EMPIRICAL ANALYSIS OF WAGE DIFFERENTIALS AMONG PUBLIC SERVANTS IN NIGERIA

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BACKGROUND OF THE STUDY

• The level of wage earning varies due to diversities of human capital, individual innate abilities, job nature and conditions, nonwage benefits from employers, location, etc.

• Unexplained wage gaps occur when two people with equal abilities and skills are doing similar jobs but are treated differently by the employer.
• Domerio and Giordano (2010) observed that union will exploit the relatively inelastic demand for labour in the public sector workers. This allegedly gives public sector union extraordinary bargaining power.

• Freeman (1986), as cited in Campbell et al (1999) rejects this claim of extraordinary bargaining power on four grounds
1.2 RESEARCH PROBLEM

• For the past three to four decades in Nigeria, Public/Civil servants’ wages had been reviewed with the concept of National Minimum Wage (NMW).

• This results into intergovernmental conflicts, between labour unions and government as regards to its implementation of agreement reached.

• There exist wage variation across the Nigerian federation and between employees in a recognize union.
PROBLEM CONT.

This research study tends to investigate the following research problem;

1. What are the determinants of conditional distribution of Wage earning in Nigeria and how possible they contribute to wage differentials in the Nigeria Civil Service?

2. What is the level of wage differentials between public employees’ base on sector of employment, employer or region, age, sex, and union status in the Nigerian public service?

3. What effect does Intergovernmental transfer have on Wage variation among States government employees in Nigeria?

4. What are the likely measures that will proffer solution to Wage differentials in the Nigerian Public Service?
1.3 OBJECTIVE OF THE STUDY

1) To explore the determinants of conditional distribution of Wage earning and how they can contribute to Wages differentials, in Nigeria Public Service.

2) To examine the level of wage differentials of public employees, based on Sector of employment, Region and employer, Sex, Age, and Union status across the Federation.

3) To examine if Intergovernmental transfer is a determining factor on how much a state pays its employees, and see whether it is a contributing factor to wage differential in the public service.

4) To posit some policy measures that can help to reduce Wage disparities in the Public Service (will not be captured in a model but from recommendation).
1.4 JUSTIFICATION OF THE STUDY

➢ To academician, this work will serve as a source of literature for further research,

➢ Policy makers who will see the work as a guide to readdressing policies in relation to resources allocation, to promote growth, equity and efficiency in the economy and

➢ This work is all sectors research policy program, which will also add to existing stock of literature in labour economics.
1.5 SCOPE OF THE STUDY

- The study will cover only but six states, each from a political zone (both federal and state employees in those states).

- Emphasis will be laid on sector of employment, age, region or employer, sex, union status, educational attainment, dependants, and experience; as causes of wage disparity in the public service.
2.0 LITERATURE REVIEW

• “And Laban said unto Jacob, because thou art my brother, shouldest thou therefore serve me for nought? tell me, what shall thy wages be... he said, I will serve thee seven years for Rachel thy younger daughter, (Genesis 29:15,18).

❖ Theoretical Literature concentrates on;
• Wage differentials
• WAGE Determination
2.3 EMPIRICAL LITERATURE

2.4 LIMITATION OF OTHER STUDIES

- Of all the reviewed literatures examined, almost all focus on gender wage disparities both in the private and public sectors, regional, ethnic group, and racial discrimination. But, government expenditure both capital and recurrent are budget constrain, guided by legislative authority.

- Fiscal policies of government play a viable role in the implementation of its employee’s fringe benefits, which causes wage disparity between regional governments in an economy.

- We then therefore intends to bridge this gap, with the application of a quantile regression analysis, to examine the individual predictor effect on the response variable, at different scale, location and shape.
3.0 METHODOLOGY

• A model is a simplified representation of a real-world process. Many scientists have argued in favour of simplicity because simple models are easier to understand, communicate, and test empirically with data.

• But in reality the choice of models are always almost made after some preliminary data analysis (Maddala, 1998). Our choice of model is the Mincerian wage earning model with quantile regression application.
3.0 METHODOLOGY

• The $\theta$th sample quantile, $0 < \theta < 1$, regression model propounded by Koenker and Bassett (1978) is defined as any solution of minimization problem:

$u_t = Y_t - X_t \beta$ having distribution function $F$.

• The $\theta$th regression quantile, $0 < \theta < 1$, is define as any solution to the minimization problem:
3.0 METHODOLOGY

• Min $[\sum \theta | Y_t - X'_t \beta_\theta | + \sum (1-\theta) | Y_t - X'_t \beta_\theta |]$ .......................... 1

• $t \in \{t: y_t > x_{tb}\}$ $t \in \{t: y_t < x_{tb}\}$

• We use $\beta_\theta$ rather than $\beta$ to make clear that different choices of $\theta$ estimate different values of $\beta$. Least absolute error estimator is the regression median, i.e., the regression quantile for $\theta = 0.5$, gives the least absolute-deviations estimator that minimizes

• $\sum | y_t - x'_t \beta_{0.5} |$ ................................................................. 2

• The estimation strategy is the quantile regression version of Heckman’s two-steps procedure, (see Cameron and Trivedi, 2009) and as well as the bootstrap method.
3.1 WHY QUANTILE REGRESSION

- As earlier stated, the traditional regression has disadvantages which include;

  - it characterizes the wage distribution only at the mean of the distribution.
  - It is not robust to the presence of outliers.
  - The conditional mean will show unbiased estimate but inefficient, and
  - The median regression method fits the regression hyper plane that minimizes the sum of the absolute residuals rather than the sum of the squared residuals.
3.2 MODEL SPECIFICATION

• In specifying our model in this study, we have to outline the key determinants of wages in Nigeria public service, which depends on educational qualification, working experience, dependants, trade union status, sector of employment, region or employer, and intergovernmental transfer.

• Note that sex is not a wage determinant in the Nigerian public service, like in other economies. We will use salary grade level as proxy for experience, showing the unique nature of the labor market.
Following Buchinsky (1998), writing the model in the Mincerian style in quantile form gives:

1. $Y_i^* = X_i \beta_{\theta_i} + U_{\theta_i}$ (0$<\theta$<1) .........................................................3
2. $Y^r_i = Z_i \beta^{r}_{\theta_i} + V_{\theta_i}$ ....................................................................................4
3. $D_i = I(Z_i Y_i + \varepsilon_i > 0)$ .........................................................................................5
4. $Y_i = D_i Y_i^*$ .....................................................................................................................6

Where $Y_i^*$, $Y^r_i$ and $Y_i$ are the (1 by $M_i$) vectors of offered, reserved, and observed log wages respectively, with $i \in$ (sex, sector of employment, and union status) and $M_i$ the number of observations in each sample.
MODEL CONTINUE

• $X_i$ is the $m$ by $M_i$ matrix of observed labour market characteristics/endowments that affects the offered wages with a constant

• $Z_i$ is the $n$ by $M_i$ matrix of all characteristics/endowments that affect the participation in the labour force, with $m<n$ and $X_i \subset Z_i$;

• $D_i$ is the dummy variable for employment, and $\mathbb{I}(.)$ is the usual indicator function;

• $Y_i = \beta_i^* - \beta_i^r$, where $\beta_i^* = (\beta_i, 0)$, with zeros for all those variables in $Z_i$ and not in $X_i$

• $U_{\theta i} = X_i(\beta_i - \beta_{\theta i}) + U_i$ and $V_{\theta i} = Z_i(\beta_i^r - \beta_{\theta i}^r) + V_i$, and

• $V_i$ and $U_i$ are the disturbances given $\varepsilon_i = U_i - V_i$.

• With this model the conditional quantile of the observed wage is then:

• $\text{Quant}_\theta(Y_i/X_i) = \text{Quant}_\theta(Y_i^*/X_i, D_i = 1) + \text{Quant}_\theta(U_{\theta i}/X_i, D_i = 1)
  = X_i\beta_{\theta i} + \text{Quant}_\theta(U_{\theta i}/X_i, D_i = 1) \quad \ldots \quad \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \
MODEL CONTINUE

• Where $\text{Quant}_\theta(U_{\theta i}/X_i, D_i = 1)$ can be estimated as $\hat{\lambda}\psi_{\theta i}$, such that it is possible to rewrite equation 7 in disturbance form, to get a quantile regression equivalent to

• $\text{Quant}_\theta(Y_i/X_i) = X_i\beta_{\theta i} + \lambda_i\psi_{\theta i} + \varepsilon_{\theta i}$ ........................................8

• Where $\text{Quant}_\theta(\varepsilon_{\theta i}/X_i, D_i = 1) = 0$

• Estimation of the model will adopt Hickman’s two-step procedure, which involve; the use of probit to estimate the $\Upsilon$ parameter and construct the predicted Mills ratio, $\lambda$ and substitute $\lambda$ estimated for $\lambda$ in equation 8, and estimate $\beta_{\theta}$ and $\psi_{\theta}$ from linear regression, (see Heckman, 1979 for more details), with the econometric package (Stata 10.0).
MODEL CONTINUE

• From equation 3 to 8, we specify the $\theta$th ($0 < \theta < 1$) conditional quantile of the log wage ($w$) distribution for the aforementioned objectives in Nigeria public service as follows;

• MODEL 1: Addressing objective 1, estimating the overall wage equation of public employees, with reference to conditional wage determinants.

\[ W_i = \text{Log}(W_i) = \alpha(\theta) + X_1\beta_1(\theta) + X_2\beta_2(\theta) + X_3\beta_3(\theta) + \text{Secempl\nu}_{\gamma_i(\theta)} + \text{Region}\delta_i(\theta) + m\pi(\theta) + n\eta(\theta) + \varepsilon_{\theta_i} \]

with \( \text{Quant}_{\theta}(\varepsilon_{\theta_i} | X_i) = 0 \)

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MODEL CONTINUE

- Where $\text{Quant}_\theta(\varepsilon_\theta \mid \cdot)$ denote the $\theta$th conditional quantile of $\varepsilon$ (and $\theta = 0.5$ refers to the median)
- $X_1$ is education, $X_2$ is salary grade level (proxy for experience) and $X_3$ is dependants.
- And we also include the quantile of dummy variables, which include sector of employment (secempl), region, member (m) and not member (nm) of effective union, which are define below for easy understanding.
• MODEL 2: Addressing objective 2, estimating wage differential between public employees as relates to sector of employment, sex, age, union status and region or employer.

\[ W_i = \log(W_i) = \alpha(\theta) + X_i\beta_i(\theta) + \text{Age}\beta(\theta) + \text{SecemplY}_i(\theta) + \text{Region}_i\delta(\theta) + m\pi(\theta) + n\eta(\theta) + \text{Mal}\psi(\theta) + \text{Femp}\rho(\theta) + \epsilon_{\theta i} \]

• Where \( X_i\beta_i(\theta) \), capture the quantile of \( X_1, X_2, \) and \( X_3 \), as earlier define, the intercept represent the wage of a federal employee, while \( \text{Region}_i\delta(\theta) \) (i=1, to 6) represent the selected states from the six zones.
MODEL CONTINUE

• MODEL 3: Addressing objective 3, estimating wage differential among state employees as a function of intergovernmental transfer.

• \( W_i = \log(W_i) = \alpha(\theta) + X_i \beta_i(\theta) + \text{Rev} + 8\lambda(\theta) + \varepsilon_{\theta i} \)

• Here the intercept stand for an employee in a state that receive less than eight billion naira monthly (sharing the states into two groups).
DATA SOURCE AND COLLECTION

- The research work relies on both primary and secondary data.
- The analysis of this work majorly depends on a sample of 450 public employees selected randomly.
- The data will be source from the employees directly and federal ministry of finance (both primary and secondary data).
- These sources are seen to be more effective in provision of reliable data for an empirical analysis of this nature.
• THANK YOU AND GOD
BLESS