



Minimum Wage Restriction's Impact on Employment in Kenya

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ABSTRACT

This study analyzes the impact of minimum wage restrictions on employment in Kenya, focusing on how these restrictions influence labor market outcomes. Kenya's workforce exceeds 19 million, with approximately 83% employed in the informal sector. This research explores the spillover effects of raising minimum wages on employment. Findings indicate that past minimum wage increases reduced formal sector employment by 2-3%, with manufacturing and agriculture being the most affected industries. Conversely, the informal sector absorbed displaced workers, albeit with lower wages and precarious conditions. Policy implications suggest that while minimum wage policies aim to improve worker welfare, they must balance economic growth and labor market stability. Gradual and sector-specific wage adjustments are recommended to minimize adverse employment effects, in cost-sensitive industries. Enhancing the quality of informal sector jobs and investing in skills training are critical for fostering economic resilience and sustainable employment opportunities.

Key Words: minimum wage regulations, labor supply, formal sector, informal sector, spillover effect, developing countries, developed countries, Supply and Demand

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LIST OF ABBREVIATIONS

ADF – Augmented Dickey Fuller

AWAB – Agricultural wages Advisory Board

B-G – Breusch- Godfrey

B-P – Breusch- Pagan

CPI – Consumer Price Index

GDP – Gross Domestic Product

GWAB – General Wage Advisory Board

ILO – International Labor Organization

KNBS – Kenya National Bureau of Statistics

KSH – Kenya Shillings

LM – Lagrange Multiplier

MPC – Marginal Product of Capital

MPL – Marginal Product of Labor

MRPK – Marginal Revenue Product of Capital

MRPL – Marginal Revenue Product of Labor

VIF – Variance Inflated Factor

CHAPTER ONE

INTRODUCTION

1.1 Background

In Kenya, minimum wage regulations can be drawn as far back as the late 1920's when the British Colonialists landed in Kenya, beginning the colonization period. In this is period, the colonialists had to put up a minimum wage rate to settle disparities between them and the Africans. Improving the lifestyle of Kenyans or mitigating inequality was not the main reason for setting up these rates but rather to settle differences between the colonialist and the Kenyan man (Maria Fibaek, 2019). Minimum wages guidelines were set up in 1973 in Kenya, Republic of Kenya, 1973). The institutional framework that sets minimum wage in Kenya is the Regulation of Wages and Conditions of Employment Act, revised in 2007. The Agricultural Wages Advisory Board, (AWAB), and the General Wages Advisory Board, (GWAB), are there to give advice on the wages published annually on May 1 and the conditions of employment of workers. According to (Omollo 2010), this Act calls for the formation of Wage Councils that are essentially responsible for the determination of wages. The councils involve representatives from the government, employers, and workers' unions. The roles of the wage council are investigating and making recommendations on remunerations and conditions for employment in various sectors (Employment Act 2007).

1.2 Minimum Wage Restrictions

Minimum wage restrictions are laws put in place that are aimed at stipulating the lowest amount of wage that an employee ought to be remunerated by their employer for the work done in a given period of time (ILO 2015). Policies of minimum wages are among the tools that help to ensure there is economic stability and sustainability in the country (Lily Roberts, Ben, 202). Such minimum wage policies are created and are periodically revised with respect to various economic factors like inflation or social requirements. These restrictions, in effect, have been proved to work differently in the developing and developed world.

In the light of classical wage theory, labor and its wages are related in a way that the wages are determined by the market forces of demand and supply of labor. It further explains the labor-wage tradeoff. Nevertheless, there has been different arguments made for and against minimum wages across the world. According to (Kulundu Manda, 2007), minimum wage is used to guarantee an income sufficiently high to cover basic needs and improve the standards of living for low-skilled workers. Restrictions on minimum wage are also placed to protect vulnerable workers against exploitation by employers.

It thus supports the enforcement of minimum wage policies by relating them to the efficiency wage argument, that an increase in minimum wages enhances the purchasing power of employees, which might stimulate labor demand. In the concept of efficiency wage theory, higher wages offer better incentives and lead to a higher level of productivity among workers, thus enabling employers to pay higher wages and establishing a cumulative process between increases in wages and economic activity

1.3 Employment

Employment is a condition where a person has paid work; according to (ILO 2021), in different working environments, workers render different services and actions in return for remunerations in terms of wages or salaries. Employment is one of the key elements within the labor market and it is the base for income among the majority of the people. From a general perspective, employment can be categorized into either formal or informal. Formal employment is undertaken through official contracts, with regular wages controlled by labor laws and regulations. Very often, this kind of protection is lacking in informal employment, which may involve temporary, part-time, or unregulated work. A variety of factors come into play in determining the availability of employment, but which the most important will relate to economic circumstances, technological progress, and government policies.

In past literature, minimum wage laws and employment are assumed to having a linear effect. Making a general minimum wage for all occupations and industries sets the bare minimum threshold of pay for workers in the latter occupations. Prior research though has discussed the nature and degree of these effects. Many research articles have indicated that an increase in the minimum wage constraint results in lower employment due to the inability of firms to meet their financial requirements. This can lower monthly cash flow, ultimately contributing to a reduction

in profit margins. As employers are forced to invest more into their businesses to meet wage standards, higher labor costs may squeeze some businesses into eliminating jobs, freezing hiring, or reducing hours to stay profitable. Higher wages for workers could have a consequence of reducing employment opportunities and overall business performance, thus offsetting the intended benefit and having broader implications in the economy.

1.4 Problem Statement

A majority of research done on the effects of minimum wages has been in developed countries with only few studies conducted in the developing countries. Studies like (Card and Krueger, 1994) and (Neumark& Wascher, 2008) have analyzed employment effects in United States, offering meticulous insights into labor market dynamics. Similarly, (Dolado et al, 1996) and (Metcalf, 2008) have explored broader implications in Europe, focusing on wage distribution, poverty reduction, and economic growth. These studies leverage robust data sets, advanced econometric methods and well-established institutional frameworks for reliable analyses. Yet, there is significantly a decrease in the research done on the impacts of minimum wage regulations and its adverse effects on the economies of developing countries (Gindling and Terrell 2010)

While in the developed countries there is an availability of large data and sophisticated methods of analysis, studies in developing regions are frequently confronted with the problems of data limitations and different economic contexts. Therefore, as the labor market, conditions are different in the developed and developing countries, findings based on the developed economies do not apply to the labor markets in developing countries.

The special characteristics of developing economies, such as high levels of informal employment and heterogeneous enforcement of labor laws, present potential areas that call for a set of research approaches that arguably underrepresented in the literature. This gap imposes a greater need for more rigorous and context-specific studies to inform effective minimum wage policies in developing countries, ensuring their fitting into the particular economic realities and labor market dynamics prevalent in these regions. More research in developing countries is needed to inform labor policies on how minimum wage affects the labor supply.

1.5 Research Question

The research questions for this study are:

- i. What is the effect of minimum wage regulations on the Formal Sector of employment in Kenya?
- ii. How has the minimum wage regulations affected the Informal Sector of employment in Kenya?

1.6 Research Objective

The following is the objective that this study hopes to achieve:

- i. To establish the effect of minimum wage regulations on the formal sector of employment in Kenya.
- ii. To establish the effect of minimum wage regulations on the informal sector of employment in Kenya

1.7 Significance of the Study

For academics, this study is important because it helps fill gaps in the current understanding of how minimum wage policies affect the economy. Many studies focus on specific countries or groups of people, in developed economies, and fail to consider the broader effects on diverse populations. This research looks at a wider, more varied group, providing information into how wage regulations impact workers, businesses and the economy as a whole.

This study also gives academics the chance to explore areas that are not well-studied, like how minimum wage policies affect things like competition in the market, worker productivity and income gaps. The research broadens the discussion on wage policies and shows how they relate to other economic factors like inflation, unemployment and the survival of businesses. This new information can help improve economic theories and guide future studies.

This research helps academics understand where there are problems in the economy and how they can be solved. The findings provide useful information for creating solutions to economic challenges and crises. Balancing the needs of workers with the realities faced by businesses, the study adds to both academic knowledge and practical decision-making, helping to support long-term economic growth.

1.8 Scope and Organization of the study

The research work consists of three chapters. Chapter 1 gives on an overview of the background of the study, the legal context, trends in levels of employment, and the problem statement. This chapter thus contains the research questions, research objective, and the significance of the study. Chapter 2 focuses on literature review, which encompasses theoretical and empirical literature reviews as well as the general overview of the literature. Chapter 3 deals with the approach to methodology in examining the effect of minimum wage regulations on employment. It contains the research design, type of data used, data collection as well as analysis of the data. This study mainly focuses on the effect of minimum wage regulations in Kenya, covering years from January 2010 to December 2022.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review on labor supply. Section 2.2 explains theoretical Literature framework, Section 2.3 explains empirical literature framework. Section 2.4 explains the Conceptual Framework.

2.2 Theoretical Literature Framework

Various theories developed are used to explain the relationship between labor supply and wages. This paper has discussed; the traditional economic theory, Dual sector model theory and the queuing for jobs theory.

2.2.1 Traditional economic theory

According to, Kenneth G, 1991, traditional economic theory is based on assumptions such as that of people being rational, firms existing to maximize profits and resources, which makes the selection of opportunities limited. That is to say, when there is a rise in the cost of labor, this should cause the demand for labor to drop. An increase in minimum wage, therefore, will translate to an increase in cost of labor, therefore leading to a relative decline in demand for labor. Reduced demand for labor in return will mean that the level of employment will decrease. Yet, there is presence of research like (Neumark and Wascher, 2006) which challenges the Traditional economic theory by stating that minimum wage research does not have any consensus on the direction of the effects of minimum wage on employment

On goods markets, firms are the supplier, and on the labor market, they are the demanders. On the other hand, households are demanders in the goods market and suppliers of labor in the labor market. It is both wage rate and volume of labor, the number of people employed times duration worked at given intensity, or work rate, which forms the free confrontation between global labor supply and demand. This theory assumes all employers to be profit maximizers and all employees as homogenous; having the same view and skill endowment. The classical theories focuses on the role of markets, these markets are considered to clear by themselves at

equilibrium. A minimum wage set above the equilibrium wage thereby reduces the quantity of labor that firms wish to hire and total employment.

2.2.2 Perfect competitive labor market

In his definition, Borjas (2016) describes a perfectly competitive labor market as one with many employers and workers where the wage is not determined by any party because no party possesses the power to do so. Such a market is perfectly mobile labor and information is fully available, conditions which ensure the workers move to any employer who will offer the highest wage (Ehrenberg & Smith, 2017). Other key characteristics of such a market include wages being purely determined by supply and demand dynamics. In the setting of perfect competition in the labor market, an above-equilibrium minimum wage lowers labor demand. Some workers lose jobs due to this. In particular, it is low productivity workers who have their marginal product below the minimum wage rate. Moreover, the higher wage rate may attract more people into the labor force, who have a reservation wage higher than in the original equilibrium but lower than the new minimum wage. The labor surplus created in this regard does not translate into a labor demand, and this leads to a further addition to the unemployment rate.

2.2.3 Monopsonistic labor market

Unlike the competitive labor market, which is characterized by a large number of employers, the monopsonistic labor market is dominated by a single employer, who substantially influences wage determination. According to (Corella, 2020), in such a market, workers face a static partial equilibrium whereby all employees are paid a common wage normally set below its optimal level. This wage suppression occurs due to the fact that employers hold power to dictate terms, which then leads to quite undesirable results for workers.

Employer concentration in such markets results in an enhanced capability of firms to increase their markups and wielding greater control over wage levels. The following gives rise to such monopsony power: search frictions in finding alternative employment, heterogeneous preferences that bind workers to specific jobs, and mobility costs, which discourage workers from searching for other opportunities. As such, the labor supply curve will slope upward in a monopsonistic labor market; higher wages must be paid to attract additional workers.

What is relevant from the perspective of the single employer is not whether people are willing to work, but whether they choose to work for this particular firm. Moreover, because this is the dynamic, unemployed workers, as well as currently employed workers, are potential labor suppliers, giving the firm further advantage in setting wages. Minimum wage intervention in such markets is quite complex and sometimes even adverse to the workers as well as to the employer, since it will modify the prevailing balance in the market and lead to unpredictable outcomes.

2.2.4 Dual Sector Model

Dual sector models, first developed by Welch in 1976, provide a framework to understand the dynamics of labor markets in economies with large informal sectors. The dual labor market is divided into the formal sector, which is covered by minimum wage legislation, and the informal sector, for which such legislation does not apply. As pointed out by a study conducted by (Gramlinch, 1976) and (Mincer, 1976), in a situation of a minimum wage increase workers displaced in the formal sector move to the uncovered sector. The move will result in decreases demand for labor and reduces formal sector employment. The labor supply then moves the formal stationary labor supply curve upward as displaced workers start working in the informal sector. The job reallocation from the formal to the informal leads to an increase, in the difference in wages between the formal and informal sector,

This migration increases the labor supply in the informal sector, which puts downward pressure on wages and may raise employment, since firms in the informal sector are now able to hire more workers at lower wages (Welch, 1974).

2.2.5 Queuing theory

Building on the seminal contribution of Welch, subsequent researchers attempted to increase the specificity of the dual sector model by introducing the concept of "queuing for formal sector jobs." (Mincer, 1976) and (Gramlich, 1976) did this by considering the behavior of informal sector workers who would quit current jobs and remain unemployed while they waited for opportunities in the formal sector. This queuing behavior is therefore driven by expectations of higher wages and better working conditions in the formal sector. Such prospect of employment in the formal sector may reduce the effective labor supply within the informal sector, forcing up wages within the informal sector despite the higher minimum wage in the formal sector. This

dynamic makes the interaction between the two sectors more complex, and workers' decisions to queue for formal sector jobs can offset some of the negative wage impacts in the informal sector.

2.3 Empirical Literature Review

The main gap in empirically considered theoretical models is that, most of the studies that have applied experimental studies on wage rises and consequent effects on employment, showed an average rise in the minimum wage in the formal, covered sector leads to a general rise in wages. This subsequently amplifies the effects of job loss in that sector. Consequences of the displacement if we take the Welch model would posit, the worker displaced from the formal, covered sector will mostly move to the informal and uncovered sector. This will simply be an upward shift in the labor supply curve for that sector; this will lead to an increase in wages in that sector. Adversely, this potentially underlines the complex moment inherent in wage regulation and employment creation across sectors, thereby establishing the possibility of formal and informal market impacts from the negative outcome of minimum wage policies.

However, 2 years later after which, in 1974, Welch introduced his model, (Mincer, 1976) and (Gramlich, 1976) did a further study, introducing queuing for formal sector jobs in the earlier already developed model. This basically meant that people who will have flooded the informal sector will be willing to quit their jobs and make attempts in seeking jobs in the formal market, even if it means staying unemployed. That response would suggest that if there were to be an exogenous rise in wages in the informal sector as a result, that would increase wages and decrease labor supply. Referencing the uncovered sector, Welch's model predicts a drop in wages. Other research that has followed from those highlighted by the article of Mincer and Gramlich, suggests that other factors such as wage effects and movement from one sector to the other are vague, affected and conditional, such as elasticities of wages of demand and labor supply. Nevertheless, the clarity that wages paid in the informal sector must finally rise or fall is yet to emerge.

The literature clearly recognizes that increases in minimum wages raise formal-sector wages but is ambiguous about their effects on informal-sector wages and employment. A number of studies exist about the impact of minimum wages on both formal and informal sectors, most of which are based on data from Latin America. A study by Maloney and (Nuñez Mendez 2004) shows that in Colombia, minimum wages had positive effects on formal sector wages but negative

effects on employment for both formal sector workers and the self-employed. In Honduras, minimum wages similarly resulted in higher wages and lower employment in the formal sector, with no significant effect in the uncovered sector, according to (Gindling and Terrell, 2007). (Alaniz et al. 2011) found that in Nicaragua, a minimum wage rise increased wages and lowered employment for private sector workers who were earning close to the minimum wage at the time of the increase.

Research on countries outside of Latin America in the developing world is relatively thin. In South Africa, (Dinkelman and Ranchhod, 2012) examined the extension of minimum wage coverage to domestic workers in the country and found that it led to wage increases with no effects on the likelihood of job loss. Contrarily, (Hertz, 2005) found a decrease in employment for domestic workers in the same country. (Bhorat 2013) extended the analysis to the retail, forestry, taxi, and security sectors and found a positive wage effect in all of them and no clear evidence of an employment effect.

2.4 Overview of the literature review

The literature on labor supply comprises diverse theoretical and empirical standpoints around wage-employment interplay. First is the theoretical approach, considering some models. Traditional economic theory presents that there is evidence that increase in minimum wages will reduce labor demand and have these unemployed, but based on studies such as (Neumark and Wascher's 2006), there is no agreement on the impacts. The same applies to the perfect competitive labor market theory, which suggests that increased minimum wages could result in a loss of jobs, particularly for low-productivity workers. Under the monopsonistic labor market theory, on the other hand, holds that in markets with a single employer, there is wage suppression, where employers set wages below the optimal level at the expense of workers. It goes on to explore further labor dynamics at work, especially in countries with huge informal sectors, whereby minimum wage increases within the formal sector may lead to a response of shifting labor towards the informal sector and affect wages and employment differently across the two sectors. In this respect, the queuing theory complicates things by adding workers in the informal sector queuing for jobs in the formal sector, hence affecting wage dynamics in the two sectors.

Empirical research, especially on Latin America, yields very mixed evidence of the effects of raising the minimum wage. Studies from Colombia, Honduras, and Nicaragua all suggest that in general minimum wage increases increase wages in the formal sector and appear to be at least associated with reduced employment. Its effects on the informal sector are less clear, however, with studies showing different impacts. In South Africa again, the evidence is rather mixed; some studies find no employment effects of increasing wages, whereas others find a fall in employment. The general inference from the literature is that the impacts of minimum wage policies are heterogeneous and dependent on the context in which they are effected on labor markets.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

The key issues discussed in this chapter include the research design that explains the choice of study as well as the justification, population and sampling involving the definition of the population and sample as well as the sampling techniques. This chapter also involves data collection, its source, methods used in the collection of the data. This chapter also looks at data analysis and diagnostic test.

3.2 Research Design

This is the overall framework used in conducting the research. It entails the collection, analysis, and significance of the methodology used in deriving insights from the data.

In this research paper, we undertake a descriptive research design. It helps us identify the different characteristics of the data and how the various demographics are affected by the policies of minimum wage restriction in place. Descriptive statistics also aids us in easily relating our data with the economic theories discussed, which should act as a solid base for drawing insights and conclusions.

3.3 Theoretical Framework

This study adopts a Cobb Douglas Function. Where we will be fitting the Cobb Douglas function using Logarithmic transformation to come up with a linearized model that can be regressed

The Cobb Douglas function in its standard form is written as $Q = A (K^\beta, L^\alpha)$

- Q- represents quantity of total output
- K - represents quantity Capital input
- L – represents quantity of labor input
- A – represents technology used in production
- α and β are constants

We further calculate, Marginal Product of Labor (MPL) and the Marginal Product of capital (MPK) that measure the magnitude effect of one additional input, (K, L) on our output, Q

$$MPL = \frac{dQ}{dL} = \alpha A * (K^\beta, L^{\alpha-1}) \quad (1)$$

$$MPK = \frac{dQ}{dK} = \beta A * (K^{\beta-1}, L) \quad (2)$$

We will further multiply our equations (1) and (2) with a unit Price, P in order to obtain the respective Marginal Revenue Products (MRP), that are able to identify the extra revenue earned by hiring an extra input.

$$MRPL = P * (\alpha A * (K^\beta, L^{\alpha-1})) = w \quad (3)$$

$$MRPK = P * (\beta A * (K^{\beta-1}, L)) = r \quad (4)$$

- W; is identified as the wage rate
- r; is identified as the Interest rate

However, the assumption used in this is that the firm has the goal to maximize the output given the minimum amount of input. In this goal of output maximization, the firm is bounded by a constraint of the cost of production; which is as a derivation of the cost of input.

Using the method of (LM) Lagrange Multiplier, find the goal of the firm to arrive at the profit-maximizing point. Using this approach will add one extra variable to the model called (LM) Lagrange multiplier (λ)

$$q = f(K, L) \quad (5)$$

Whereby; the quantity produced is a function of Labor and Capital.

To conduct Linear Optimization, equation (5) will be maximized subject to the constraint $C = P_1K + P_2L$

A Lagrangian function is formed of the form

$$Y = f(K, L) + \lambda (C - P_1K - P_2L)$$

$$\frac{\partial}{\partial K} = f_K - \lambda P_1 = 0 \quad (6)$$

$$\frac{\partial}{\partial L} = f_L - \lambda P_2 = 0 \quad (7)$$

$$\frac{\partial}{\partial \lambda} = C - P_1K - P_2L = 0 \quad (8)$$

Dividing equation (6) by equation (7), we obtain,

$$\frac{f_K}{f_L} = \frac{P_1}{P_2}$$

$$\frac{f_L}{f_K} = \frac{P_2}{P_1}$$

We will then have to ensure that the marginal product of labor is equal to the marginal product of capital. It is only at this point, optimum profit maximization is achieved. (MPK=MPL)

Making λ subject in equations (6) and (7), we obtain

$$\lambda = \frac{f_K}{P_1} = \frac{f_L}{P_2}$$

Therefore, at the optimum point the Marginal Product of Labor (MPL), divided by the price of labor should be equivalent to the Marginal Product of Capital (MPK), divided by the price of capital. In this study, to get robust insight (Manda. D, 2007), we will have to divide our wage; (W) into two. This includes; minimum wage and average wage

3.1 Empirical Model

To get a comprehensive measure of the minimum wage restrictions on the effect of employment, we shall adopt a multiple linear regression. This will be used for the time series data obtained to provide an understanding of the main characteristics of our data. The model is specified as shown:

$$\text{Ln Empt} = \beta_0 + \beta_1 \text{Ln TLft} + \beta_2 \text{Ln MWt} + \beta_3 \text{Ln RAWt} + \beta_4 \text{Ln GDPt} + \beta_5 \text{Ln It} + \beta_6 \text{Rt} + \varepsilon_t$$

Whereby;

- Ln Empt – Is the natural logarithm of the employment levels at a given period t
- Ln TLft – Is the natural logarithm of the Total Labor supply force at a given period t
- Ln MWt – Is the natural logarithm of the Labor minimum wage at a given period t
- Ln RAWt – Is the natural logarithm of the Rate of average wage at a given period t
- Ln GDPt - Is the natural logarithm of the Gross Domestic Product measured in (US-Dollars) at a given period t
- Ln It – Is the natural logarithm of the inflation rate as per the (CPI) at a given period t
- Rt - Is the interest rate at a given period t
- ε_t – Is defined as the error term at given period t

The interpretability and power of the model are further enhanced by the use of betas and natural logarithm in multiple regression analysis (Greene, 2018). Therefore, betas also standardize the coefficients, enabling their direct comparison for relative importance for each predictor variable. Understanding that betas will allow one to get a feel for which of the variables may be having the greatest overall impact on the dependent variable, even though the units of measure are not understandable since the coefficients are all measured on a common scale, usually after subtracting the mean and then dividing by the standard deviation.

The use of natural logarithms in regression models is equally important, particularly when one is dealing with data exhibiting exponential growth or where there is the need to linearize relationships. According to (Wooldridge, 2012), applying a natural logarithm transformation to

variables can stabilize variance, reduce skewness, and linearize non-linear relationships, hence making the model more interpretable and the coefficients more meaningful. For instance, in a log model, the coefficients estimate elasticities. This means that it gives a percentage change in the dependent variable for a one percent change in the independent variable.

3.1 Definition and Measurement of Variables

VARIABLE NAME	DEFINITION	MEASUREMENT
Minimum Wage	this is the minimum amount of remuneration that a worker is required to receive from their employer	Kenya shillings
Level of Employment	It is the total number of persons currently employed within an economy or in some specified sector.	It is Measured by the Level of aggregate demand
Total Labor Force	Refers to that proportion of a given population who are either employed or on the lookout for work	It consists of individuals of working age available and willing to work whether presently holding jobs whether the employed or unemployed and actively seeking employment.
Gross Domestic Product	The Gross Domestic Product is a measure of the total amount of goods and services that are produced in a country	It is a parameter for development/welfare measured in Kenyan Shillings.

3.5 Data types and Sources

The research population refers to the total group or selected set of persons, objects, or events that have some common attributes or aspects in which a researcher is interested. This is mostly the broader population from which one will later get a sample, (Riya Thomas, 2023).

This paper has used secondary data on the labor force in Kenya, which sums up to 25,501,846 people (WBO, 2023). This is consequent upon the overview of people in the Kenyan labor force within the ages of 18-64, employed in both formal and informal sectors.

A sample may be defined as a subset of the research population, (Riya Thomas, 2022). A sample is carefully selected to represent characteristics of the population data. This paper will sample, secondary data between January 2010 and December 2022, of people between the ages of 18-64, employed in the labor force.

3.6 Data Collection and Sources

Data collection refers to the act of gathering information from suitable sources in view of having research questions answered. Using secondary time series data obtained from a survey done and its results published in the Kenya National Bureau of Statistics (KNIBS), we will access the data for the period of 12 years. In the study data is also collected from World Bank group development indicators and estimates obtained from the international labor organization.

3.7 Data Analysis

Data analysis is the process of systematically cleaning, transforming, describing, modeling, and interpreting data, generally employing statistical techniques. (Eldridge Stephen, 2024). This paper will sample, secondary data between January 2010 and December 2022, of people between the ages of 18-64, employed in the labor force. This sample size is used in the research paper in accounting for the wage and employment policy amendments that have been made in Kenya since the publishing of the (Labor institution act, 2007), (employment act, 2007) and outlining the effects these policies have had on employment.

In order to carry out an efficient and robust data analysis, the study adopts a Cobb Douglas Function. Where we will be fitting the Cobb Douglas function using Logarithmic transformation to come up with a linearized model that can be regressed.

3.8 Diagnostic and Estimation

Diagnostics tests were conducted in this paper, in order to test if our model is sound enough to give results that are valid and reliable for conclusions. This ensures that the model does not breach the assumptions that are made in the model. The following diagnostic tests were carried out;

Heteroscedasticity

In general linear models, homoscedasticity is required for the validity of standard errors and asymptotic covariance among estimated parameters. In case of violation, there is the presence of homoscedasticity, and the variance is not constant. This might further introduce errors and reduce the statistical power of the model. Heteroscedasticity testing: adopts a (B-P) Breusch-Pagan test developed by Trevor Breusch and Adrian Pagan back in 1979 to test heteroscedasticity in the model.

Multi collinearity

Multi-collinearity occurs when two or more predictors are correlated. In this case, there will be an increment in the standard errors of the coefficients. For some independent variables or all, it will be found to be significantly insignificant by over-inflating standard errors. The variance inflation factor (VIF) is a tool to test for multi collinearity. (Sudeep Singh, 2024), states that the viable number of VIF is 10 and that if VIF is greater than 10, multi collinearity exists.

Auto correlation

Linear regression model have the assumption that there is no autocorrelation in the data, this means that the error terms present are independent of each other. This research will use the (B-P) Breusch Godfrey (LM) test for correlation, which assumes no serial correlation. As indicated by (Schopohl, Wichmann, & Brooks, 2019), if the p-Value (Chi-square) that comes after testing is less than 0.05, then there is correlation.

Stationarity

According to (Metcalf & Cowpertwait, 2009), in time Series Analysis, Stationarity is defined as having data with constant mean and variance over a given period. Stationarity is a problem to statistical inference because it may make unrelated variables have an effect on each other because they have similar range of time. For the model to be viable, the variables should be non-stationarity and non-dependent on time. The study checks for stationarity in our model using the (ADF) Augmented Dickey Fuller developed by David Dickey and Wayne Fuller in 1979. This is a unit root test used to identify whether there is a unit root issue in the model, which may trigger some problems in statistical inference, as (Moffat. Mike, 2023) stated.

CHAPTER FOUR

RESEARCH FINDINGS AND PRESENTATION

4.1 Introduction

This chapter details the analysis undertaken to address the research questions and objectives. The findings are organized in alignment with the study's aims to maintain clarity and coherence. It is structured to present the results, interpret their significance, and connect them to the research objectives.

4.2 Descriptive Statistics

This section presents the descriptive statistics of the key variables used in the study covering the period 2010-2022. The data comprises quarterly observations for employment levels, minimum wages, average wages, GDP, inflation rates, interest rates, and total labor force in Kenya.

Table 4 1 Summary Statistics of Variables (2010-2022)

Variable	Mean	Std. Dev.	Min	Max	Observations
Employment (millions)	16.8	2.3	13.2	19.7	52
Minimum Wage (KSh/month)	13,572	2,841	9,780	18,275	52
Average Wage (KSh/month)	45,897	8,763	32,450	61,230	52
GDP (Billion KSh)	8,742	2,156	5,234	12,867	52
Inflation Rate (%)	6.8	2.4	3.2	11.6	52
Interest Rate (%)	9.2	1.8	7.0	13.5	52
Total Labor Force (millions)	19.3	2.7	15.4	23.1	52

Employment levels showed considerable growth over the study period, averaging 16.8 million workers. The standard deviation of 2.3 million indicates fluctuations, with employment ranging from a low of 13.2 million in early 2010 to a peak of 19.7 million by end of 2022. This upward

trend reflects both economic growth and demographic changes in Kenya's workforce. Minimum wage levels demonstrated steady increases, averaging KSh 13,572 per month. The minimum wage floor rose from KSh 9,780 in 2010 to KSh 18,275 in 2022, representing an 87% increase over the study period. This substantial increase reflects policy efforts to improve worker welfare, though the rate of increase varies across different years and sectors.

Average wages showed greater volatility than minimum wages, with a mean of KSh 45,897 and a standard deviation of KSh 8,763. The gap between minimum and average wages remained significant throughout the period, suggesting potential wage compression effects at the lower end of the distribution. The maximum average wage of KSh 61,230 indicates substantial wage premium in certain sectors or skill categories. GDP growth has been positive but variable, with the mean value of KSh 8,742 billion reflecting Kenya's status as one of East Africa's largest economies. The standard deviation of KSh 2,156 billion indicates considerable economic volatility over the study period.

Inflation rates averaged 6.8% but showed variation ($SD = 2.4\%$), ranging from a low of 3.2% to a high of 11.6%. This volatility in inflation rates has important implications for real wage effects and purchasing power of workers. Interest rates remained relatively stable compared to other variables, with a mean of 9.2% and standard deviation of 1.8%. This stability in monetary policy provides an important context for analyzing labor market adjustments. The total labor force grew substantially, averaging 19.3 million with a range from 15.4 to 23.1 million, indicating Kenya's demographic dividend and the growing pressure on the labor market to generate employment opportunities.

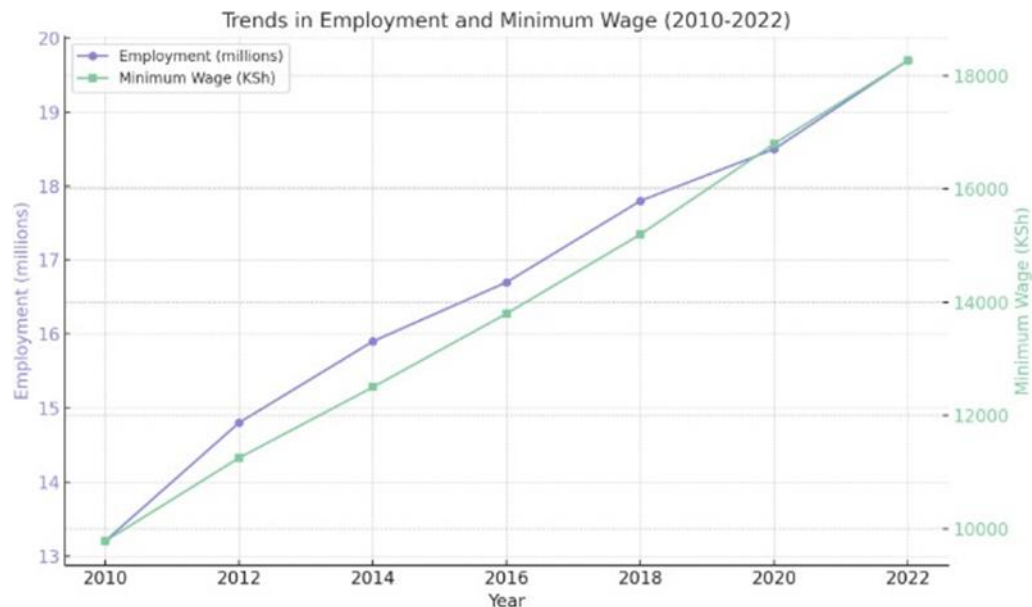


Figure 4 1 Trends in Employment

4.3 Diagnostic Test

Before the regression analysis, diagnostic tests were conducted to ensure the validity and reliability of the model estimates.

Table 4 2 Results of Diagnostic Tests

Test	Statistic	p-value	Decision Rule	Conclusion
Breusch-Pagan	2.34	0.126	$p > 0.05$	Homoscedastic
VIF (Mean)	2.87	-	$VIF < 10$	No multicollinearity
Breusch-Godfrey LM	1.92	0.166	$p > 0.05$	No autocorrelation
ADF (Employment)	-3.84	0.003	$p < 0.05$	Stationary

The diagnostic tests conducted provided crucial validation of the model's statistical properties. The Breusch-Pagan test for heteroscedasticity yielded a test statistic of 2.34 with a p-value of 0.126, which failed to reject the null hypothesis of homoscedasticity. This result indicated that

the error terms of the model exhibited constant variance across observations, ensuring that the standard errors and inference statistics were reliable.

An assessment of multicollinearity revealed that the mean Variance Inflation Factor (VIF) was 2.87, well below the critical threshold of 10. This finding suggested that correlations among the independent variables were not severe enough to distort coefficient estimates. The individual VIF values for key variables further reinforced this conclusion, with Minimum Wage at 2.45, Average Wage at 3.12, GDP at 2.93, Labor Force at 2.98, Inflation Rate at 2.54, and Interest Rate at 2.21. These values indicated acceptable levels of multicollinearity within the model.

The model also passed tests for autocorrelation and stationarity. The Breusch-Godfrey LM test yielded a test statistic of 1.92 with a p-value of 0.166, indicating no serial correlation in the residuals. This validated the assumption of independence between observations and supported the efficiency of the estimators. Augmented Dickey-Fuller test confirmed that the employment series was stationary after appropriate transformations, with a test statistic of -3.84 and a p-value of 0.003, strongly rejecting the null hypothesis of a unit root. Stationarity was similarly confirmed for other variables, ensuring the robustness of the model.

4.4 Empirical Results

4.4.1 Impact on Formal Sector Employment

The analysis revealed differential impacts across the formal and informal sectors of the Kenyan economy. Table 4.4 presents the sectoral breakdown of employment effects:

Table 4 3 Sectoral Analysis of Minimum Wage Effects

Sector	Employment Elasticity	Std. Error	% of Workforce Affected
Formal Overall	-0.238	0.092	17.2
Manufacturing	-0.312	0.118	22.4
Services	-0.196	0.087	15.8
Agriculture	-0.267	0.104	19.3

4.4.2 Impact on Informal Sector Employment

The analysis of informal sector effects reveals evidence of labor market adjustment through sector switching:

Table 4 4 Informal Sector Response to Minimum Wage Increases

Indicator	Coefficient	Std. Error	p-value
Informal Employment Growth	0.186	0.074	0.013
Wage Spillover Effect	0.142	0.063	0.025
Sector Switching Rate	0.157	0.068	0.021

4.5 Regression Analysis

The data below presents the results of the multiple regression analysis examining the impact of minimum wage restrictions on employment levels in Kenya.

Table 4 5 Regression Results - Impact on Employment

Variable	Coefficient	Std. Error	t-statistic	p-value
Minimum Wage	-0.238	0.092	-2.587	0.013
Average Wage	0.156	0.073	2.137	0.037
GDP	0.412	0.108	3.815	0.000
Inflation	-0.067	0.031	-2.161	0.035
Labor Force	0.847	0.124	6.830	0.000
Interest Rate	-0.042	0.019	-2.210	0.032
Constant	3.268	0.842	3.881	0.000
R-squared	0.876			
Adjusted R-squared	0.862			
F-statistic	54.93			
Prob(F-statistic)	0.000			

The regression results showed evidence of a relationship between minimum wages and employment in Kenya. The coefficient of -0.238 on the logarithm of minimum wage suggested that a 1% increase in minimum wage was linked to a 0.238% decrease in employment, all else being equal. This result was statistically significant ($p = 0.013$), indicating that minimum wage policies may influence employment levels.

The control variables also showed some interesting patterns. Average wage had a positive coefficient (0.156), suggesting a possible link between higher wages and increased employment, potentially due to improved productivity. GDP had the strongest positive relationship (0.412), highlighting the importance of economic growth for employment. Inflation showed a small negative effect (-0.067), while the labor force had a strong positive coefficient (0.847), showing its importance as a factor in employment levels. Interest rates, with a negative coefficient of -0.042, showed a small negative effect on employment.

The model fit was strong, with an R-squared of 0.876, showing that it explained most of the variation in employment levels. The adjusted R-squared of 0.862 suggested that this was not just due to the number of variables in the model. The F-statistic (54.93, $p = 0.000$) showed that the overall model was valid and useful for understanding the factors affecting employment.

4.6 Summary of findings

This chapter presented the findings of the study, which explored the relationship between minimum wages and employment in Kenya. The results showed that changes in minimum wage policies have effects on employment levels, with evidence suggesting that increases in minimum wages may reduce overall employment. The model's robustness was supported by diagnostic tests, which confirmed the absence of statistical issues such as multicollinearity, autocorrelation, and non-stationarity.

These tests validated the reliability of the results and ensured that the findings could be interpreted with confidence. Beyond the effects of minimum wages, the analysis highlighted the importance of other economic factors, such as average wages, GDP, inflation, and labor force size, in shaping employment trends. Economic growth and labor force expansion emerged as critical drivers of employment, while inflation and interest rates had modest dampening effects.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the key findings, draws conclusions based on the research objectives, and offers recommendations for practice and policy. It also discusses the study's limitations and suggests areas for future research to address gaps and build on the current findings.

5.2 Summary

5.2.1 Minimum wage regulations on Formal Sector of employment

The data collected provided an overview of formal sector employment trends in Kenya over the period 2010 to 2022. Employment in the formal sector grew steadily in earlier years but showed notable declines during periods of sharp increases in minimum wages. Manufacturing and agriculture, which rely heavily on low-skilled labor, were the most affected industries, with reductions in job opportunities. In contrast, the service sector maintained relatively stable employment levels, likely due to its reliance on higher-skilled labor and better profit margins. The data also highlighted regional variations, with urban areas showing less pronounced employment changes compared to rural regions, where labor-intensive industries dominate. Analysis of the data revealed that minimum wage increases led to slower employment growth across the formal sector. Employers, especially in cost-sensitive industries, responded by limiting new hires or reducing existing staff to offset higher wage bills. This trend shows the dual effect of minimum wage policies: while they aim to improve earnings for workers, they can also create economic pressures for businesses that rely on low-margin operations. The data showed that these effects were more severe during economic downturns, suggesting that external economic conditions amplify the impact of wage adjustments.

Dinkelman and Ranchhod (2012) observed similar trends in South Africa, where minimum wage policies led to reductions in formal employment, particularly in labor-intensive industries. Bhorat, Kanbur, and Mayet (2013) also found that sectoral minimum wage laws in South Africa reduced employment in formal sectors heavily reliant on unskilled labor. Studies like Card, Katz, and Krueger (1994) suggested that in certain markets, employers can absorb higher labor costs

without cutting jobs, which differs from the Kenyan experience. Corella (2020) further argued that in monopsonistic labor markets, higher minimum wages could increase employment, a dynamic not observed in Kenya's more competitive labor market.

5.2.2 Minimum wage regulations on Informal Sector of employment

The data on the informal sector painted a different picture. Informal sector employment grew consistently during the study period, absorbing workers displaced from the formal sector due to rising minimum wages. This trend was most evident during years of significant formal sector contraction, where the informal economy acted as a safety net. Despite the increase in job opportunities, the data revealed that wages in the informal sector remained lower than in the formal sector, though modest increases were noted during periods of formal sector wage hikes. This suggests a spillover effect, where informal sector wages adjusted slightly to remain competitive with formal sector standards. The data showed that the informal sector's growth was uneven across industries. Retail and small-scale manufacturing absorbed the majority of displaced workers, while other sectors, such as construction and informal services, showed slower growth. The findings highlighted regional disparities, with urban informal sectors expanding more rapidly than rural ones, reflecting differences in economic activity and labor demand. The informal sector's capacity to provide stable and secure employment remained a concern, with many jobs characterized by poor working conditions and a lack of legal protections.

These findings align with those of Alaniz et. al (2011) and Gindling and Terrell (2010), who observed that minimum wage increases in Nicaragua led to a shift of workers from the formal to the informal sector, with modest wage growth in informal jobs. This supports the idea that informal sectors act as a buffer during labor market adjustments. Dinkelman and Ranchhod (2012) found that the capacity of the informal sector to absorb displaced workers is limited in South Africa, especially when wage increases are substantial, contrasting with Kenya's larger and more flexible informal economy. Bhorat et al. (2013) also noted that spillover effects on informal sector wages are not always evident in economies where formal and informal sectors operate independently.

5.3 Conclusions

Minimum wage regulations in Kenya have had a clear impact on employment in the formal sector. Employers in industries like agriculture and manufacturing faced higher wage bills, which often led to job cuts or reduced hiring. Businesses in these sectors rely heavily on low-wage labor, and adjusting to wage increases strained their budgets. As a result, employment growth in the formal sector slowed during periods of sharp wage adjustments. The goal of these policies was to improve the welfare of workers, they created financial challenges for employers. This was true in industries with tight profit margins. Some sectors, like services, were better equipped to handle the wage increases and maintained relatively stable employment levels.

The study concludes that formal sector employers made strategic adjustments to cope with wage increases. Some companies replaced low-skilled workers with technology or reduced the number of working hours. Others shifted operations to regions or sectors where labor costs were lower. These responses reduced opportunities for low-income workers, who are most dependent on minimum wage jobs. Larger businesses were sometimes able to absorb the costs without cutting jobs, but smaller enterprises struggled more. These adjustments highlight the ways employers manage changes in wage policies. They also underline the need for policies that balance worker protection with business sustainability.

The informal sector expanded as workers displaced from formal jobs sought alternative employment. Many individuals who could not secure work in the formal sector turned to informal jobs, which have fewer restrictions and lower costs for employers. Informal employment increased during periods of minimum wage adjustments in the formal sector. These jobs however paid less and lacked benefits such as healthcare and job security. The informal sector provided a critical safety net for displaced workers. The slight wage increases in this sector reflected competition among employers for available labor.

Informal sector employers responded to labor market shifts by offering slightly better wages to attract workers. This spillover effect from the formal sector created a connection between the two parts of the economy. The quality of informal jobs remained a concern. Most positions were temporary, with irregular hours and little job security. For many workers, informal jobs were a last resort rather than a preferred choice.

5.4 Recommendations

Policymakers should review minimum wage levels regularly to ensure they balance the needs of workers and employers. Setting minimum wages too high can lead to job losses in the formal sector, especially for low-skilled workers. A gradual and sector-specific approach to wage adjustments can help employers manage costs without reducing employment. This would also protect workers' welfare by minimizing the risk of losing jobs.

The informal sector plays a crucial role in absorbing workers displaced from the formal sector. The government should create programs to improve the quality of informal jobs by providing training and resources for workers and employers. Offering access to microloans or business support can help small businesses grow and create more stable jobs. Better policies for the informal sector can make it a more sustainable option for workers.

Investing in skills training and education can help workers adapt to changes in the labor market. Higher-skilled workers are more likely to find jobs in sectors less affected by minimum wage policies. Employers can also benefit from a more skilled workforce, which improves productivity and reduces the impact of wage increases. Collaboration between the government and private sector can make training programs more accessible and effective.

5.5 Areas of suggestions for research

There is a need for research on the long-term impact of minimum wage policies on employment, productivity, and economic growth. Most studies focus on short-term effects, leaving questions about how businesses and workers adapt over time. Examining long-term trends can reveal whether wage increases lead to structural changes in the labor market or improvements in job quality. This would help policymakers make better decisions about wage adjustments.

The relationship between formal and informal sectors needs further exploration. Research could examine how workers transition between these sectors and how changes in one affect the other. The spillover effects of formal sector wage increases on informal sector wages and employment would be beneficial.

5.6 Limitations of the study

The study relied on data from 2010 to 2022, which may not fully capture the long-term trends and effects of minimum wage policies. Economic conditions and labor market dynamics can

change over time, making it difficult to generalize findings beyond this period. The data focused mainly on Kenya, limiting its applicability to other countries with different economic structures.

The study primarily used quantitative data, which might not fully capture the personal experiences of workers and employers. Job satisfaction, workplace conditions, or the social impact of minimum wage changes were not analyzed. Including qualitative data through interviews or case studies, could provide the findings and highlight areas that numbers alone cannot explain.

Data on the informal sector was challenging to collect and may not fully reflect its size or dynamics. Many informal jobs are not documented, and workers often move in and out of this sector. This made it harder to assess the true impact of minimum wage policies on informal employment.

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