimbei and Wanjala (2007). However, to the best of my knowledge,

no study has evaluated the effects of minimum wage on employment by gender in Kenya. The need to disaggregate arises from the fact that the changes in minimum wages may affect differently the males and females in employment.

This study will investigate whether formal employment differs for men and women, with changes in the minimum wages. By so doing, this paper is expected to make an empirical contribution to the minimum wage literature in Kenya. Subsequently, the study is expected to inform the incomes and wages policy and national employment policy that are being developed by the Ministry of Labour and any other future reviews of these policy documents and other relevant policies.

## **1.4 Objectives and Research Question**

### **1.4.1 Objectives**

The main aim of this study is to analyze the effects of minimum wage on female and male employment in Kenya.

The specific objectives include:

- a) To establish the direction and magnitude of changes in minimum wages on female and male employment
- b) To examine if the effects are different for females and males
- c) To draw policy recommendations

### **1.4.2 Research Question**

To what extent do the minimum wage increases affect female and male employment in Kenya?

## **1.5 Justification of the Study**

Currently, governments are rethinking their social protection systems, attempting to create an integrated and cohesive system. This is an ideal time to empirically analyze the impacts of the minimum wage in developing countries and give policy makers some direction on this policy tool. In Kenya, this is so far being implemented through programmes such as Kazi Kwa Vijana (KKV), Orphan and Vulnerable Children (OVC) and cash transfer to older persons. The KKV programme is tailored to address the unemployment problem among the youth, but with it comes the issue of minimum wages and gender disparity. Most

of the work in KKV programme is manual and physically demanding, leaving doubt as to whether or not the required number of females is engaged.

The Millennium Development Goal No. 3 that aims to promote gender equality and empower women is to be achieved through monitoring the share of women in wage employment in the non-agricultural sector. This study will go a long way as a pointer towards this indicator, since the analysis will be disaggregated by gender.

Kenya's Vision 2030 has embedded in the economic pillar that gender, youth and vulnerable groups should have equity in power and resource distribution between the sexes, and improved livelihoods for all vulnerable groups. In carrying out this study, the results will give a pointer on this indicator as to whether the vision will be realized as far as gendered employment is concerned.

Furthermore, the current rising cost of living is associated with nominal wage decline, making the minimum wage policy an issue that should be looked at closely. The draft National Employment Policy recognizes the fact that female labour participation does not match the male participation, yet the women constitute the majority in the labour force. The findings of the study will inform future reviews of the policy.

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## **2. Literature Review**

### **2.1 Theory**

In the traditional economic theory, an increase in labour cost will lead to a decrease in demand for labour. This implies that an increase in minimum wages will translate to an increase in the cost of labour, thereby reducing the demand for labour. Reduction in demand of labour in return causes unemployment. However, emerging minimum wage research has no consensus on the direction of the effects of minimum wage on employment (Neumark and Wascher, 2006; Lemos, 2004).

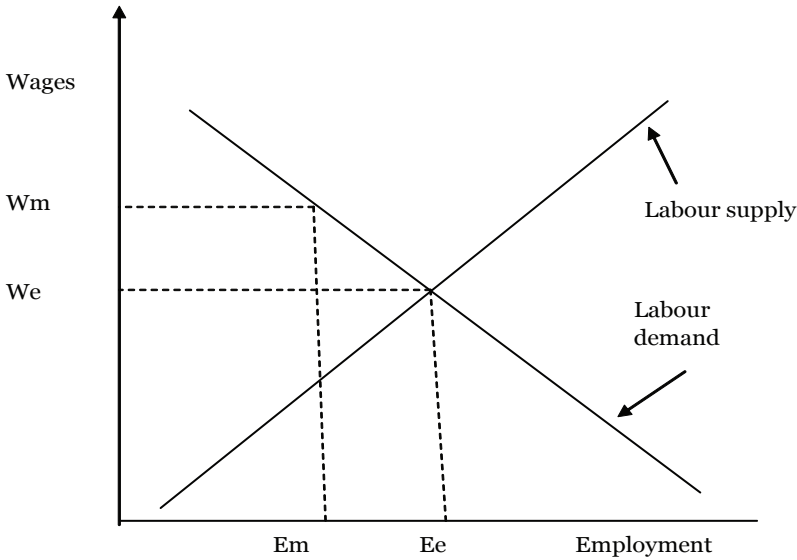
Conventional wisdom tells us that women's market labour supply is more elastic than men's. This insight results from a vast number of empirical studies that investigate whether individuals supply labour and by how much using data from individual or household level surveys. Theoretical labour supply models also take the perspective of employees. This means that employers' perspective, that is, the demand side of labour, usually plays only a minor role (Hirsch, Schank and Schnabel, 2010).

There are several theoretical models that explain the impact of minimum wages on employment. The most basic neoclassical model of the labour market suggests that wages should be equal based on the assumption that there is perfect competition in the market; the employers are maximizing their profits and the workers are homogeneous. The classical theories revolve mainly around the role of markets which clear on their own at equilibrium. A minimum wage set above the equilibrium wage then decreases the quantity of labour demanded by firms and total employment decreases (Figure 2.1). In a perfect competitive labour market, the introduction of a minimum wage would tend to reduce employment; but in a monopsony structure of the labour market, the effect might be the opposite.

A monopsonistic labour market faces an upward-sloping labour supply curve due to search frictions, heterogeneous preferences of workers or mobility costs. Here, the workers face a static partial equilibrium in the labour market with just one employer who pays the same wage to all its workers. From this perspective of a single firm, it does not matter whether an individual supplies labour generally, but whether he or she supplies it to this firm or not. Furthermore, not only unemployed, but also employed workers are potential suppliers of labour to this firm.



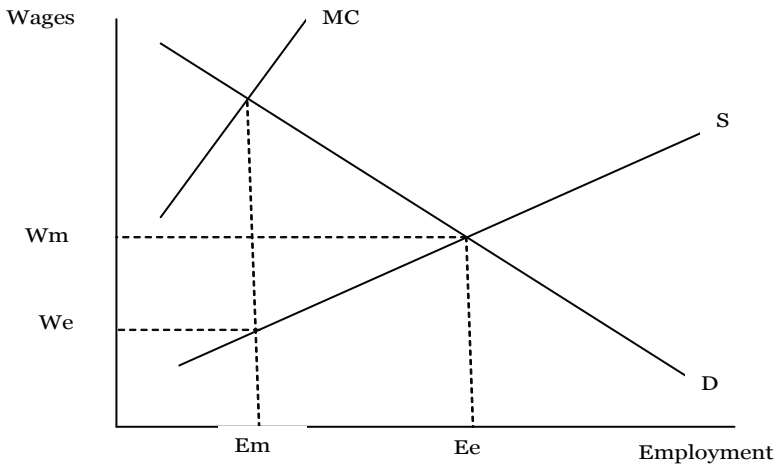
**Figure 2.1: The competitive labour market**



Monopsonistic firms always have their marginal cost (MC) exceeding the supply price of labour. These firms are assumed to minimize costs by living up to the point at which MC is equal to their demand for labour ( $E_e$ ). Once minimum wage is introduced, the firm becomes a price taker up to equilibrium wage where demand of labour is equal to supply of labour. Therefore, a minimum wage which is set at  $W_m$  leads to an increase in employment from  $E_e$  to  $E_m$ . If minimum wage is set higher than the equilibrium wage ( $W_m$ ), employment would be reduced.

The new monopsony literature, whose first systematic exposition and application to almost all traditional topics of labour economics, has it that monopsony power may even arise if there are many firms competing for workers (Manning, 2003). Other studies which assume a monopsony structure provide neutral or positive effects of minimum wages on employment (Card and Krueger, 1995; Machin and Manning, 1996; Bhaskar, 1999; Lang and Kahn, 1999). The classic argument here is that minimum wages can reduce the monopsony power of employers.

Monopsony explanation allows for the wage structure to be set as much by social norms as by organizations' ability to pay or labour market supply and demand conditions. In the context of surplus labour, social norms acquire greater importance in fixing the wage structure. These social norms vary for different groups and reflect in part the social organization of the economy, including the family economy (Rubery, 2003).

**Figure 2.2: Monopsonistic labour market**

Although women's labour supply is more elastic than men's at the market level, it might be less elastic than men's at the firm level, giving rise to steeper labour supply curves for women to the firm. Reasons for this could be different preferences over non-wage job characteristics and a higher degree of immobility. For instance, women's job moves might be less motivated by pecuniary considerations, but to a larger extent, by the job's location (e.g. near a nursery school) or the working hours offered (Hirsch, Schank and Schnabel, 2010).

The controversy in the minimum wage debate seems to be justified because the effects of the minimum wage legislation and increase of minimum wage may differ depending on the labour market structure.

## 2.2 Empirical Literature

Minimum wage legislation is still a subject of discussion in all sectors, public and private, regardless of the vast research on its costs and benefits. As a policy tool, it perhaps touches on a few people directly, but it is still widely supported with the union strongly in favour of it. In May 2011, the Central Organization for Trade Unions in Kenya agitated for an up to 60 per cent increase in the minimum wages, but only 10 per cent increase was agreed to by the government.

A number of studies even after the doubt that was cast by Card and others still indicate a mixture of results with others indicating a negative impact of minimum wages on employment (Chesnes, 2001; Alatas and Cameron, 2003) and others showing minimum or no significant effect of MW on employment (Stewart, 2001). Abowd, Kramark and Margolis

(1997) used logit models to study the minimum wage effects in France and the United States, and noted that the minimum wage has large negative effects on employment. The effects are mild in general, but very strong on worker employed at the minimum wage level.

In a later study, Abowd, Kramarz and Margolis (1999) used longitudinal individual wage and employment data in France and the US to investigate the effects of changes in minimum wages on employment. They found that for France, a one per cent increase in the real minimum wages decreases the future employment probability of people currently employed at minimum wage by 1.3 per cent for males and one per cent for females. The effects for the US were found to be 0.4 per cent for males and 1.6 per cent for females.

In their study that sampled young women's cohort covering the period 1968-80 and young men's cohorts covering the period 1966-81, England *et al.* (1988) used a fixed effects model and found a stronger evidence of a negative gender composition effect as compared to Gerhart and Cheikh (1991), who found a negative and significant relationship for young men but a small negative and insignificant effect for young women after controlling for fixed effects.

Kaufman (1989) estimated the employment effects of setting wage minimums above their equilibrium levels in Britain. He used Constant Elasticities of Substitution (CES) production function to estimate partial elasticities of substitution among male and female labour and capital after which he derives their elasticities of demand. He estimated the elasticity of the average wage in relevant industries with respect to the statutory minimum rate to be zero for men and between 0.07 and 0.15 for women.

Williams and Mills (1998) re-analyzed data of time series studies that previously showed that raising minimum wage had a smaller impact on females than males and found out that the minimum wage had a similar significant impact on both males and females.

In a study that considered the period after post welfare reforms in the US, Neumark (2007) found that the disemployment effects of minimum wage were concentrated on the young minority men, and there was little evidence of minimum wage effects on employment of young women except for high school drop outs.

Blais, Cousineau and McRoberts (1989) found in their study that the relative minimum wage tends to be lower when and where there are more women and young people in the labour force, where small businesses play a greater role in the economy and when unemployment is high. They concluded that whenever women and young people form a greater part of the labour force, the relative minimum wage is decreased.

A study by Cousineau, Tessier and Villancourt (1992) focusing on minimum wage impact on unemployment of women and youth and covering experience of Ontario province in Canada found that minimum wage had a negative impact on both female and youth employment. A 10 per cent increase of relative minimum wage increases the unemployment rate of women by 1.4 per cent and that of youth by 1.53 per cent. According to the authors, when more explanatory variables are incorporated into the estimation (quadratic regression approach), the impact becomes more important where the negative impact is estimated as being 1.82 per cent and 1.99 per cent for female and youth unemployment, respectively.

Utilizing descriptive analysis, Omolo and Omiti (2004) find that the minimum wage policy in Kenya has failed to contribute to sustained poverty reduction. They use aggregate time series data and find a negative correlation between minimum wages and modern private sector employment. The study by Manda, Kosimbei and Wanjala (2007) investigated the effects of minimum wages on formal employment in both public and private sectors in the short and long run. They used time series data to analyze the impact of minimum wages on formal employment in Kenya and found that an increase in real minimum wages significantly reduces the level of employment both in public and private sectors, but the impact was larger for the public sector.

In the modern economics literature, the minimum wage debate has become framed as an issue regarding whether labour markets are best characterized as competitive or monopsonistic (Dolado *et al.*, 1996; Metcalf, 2008; Neumark and Wascher, 2006; Kaufman, 2009).

Studies conducted by Card and Krueger (1995) and Katz and Krueger (1992) used the natural experiments evaluation which showed that the demand for labour responded positively to a minimum wage increase. However, Neumark and Wascher (1992) criticized the method used to capture the effects of minimum wage increase on employment. They argued that the experiment approach did not consider the lagged effects of minimum wage changes that may occur later.

### **2.3 Literature Overview**

The empirical studies conducted have relied on a variety of approaches and have led to different findings. Some have a negative significance, while others post a positive significance of minimum wages on employment. The opposing nature of the conclusion from the reviewed studies show the highly controversial nature of the issue of minimum wages. Indeed, a consensus is yet to be reached in this field of study.

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### **3. Methods and Procedures**

#### **3.1 Model Specification**

This study adopts a time series model of employment, whereby employment is a function of the minimum wage and other factors. This is disaggregated for estimation as follows:

$$FE=f(MW,GDP,TLF,AW).....(1)$$

$$ME=f(MW,GDP,TLF,AW).....(2)$$

Where: FE is female employment

ME is male employment

MW is the minimum wages

GDP is the gross domestic product

TLF is the total labour force

AW is the average wage

The choice of these variables is guided by previous literature on minimum wages.

#### **3.2 Estimation Procedure**

Following Manda, Kosimbei and Wanjala (2007), the analysis will use the natural logarithms of the variables since an inverse relationship between minimum wages and employment is expected, following the standard competitive model that concludes minimum wages will reduce employment. The use of natural logarithms makes the parameters to be elasticity measures. Brown (1999) clarifies further that minimum wage analysts usually multiply the minimum wage elasticity with about five in order to calculate the implied demand elasticity.

This study examines stationarity of the variables by testing for unit roots using the Augmented Dickey-Fuller and Phillips-Perron tests. The results show that all the variables had a unit root which led to differencing that eventually made them stationary. All the variables were found to be integrated of order 1 (Table 3.1).

The Johansen Co-integration Test results indicate that there is one co-integrating equation at five per cent level of significance for both female employment and male employment as presented in Tables 3.1 and 3.2.

**Table 3.1: Female employment cointegration test results**

	Trace test		Max-eigenvalue test	
	Hypothesized No. of co-integrating equations		Hypothesized No. of co-integrating equations	
	None	At most 1	None	At most 1
Eigen value	0.611278	0.450029	0.611278	0.450029
Trace statistic	80.12526	47.05411	33.07114	20.92613
0.05 critical value	69.81889	47.85613	33.87687	27.58434
Probability	0.0060	0.0594	0.0622	0.2807
No. of co-integrating equations	1 CE at 0.05 level		0 CE at 0.05 level	

The existence of co-integration in both equations (3a and 3b) indicates that there is a long-run relationship among the variables. For long run and short run effects of the change in minimum wages, an error correction model using Engel Granger two-stage estimation technique is used. The respective models are given as follows:

$$FE = \alpha_0 + \alpha_1GDP + \alpha_2TLF + \alpha_3MW + \alpha_4AW + \varepsilon \dots\dots\dots(3a)$$

$$\alpha_0, \alpha_1, \alpha_2 >; \alpha_3, \alpha_4 < 0$$

$$ME = \alpha_0 + \alpha_1GDP + \alpha_2TLF + \alpha_3MW + \alpha_4AW + \varepsilon \dots\dots\dots(3b)$$

$$\alpha_0, \alpha_1, \alpha_2 >; \alpha_3, \alpha_4 < 0$$

Where the  $\alpha$ 's are the population parameters to be estimated.

$$\Delta FE_t = \varnothing_0 + \sum_{i=0}^n \varnothing_1 \Delta GDP_{t-n} + \sum_{i=0}^n \varnothing_2 \Delta TLF_{t-n} + \sum_{i=0}^n \varnothing_3 \Delta MW_{t-n} + \sum_{i=0}^n \varnothing_4 \Delta AW_{t-n} + \sum_{i=0}^n \varnothing_5 ECT_{t-1} + D_t + \mu_t \dots\dots(4a)$$

$$\Delta ME_t = \varnothing_0 + \sum_{i=0}^n \varnothing_1 \Delta GDP_{t-n} + \sum_{i=0}^n \varnothing_2 \Delta TLF_{t-n} + \sum_{i=0}^n \varnothing_3 \Delta MW_{t-n} + \sum_{i=0}^n \varnothing_4 \Delta AW_{t-n} + \sum_{i=0}^n \varnothing_5 ECT_{t-1} + D_t + \mu_t \dots\dots(4b)$$

Where  $ECT_{t-1}$  is the error correction term, and  $\Delta$  represents the difference operator,  $D_i$  represents dummy variables, while  $u$  is the disturbance term.

**Table 3.2: Male employment co-integration test results**

	Trace test		Max-eigenvalue test	
	Hypothesized No. of co-integrating equations		Hypothesized No. of co-integrating equations	
	None	At most 1	None	At most 1
Eigen value	0.690905	0.490556	0.690905	0.490556
Trace statistic	84.35118	43.25746	41.09372	23.60523
0.05 critical value	69.81889	47.85613	33.87687	27.58434
Probability	0.0022	0.1264	0.0058	0.1491
No. of co-integrating equations	1 CE at 0.05 level		1 CE at 0.05 level	

While equation (3a) and (3b) are the long-run specifications for female and male employment, equations (4a) and (4b) are the female and male employment short run models, respectively. Estimation of the long-run relationship is by Ordinary Least Squares (OLS).

### 3.3 Data

The study makes use of time series data for the period 1973 to 2009 to analyze the impact of minimum wages on female and male employment. The data was collected from the Kenya Economic Surveys of the specified years and various Government of Kenya legal notices on minimum wages. The period is chosen because of availability of consistent data. The variables used in the estimations of the study are: Female Employment (LFE), Male Employment (LME), Real Gross Domestic Product (RGDP), Total Labour Force (TLF), Real Minimum Wages (RMW) and Real Average Wages (RAW). The analysis makes use of natural logarithms of the variables. The choice of these variables was informed by previous literature of similar studies.



## 4. Estimation Results

**Table 4.1: Unit root tests**

Variable	ADF-test		Phillips-Perron test	
	Level	1 <sup>st</sup> Difference	Level	1 <sup>st</sup> Difference
Log of female employment	-3.540328 (0.9985)	-3.544284 (0.0009)	-3.540328 (0.9970)	-3.544284 (0.0009)
Log of male employment	-3.540328 (0.6290)	-3.544284 (0.0000)	-3.540328 (0.6249)	-3.544284 (0.0000)
Log of real GDP	-3.552973 (0.9997)	-3.544284 (0.0001)	-3.540328 (0.9871)	-3.544284 (0.0000)
Log of TLF	-3.540328 (0.8997)	-3.544284 (0.0000)	-3.540328 (0.8672)	-3.544284 (0.0001)
Log of real minimum wage	-3.540328 (0.7448)	-3.544284 (0.0000)	-3.540328 (0.7785)	-3.544284 (0.0000)
Log of real average wage	-3.544284 (0.6885)	-3.544284 (0.0221)	-3.540328 (0.7420)	-3.544284 (0.0237)

p-values are given in brackets

Correlation matrices (Appendix Table 1) show that real minimum wages are negatively correlated with both male and female employment. From this, it can easily be deduced that the inverse relationship between minimum wages and employment of both males and females indicates that an increase in the minimum wages is more likely to be linked to a reduction of employment for both males and females.

### 4.1. Long Run Estimations

Two equations were estimated with the dependent variables for each equation given as female and male employment. The results are presented in Table 4.2.

The results show that an increase in minimum wages will likely cause a decline in the level of male employment in the long run. Thus, a one per cent increase in minimum wages will lead to 0.23 per cent decline in total male employment in the formal sector in the long run.

Dummy variables were included in the estimations to capture the disturbances on male employment. The dummy variable for 2009 had a positive effect, while dummy variable for 1993 and 2001 had a negative effect.

**Table 4.2: Long run regression results**

Variable	Female employment	Male employment
Constant	-4.378439*** (0.676662)	8.577171*** (0.539668)
Logarithm of real average wage	-0.121200*** (0.043874)	0.019520 (0.035992)
Logarithm of real GDP	-0.0434661 (0.084296)	0.236265*** (0.067500)
Logarithm of real minimum wage	-0.043167 (0.056372)	-0.237321*** (0.045067)
Logarithm of total labour force	0.861582*** (0.050160)	0.264478*** (0.040623)
Dummy variable for 1993	-0.102624*** (0.039569)	-0.053371* (0.032230)
Dummy variable for 1998	0.063464* (0.033834)	
Dummy variable for 2001		-0.049317* (0.027210)
Dummy variable for 2009	-0.073497** (0.036535)	0.084750*** (0.029807)
Test summary		
RSS	0.029787	0.019793
R-squared	0.997029	0.988537
Log-likelihood	79.30412	86.86630
Durbin-Watson stat	1.708455	1.224426
F-statistic	1390.243	357.2743
Prob (F-statistic)	0.000000	0.000000
No. of observations	37	37

Levels of significance: \*\*\*1%, \*\*5%, \*10%

The standard errors are given in brackets

The female employment response to changes in minimum wages is also negative in the long run. However, the decline in the total female employment was found to be statistically insignificant.

Dummy variables were included in the estimations to capture the impact of shocks on male employment. The dummy variable for 2009 had a positive effect on male employment. This is quite intriguing given that the year before had seen so many people displaced and others killed as a result of the post election chaos. 1993 and 2001 dummy variables had negative effects on male employment. These years saw some political instability with 1993 having the effects of the tribal

clashes of 1992, and 2001 the heightened anticipation of the change of government in the elections of the following year.

In the long run, real average wages have a significant negative impact on female employment, but real GDP has significant positive effect on both female and male employment. This implies that as the economy grows, demand for labour goes up. Thus, an increase in real GDP would lead to an increase in employment of both males and females.

These results are in line with findings of the study by Gerhart and Cheikh (1991), Williams and Mills (1998) and Neumark (2007). The bulk of studies conducted on the impact of minimum wages on aggregate employment found a negative effect, but a few that analyzed monopsonistic labour markets found a positive effect of minimum wage increase on aggregate employment.

#### **4.2. Short Run Estimations**

The results for the short run equations with dummy variables are presented in Table 4.3.

The results of the short run regressions show that current and past levels of the real minimum wages have a positive impact on female employment. A one per cent increase in minimum wages is associated with 0.16 per cent increase in female employment. Further still, a one per cent increase in the second lag of real minimum wages may lead to 0.08 per cent increase in current female employment.

On the other hand, male employees are negatively affected by changes in the minimum wages. An increase in the minimum wages is more likely to reduce male employment. A 1 per cent increase in minimum wages is associated with 0.06 per cent decrease in male employment but lagging the minimum wages twice, 1 per cent increase in the lagged minimum wages will lead to 0.05 per cent decline in male employment.

On average, a 1 per cent increase in real average wages reduces the female employment by 0.12 per cent. Lagged real GDP however, produces positive effects to both male and female employment. A 1 per cent increase in first lag of real GDP is associated with 0.22 per cent and 0.11 per cent of female and male employment, respectively.

The error correction terms for both models have the expected negative sign. The value shows the speed of adjustment to the long-

**Table 4.3: Preferred short-run employment model results**

Variable	Female employment	Male employment
DLME_2		-0.000958 (0.130275)
DLFE_2	0.545450*** (0.140986)	
Constant	0.015430 (0.014017)	0.036941*** (0.010187)
DLRAW	-0.118337** (0.053372)	
DLRGDP		0.083192 (0.068132)
DLRGDP_1	0.218545* (0.109845)	0.109710* (0.063354)
DLRMW	0.163658*** (0.048247)	-0.064930** (0.029963)
DLRMW_2	0.076726* (0.039137)	-0.052375** (0.024811)
DLTLF	0.589709** (0.242912)	-0.144611 (0.166445)
DLTLF_1		-0.319865** (0.153873)
DLTLF_2	-0.486790** (0.226016)	
ECTmet-1		-0.253875* (0.135123)
ECTfet-1	-0.538272*** (0.148955)	
Dummy variable for 1993		-0.029286* (0.015055)
Dummy variable for 2001		-0.039612*** (0.014530)
Dummy variable for 2009	-0.087797*** (0.021409)	0.039900*** (0.014998)
Test summary		
RSS	0.009752	0.004144
R-squared	0.757850	0.618488
Log-likelihood	90.41900	104.9669
Durbin-Watson stat	1.770157	2.178583
F-statistic		3.242304
Prob(F-statistic)	8.345795	
No. of observations	0.00016	0.009078
	34	34

Levels of significance: \*\*\*1%, \*\*5%, \*10%

The standard errors are given in brackets

run female employment equilibrium which is higher at 54 per cent than speed of adjustment to the long run male employment which is 25 per cent.

The dummy variable for 2009 had a positive effect on male employment. This result is peculiar given that the year before saw many people displaced and others killed as a result of the post-election chaos. However, the same year had a negative effect on female employment which may be an indicator that females were the most affected by the post election violence. 1993 and 2001 dummy variables had negative effects on male employment. These years saw some political instability with 1993 having the effects of the tribal clashes of 1992, and 2001 the heightened anticipation of the change of government in the elections of the following year.

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## **5. Limitations of the Study**

The use of time series data makes it difficult to isolate the effect of macro shocks that can be correlated with revisions in minimum wage rates. Economic literature relies on repeated cross sectional or longitudinal data at individual level to estimate the effect of minimum wages on employment. There is no much labour market micro data available in Kenya. The last labour survey was the 1998/99 Integrated Labour Force Survey (ILFS), a nationally representative survey conducted during the months of December 1998 and January 1999 to 11,040 households.

Up to date, techniques to investigate the effects of minimum wages on inequality and employment require longitudinal micro data or in its defect, a series of consecutive household level surveys. Such data is not available in Kenya. There is need for frequent labour force surveys to provide sufficient data for analysis towards developing better labour market policies.

There is the possibility that minimum wage earners in the formal sector may not be among the lowest earners since there is a small size of formal sector and a large size of informal economy in Kenya.

## **6. Conclusion**

The link between minimum wages and employment might be negative or positive depending on the circumstance and context of implementation. Minimum wage is a tool whose effects depend on the social, economic and political context in which it is implemented. Actual effects will depend on the context in which it is implemented and the political will and agenda behind the implementation.

The results of this study match the implication of a dynamic standard model following a minimum wage increase. The results show that minimum wage has a significant positive effect on female employment in the short run, but it is significantly negative for male employment. However, in the long run, minimum wage has significant negative effect on both male and female employment, but the effect on male employment is more significant than that of female employment. Increase in real GDP has significant positive impact on both female and male employment.

Adjusting the minimum wages upwards could be good in checking the gender disparities in employment in the short run. However, the adjustments should be spread in such a way that the short run positive effect on female employment is maintained in the long run, while at the same time minimizing the negative effect on the male employment. Currently, the practise in Kenya is that adjustment is done every year mainly because of political agenda as opposed to policy. To minimize the long-run effects, the adjustment frequency should be reviewed to a longer period between adjustments. Minimum wage legislation in itself is a more general policy. A targeted policy to deal with the specific problem of the gender disparity in employment should be complemented with it in order to balance the number of males and females in formal employment in Kenya.

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## Appendix

**Table 1: Female and male employment**

**a) Female employment**

	LFE	LRAW	LRGDP	LRMW	LTLF
LFE	1.000000	0.216472	0.969953	-0.439975	0.988064
LRAW	0.216472	1.000000	0.072356	0.622797	0.324955
LRGDP	0.969953	0.072356	1.000000	-0.554941	0.931040
LRMW	-0.439975	0.622797	-0.554941	1.000000	-0.345924
LTLF	0.988064	0.324955	0.931040	-0.345924	1.000000

**b) Male employment**

	LME	LRAW	LRGDP	LRMW	LTLF
LME	1.000000	0.121645	0.969909	-0.556271	0.959526
LRAW	0.121645	1.000000	0.072356	0.622797	0.324955
LRGDP	0.969909	0.072356	1.000000	-0.554941	0.931040
LRMW	-0.556271	0.622797	-0.554941	1.000000	-0.345924
LTLF	0.959526	0.324955	0.931040	-0.345924	1.000000

**Table 2: General short-run regression results**

Variable	Female employment	Male employment
Constant	0.027810** (0.013856)	0.011929 (0.008594)
Logarithm of real average wage in first difference	-0.045027 (0.072992)	-0.086248 * (0.045604)
Logarithm of real GDP in first difference	0.116175 (0.122231)	0.183239** (0.072944)
Logarithm of real minimum wage in first difference	0.027966 (0.057853)	-0.066807* (0.037439)
Logarithm of total labour force in first difference	0.435225 (0.302939)	0.160134 (0.188254)
Lagged error correction term for female employment	-0.615873*** (0.181240)	
Lagged error correction term for male employment		-0.472249*** (0.142496)
Dummy variable for 1993	-0.059916* (0.034621)	-0.058330*** (0.022204)
Dummy variable for 2001		-0.033933* (0.018591)
Dummy variable for 2009	-0.085522*** (0.029472)	0.049409*** (0.018737)
<b>Test summary</b>		
RSS	0.022005	0.008205
R-squared	0.022005	0.512955
Log-likelihood	82.11857	99.87600
Durbin-Watson stat	1.581898	2.204025
F-statistic	3.493087	3.554550
Prob (F-statistic)	0.008112	0.006173
No. of observations	36	36

Levels of significance: \*\*\*1%, \*\*5%, \*10%

The standard errors are given in brackets



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