Government Wage Review Policy and Public-Private Sector Wage Differential in Nigeria

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Abstract

The study investigated the impact Nigeria's government wage review of 1998 had on the differential in pay for public and private sector workers of the same educational qualifications and ages. Empirical analysis based on the Mincerian human capital model was carried out for urban male employees only (as they constitute a homogeneous group) in the public and private sectors. The results obtained show that before the wage review of 1998, public sector workers suffered a pay disadvantage of 6.78% while about one year after the review, public sector workers enjoyed a premium of 35.07%. In the absence of any wage reduction in the private sector, this result suggests that the implementation of the 1998 wage review succeeded in making public sector workers better remunerated than their private sector counterparts and it can be concluded that the wage increase in the public sector achieved its disguised goal of redressing the age-long poor pay in the sector.

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1. Introduction

The history of government wage review in Nigeria is as old as the history of the nation's minimum wage. Minimum wage, which relate to some legal restrictions on the lowest wage rates payable by employers to their workers, have influenced wages in Nigeria since 1955, courtesy of the Wages Board Act of 1955. From 1955, successive governments have set minimum wages for all kinds of occupations/trades, especially the ones that can be considered formal. More often than not, whenever the minimum wage is set, it affects other levels of wages/salaries in Nigeria. In the past nine years, the federal government has formulated two directives/legislations that sought to increase the prevailing minimum wage and other levels of pay. The first became effective in September 1998. One aspect of this directive is that the minimum wage payable to workers in state government (and by extension, in formal private sector employment) should be ₦3000 (about US$35) per month, while that of workers in federal employment should be ₦3500 (about US$41).

The second directive on wages, which is an Act of Parliament, became effective on 1 May 2000. The main provision of this Act is that the lowest paid worker in both the private sector (formal) and state governments should be ₦5,500 (about $55 then) every month. The lowest paid federal worker should receive a minimum wage of ₦7,500 (about $75) per month. The objective of this law was to increase the nation's minimum monthly wage by 83%. Higher levels of pay, especially in the public sector, were also supposed to register some increases in accordance with the existing pay structure which in most cases led to an increase of about 300% in the pay of higher level officers. The 1998 wage review, however, was expected to lead to at least 726.45% increase in the nation's minimum monthly pay, while the higher levels of pay in the public sector were supposed to increase in line with the public sector pay structure.

The first wage review in particular can be justified on the grounds that poor pay had prevailed for too long in the public sector. Public sector pay in Nigeria had stagnated since 1993 in spite of the rapidly increasing general price level (see Appendix 1). This had resulted in the public sector pay structure being inferior to that of the private sector. Such stagnation in the public sector pay might have been responsible, to some extent, for the brain drain that affected the public sector before the wage review in 1998[1]. Some newspaper reports (*The Guardian, 1999; The Punch, 1999, Nigerian Tribune, 1999)* indicate that a sizeable number of public sector employers (especially the state governments) did not comply in the first few months of the supposed implementation of the wage review, while the reactions (in terms of improved pay structure) of formal private sector employers to the new public sector pay structure remain unknown. The extent to which public sector employers complied with the requirements of the wage review would

definitely have implications for the supposed gap between public and private sector pay. In the same vein, the reactions of private sector employers would also have implications for the gap between public and private sector pay. Hence, the size of this gap should be of policy interest to those involved in addressing the poor public sector pay structure before the wage review. It was the examination of the nature of the gap between public and private sector pay in the post-1998 wage review period that constituted the main focus of this study. The study was also concerned with the extent of the wage gap that existed between the two sectors before the wage review in 1998 so as to provide some base results with which to assess the pay gap after the wage review.

The methodology adopted to determine the gap in pay was a comparison of predicted means of natural logarithm of earnings/pay of employees in the public and private sectors before and after implementation of the 1998 wage review. The predicted mean of natural logarithm of earnings of employees was derived from an estimated Mincerian human capital model for urban male employees in each sector. Observed differentials in the predicted means of the natural logarithm of earnings was then decomposed into the one due to background characteristics of workers and the one traceable to returns to those characteristics. An attempt was also made to explain labour market participation decision and sector selection of the whole labour force, which in this study was divided into six groups, namely: Private sector employees, public sector employees, self-employed, members of producer cooperative, employers of labour, and unpaid family labour and others (non-working).[2] The results obtained showed that before the wage review of 1998, public sector workers had a pay disadvantage of 6.78% while about one year after the wage review, public sector workers were already enjoying a premium of 35.07%. In the absence of any wage reduction in the private sector, this result suggests that the implementation of the 1998 wage review succeeded in making public sector workers better remunerated than their private sector counterparts. One can conclude that the wage increase in the public sector achieved its stealth goal of redressing the long-standing issue of poor pay in the sector.

Justification for the study

This study can be justified on several grounds. First, no empirical study on public–private wage differentials has been conducted recently for Nigeria. The absence of this sort of study and the lack of any reliable information on the pay differential might have bolstered the leverage of labour unions (of mainly public sector concerns) to pressure the government for pay increases, even after substantial increases were effected in the workers' pay under the Wage (Minimum) Act of 2000 in Nigeria. This study can provide some evidence on the public–private pay differential; such evidence can assist government in addressing wage policy problems in the public sector.

Another justification for this study stems from the fact that the last two wage reviews in the public sector were not hinged on productivity increases. These could engender price increases the more so since the public sector is the largest employer of non-agricultural salaried workers in Nigeria (as in other African countries; see Heller and Tait, 1984) whose consumption expenditure has a profound multiplier effect on the market for consumables. Previous wage increases in Nigeria were not accompanied by

productivity increases and the increases resulted in upward trends in the price level (see Owoye, 1994). Before the public sector pay review in 1998, there were genuine feelings and arguments that public sector workers were poorly remunerated in comparison to private workers. Nevertheless, this study can serve as a guide to future wage increases in the public sector, especially by revealing whether the public sector wage review in 1998 made public sector employees enjoy a wage advantage over their private sector counterparts who are, of course, assumed to be remunerated according to productivity.

This study can also be justified on the grounds that it could be of immense use to public sector policy makers concerned with redressing the poor state of public sector pay (in relation to private sector pay) in the period before September 1998. The study will show how far the wage review achieved the goal of bettering the lot of public sector employees whose pay had stagnated from 1993 to August 1998.[3]

The rest of this study is structured as follows. Section 2, examines the theory of public-private sector wage differentials. Section 3 reviews wage determination policies in Nigeria. A review of related studies is undertaken in Section 4. Discussions on the models adopted for the study are contained in Section 6, while the data on which empirical analysis is based are described in Section 5. Results of the participation and sector of employment models are discussed in Section 7, while Section 8 is devoted to the interpretation of estimated wage equations. The differentials in public and private sector pay are analysed in Section 9. The study findings and conclusions are summarized in Section 10.

2. Theory of public–private sector wage differentials

Several authors have provided explanations and reviews on why there may be differentials between public and private sector pay structures. Among them is Gunderson (1979). He observes that the central difference between the private and public sector wage determination process is that in the public sector the neo-classical profit constraint is usually jettisoned in favour of an ultimate political constraint. He explains that under such a condition the wages of public sector employees will invariably be dictated by their ability to compete with other interest groups when making decisions on the allocation of government fiscal resources and also by their ability to compete with taxpayers on the aspect of the magnitude of government budget.

Existing political forces influence public sector wages indirectly through institutional channels, which in the end determine the framework for the bargaining process (Gunderson, 1979). Among such institutional channels are matters relating to rights to organize, appropriate crisis/dispute settlement procedures, the allowable number of bargaining issues, civil service regulations, appropriate wage criteria, and comparable wage surveys. He explains further that public sector wages can also be affected by such aggregate policies as wage-price guidelines, intergovernmental transfers, and deliberate and stealth attempts/decisions to contain the growth of the public sector. All these kinds of policy have been used in Nigeria at different times in the past three decades to determine wages across the public and private sectors.

Theoretical literature on public–private wage differentials also touches on why the public sector often absorbs wage increases or retains costlier employees. Cousineau and Lacroix (1977) identify among such reasons/factors the taxation power and the borrowing ability of governments, which enable the public sector to absorb wage increases without considering or using cheaper substitutes or reducing public services/workers. In a country like Nigeria, it is the increased oil-based revenue that has prompted the government to absorb substantial wage increases since the oil boom era of the 1970s.

Preston (1986) highlights three reasons why public and private sector wage rates may differ. First, there may be lags in the adjustment of labour market and its sub-markets. Second, workers in the two sectors may be non-competing groups to a certain extent. The last reason is that the government sector is not subject to the same pressures as the private sector is subjected, especially those related to the impact of competition in bringing about some uniformity in the wage rates offered by private sector participants. He indicates that competition may prompt the public sector to pay above the going rate, and then reduce the number of people it employs or the sector may decide to pay less than the going rate and accept the consequences, a decline in the quality of its labour.

While the foregoing theoretical literature points out some facts that are characteristic

of Nigeria's wage determination process, the literature fails to dwell on such issues as the roles played by poverty, populist government programmes and the cost of living. These additional issues have featured prominently in the determination of public and private sector wages in Nigeria.

3. Wage determination policies in Nigeria

Several criteria for fixing or determining wages and salaries have been identified in the literature. Among these are job evaluation (which is adjudged the most valuable way of fixing wages), government order (especially with regard to minimum wage), ability to pay (on the part of employers), cost of living, and collective bargaining (see Akinwale, 2000). Fapohunda (1979) stresses (among other factors) the impact of fluctuating labour market forces (demand and supply) in the setting of wages. Fapohunda explains further that in Nigeria, modern sector wages and salaries are determined and regulated by administrative decisions of government, wage commissions, and prices and income policies. In addition, the traditional (mainly rural and informal) and intermediate sector wages are influenced to a large extent by market forces and to a lesser extent by wage levels in government establishments.

The phenomenon of wage commissions in Nigeria to determine and regulate wage levels dates back to the colonial period. The colonial government encouraged collective bargaining with minimal government intervention and official recognition of trade unions as legal institutions. The same government never required employers to recognize or bargain collectively with unions (Fapohunda, 1979).

Government policy on minimum wage in particular (in Nigeria) can be traced to the Wages Board Act of 1955 whose philosophy was the colonial government's official policy of collective bargaining. By the mid 1960s, the Nigerian government had set minimum wages on nine different occasions for such occupations as mining (Jos Mine field) and commercial agriculture (Benin Rubber Industry), and also for trades in Lagos. Although the official labour policy stressed collective bargaining, the colonial government disregarded this policy. Instead, the government always set up ad hoc commissions to consider bonuses or wage revisions during periods of labour discontent. A total of 13 of such commissions have been establishd to date. These commissions/committees are:

(1) Bridges Committee of Inquiry 1941
(2) Tudor Davis Commission 1945
(3) Harragin Commission 1946
(4) Miller Committee 1947
(5) Gorsuch Commission 1955
(6) Mbanefo Commission 1959/60
(7) Morgan Commission 1963/64
(8) Adebo Commission 1970/71
(9) Udoji Commission 1972/74
(10) Damachi Tripartite Committee 1990
(11) 19-Man Presidential Committee 2000

(12) Wages, Salaries and Emolument Relativity Panel 2004/2005
(13) Consolidation of Public Sector Emolument Panel 2005/2006

Nearly all these commissions (with the exception of the last two)[4] used changes in the cost of living indexes rather than productivity changes for granting/recommending some wage increases. This might be due to the prevailing inflationary pressures which often reduced the real income of workers to below what could afford them the basic necessities of life. One disturbing aftermath of the Udoji Commission in particular was the official backdating and subsequent implementation of the increase in wages and salaries (which ranged from 12% to 30%).[5] This served in no small measure to boost the purchasing power of government workers in the 1970s before inflationary pressures later made nonsense of the wage awards. In Table 1, it is shown that the Udoji Commission's recommendation gave rise to a minimum monthly pay of ₦60 (about US$100 then).

In 1977, the federal government established a Productivity, Income and Wages Analysis Agency (to collect and analyse statistics on wages, income and price changes in both the public and private sectors) as a permanent institution to substitute for the institutionalized culture of ad hoc wage commissions to resolve wage and salary problems. Nevertheless, wage review commissions/committees continue to feature in the government wage determination process.

During the civilian regime in 1981, the nation's minimum wage was fixed at ₦125 per month by an Act of Parliament. However, at the onset of the structural adjustment programme in late 1986, the government issued the National Minimum Wage (Amendment) Order which abridged the 1981 Minimum Wage Act by exempting persons or companies employing fewer than 500 workers and persons employed in agricultural projects from its provisions. This amendment was, however, rescinded on 24 April 1987 owing to labour protests against it in major cities (Benin, Enugu, Ibadan, Kaduna, and Lagos) across the country.[6]

When a 15-month national economic emergency was declared on 1 October 1985 against a background of lacklustre economic performance, deductions ranging from 2% to 15% from all incomes were effected at source and paid into the Economic Recovery Fund at the Central Bank of Nigeria. The incomes from which deductions were made included rents, dividends, and wages and salaries of workers in both the private and public sectors, including the armed forces. These deductions were part of the measures expected to reduce domestic absorption so that the long running macroeconomic imbalance (current account and fiscal deficits in particular) in the economy could be ameliorated. There was, however, a refund of the deductions made in respect of junior workers at the end of the economic emergency period.

The minimum wage was redefined in 1991 to embrace total emoluments and at the same time universal applicability of minimum wage to all public sector departments and government levels was discontinued. Each government department/level was advised to pay according to its ability. However, at the beginning of 1993 an increase of 45% was effected in public sector workers' salaries. The increase was ostensibly meant to cushion the inflationary effects of the rapidly depreciating naira (against major international currencies) following the deregulation of the foreign exchange market on 5 March 1992.[7]

By September 1998, the federal government had issued a directive to increase the prevailing minimum wage and other levels of wages (especially in the public sector) perhaps due to its concern for workers' welfare. The implementation of the directive resulted in the increase of the nation's minimum monthly wage from ₦363 to ₦3,000. In addition, the directive led to substantial increases in take-home pay of all other categories of employees in the public sector. The extent of increase in pay in the private sector in response to what obtained in the public sector is, however, unknown. Following an agitation for an increase in wages by the Nigeria Labour Congress in 2000, the federal government again increased the minimum monthly wage from ₦3,000 to ₦5,500 in May 2000, while other levels of pay in at least the public sector were also increased. The increases in public sector pay were based on the report of a 19-man presidential committee set up to advise on the wage problem. The legal backing for the increases was the Wage (Minimum) Act of 2000. The extent to which state governments complied with the minimum wage aspect of the Act differed from one to the other.[8] This may have been due, to a large extent, to the financial strength (of individual states) which has been recognized since 1991 as a critical factor in public sector employers' compliance with any wage directive from the federal government. In Nigeria, the federal government appears to play some sort of overriding role in labour matters.

Some of the policies of the Nigerian government in the past three decades in the area of minimum wage and other wages for workers in the country are highlighted in Table 1.

Table 1: Some federal government policies on minimum wage and other wages from 1974 to 2000

Commission/Budget/Decree/Act Year	Recommendations	Effective
1. Udoji Commission (1972/1974)	*Awards ranged from 12% to 30%.	1974
	*Minimum wage of eq N=60 (US$100) per month.	
	*Maximum wage of eq N=1,025 (US$1,708)	
2. Minimum Wage Act of 1981	*Minimum wage of eq N=125 (US$209)	1981
3. Minimum Wage (Amendments) Decree 1990	*Minimum wage of eq N=250 (US$31)	1991
4 Federal Budget (1993)	*45% across the board increase in government workers' salaries resulted in the increase of minimum wage from N250 (US$11.4) per month to N363 (US$16.5)	1993
5. Government Directive on Wages (1998)	*Minimum wage of eq N=3,500 (US$41) for federal workers*Minimum wage of eq N=3,000 (US$35) for state government workers	September 1998
6. Minimum Wage Act of 2000.	*Minimum wage of eq N=7,500 (US$75) for federal workers*Minimum wage of eq N=5,500 (US$55) state government and private sector workers	May 2000

Note: The dollar value was arrived at using the naira–dollar exchange rate prevailing at the corresponding period.

Sources: Federal Ministry of Finance (1991); World Bank (1994); CBN (1998); *The Guardian* (2000).

(2)

The minimum wage and other wages in the public sector registered a zero rate of increase from 1981 to 1990 perhaps as a result of the requirements of the economic reform programme (structural adjustment programme) that held sway during the period.[9] Furthermore, the period from 1993 to 1998 recorded no increase in public sector pay despite the rapidly rising price level that prevailed during the period (see Appendix 1).

4. Literature review

In a review of the literature on the public–private sector wage differential in developing countries, van der Gaag et al. (1989) discern two general types of studies. One type compares average wages between the two groups of workers, either on an aggregate basis or stratified by qualification levels. The other, which is well rooted in human capital models, assesses variation in wages on the basis of individual characteristics (like education) or by job characteristics (occupation). Studies in the mould of the first type include those of Bennel (1981), Lindauer et al. (1988) and Heller and Tait (1984). Bennel (1981) in particular investigates earning differentials between public and private sectors in Africa with special reference to Ghana, Kenya and Nigeria. All these studies and others of that hue involve comparisons of average wages and such exercises have been faulted as they do not systematically analyse the role of workers' background characteristics in determining relative levels of remuneration (see van der Gaag, et al. 1989).

The work of Mincer (1958, 1974) and Becker (1964) on the human capital models of determining earnings constitutes the conceptual fulcrum for the other type of studies. The model often suggests that observed wage differences among individuals are brought about by a combined team of school and post-school investments (education, training and work experience) and a host of other socioeconomic factors like geographical location, marital status and nationality which are expected to be correlated with earnings. Examples of studies that have followed this approach to unravel wage differentials are those by van der Gaag et al. (1989), Oaxaca and Ransom (1993), Terrell (1993), Bedi (1998) and Filmer et al. (1998). Oaxaca and Ransom (1993) and Filmer et al. (1998), however, focus on World Bank staff.

In these studies, sector-wage equations are estimated and then used to decompose the observed wage gap into two parts. One part relates to differences due to characteristics of the respective groups of workers, while the other part relates to differences traceable to between group/sector differences in the returns to given individual characteristics. This second part is not attributed to productivity-enhancing background attributes and is often taken as a priori evidence to suggest that one sector (say, public) or the other room sector (private) workers are reaping economic rent or collecting a pay premium. One of the distinguishing characteristics of most of the studies is that they use cross section data, while a few have used panel data.

The findings of the various studies on developing countries have not been uniform, perhaps due to the pay structure that prevailed in the private and public sectors. Some studies (see, for example, Lindauer and Sabot, 1983; House, 1984; Terrell, 1993; Skyt-Neilsen and Rosholm, 2001; Bales and Rama, 2002; Filmer and Lindauer, 2002; Boudarbat, 2004; Hyder and Reilly, 2005) suggest that public sector workers earn varying

amounts of premium. Other studies (for example, Corbo and Stelcner, 1983; van der Gaag et al., 1989; Bedi, 1998) find that private sector workers enjoy a significant wage advantage over their public sector counterparts.

Yet studies like those of Mohan (1986), which was undertaken for Columbia, and Al-Samarrai and Reilly (2005), conducted for Tanzania, conclude that there is no significant statistical difference in the wage structures between the public and private sector. Besides these three groups of studies (and their findings) there is yet another whose conclusions are mixed (for example, Psacharopoulos et al. 1987; Steier, 1987). The study by Steier (1987), conducted in Venezuela, finds that average public wages were higher than private wages at all educational levels except post-secondary in 1975, but in 1984 public wages were lower at all schooling levels. In addition, in 1975 schooling and experience were found to be higher for workers in the private sector, but in 1984 the returns were surprisingly the same in both the private and public sectors. In addition, public sector workers enjoyed a wage advantage in the neighbourhood of 17% but this had ended by 1984. These varying results at different times, especially the dramatic turn of events that characterized public sector wages, were due perhaps to the selective freezing of government workers' wages (Steier, 1987).

5. Empirical models

Earlier studies that investigate public–private pay differentials adopted various models, most of which, in recent times, are based on the Mincerian human capital model.[10] Another feature of some of these studies is the modelling of labour market participation and sector of employment determination; two basic approaches have featured in this modelling. These approaches are based on the probit and multinomial logit models. The probit model is suitable when the problem involved has two choices (of employment), while the multinomial logit is adjudged a better alternative whenever the choices involved are more than two.

The modelling of labour market participation and sector of employment determination is usually informed in part by the need to explain the factors determining individual household member's participation in the employment sector in which he/she is identified. The modelling is also meant to make possible the estimation of a sector selection variable/term which is used to correct sector selection bias in the equation explaining individual/worker earnings.

In this study we employed the multinomial logit to model labour market participation and sector of employment determination. This was informed by the fact that an individual of working age in Nigeria may be found in any one of the six forms of labour market participation as obtainable in the Nigeria's general household surveys. These forms of labour market participation are: Formal private sector employment (as employee); public sector employment (as employee); self-employment; employment creation (as employer); membership of producer cooperative; and unpaid family employment and others (most probably as unemployed as no income is earned). The focus of this study was on the first two forms of labour market participation. We used the last form (unpaid family labour and others) as the control group or base category in the multinomial logit model.

We used the Mincerian human capital model to explain individual earnings in each of the two formal sectors of employment (public and formal private). We noted that a familiar problem in this sort of model was sample selection bias. This often occurs when unobserved characteristics of an individual influence both the wage and the sector selection process. If these characteristics are correlated with the explanatory variables in the human capital model/equation, the estimated coefficients on the variables will be biased. To deal with this problem, if it exists, we calculate selectivity terms (lambda) from the predicted probabilities of employment for each individual in a sector.[11] These terms are then included as an explanatory variable in the human capital equation as follows:

$$LnW_{is} = \beta_0 + \beta_k H_{is} + \beta_\lambda \lambda_{is} + e_{is} \quad (1)$$

where LnW_{is} is natural logarithm of monthly earnings/wage of individual i, in sector s;

H_{is} are human capital and other background characteristics of worker i in sector s;

λ_{is} is the selection correction term for individual i in sector s;

e_{is} is error term of zero mean and constant variance; and,

β_0, β_k and β_l are parameters, where k ranges from 1 to n (that is n H variables).

Equation 1 is a Mincerian human capital equation that is expressed in a compact form for the two sectors of employment (public and formal private). In the equation, individual employee wage/earnings are explained by human capital variables (education and age). If β_λ is statistically significant, there is selectivity bias. In addition, the sign taken by β_λ is of special significance. If its sign is negative, it implies negative selection into the sector/form of employment in question. A positive sign denotes positive selection into the sector concerned.

In estimating a Mincerian earning function/equation that includes a selectivity term, a problem that borders on identification normally arises. To address this problem, it is advisable to exclude one or more variables that are used to identify λ_{is} in the sector allocation/choice decision from the earnings equation. In this study, we used home ownership variable, location variable (urban/rural) and demographic characteristics of individuals to identify the selection terms (λ_{is}) and excluded these variables from the Mincerian earning equation.[12]

6. The data

Two data sets were used for the analysis in this study. The data sets were derived from the General Household Survey (GHS) of Nigeria. The GHS contains information on household (and their members) background characteristics, educational attainment and employment activities, among others. The Federal Office of Statistics in Nigeria regularly conducts the GHS and it runs from April (of one year) to March (of the following year). Data gathering is divided into four quarters. The survey is designed and executed to cover both the rural and urban areas in a nationally representative way.

In this study, we used the data for the second quarter of the 1998 GHS, and the third quarter of the 1999 GHS. The second quarter data of 1998 GHS covered July, August and September (1998). The third quarter 1999 GHS data were for October, November and December (1999). The GHS data on household background characteristics, educational attainment and employment activities were for the month preceding the month of survey. The second quarter data of the 1998 GHS thus related to the period immediately before the increase in the public sector wage in September 1998. The third quarter data of 1999 GHS were gathered more than a year after the public sector wage review in 1998.

The two data sets were restricted to individuals whose ages ranged from 15 to 60. Such individuals were assumed to constitute the nation's labour force. The retirement age in Nigeria is 60 for most public and formal private sector employment. Students within this age bracket (15 to 60) were, however, excluded. The relevant data in respect of individuals in each of the surveys are contained in two separate data files. One relates to the data on the household as a unit, while the other focuses on individual members of the household. The two were merged using Stata Version 8 (a statistical software and econometric software). This permits in particular the identification of individual's location (urban/rural) and of whether the respondent/individual owns a home or not.

Next we describe how we derived the variables used in the models. In the two data sets, four educational levels (without education, primary, secondary and post-secondary) were identified. We represented each level with a dummy variable and identified each individual/worker with the highest level attained. We arrived at the years of schooling by assuming 0, 6, and 12 years as the learning periods respectively for those without education, with primary, and with secondary education. The number of years of schooling for those who had attained the post-secondary level was 16. There were no data on workers' experience in either their current or previous jobs. We had to derive general experience for each of the employees by subtracting from their ages, the years of schooling and six years of pre-school age. We used information on secondary job

of individuals/workers as a proxy for their moonlighting activities. GHS recognizes six occupational groups to which individuals can belong: Professional, sales, services, agriculture, production and clerks.

Some descriptive statistics of variables that relate to the whole labour force both before and after public sector wage review in 1998 are presented in Table 2. The Table shows that that there were no significant differences in the household demographic variables, educational levels, and occupational groups during the more than one year-period in which stellar changes were registered in the public sector wage structure. These, of course, are not unexpected in view of the period involved.

Table 2: Descriptive statistics of Nigeria's labour force before and after public sector wage review in 1998

	Before wage review (N = 10,891)		After wage review (N = 11,773)	
	Mean	**Standard Dev.**	**Mean**	**Standard Dev.**
Household demographic and other variables				
Age	37.56	11.70	37.44	11.87
Experience	26.80	13.76	26.66	13.85
Years of schooling	4.79	5.34	4.80	5.38
Gender (Male = 1)	0.64	0.48	0.62	0.49
Marital status (Married = 1)	0.73	0.44	0.73	0.44
Household size	1.80	1.54	1.79	1.44
Own home	0.69	0.46	0.71	0.46
Household head	0.61	0.49	0.59	0.49
Urban/rural (Urban = 1)	0.26	0.44	0.26	0.44
Moonlighting	0.08	0.26	0.07	0.25
Monthly income/earnings (in 1985 prices)	₦67.39	87.40	₦102.60	350.62
Educational levels				
No education	0.49	0.50	0.49	0.50
Primary education	0.25	0.44	0.25	0.43
Secondary education	0.21	0.41	0.21	0.40
Post-secondary education	0.05	0.21	0.05	0.22
Occupational groups				
Professional	0.06	0.24	0.06	0.24
Sales	0.22	0.41	0.21	0.41
Services	0.01	0.11	0.01	0.12
Agriculture	0.60	0.49	0.60	0.49
Production	0.06	0.24	0.08	0.27
Clerks	0.05	0.21	0.04	0.19

Source: Computations by the author from the Nigeria General Household Survey (2nd quarter data of 1998 and 3rd quarter data of 1999). The survey was conducted by the Federal Office of Statistics (now renamed the National Bureau of Statistics), Lagos, Nigeria.

At least 49% of Nigeria's labour force lacked the lowest educational level (primary); this is corroborated by the low average years of schooling which was less than the years of schooling at the primary education level. Another notable feature of the labour force

was the dominance of male labour, accounting for between 62% and 64% of the nation's labour force. Urban dwellers accounted for 26% of the labour force, while at least 60% of the nation labour force was employed in agriculture (which is rural-based). The next important occupation in Nigeria is sales, which embraces all activities that have to do with buying and selling. Between 7% and 8% of the labour force reported moonlighting activities. This probably constituted incomplete reporting, as many employed Nigerians do engage in work besides their primary occupation.

Of special significance in the statistics presented in Table 2, was the dramatic change that characterized the average income of the labour force after the public sector wage review in 1998. This was, however, accompanied by a higher dispersion in income distribution (from ₦87.40 to ₦350.62) thereby suggesting an increased level of income inequality in the country. There is no doubt that the wage review might have played a significant role in the stellar change (of 51.80%) registered in the average income (in 1985 prices) of the labour force during the period under review. This is more so as the economy was undergoing a slowdown on account of the drastic reduction in oil export revenue, traceable to the meltdown in the East Asian economies during the same period. Available statistical evidence shows that a reduction of about 28% was registered in oil export revenue in the 1998 fiscal year alone.[13] Oil exports account for more than 90% of Nigeria's export earnings.

Other developments in the economy during the period still allude to the fact that the public sector wage must have played some decisive role in the impressive growth recorded in the average income/earnings of the nation's labour force. A tight monetary policy coupled with good harvests during 1999 resulted in a single-digit inflation rate of 6.6% (CBN, 1999). Moreover, the gross domestic output grew by 2.7% against the minimum target of 3.0% (CBN, 1999).

Further developments in 1999 relate to the observed stability in the interest and exchange rates which also contributed to the relative macroeconomic stability during the period. Labour unemployment, as measured by composite unemployment rate, was at a level of 3.3% in June 1999 compared with 3.9% in the corresponding period in 1998. However, industrial relations were strained during the year, as the number of trade disputes declared increased from 16 in 1998 to 52 (in 1999). Out of the 52, about 37 gave rise to work stoppages. The upsurge in trade disputes was mainly due to disputes between most state governments and civil servants over the implementation of the requirements of the new public sector pay review. The increase in public sector pay must have contributed to the dramatic increase in the labour force average monthly income/earnings, as these other developments in the economy could not have led to such a large increase in the nation's average monthly income/earnings.

Since the analysis of public-private wage differential in this study was based on urban male employees in both the public and private sectors, we presented the descriptive statistics and the distribution of monthly income/earnings for this cohort of employees by decile for the two sectors in Tables 3 and 4 respectively. The focus on urban male employees was informed, first, by the fact that they constitute a homogeneous group. Another reason was that similar studies on developing countries have used mostly samples of male employees[14] and we hoped our choice of male sample (though only urban) could provide some basis for comparing our results with those of other studies that employ similar data sets.

Table 3: Descriptive statistics of urban male employees before and after public sector wage review in 1998

	Before wage review				After wage review			
	Private sector		Public sector		Private sector		Public sector	
Sample size	234		267		153		347	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Household demographic and other variables								
Age	38.01	9.46	37.98	8.63	37.81	9.64	40.75	8.82
Experience	20.95	10.94	20.20	10.04	22.11	11.02	22.95	10.44
Years of schooling	11.09	4.45	11.78	4.22	9.71	4.99	11.80	4.78
Marital status (Married =1)	0.69	0.46	0.73	0.44	0.70	0.46	0.80	0.40
Household size	1.22	0.94	1.15	0.80	1.25	0.95	1.08	0.62
Own home	0.17	0.38	0.27	0.44	0.19	0.39	0.25	0.43
Household head	0.92	0.27	0.94	0.23	0.90	0.29	0.97	0.17
Moonlighting	0.06	0.24	0.04	0.20	0.01	0.80	0.01	0.12
Monthly income (in 1985 Prices)	₦142.41	185.22	₦112.95	90.57	₦175.29	103.08	₦255.36	326.84
Educational levels								
No education	0.05	0.23	0.06	0.23	0.12	0.33	0.08	0.27
Primary education	0.23	0.42	0.13	0.34	0.25	0.44	0.14	0.34
Secondary education	0.44	0.50	0.50	0.50	0.44	0.50	0.39	0.49
Post-Secondary education	0.28	0.45	0.31	0.46	0.18	0.39	0.39	0.49

Where Std. Dev. refers to Standard Deviation.
Source: Computations by the author from the Nigeria General Household Survey (2nd quarter data of 1998 and 3rd quarter data of 1999). The survey was conducted by the Federal Office of Statistics (now renamed the National Bureau of Statistics), Lagos, Nigeria.

The information in Table 3 shows that the average age of private sector urban male employees during the period was similar to that of public sector urban male employees. The average years of experience of the two groups of employees were also similar. This can be explained by the closeness of their average ages. However, public sector employees had a higher number of years of schooling than their private sector counterparts and this is understable since the percentage of public sector employees with secondary and post-secondary education was higher than that of private sector employees.

More public sector employees owned their houses than did private sector employees. The higher percentage of public sector workers who were homeowners may be explained by the various housing schemes implemented for public sector employees before the structural adjustment policies put an end to the practice. The percentage of public sector employees who were household heads was higher perhaps due to the higher percentage that were married. The percentages of employees engaged in secondary job activities (moonlighting) were lower after the public sector wage review in 1998. This may be attributed to the upward review in public sector wages with its positive spillover effects in the private sector. Since the wage review bolstered the real income of employees in the two sectors, it is most likely that engaging in secondary job activities became less attractive. It then follows that some additional hours might have been allocated to leisure after the wage review.

The average monthly income (in 1985 prices) of public sector employees increased by about ₦140 after the wage review while that of private sector employees increased by ₦32.88. These increases were accompanied by higher variability (as measured by standard variation) in public sector wages and lower variability in private sector wages. The distribution of income (of the two cohorts of employees) by decile before and after the public sector wage review in 1998 is presented in Table 4.

Table 4: Distribution of urban male employees' monthly income (in 1985 prices) by decile before and after public sector wage review in 1998

	Before wage review		After wage review	
	Private sector	Public sector	Private sector	Public sector
Sample size	234	267	153	347
Decile	₦	₦	₦	₦
10	45.97	45.97	74.54	106.93
20	61.29	55.16	91.65	128.91
30	76.61	64.35	122.20	152.75
40	91.93	76.61	137.48	177.19
50	107.25	91.93	152.75	195.52
60	122.58	107.25	183.30	229.13
70	153.22	122.58	204.69	259.68
80	183.86	153.22	229.13	324.44
90	228.30	203.16	293.28	458.25
100	1109.75	919.31	672.10	1374.76

Source: Computations by the author from the Nigeria General Household Survey (2nd quarter data of 1998 and 3rd quarter data of 1999). The survey was conducted by the Federal Office of Statistics (now renamed the National Bureau of Statistics), Lagos, Nigeria.

As shown in Table 4, before the public sector wage increase in September 1998, the private sector wage profile (in 1985 prices) for urban male employees was better than that of the public sector (for virtually all the deciles). This perhaps provides some reason behind the brain drain (of mainly highly skilled labour) from the public to private sector before 1998.[15] The poor public sector pay profile (before September 1998) can be blamed on the stagnation that characterized salaries from 1993 to August 1998 on account of the

Federal Government policy to contain the growth of public sector pay. More than a year after the pay review, public sector pay (in 1985 prices) for every decile was higher than that of the private sector. The pay advantage can, of course, be traced in large measure to the implementation of the requirements of the public sector pay review, at least in the public sector, where the review was much publicized and fought for by the various public sector labour unions. The case for the implementation of the pay review was pursued vigorously by the militant central labour union, Nigeria Labour Congress.

7. Participation and sector of employment

The results of the estimated multinomial logit models are presented in Table 5. The dependent variable in each of the models was represented by 1, 2, 3, 4, 5 or 0 if the individual (member of the household) concerned is respectively a private sector employee, public sector employee, own account worker, producer cooperative member, employer of labour or unemployed/unpaid family worker. Among the explanatory variables considered were marital status and household headship, which were expected to capture the responsibility associated with marriage and being a household head respectively. The responsibility was assumed to influence an individual's decision to participate in the labour market segments positively.

Another explanatory variable was household size, which could represent both obligation and resources. In case of obligation, one would expect it to influence participation positively but negatively in case the variable functions more as an indicator of resources. Yet another variable considered, which also serves as an indicator of resources was home ownership (own home) which should negatively influence participation. The decision to participate (especially as an employee in either the private or public sector organization) would be positively affected by the level of schooling. Being an urban dweller was expected to influence the decision to participate positively in the formal labour market sectors, which are common in the urban areas. The variable for this was named urban/rural. Being young was expected to increase an individual's probability of participation in the various labour market sectors. This could be explained by an individual's age while participation was expected to decline with age. This was measured by the age squared variable in the multinomial logit models.

In order to verify whether the sectoral decomposition of the nation's labour market adopted for the multinomial logit models was justified, I conducted Wald tests of the equality of the slope parameter vectors associated with various employment choices. The null hypothesis was rejected at 0.000 level of significance. The same level of significance and decision characterized the null hypothesis with regard to the equality of schooling effects, which were represented in the models by primary, secondary and post-secondary education. The results of these tests show that Nigeria's labour market is indeed not homogeneous and so the sectoral decomposition adopted was justified, as the determinants of entry into the different sectors of the labour market were not the same. The results presented in Table 5 are interpreted in the next section. These results relate to multinomial logit models for explaining the determinants of entry into the different sectors of the labour market in the periods before and after public sector wage review in 1998. The coefficients reported are odd ratios, which are the exponentiated coefficients of the estimated multinomial logit models.

Table 5: Estimated multinomial logit models of labour force participation before and after public sector wage review in 1998

	Private sector employees		Public sector employees		Own account workers		Producer coop members		Employers of labour	
	Before	**After**	**Before**	**After**	**Before**	**After**	**Before**	**After**	**Before**	**After**
Sample size	546	340	636	827	7433	8290	1954	1201	80	69
Percentage (%)	5.01	2.89	5.84	7.02	68.25	70.42	17.94	10.20	0.73	0.59
Variables:										
Head	5.09***	42.86***	7.88***	67.84***	8.38***	55.61***	0.02***	0.04***	1.99	11.37**
	(6.01)	(11.58)	(7.12)	(14.58)	(8.93)	(18.42)	(-11.29)	(-4.26)	(0.99)	(2.00)
Marital status	2.23***	1.28	3.22***	1.70**	4.06***	2.01***	3.13***	1.51***	3.58***	1.75
	(3.66)	(1.34)	(5.30)	(3.24)	(7.11)	(5.74)	(5.22)	(3.24)	(3.55)	(1.50)
Gender	0.62**	1.69**	0.60**	1.08	0.24***	0.71**	0.54***	0.79**	1.35	0.74
	(-2.20)	(2.52)	(-2.18)	(0.42)	(-7.49)	(-2.90)	(-3.18)	(-2.00)	(0.62)	(-0.70)
Household size	1.15**	0.85*	1.09	0.88*	0.82***	0.84***	1.00	0.92***	0.69	0.13*
	(2.66)	(-1.83)	(1.32)	(-1.70)	(-3.80)	(-6.36)	(0.05)	(-3.59)	(-1.20)	(-1.90)
Own home	0.53***	0.31***	0.53***	0.35***	1.16	0.76**	2.20***	1.23	0.46**	0.38***
	(-3.32)	(-6.75)	(-3.31)	(-7.00)	(0.91)	(-2.43)	(4.44)	(1.61)	(-2.49)	(-3.14)
Age	1.28***	1.31***	1.43***	1.48***	1.21***	1.25***	1.00	1.05*	1.22**	1.38***
	(5.04)	(5.75)	(6.70)	(9.34)	(4.81)	(9.19)	(0.08)	(1.85)	(2.16)	(2.88)
$(Age)^2/100$	0.75	0.75***	0.65***	0.66***	0.79***	0.79***	0.97	0.95	0.81*	0.70**
	(-4.41)	(-4.74)	(-6.17)	(-7.70)	(-4.34)	(-7.04)	(-0.46)	(-1.37)	(-1.91)	(-2.56)
Urban/rural	0.92	6.49***	0.68**	4.98***	0.53***	3.10***	0.12***	1.03	0.85	6.18***
	(-0.50)	(10.73)	(2.15)	(10.47)	(-4.05)	(9.07)	(-12.72)	(0.19)	(-0.55)	(6.01)
Primary education	1.21	9.46***	1.92**	14.35***	0.45***	2.71***	0.25***	1.33***	0.55	4.74***
	(0.73)	(9.95)	(2.23)	(12.66)	(-3.69)	(9.50)	(-6.44)	(2.68)	(-1.53)	(3.00)

continued next age

Table 5 Continued

account workers	Private sector Producer coop employees members		Public sector Employers employees of labour		Own
	Before	After	Before	After	Before
After	Before	After	Before	After	
Sample size	546	340	636	827	7433
8290	1954	1201	80	69	
Percentage (%)	5.01	2.89	5.84	7.02	68.25
70.42	17.94	10.20	0.73	0.59	
Variables:					
Secon. education	1.86**	21.48***	5.35***	66.67***	0.34***
3.71***	0.13***	1.40***	0.79	17.18***	
	(2.42)	(13.20)	(5.96)	(19.74)	(-5.10)
(10.52)	(-9.22)	(2.62)	(-0.60)	(6.07)	
Post-Sec. education	2.22**	105.14***	7.57***	562.82***	0.05***
3.49***	0.02***	0.83	0.57	273.95***	
	(2.41)	(10.39)	(5.81)	(14.67)	(-9.81)
(3.12)	(-7.99)	(0.35)	(1.18)	(9.76)	

Sample size: Before = 10,891, After = 11,773, LR chi2 (55): Before = 8711.55, After =8685.75, Prob>chi2: Before = 0.0000, After = 0.0000,
Pseudo R^2 : Before = 0.3977, After = 0.3638, Log Likelihood: Before = -6595.8709, After = -7594.6833.
Note: The variables' coefficients are odd ratios, which are referred to as relative risk ratios (rrr) in Stata program. The figures in brackets are z-statistics.
*** 1% level of significance.
** 5% level of significance.
* 10% level of significance.
"Secon." means secondary while "Post-Sec." means post-secondary.
The control group or base category is made up of unemployed and unpaid family members.
Source: Estimations based on the Nigeria General Household Survey data for second quarter (July, August and September), 1998 and for third quarter (October, November and December) 1999.

Results in Table 5 show that the underlying coefficients of the odds ratios attached to household head and marital status had the right signs and they were significant across the various labour market segments (except the negative but significant coefficient sign for household head in the case of producer cooperative members) in the periods before and after the increase in public sector wage.[16] The odds in favour of household heads increased across the labour market segments after the public sector wage review. The highest odds of 67.84 were registered with regard to public sector employment for household heads after the wage review. This shows that household heads were 67.84 times more likely to be employees in the public sector (relative to being unemployed or unpaid family workers) than household members who were not heads. The next labour market segment in which household heads are more likely to be found following the wage review is the one populated by own account workers. Household heads were 0.04 times less likely to be engaged as producer cooperative members after the wage review. The odds (in favour) of household heads to be private sector employees increased by 5.09 times before wage review while odds increased by 42.86 times after wage review.

The levels of odds (in favour) of marital status declined across labour market segments after public sector wage review. The highest odds of 2.01 characterized the own account

workers' segment after the wage review. This implies that married members of households were 2.01 times more likely to be own account workers (relative to being unemployed or unpaid family workers) than household members who were not married. After the public sector wage review, married household members were 1.70 times (compared with 3.22 times before wage review) more likely to be public sector workers (relative to being unemployed or unpaid family workers) while the same cohort of household members was 1.28 times more likely to be private sector employees (relative to being unemployed or unpaid family workers) than household members outside the cohort.

The odds in favour of male members of household to be engaged in the various labour market segments increased after the wage review perhaps due to increased returns to efforts. The only exception was the "Employers of labour" segment whose underlying coefficient was not significant. All this may be partly traced to the small sample size that characterizes the segment both before and after the wage review. The odds in favour of household male members being private sector employees increased from 0.62 times before wage review to 1.69 times after the wage review while the case of the same genre of household members being engaged as public sector employees increased from 0.60 times before wage review to 1.08 times after the wage review. The odds against employment prospects of household members for every increase in household size (in the various sectors of labour market) increased by a small margin (of less than 1) after the wage review.[17] The same marginal increase was apparent in the odds against household members with their own homes being engaged in the various segments of the labour market after the wage review. These results suggest that the public sector wage review in 1998 bolstered the income earning prospects and the effective participation of the concerned household members across the five segments of the Nigerian labour market. The results in respect of household members with their own homes indicated that such an asset holding should ordinarily increase the odds against participation in the various labour market segments substantially both before and after any public sector wage review.

The coefficients attached to age variables (age and age squared) had the right signs and were significant in most cases. With regard to age, the levels of odds in favour of participation across the five labour market segments registered some increases after wage review. For every additional year of age, the odds (in favour) of household members participating as private sector employees increased by 1.28 times before wage review while the odds increased by 1.31 times after wage review. However, the odds (in favour) of household members being employed as public sector employees increased by 1.43 times before wage review while the odds increased by 1.48 times after wage review. For every additional year of age, the odds of household members entering the labour market as own account workers increased by 1.21 times before wage review while the odds increased by 1.25 times after wage review. Each additional year of age would result in the odds of household members being employers of labour increasing by 1.22 times and 1.38 times before and after wage review respectively. The results in respect of age-squared were such that the odds against old household members being involved in the various segments of the labour market range from 0.65 to 0.97 times during the periods before and after wage review.

The coefficients of urban/rural variable were significant in most labour market

segments with negative odds predominating in the period before wage review. The negative odds were implied by the negative sign of the underlying coefficients. This, of course, means that the odds are against household members (that are based in urban areas) in securing employment opportunities in the various segments of the labour market before wage review. However, the odds against were less than 1 in all the cases while the odds in favour after wage review were greater than 1, ranging from 1.03 to 6.49.

The levels of odds attached to education variables across labour market segments were higher after wage review and their underlying coefficients (both before and after wage review) were significant in most cases from 5% to 10% (level of significance). For household members with primary education, the highest odds (in favour) before and after wage review occurred in the labour market segment made up of public sector employees. This suggests that the least educated were selected into that segment of Nigeria's labour market where they were better remunerated perhaps under the public sector-mandated minimum wage. Again the highest odds (in favour) of household members that had either secondary or post-secondary education were associated with being employed as public sector employees both before and after wage review. The lowest odds were common with the segment populated by producer cooperative members both before and after wage review. This can be explained by the fact that the job involved under producer cooperative arrangement, which is rural-based and agricultural-related, does not require much education.

The increases in the levels of odds in favour of and the marginal increases in the odds against household members being selected into the various segments of the nation's labour market after the wage review suggest that the review must have played some role in the absence of any other fundamental changes in the labour market. Hence, the wage review had some decisive effects on the household members' participation decisions in the various segments of the Nigeria labour market.

8. Estimated wage equations

The results of the estimated wage equations are presented in Tables 6 and 7. The explanatory variables considered were age, age squared and educational levels of urban male household members employed as private and public sector employees. The dependent variable was the natural logarithm of monthly wages/salaries. In Nigeria, private and public sector employees are in most cases remunerated monthly. Age as a variable was meant to capture returns to experience while age squared is introduced to measure the often observed parabolic decline in earnings with age.

Table 6: Estimated log-monthly wage equations for urban male employees

	Before wage review		After wage review	
	Private sector	**Public sector**	**Private sector**	**Public sector**
Constant	1.2515***	1.4022***	3.3943***	3.3703***
	(4.61)	(5.65)	(6.29)	(5.62)
Age	0.0302**	0.0107	0.0671**	0.0728***
	(2.19)	(0.83)	(2.44)	(2.50)
$Age^2/100$	-0.0298*	-0.0044	-0.0740**	-0.0757**
	(-1.65)	(-0.27)	(-2.15)	(-2.15)
Primary education	-0.0103	0.1862**	-0.0177	0.0054
	(-0.12)	(2.40)	(-0.13)	(0.04)
Secondary education	0.0686	0.2061***	0.1292	0.1610
	(0.86)	(2.99)	(1.03)	(1.31)
Post Sec. education	0.2122***	0.3103***	0.8177***	0.5609***
	(2.59)	(4.36)	(5.71)	(4.65)
Sample Size	234	267	153	347
F Statistic	8.51	7.55	15.84	14.92
Prob>F	0.00	0.00	0.00	0.00
Adjusted R^2	0.14	0.11	0.33	0.17

Note that the figures in brackets are t-statistics of the corresponding coefficients.
Where *** implies 1% level of significance.
** implies 5% level of significance.
* implies 10% level of significance.
Source: Estimations based on the Nigeria General Household Survey data for 2nd quarter (July, August and September) 1998 and for third quarter (October, November and December) 1999.

Three educational variables were included in the model. These were primary education, secondary education and post-secondary education. The coefficients attached to these levels of education were expected to be positive and to increase according to the levels attained by the employees. The coefficients attached to age and age-squared were expected to be positive and negative respectively. The results in Table 6 specifically relate to the estimated equations of logarithm of monthly wage of urban male employees in the private and public sectors. The explanatory powers of the estimated equations (with and without selectivity correction terms) in terms of adjusted R^2 ranged from 11.0% to 35%. This range is plausible in light of the ranges of adjusted R^2 found in similar empirical studies that use cross-sectional data. The entire slope coefficients of each of the equations were highly significant as indicated by the F statistics and its significance levels.

Yearly returns to experience were on the low side across sectors. They were, however, within the range reported in Hofmeyr (2002) for South Africa, and Glick and Sahn (1997) for Guinea (French-speaking, West African country). Age-squared had the right negative sign and was also significant across sectors (except in the public sector before wage review).

The results in Table 6 show that other variables have the right signs except the primary education variable in the periods before and after wage review for the private sector. Some of the variables were statistically significant at any level from 1% to 10%. Before the wage review in 1998, the returns to experience (age) in the private sector were more than double those registered in the public sector though the coefficient attached to the experience variable in the public sector was not significant. This seems to provide some explanation for the brain drain witnessed in the public sector before the wage review in September 1998. The coefficient attached to age-squared shows that the decrease in earnings (as an employee becomes old) was higher in the private sector than in the public sector in the period before the wage review. This may be explained by the better pension and retirement benefits in the Nigerian public sector.

Before and after the wage review, the returns to schooling increased with the level of education attained by urban male employees. This finding agrees with those of van der Gaag and Vijverberg (1989), Glick and Sahn (1997) and Nielsen and Westergard-Nielsen (2001). However, the result contradicts that of Psacharapoulos (1994), whose study seeks to provide comprehensive update of the profitability of investment in education at a global scale. In the present study, the primary education variable in the private sector that is wrongly signed is not significant at any level from 1% to 10%.[18] Before the wage increase, the returns to educational levels were higher in the public sector than in the private sector despite the zero increase in public sector wage from 1993 to August 1998.

After the wage review, the returns to experience for urban male employees became higher in the public sector than in the private sector while the reduction in earnings as employees grew older was slightly larger in the public than in the private sector. The returns to post-secondary schooling became higher in the private sector while the returns to secondary education were higher in the public sector perhaps due to the wage review. This suggests that the wage review succeeded in bettering the lot of public sector employees with secondary education while public sector employees with post-secondary education were still poorly remunerated when compared with their private

sector counterparts.[19] However, the coefficients attached to education variables besides post-secondary education were not significant at reasonable levels in the public sector wage equation. The results of estimating the wage equations while correcting for sector selection bias, which is captured by a variable named lambda, are presented in Table 7.

Table 7: Selectivity-corrected log-monthly wage equations for urban male employees

	Before wage review		After wage review	
	Private sector	Public sector	Private sector	Public sector
Constant	1.1164*	2.2332***	2.1963***	-9.0778
	(1.94)	(3.26)	(2.53)	(-1.25)
Age	0.0297**	0.00002	0.0371	0.0514
	(2.12)	(0.00)	(1.15)	(1.63)
$Age^2/100$	-0.290	-0.0086	-0.0407	-0.0544
	(-1.59)	(-0.45)	(-1.04)	(-1.46)
Primary education	-0.0056	0.1692**	-0.0642	0.0292
	(-0.07)	(2.15)	(-0.47)	(0.21)
Secondary education	0.0798	0.1248	0.0693	0.2202*
	(0.88)	(1.34)	(0.54)	(1.73)
Post Sec. education	0.2397*	0.1027	0.7794***	0.6840***
	(1.82)	(0.59)	(5.41)	(4.89)
Lambda	0.1905	-0.7986	2.3699*	31.7805*
	(0.27)	(-1.30)	(1.75)	(1.72)
Sample size	234	267	153	347
F-statistic	7.08	6.59	13.90	13.00
Prob>F	0.00	0.00	0.00	0.00
Adjusted R^2	0.14	0.11	0.34	0.17

Note that the figures in brackets are t-statistics of the corresponding coefficients.
Where *** implies 1% level of significance.
** implies 5% level of significance.
* implies 10% level of significance.
Source: Estimations based on the Nigeria General Household Survey data for 2nd quarter (July, August and September) 1998 and for third quarter (October, November and December) 1999.

The results in Table 7 show that the sector selection variable (lambda) is only significant in determining wages in the two sectors in the period after the wage review. Of particular interest is the higher size of the coefficient attached to the selection variable in the public sector wage equation (after the wage review), which further explains the higher relative risk ratios attached to participation of household members with any of the educational levels after the wage review (see Table 5). The negative sign of lambda (though not significant) in the public sector wage before the wage review suggests that there was negative selection of employees into the public sector. This seems to confirm what really happened in the sector during the period of stagnation in public sector pay, as the phenomenon of brain drain from the public sector assumed a topical and disturbing dimension. The positive sign (though not statistically significant) of the sector selection variable in the case of the private sector wage equation before the wage review implies

that there was positive selection of employees into the private sector which may be expected, as there is evidence of brain drain from the public sector to the private sector. The positive sign assumed by the selectivity term in the period after the wage review suggests that there is positive selection into the two sectors perhaps due to the better public sector pay profiles and the spillover effects of the pay review in the public sector.

Following the introduction of the selectivity term, the returns to educational levels were moderated upward in the private sector wage equation while the returns to educational levels were moderated downward in the public sector wage equation before the wage review. However, in the period after wage review, the results were the opposite. While age variables had the right signs, it was only in one of the eight cases that there was statistical significance. On the whole, the sector selection term was only relevant for this analysis (of pay differentials) in the period after the wage review in 1998, as the statistical significance of the term conferred some measure of reliability on the estimated coefficients of the equations.

9. Public–private wage differentials and their decompositions

Analyses of the pay differentials are contained in Table 8. Two sets of estimated wage equations feature in the analyses of the pay differential. These are the equations with and without the selectivity term. Estimated wage equations are used without the selectivity term in the period before the wage review while wage equations with the selectivity term are used in the period after the wage review to decompose wage differentials between the two segments of the labour market. As shown in Table 8, there are differences in the predicted means of natural logarithm of earnings of employees in the two sectors.

Table 8: Public–private wage differential for the periods before and after the wage review in 1998

	Before wage review	After wage review
Mean ln monthly wage—private sector	2.0316	5.0076
Mean ln monthly wage—public sector	1.9660	5.3082
Overall ln wage differential	0.0656	0.3006
Antilog of (ln) wage differential	1.0678	
1.3507		
Contribution of employees' characteristics	-0.01648	-0.0308
Contribution of returns to characteristics[20]	0.08208	0.3314
Percentage contribution of characteristics	-25%	-10.25%
Percentage contribution of returns	125%	110.25%

Source: Computations from descriptive statistics of urban male employees and estimated wage equations.

The predicted mean of the natural logarithm of earnings of employees in the private sector was higher than that of the employees in the public sector before the wage review in 1998 (Table 8). However, the opposite situation prevailed after the wage review. The predicted means of natural logarithm of earnings in the sectors for the two periods are in line with the descriptive statistics (mean of monthly income) and the distribution of monthly income of urban male employees by decile presented earlier in this paper.

A much more meaningful description of the differential in the means of natural log earnings can be obtained by taking the antilog of the differential. This is carried out for each period in Table 8. For the period before the wage review in 1998, the antilog shows that public sector urban male employees suffered a pay disadvantage of 6.78% while the same cohort of employees enjoyed a pay advantage of 35.07% after the wage review in

1998. The pay disadvantage in the public sector before the wage review can be traced to a great extent to the stagnation that characterized the public sector pay structure from 1993 to August 1998. The pay disadvantage might have been responsible to a great extent for the brain drain observed by Ojo (1998) in the public sector before 1998.

The differential in predicted means of logarithm of earnings in similar studies is usually decomposed into two parts. One part is the differential traceable to differences in mean employee's characteristics while the other part is taken to be due to differences in the returns to those characteristics. The latter differential is taken as evidence of economic rent. Empirically, the first part is due to differences in the average levels of education, experience, and other covariates (that is, other explanatory variables). The second part of the differential is derivable from the differences in the coefficients (both intercept and slopes) in the earnings equations.[21] The entire differential in pay in the periods before and after the wage review in 1998 was due to differences in returns to characteristics with returns to characteristics of employees in the private sector leading in the period before the wage review (Table 8) while the returns to characteristics of public sector were higher than those of their private sector counterparts in the period after the wage review (see Tables 6 and 7).

Assuming that there was not much difference between the public and private sector pay shortly after the increase in public sector pay in January 1993, one basic conclusion that can be drawn from the small size of the differential in public–private sector pay before the wage review in 1998 is that private sector pay must have registered a paltry rate of increase given the fact that public sector pay recorded zero increase during the period. The general lull in business activity during this period in Nigeria may provide some explanation for the small rate of increase in private sector pay. Another probable factor for the state of private sector pay during this period is that the public sector pay structure seems to dictate to a certain extent what happens to comparable private sector pay structures, or any other pay structures for that matter, in the Nigerian labour market. This can be deduced from the descriptive statistics (which relate to the periods before and after wage review) presented earlier for the entire labour force.

10. Summary of findings and conclusion

This study investigated the impact of the government wage review in 1998 on the pubic–private sector wage differential in Nigeria. The investigation was based on urban male employees in the public and private sectors. The study found that before the wage review, public sector employees had a pay disadvantage of 6.78%. This meagre differential in public–private sector pay in the face of the stagnation that permeated the public sector pay levels for a long time before the wage review may be explained first by the downturn in business activity. This downturn could have limited private sector pay increases, and may be explained by the seemingly effective impact of the current public sector pay on private sector and other pay structures in the Nigerian labour market. The study also found that after the wage review, public sector employees were better remunerated (to the tune of 35.07%) than their private sector counterparts.

While the whole gamut of the pay disadvantage in the public sector before the wage review was mainly due to returns to employees' human capital characteristics, the pay advantage that characterized the public sector pay structure after the wage review was equally traceable (in its entirety) to the returns to human capital characteristics of public sector workers. The government pay review therefore addressed, to some extent, the ostensibly poor public sector pay that prevailed before September 1998.

There is still much to be done to redress at least the real public sector pay after the 1998 wage review, as its level (when measured by the state of real minimum wage) is still below what obtained in 1982 when the nation's economy started to register profound declines in key macroeconomic indicators following the collapse in the prices of crude oil exports (see Appendix 2).

Notes

1. See Ojo (1998) for evidence of the brain drain from the public to the private sector during period before 1998.

2. Newspaper reports indicate that there were some running crises between most state governments and their workers' unions over the non-implementation of the wage review in its entirety in the last months of 1998 and in the early part of 1999 The state governments complained of lack of funds to implement fully the requirements of the 1998 wage review/ directive (*The Punch*, 6 October 1998, pp.1–2; *Business Times*, 12 October 1998; *Nigerian Tribune*, 10 November 1998; *The Punch*, 12 January 1999; *The Guardian*, 23 February 1999, pp.1–2; *Nigerian Tribune* 26 April 1999). This author has no knowledge of any study conducted on the compliance level of formal private sector employers to any public sector-mandated wage review/directive in Nigeria.

3. The classifications adopted here are based on the survey instrument used by the Federal Office of Statistics (in Nigeria) to collect household data under its General Household Survey. In Part B of the instrument, the six categories of respondents are identified.

4. The real minimum wage rose dramatically during the periods of wage reviews (see Appendix 2). This implies that all other levels of pay (in real terms) in the public sector might have registered some increases.

5. See Fapohunda (1979), Anyanwu et al. (1997) and *The Guardian*, 1 May 2000, pp.1–2.

6. The second last Commission was set up to provide information on pay disparities within the public and the private sectors and between these two sectors. The panel/commission report was submitted in February 2006. The last panel was set up in December 2005 and, as at the time of writing this study, was still conducting a nationwide tour to collate people's views on the consolidation of benefits in the public service.

7. The federal government discontinued this policy of backdating wage increases in the past two decades, perhaps on account of the fiscal and inflationary implications.

8. See *New Nigerian* (daily newspaper) of 25 April 1987.

9. Other policy measures taken during 1992 in particular included a waiver of import duty on transport vehicles and their spare parts to help bring down the cost of transportation for the people.

10. Among the states are: Ogun, ₦6,500 (*The Punch*, 17 August 2000); Imo, ₦6,000 (*The Punch*, 18 August 2000); Ondo, ₦6,500 (*The Guardian*, 11 August 2000); Ebonyi, ₦6,500 (*The Punch*, 11 August 2000); Oyo, ₦6,500 (*The Punch*, 14 August 2000); Taraba, ₦6,500 (*The Punch*, 15 August 2000); Ekiti, ₦6,000 (*The Guardian*, 4 August 2000); Edo, ₦6,500 (*The Comet*, 4 September 2000); Enugu, ₦6,000 (*The Punch*, 3 August 2000); Bayelsa, ₦7,500 (*The Guardian*, 30 May 2000); Rivers, ₦7,500 (*The Guardian*, 6 June 2000); Abia, ₦6,000 (*The Guardian*, 3 July 2000); and Kaduna, ₦5,600 (*The Guardian*, 29 June 2000). These sources are daily newspapers and the relevant sections are the ones on minimum wage. There are 36 states in Nigeria.

11. This was to some extent due to the structural adjustment policies introduced in Nigeria in the second half of the period. The policies sought (among others) to hold down the public sector wage bill (which was operationalized by freezing public sector workers' pay) to achieve fiscal viability (see World Bank, 1994).

12. The Mincerian approach/equation is based on the assumption that wages are set equal to the marginal productivity of the wage earners.

13. The derivation of the lambda variable (l), which is referred to as the inverse Mill's ratio, follows the two-step procedure of Lee (1983). The formula for lambda is: $l_{ij} = j\ (Q^{-1}[P_{ij}])/P_{ij}$. Where j (Ö) refers to the standard normal density function, while Q(Ö) relates to the cumulative distribution function. P_{ij} is the predicted probability of observing individual i in sector j as obtained in the multinomial logit model (which in this study is the estimated multinomial logit model before we obtain the relative risk ratios [exponentiated multinomial logit model's coefficients]).

14. In similar studies (such as Glick and Sahn, 1997) a variable that is often used together with demographic characteristics of a household/individual is non-labour income. In the four data sets used in this study there is, however, no information on non-labour income of households/individuals. We have used the home ownership variable instead.

15. This study used *Stata Version 8* (a statistical and econometric software) to carry out all the regression analyses and some aspects of the data preparation in this study.

16. See Central Bank of Nigeria Annual Report and Statement of Account for 1998. The section on fiscal matters contains the information on the 28% drop recorded in oil export revenue.

17. See van der Gaag, Stelcner and Vijverberg (1989) for a review of similar studies on developing countries that used samples of male employees.

18. See Ojo (1998) for the evidence of brain drain from the public to the private sector during period before 1998.

19. This is determined by the signs assumed by the z-scores attached to the odd ratios. The figures in brackets below the odd ratios are z-scores.

20. Of special significance is the negative sign that characterizes the underlying coefficients of the household size variable in seven of the 10 equations, which makes the variable a good indicator of resources. This has been described as a reflection of the endogeneity of household formation in which some unemployed family members are attracted to households where they can be taken care of from the resources (income) of household members who are employed (see Hofmeyr, 2002). This seems to reflect what obtains in reality as virtually every household in Nigeria has one or more unemployed members to cater for.

21. Glick and Sahn (1997) encounter the same problem of wrong signs on education variables in a similar study on Guinean data. They explain that such a problem reflects collinearity of the education covariates with the selectivity term and this, they argue, suggests that the equation concerned is not properly identified. Similar results of negative coefficients for education variables were obtained by Appleton et al. (1999) in their study on the gender wage gap in three African countries (Côte D'Ivoire, Ethiopia and Uganda).

22. This finding fully portrays what happened in reality, as the September 1998 wage review in the public sector resulted in larger increases in the wages of lower cadre workers than for higher cadre workers.

23. This is arrived at by adding the second term on the right-hand side of the Oaxaca (1973) decomposition with the differential in constant/intercept terms of the estimated wage equations.

24. The following Oaxaca decomposition (see Oaxaca, 1973) is used in this study:

i. $\ln W_h - \ln W_L = \beta_h(H_h - H_L) + H_L(\beta_h - \beta_L)$

where $\ln W_h$
and $\ln W_L$ are the predicted means of log earnings. The subscript h refers to the higher predicted mean of log earnings while the subscript L relates to the lower predicted mean of log earnings. Parameters β_h and β_L are the estimated parameters for the sectors with the higher and lower predicted means of log earnings respectively. H_h and H_L represent the means of the human capital and other variables in the sectors with the higher and lower predicted means of log earnings respectively.

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(a) The Guardian. Lagos: Guardian Newspapers Ltd

(b) Vanguard. Lagos: Vanguard Media Ltd.

(c) The Comet. Lagos: Turning-Point Newspapers Ltd.

(d) *The Punch.* Lagos: Punch Nigeria Ltd.

(e) Tribune. Ibadan: The African Newspapers of Nigeria PLC.

(f) *The Post Express.* Lagos: The Post Publishing Company Ltd.

(g) Sunday Monitor. Ibadan: Monitor Newspapers Ltd.

Appendixes

Appendix 1

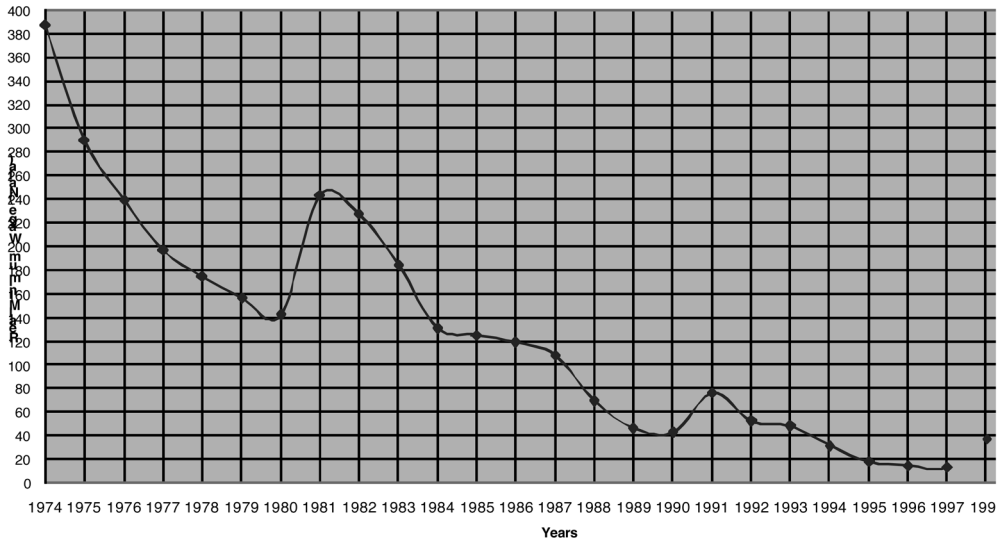
Nigeria's real minimum wage and consumer price index (1974–2000)

Year	Real Minimum Wage (Naira)	Consumer Price Index
1974	387	15.5
1975	290	20.7
1976	239	25.1
1977	197	30.4
1978	174	34.5
1979	156	15.5
1980	142	42.4
1981	243	51.4
1982	227	55.1
1983	184	67.9
1984	131	95.6
1985	125	100
1986	119	105.4
1987	108	116.2
1988	69	181.2
1989	46	272.7
1990	43	293.2
1991	76	330.4
1992	52	478.4
1993	48	751.9
1994	31	1,180.7
1995	18	2,040.9
1996	14	2,638.1
1997	13	2,863.2
1998	37	3,149.2
1999	91	3,308.5
2000	136	3,421.4

Sources: Federal Ministry of Finance. (1991); World Bank (1994); CBN (1998); CBN (2000); *The Guardian* (2000); Federal Office of Statistics (2003);

Appendix 2

Nigeria's real minimum wage (1974-2000)



1 The Federal Government discontinued this policy of backdating wage increases in the past two decades, perhaps on account of the fiscal and inflationary implications.
2 See *New Nigerian* (daily newpaper) of 25 April 1987.
3 Other policy measures taken in 1992 included a waiver of import duty on transport vehicles and their spare parts to bring down the cost of transportation for the people.

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