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Are Ghana's Public-Sector Employees Overpaid?

Understanding the Public/Private Wage Gap and Its Effect on the Government Deficit

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ABSTRACT

Ghana is again experiencing large and chronic fiscal deficits that many analysts attribute to a sharp increase in its the public-sector wage bill. This study uses macroeconomic and household survey data to examine public employment and public wages both historically and in comparison with private-sector wages. Although we do find a public-sector wage premium in the most recent data (for 2012/2013), it is not as large as one would expect from the macro data, totaling only 15 to 28 percent of the public-sector wage bill, or 2 to 3 percent of gross domestic product. That is far from enough to eliminate the government deficit. To make further reductions in the wage bill, policymakers must either make the normative case that public-sector workers should be paid less than private-sector workers with similar qualifications, something that will be difficult politically, or they must adjust the required skill levels of public-sector employees downward, something that may not make administrative sense. There is some low-hanging fruit in the public-sector wage bill, but not enough to resolve Ghana's fiscal crisis.

Keywords: Ghana, labor markets, fiscal policy

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1. INTRODUCTION

After a relatively stable period in the 2000s, Ghana again finds itself suffering considerable macroeconomic imbalances driven by a resurgent and persistent fiscal deficit. Though the deficit has several causes, an important one is the public-sector wage bill. Historically, even in times of inflated public-sector employment, total spending on employee compensation has been 5–6 percent of gross domestic product (GDP) in Ghana. But after gradually increasing between 2005 and 2010, the public-sector wage bill shot up to 11–12 percent of GDP in 2012. It has since fallen, but at 8–9 percent of GDP it remains much higher than historical averages. This leads one to suppose that reducing the public-sector wage bill to more "normal" levels should be a key part of Ghana's fiscal adjustment. This paper assesses that supposition.

The public-sector wage bill may be too large either because there are too many public-sector employees or because those employees are paid too much. Both alternatives are inherently difficult to assess because they involve normative judgments. The "correct" number of public-sector employees depends on the services that one expects the public sector to provide. For example, employment in the Ghana Education Service increased by 59 percent between 2004 and 2015, which might seem excessive. But once we know that the increase roughly matched increased student enrollments stemming from both population growth and increased enrollment rates, we might accept this employment increase as reasonable. Still, we cannot know whether or not the actual student/teacher ratios are appropriate. The best we can do is compare Ghana with other countries and with its own history, the approach we take here.

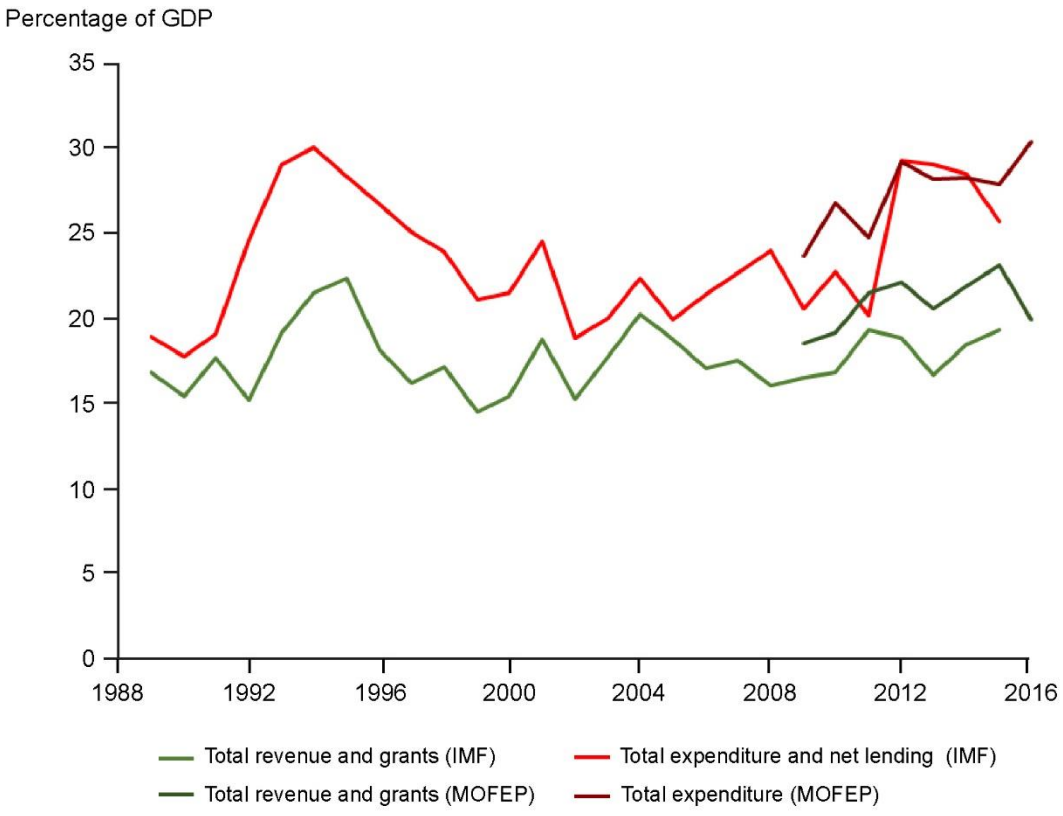
The "correct" pay for public-sector employees is also difficult to assess. We compare their pay with that of similarly skilled employees in the private sector, but although the comparison is useful, it does not answer the normative question of whether public-sector employees should be paid more or less than those in the private sector, and by how much.

In the end, our goal here is not to answer those normative questions, a task which falls to policymakers. Instead, we hope to provide some useful comparator information that will inform those policy decisions.

2. BACKGROUND: THE WAGE BILL'S ROLE IN FISCAL DEVELOPMENTS

Figure 2.1 shows total government expenditure and revenue for the past 30 years. The deficit is the difference between the two. After narrowing significantly after 2000, largely due to debt relief under the Heavily Indebted Poor Countries Initiative, the deficit again widened in the run-up to the 2008 election, narrowed significantly in the following years, and ballooned in 2012. It has remained quite large since then. Although the 2016 data from the Ministry of Finance are provisional, they indicate another significant increase in that year. For the most part, revenues are at or above historical normal levels. The major change in this decade is the large increase in expenditures, beginning in 2012.

Figure 2.1 Ghana government revenue and expenditures, 1988–2016

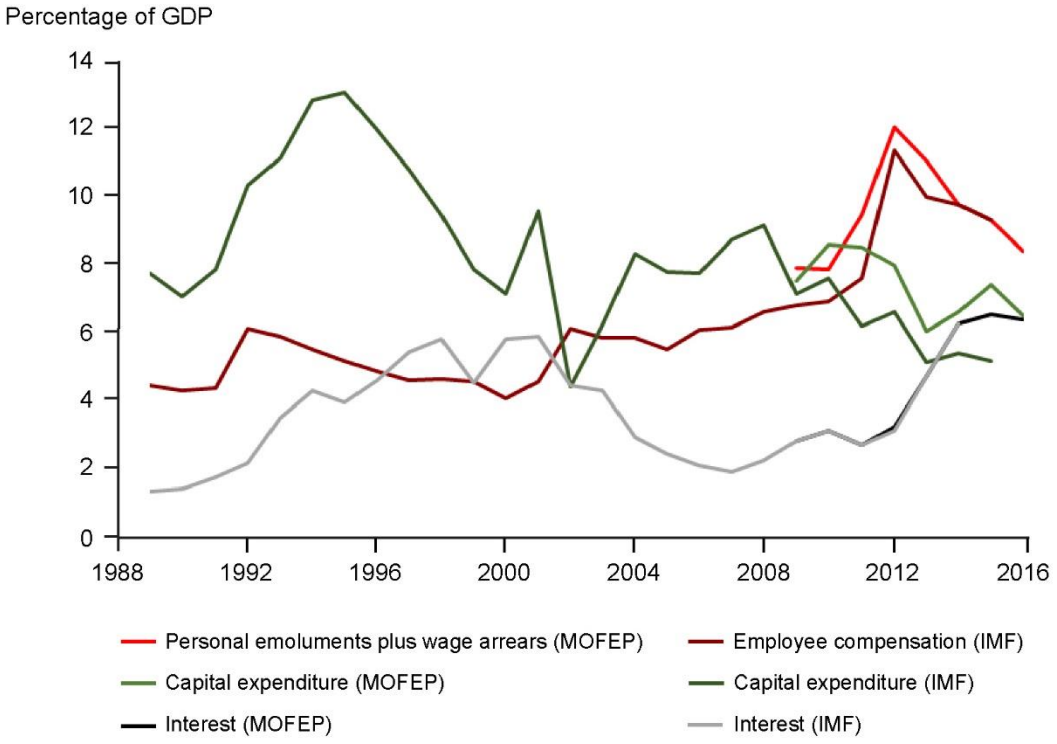


Source: Ghana, MOFEP (various dates); IMF (various dates).
Note: IMF = International Monetary Fund; MOFEP = Ghana Ministry of Finance and Economic Planning.

Figure 2.2 shows three large components of government spending: employee compensation (the public-sector wage bill), capital expenditures, and interest. It is clear that the main expenditure item

causing the large increase in the deficit in 2012 was employee compensation, which jumped by about 4 percent of GDP. The wage bill has since declined but remains well above the historical norm of about 5 percent of GDP. Meanwhile, accumulated debt has caused interest expenses to increase by more than 4 percent of GDP. These two factors are the main drivers of the deficit.

Figure 2.2 Three components of government spending, Ghana, 1988–2016



Source: Ghana, MOFEP (various dates); IMF (various dates).
Note: IMF = International Monetary Fund; MOFEP = Ghana Ministry of Finance and Economic Planning.

Because it will be very difficult to reduce interest expenditures, it seems that the government's best option for reining in the deficit is to reduce the public-sector wage bill. Thus, the main motivation for this paper is to discover whether such a reduction is feasible and whether it would be fair.

3. DOES GHANA HAVE TOO MANY PUBLIC-SECTOR EMPLOYEES?

Baddock and colleagues (2015) discussed several measures of the size of the public-sector wage bill, but were able to provide reasonably large datasets for only a few of them: compensation of employees as a share of GDP, total expenditure, domestic revenue, and government employees as a percentage of the population. Only the last of these directly addresses the number of public-sector employees as opposed to the wage bill. Table 3.1 gives these data for Ghana and a set of comparator country aggregates for the 2000s. Ghana's share of the population in public employment is much lower than that of aggregated countries in Africa south of the Sahara and of aggregated middle-income countries, but a little higher than that of aggregated low-income countries. Nothing in this comparison suggests strongly that Ghana has too many public-sector employees.[1]

Table 3.1 Measures of the size of the public-sector wage bill (2000–2012) and number of public-sector employees, Ghana and comparator aggregates (2000–2010)

Country or group	Public-sector wage bill [/1a]			General government employment, % of population[b]
	Expenditures (%)	Revenues (%)	GDP (%)	
Ghana	29.3	35.5	6.5	1.6
Africa south of the Sahara (n = 36)	26.7	28.7	6.6	3.9
Low-income countries (n = 29)	25.2	22.9	5.2	0.9
Middle-income countries (n = 74)	24.4	19.6	6.9	5.0

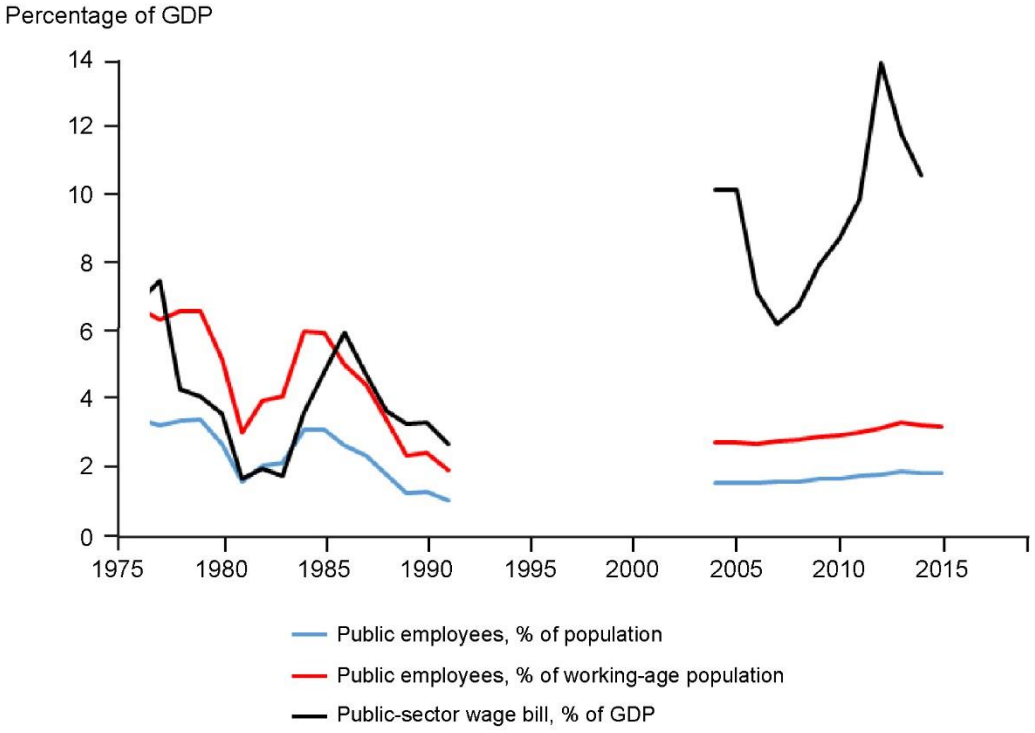
Source: World Bank (2016); general government employment in Ghana from Ghana Controller and Accountant General's Department.
Note: GDP = gross domestic product.
[a] Average, 2000–2012.
[b] Average, 2000–2010.

Figure 3.1 shows similar measures for Ghana's own history. Although there has been a gradual increase in public employment since 2004, from 1.55 percent of the population to 1.86 percent, the increase is not dramatic, nor is it notable around 2012 when the wage bill exploded. In addition, current levels of public employment are significantly lower than levels in the 1970s and 1980s, except for the very end of

[1] We will return to the question of public-sector wages below.

that period, after the first public-sector redeployment program.[2] As with the cross-country comparisons, these data also do not suggest that the number of public employees is inappropriate in Ghana.

Figure 3.1 Public-sector employment and wage bill, Ghana, 1975–2015



Source: Public employees, 1975–1991: Ghana Statistical Service (various dates); public employees, 2004–2015: Ghana Controller and Accountant General's Department; population: World Bank (2017).
Note: GDP = gross domestic product.

Measures Specific to Education and Health Services

Education and health account for a large share of civil service employees in Ghana, 75 to 80 percent in recent years (personal communication from Ghana Controller and Accountant General's Department). As it happens, these are also sectors for which a few data series on staffing levels are available in other countries for comparison, as shown in Table 3.2. Ghana's student/teacher ratios are closer to those of middle-income than low-income countries or those in Africa south of the Sahara, for both primary and secondary school, but it is not clear that one would want to take this as evidence of "overstaffing." For

[2] Younger (1996) and Alderman, Canagarajah, and Younger (1995) discussed that episode.

nurses and midwives, Ghana has somewhat fewer than other African countries south of the Sahara, and many fewer than the average of middle-income countries. Unfortunately, similar comparisons for other types of public employment are not readily available.

Table 3.2 Education and health staffing indicators

Country or group	Student/teacher ratio[a]		Teachers per 1,000 population[b]		Nurses and midwives per 1,000 population[b]
	Primary	Secondary	Primary	Secondary	
Ghana	31.7	17.4	4.89	4.74	0.93
Low-income countries	44.0	24.3	3.77	2.11	
Middle-income countries	24.7	18.2	4.10	4.50	2.33
Africa south of the Sahara (excluding high-income countries)	42.8	25.4	3.74	2.09	1.15

Source: World Bank (2017).
[a] Average over 2007–2016.
[b] 2010 or 2011.

Ghost Workers

Ghost workers,[3] a persistent but poorly documented problem in Ghana, have been discussed widely in both policy documents (IMF 2017) and the press (*Ghana Press* 2017; *Ghana Business News* 2017; Ezebuiro 2017). Could ghost workers explain the large increase in the public-sector wage bill since 2012? Almost certainly not. The number of ghost workers reported in the press is large, about 26,000 (*Ghana Press* 2017; Ezebuiro 2017), and the International Monetary Fund reports about 50,000 including ghost pensioners (IMF 2017). But the amount of money to be saved by their elimination is only 433 million Ghanaian cedis (*Ghana Business News* 2017; *Ghana Press* 2017), or about 3 percent of the 2016 wage bill (Ghana MOFEP 2016). Even if these ghosts had appeared all at once in 2012, the amount they would have collected cannot account for the large increase in the wage bill. It is also worth noting that the estimates of their numbers may be (far) too high. An earlier effort to clear the payroll of ghost workers ended up reinstating almost all of the supposed ghosts (Controller and Accountant General's Department 2015) when it was found that they were real employees. In the most recent purge, May 2017, the minister

[3] A "ghost worker" is someone who collects a salary but does not work. It may be a fictitious person whose salary is collected by someone else or a real person who collects a public-sector salary but does not actually report for work, possibly due to moonlighting (or "daylighting"). A third possibility is that someone is continuing to collect the pension of a deceased retiree.

of finance had to apologize almost immediately for the elimination of genuine workers, including some of his own staff (Ezebuiro 2017). So, although it is surely right and fair to drop ghost workers from the payroll (as all retrenchment schemes in Ghana do), their existence cannot account for the large increase in the public-sector wage bill in 2012, and their elimination would not bring the wage bill down to historical levels.

4. ARE PUBLIC-SECTOR WORKERS OVERPAID?

Most of the data on the number of public-sector employees suggest that it is not unreasonable compared with other countries and with Ghana's own historical levels. On the other hand, Ghana's public-sector wage bill is currently unusually high, again compared with other countries' and with Ghana's own history (Figure 2.2 and Table 3.1). These facts seem to lead to an obvious conclusion: since about 2012, public-sector employees in Ghana are paid too much. But it is also possible that prior to 2012, public-sector wages were too low and the dramatic increases observed in 2012 only served to bring them up to a reasonable level. In this section, we compare public-sector with private-sector wages in Ghana in an attempt to judge whether public-sector employees are paid too much. We should say at the outset that our benchmark is parity with private-sector wages, a judgment that is open to challenge. One could argue that public-sector workers should be paid less than private-sector workers of comparable skill because public-sector workers receive a generous pension that some private-sector workers do not (though private formal-sector workers do[4]) or because public-sector work may have nonpecuniary benefits such as power, prestige, better working conditions and job security, less demanding hours, and so on. On the other hand, public-sector workers surely pay income tax at rates from 5 to 25 percent, something that many private-sector employees do not do. Balancing these considerations is beyond the scope of this paper but bears keeping in mind as we compare public- and private-sector wages.

Comparing Public- and Private-Sector Wages: Methods

In comparing wages across sectors, it is important to control for workers' human capital (or skills): if public-sector wages are higher than private because public-sector workers are more productive, that is entirely appropriate. The simplest way to do this is with a Mincer regression of the logarithms of wages on measures of human capital, usually schooling and work experience:

$$ln(w) = X\beta + \alpha P + \varepsilon, \quad (1)$$

[4] Formal private-sector workers have 18.5 percent of their pay withheld and transmitted to the Social Security and National Insurance Trust for pensions and health insurance. If this percentage is actuarially fair, it represents a significant bonus over and above paid wages.

where X includes measures of schooling and work experience, P is a dummy variable for the public sector. α then measures the premium to public-sector employment, controlling for human capital.

A limitation of this method is its assumption that the returns to human capital characteristics, β, are the same for all workers regardless of their sector of employment. A more general approach relaxes that assumption to yield the Oaxaca-Blinder decomposition (Oaxaca 1973; Blinder 1973). Here, each sector has its own wage equation, respectively:

$$ln(w_{pub}) = X_{pub}\beta_{pub} + \varepsilon_{pub} \text{ and} \quad (2)$$

$$ln(w_{prv}) = X_{prv}\beta_{prv} + \varepsilon_{prv} \quad (3)$$

Taking the expected value of the difference in these wages allows a decomposition of that difference into two components, one due to differences in human capital (the regressors) and the other due to differences in the "returns" to that human capital (the coefficients):

$$E\left[ln(w_{pub}) - ln(w_{prv})\right] = E\left[X_{pub}\beta_{pub} - X_{prv}\beta_{prv}\right] = E\left[X_{pub}\beta_{pub} - X_{prv}\beta_{pub} + X_{prv}\beta_{pub} - X_{prv}\beta_{prv}\right] = E\left[\left(X_{pub} - X_{prv}\right)\beta_{pub} + X_{prv}\left(\beta_{pub} - \beta_{prv}\right)\right], \quad (4)$$

which can be estimated by taking the ordinary least squares estimates of β_{pub} and β_{prv}. Here, differences in the expected value of log(wages) due to the regressors (the first term) are acceptable or justified because they reflect greater human capital, whereas those due to the coefficients (the second term) are not because they reflect different and perhaps unwarranted rates of return on similar skills.

A further generalization discussed by Machado and Mata (2005), and one we use here, recognizes that the Oaxaca-Blinder decomposition is for the *mean* of the dependent variables. Yet many countries, including Ghana, have more compressed wages in the public sector than in the private: workers at the low end of the wage distribution tend to be better paid in the public sector than in the private, whereas the opposite is true at the top end. The Oaxaca-Blinder decomposition forces the premium to be the same mean difference for all workers, conditional on their skills. To capture the possibility of greater wage compression in one or the other sector, Machado and Mata (2005) suggested running quantile regressions centered at several quantiles across the wage distribution. Quantile regression minimizes the following:

$$min_{\{\beta\}}\{(1-p)\left(\sum_{i,y_i<X_i\beta}|y_i - X_i\beta|\right) - p\left(\sum_{i,y_i>X_i\beta}|y_i - X_i\beta|\right)\}, \quad (5)$$

where p is a quantile of the dependent variable (p = 0.1 is the 10th percentile; p = 0.5 is the median, and so on). Rather than being centered around the mean, the quantile regression is centered around the p^{th} quantile. By varying p, we can generate a set of regressions that focus on different parts of the wage distribution.

Chernozhukov, Fernández-Val, and Melly (2013) showed that this approach is one of a family of similar "distributional regressions" that estimate the entire conditional distribution—that is, the distribution of the difference between public- and private-sector wages at each point of the wage distribution, controlling for human capital. Their methods allow for decomposition of the entire conditional distribution in the same way that the Oaxaca-Blinder approach decomposes the mean. In practice, we will run a series of quantile regressions at values of p from 0.05 to 0.95 in increments of 0.10, for 10 regressions in all, with each taken to represent a decile of the wage distribution. We will then decompose the difference in each regression into characteristics ("justified") and returns ("unjustified").[5]

For both the Oaxaca-Blinder and the Machado-Mata decompositions, the results are not symmetric. That is, they can differ depending on whether the public- or private-sector regressors (coefficients) are multiplied by the coefficients (regressors). In the results that follow, we run the models both ways and take the average of the decompositions.

Finally, we estimate a very simple Mincer model that includes only dummy variables for having graduated from primary school, junior secondary school, senior secondary school, vocational education, and university, and age and age squared to proxy work experience. Results for a more detailed model including gender, a dummy for the household head, a dummy for the spouse of the household head, a dummy for living in an urban area, and household size generate broadly similar results.

[5] The results below use the Chernozhukov and colleagues estimator and the Stata code that the authors provide at http://sites.bu.edu/ivanf/research/ .

Data

We use data from five rounds of the Ghana Living Standards Survey (GLSS): GLSS-1 and GLSS-3 through GLSS-6, spanning 1987 to 2012/2013.[6] To account for differences in survey questions, we use the World Bank's Survey-Based Harmonized Indicators datasets, which have been standardized across countries and time for basic labor market variables.[7] We made one adjustment to these data because we found many respondents who claimed to be public-sector employees earning less than the minimum wage, which is impossible, and we also found the number of public-sector employees in the surveys to be greater than the number reported by the Controller and Accountant General's Department.[8] So we reclassified anyone earning less than the minimum wage as an informal private-sector worker.

Results

Oaxaca-Blinder Model

Table 4.1 gives results for the simple model in equation (1) and for the Oaxaca decomposition in equation (4) for two comparisons: public-sector wage workers versus all private-sector wage workers (panel A), and public-sector wage workers versus formal private-sector workers (panel B).[9] Compared with all private-sector workers (panel A), public-sector employees are paid considerably more overall, and that gap has been growing over time so that by 2013, public-sector employees, on average, earned almost double what private-sector employees did (column 2). The amount of this gap that is justified by greater human capital is relatively small (column 3), though it roughly doubled from 1999 to 2013, indicating that education levels and work experience in the public sector increased relative to those in the private sector during that period. The last column is the α coefficient in equation (1), the simple dummy

[6] GLSS-2 was carried out only one year after GLSS-1, so we have not included it.

[7] Data available by searching for "GLSS" under "Search by Keyword > in study description" at http://microdata.worldbank.org/index.php/catalog.

[8] Some of those identifying themselves in the surveys as public employees, though certainly not all, had jobs such as "watchman" or "cook," meaning that they may provide services at public-sector establishments (especially schools) but not actually be public-sector employees.

[9] We define a worker as being a formal worker if she or he reports having a written employment contract.

variable model. It shows that a large part of the premium in the public sector is due to some factor other than higher returns on education and experience.

Table 4.1 Oaxaca-Blinder results for each Ghana Living Standards Survey, 1987–2013

Survey	Average total difference (%)	Difference accounted for by … Oaxaca-Blinder regressors (%)	Oaxaca-Blinder coefficients (%)	Public-sector dummy variable (%)
	A. Public-sector versus all private-sector wage earners			
GLSS-1 (1987)	50	11	39	26
GLSS-3 (1991/1992)	70	9	61	47
GLSS-4 (1998/1999)	81	10	71	59
GLSS-5 (2005/2006)	86	19	68	43
GLSS-6 (2012/2013)	94	23	71	51
	B. Public-sector versus formal private-sector wage earners			
GLSS-1 (1987)	8	4	5	1
GLSS-3 (1991/1992)	3	5	-2	-12
GLSS-4 (1998/1999)	-4	3	-7	-10
GLSS-5 (2005/2006)	10	8	2	-7
GLSS-6 (2012/2013)	40	12	28	17

Source: Ghana Living Standards Surveys and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

Overall, these results are consistent with the argument that public-sector employees are overpaid and that the premium has increased significantly in recent years, though most of the increase was between 1999 and 2005 rather than between 2005 and 2013 (column 4). Given these results, Table 4.2 calculates the reduction in public-sector wage bill that would be possible if public-sector employees were paid similarly to private-sector employees.[10] In the most recent survey, which closely followed the spike in public-sector wage bill in 2012, the government could save 37 percent of its total wage bill by equalizing public with private salaries, less than the 50 percent one might have expected from the increase in public-sector wage bill observed in 2012, but enough to go most of the way toward returning the public-sector

[10] In making this calculation, we only *reduce* public-sector salaries. Any public-sector employee who is underpaid compared with the private sector sees no change in salary.

wage bill to its pre-2012 levels. To the extent that these wage differences are unjustified, such a reform would also be fair.

Table 4.2 Potential reduction of the public-sector wage bill, 1987–2013, Oaxaca-Blinder Model

	% of public-sector wage bill potentially saved	
Survey	**All private**	**Formal only**
GLSS-1 (1987)	26	4
GLSS-3 (1991/1992)	36	-2
GLSS-4 (1998/1999)	39	-7
GLSS-5 (2005/2006)	36	2
GLSS-6 (2012/2013)	37	20

Source: Ghana Living Standards Surveys and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

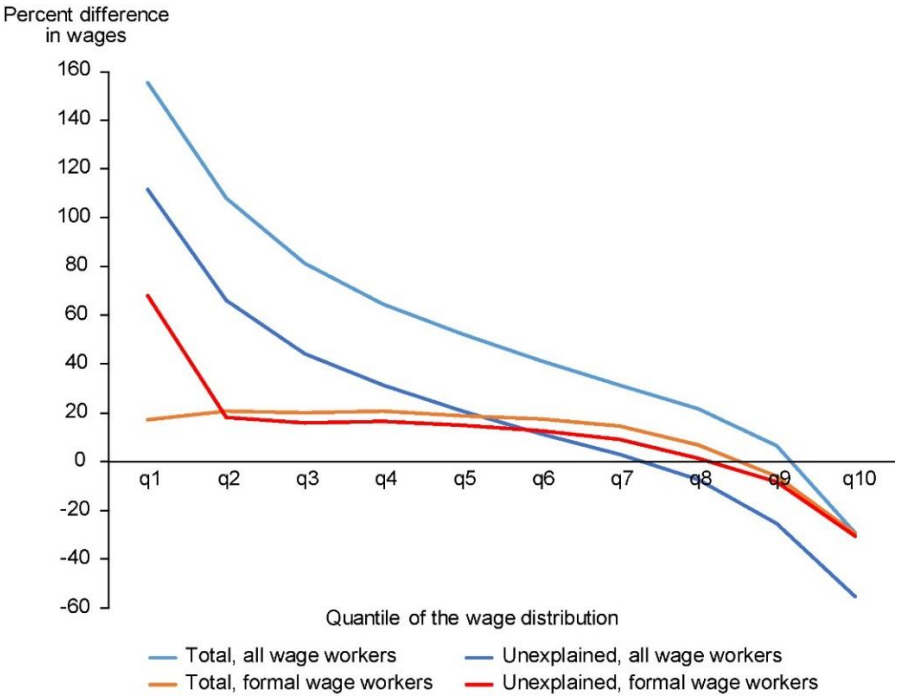
Table 4.1, Panel B, compares public employees with formal private-sector employees. Whether this is a better comparison is debatable. On the one hand, public-sector employees are clearly formal sector, so if one believes that formal-sector employees deserve higher pay than those in the informal sector, perhaps for some unobservable characteristic(s) that select them into that sector, then this comparison is best. On the other hand, if one believes that formal private-sector workers earn an unwarranted premium in much the same way that we are thinking of the public-sector premium, then comparing against the entire private sector (as in panel A) makes more sense. As one would expect, the overall wage difference in panel B is much smaller than the one depicted in panel A, though it too increased significantly between 2005 and 2013. The difference due to the regressors, the justifiable part, is a larger share of the total difference in these regressions, except for the 2013 survey. So these results suggest that public-sector pay increased too much between 2005 and 2013, though the amount is much smaller than that shown in panel A, with the unjustified effect being only a 28 percent premium. Putting public-sector wages in line with private formal-sector wages would save only 20 percent of the public-sector wage bill, leaving it still well above its pre-2012 levels. Nevertheless, it is interesting to note that GLSS-6 (2012/2013) is the only survey year in which reducing public-sector employees' salaries to formal private-sector levels would generate much savings at all.

One reason the formal private-sector results may be biased toward small gaps is that private firms in the formal sector feel compelled to increase their wages in response to increased public-sector wages because the public sector dominates formal employment. We are not aware of any study of the interactions of wages in these two sectors, but anecdotal evidence reported to us by Ghana's Fair Wages and Salaries Commission argued that this did happen after the 2012 increases.

Chernozhukov and Colleagues Model

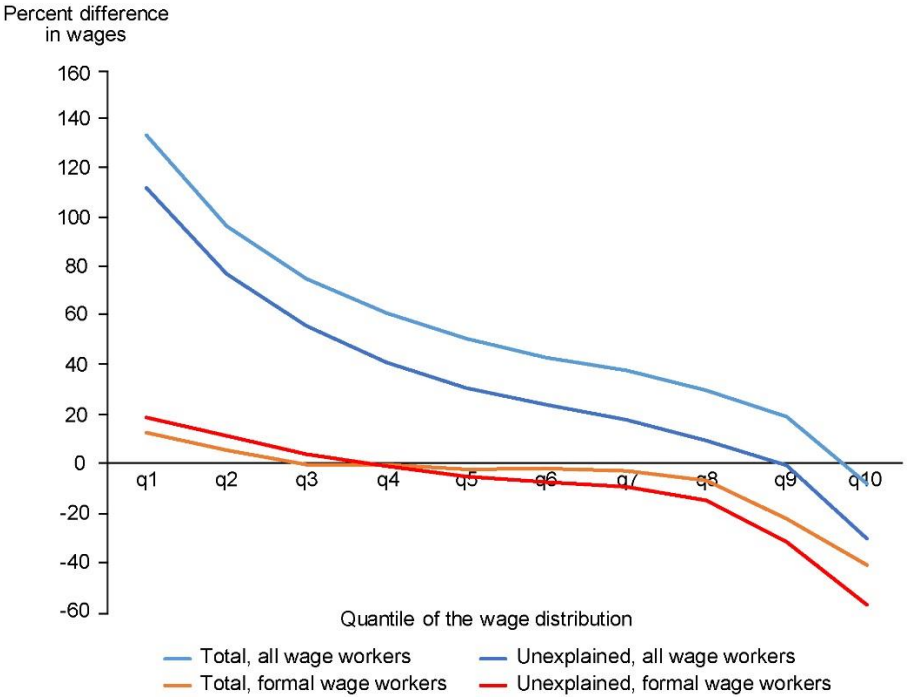
Figures 4.1 through 4.5 present the results for the Chernozhukov and colleagues decompositions. The fainter lines show the total difference between wages in the public sector and all private-sector workers (blue) or all formal private-sector workers (red), whereas the darker lines show the part of this difference that cannot be explained by workers' human capital characteristics (the regressors). The horizontal axis measures the quantile of the joint wage distribution (lowest to highest), and the vertical axis measures the difference between public- and private-sector wages as a percentage of private-sector wages.

Figure 4.1 Results of Chernozhukov and colleagues model for GLSS-1, 1987



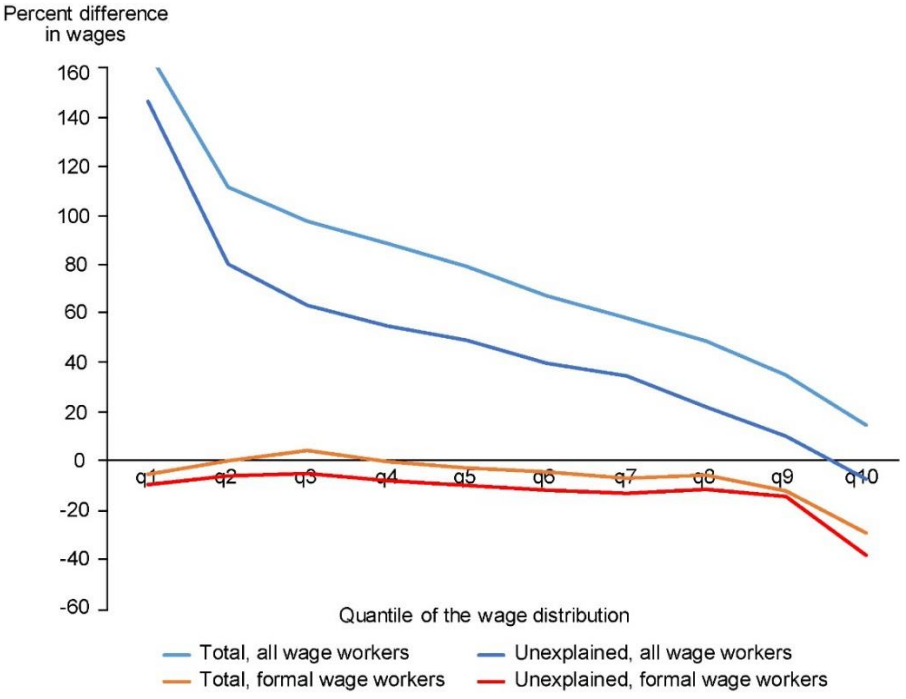
Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

Figure 4.2 Results of Chernozhukov and colleagues model for GLSS-3, 1991/1992



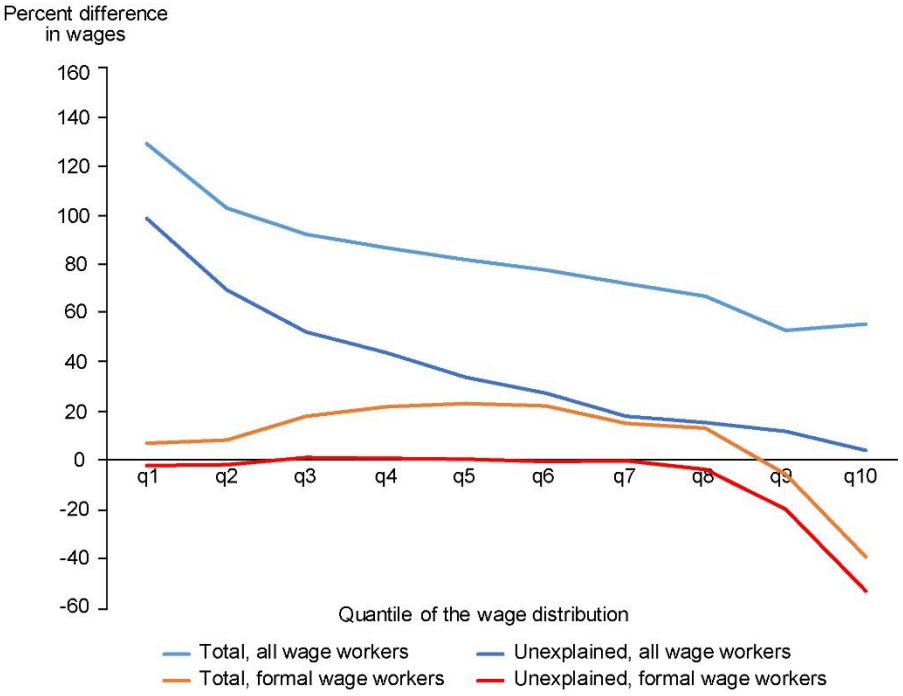
Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

Figure 4.3 Results of Chernozhukov and colleagues model for GLSS-4, 1998/1999



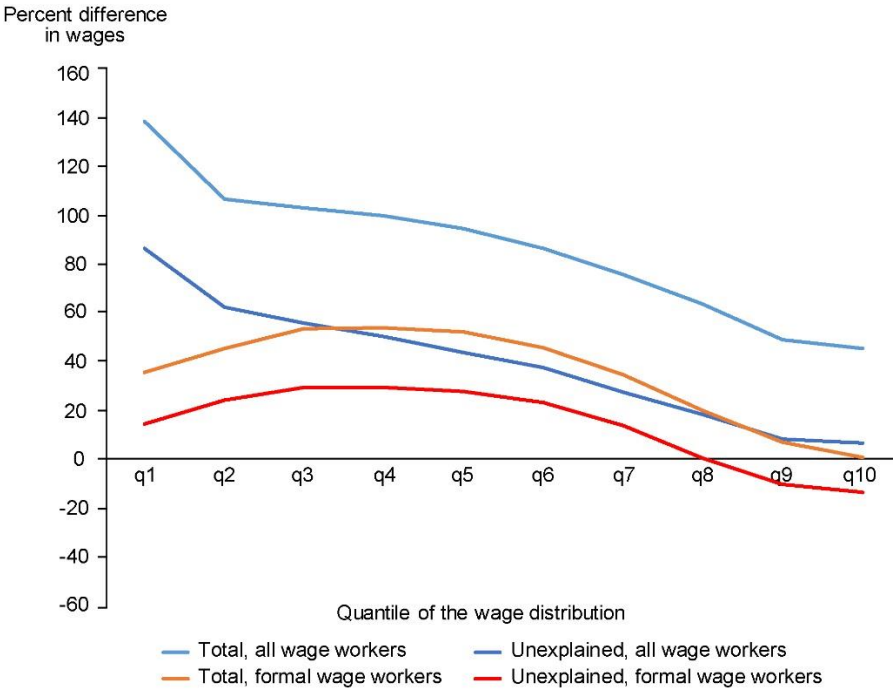
Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

Figure 4.4 Results of Chernozhukov and colleagues model for GLSS-5, 2005/2006



Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

Figure 4.5 Results of Chernozhukov and colleagues model for GLSS-6, 2012/2013



Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

In the comparisons against all private-sector wage earners, the results show the typical pattern found in many such studies: both the total difference in wages and the unexplained portion of it are larger at the lower end of the wage distribution, but they decline to 0 or even negative values at the top end. So public-sector wages are more generous at the low end but less so at the top overall, and the same is true for the unexplained or unjustified premium for public-sector work.

Similar comparisons of public-sector workers with private formal sector workers have a much less pronounced downward slope, which shows up only at the highest wage levels. In addition, the gap between the total differences and the explained differences is nonexistent in the first three surveys and small in the last two. So the premium for public-sector employment is smaller here, and almost none of it is explicable by greater education and experience in the public sector until about 2005/2006 (GLSS-5).

In the comparisons with all private-sector wage earners, the gap between the total wage difference and the unexplained wage difference, which represents the portion of the difference due to workers' education and experience, is significantly larger in the two most recent surveys, indicating that more of the public-sector premium is due to better qualified workers in the public sector in recent years. It appears that the public sector has taken on employees with more education, experience, or both than the private sector in recent years. Table 4.3 confirms this observation. Although the average age (our proxy for work experience) across sectors stays stable across surveys, there are steady improvements in public-sector educational attainment relative to that in the private sector, especially in the two most recent surveys.

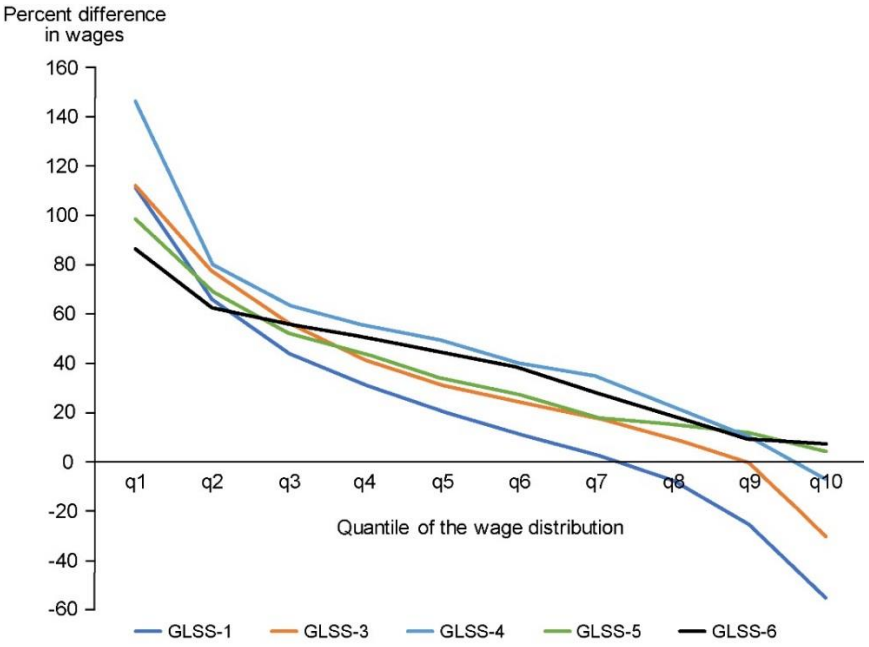
Table 4.3 Education and age (experience) levels in the public and private sectors, 1987–2012

Survey/workers	No education	Primary education	Junior secondary education	Senior secondary and vocational education	Postsecondary education	Average age
GLSS-1 (1987)						
Public	0.17	0.07	0.48	0.26	0.02	38
Private formal	0.20	0.09	0.51	0.18	0.02	36
Private informal	0.42	0.12	0.42	0.03	0.00	30
GLSS-3 (1991/1992)						
Public	0.19	0.03	0.07	0.66	0.04	40
Private formal	0.11	0.04	0.04	0.79	0.02	36
Private informal	0.33	0.07	0.11	0.48	0.01	33
GLSS-4 (1998/1999)						
Public	0.07	0.03	0.46	0.39	0.06	42
Private formal	0.06	0.03	0.57	0.29	0.05	38
Private informal	0.26	0.14	0.50	0.10	0.00	33
GLSS-5 (2005/2006)						
Public	0.08	0.03	0.04	0.61	0.24	42
Private formal	0.07	0.03	0.12	0.60	0.18	38
Private informal	0.24	0.10	0.32	0.32	0.02	31
GLSS-6 (2012/2013)						
Public	0.04	0.02	0.19	0.53	0.22	39
Private formal	0.06	0.06	0.29	0.47	0.12	36
Private informal	0.19	0.12	0.43	0.24	0.02	34

Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

Figure 4.6 summarizes the unexplained or unjustified wage differences between public-sector employees and all private-sector employees. All the surveys show a substantial unexplained premium at the low end of the distribution, declining to large negative premiums in the first two surveys and small or no premiums since then. Compared with all private-sector employees, then, most public-sector workers appear to be overpaid, except for those at the top end of the wage distribution. Nevertheless, in the most recent survey (2012/2013), the unexplained premium is positive, if declining, across the entire wage distribution, including the top.

Figure 4.6 Unexplained wage differences between public-sector and all private-sector employees

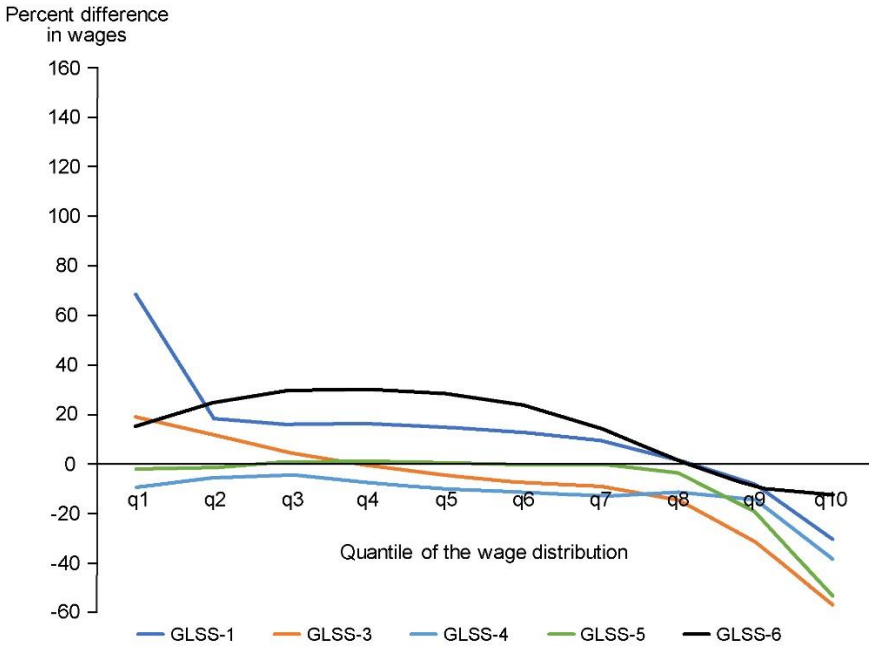


Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

Figure 4.7 shows the unexplained difference between public-sector and formal private-sector workers' wages. In all survey years, there is a significant penalty for public-sector work at the top end of the wage distribution, which is especially large in 1991/1992 (GLSS-3) and 2005/2006 (GLSS-5, the last survey before the recent increase in the public-sector wage bill), but smallest in the most recent survey (2012/2013). So for the best-paid public-sector employees, one could argue that the salary increases since 2012 were justified, reducing the significant penalty observed in the previous surveys, especially in 2005/2006.[11] At the lower deciles, the unexplained difference is quite close to 0 except in the 1987 (GLSS-1) and 2012/2013 (GLSS-6) surveys. So the 2012 wage increases for the lower echelons of the public sector are unjustified even when compared with wages in the formal sector.

[11] This argument supposes, of course, that the correct comparison is with the formal private sector, as here.

Figure 4.7 Unexplained wage differences between public-sector and formal private-sector employees



Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

Given these results, it appears that the public-sector wage bill could be reduced if public-sector employees were paid like private-sector employees with the same education and experience. As with the Oaxaca-Blinder results, the savings look much larger if we take all private-sector workers as the benchmark.

Table 4.4 calculates the amount of money the government could save by paying its workers the same as private-sector workers with the same education and experience. These estimated savings are significantly smaller than those based on the Oaxaca-Blinder method in Table 4.2, especially in the earlier surveys. What explains this difference? Figures 4.8 and 4.9 show the distribution of the public-sector wage bill across the deciles of the wage distribution.[12] More than half of the public-sector wage bill goes to the workers in the top decile and more than 80 percent goes to the top three deciles when, as in Figure 4.8, the deciles are defined using all wage earners. These proportions are somewhat less when using deciles defined by formal-sector workers only (Figure 4.9) but still quite striking.

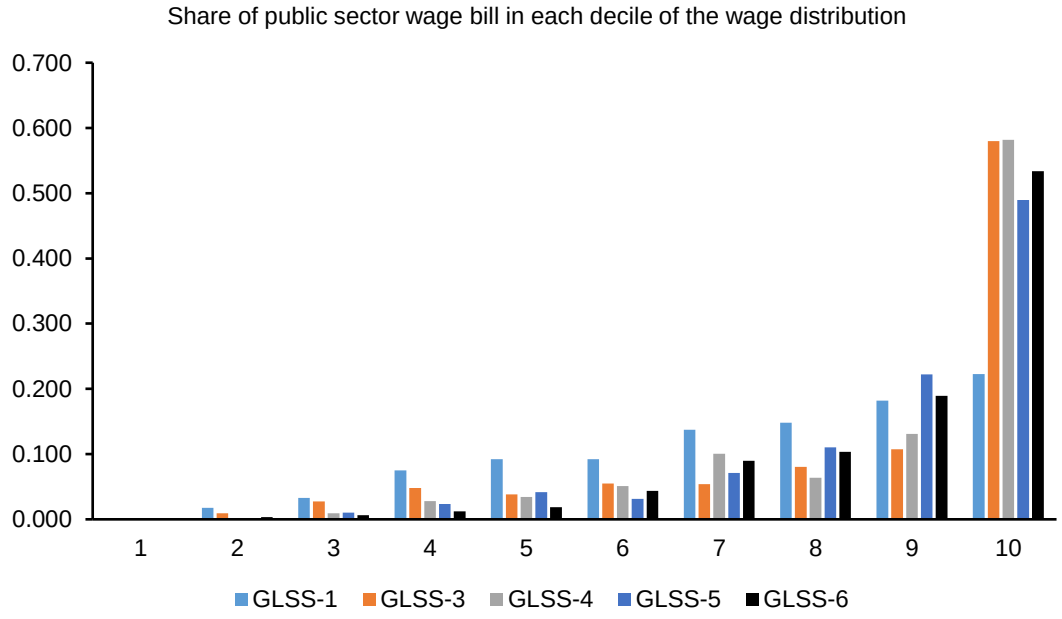
[12] The horizontal axis is the same as in Figures 4.1 through 4.7.

Table 4.4 Potential savings for the public-sector wage bill, 1987–2013, Chernozhukov and colleagues model

Survey	% of public-sector wage bill potentially saved	
	All private-sector	Formal private-sector only
GLSS-1 (1987)	11	35
GLSS-3 (1991/1992)	12	2
GLSS-4 (1998/1999)	17	0
GLSS-5 (2005/2006)	17	1
GLSS-6 (2012/2013)	28	15

Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

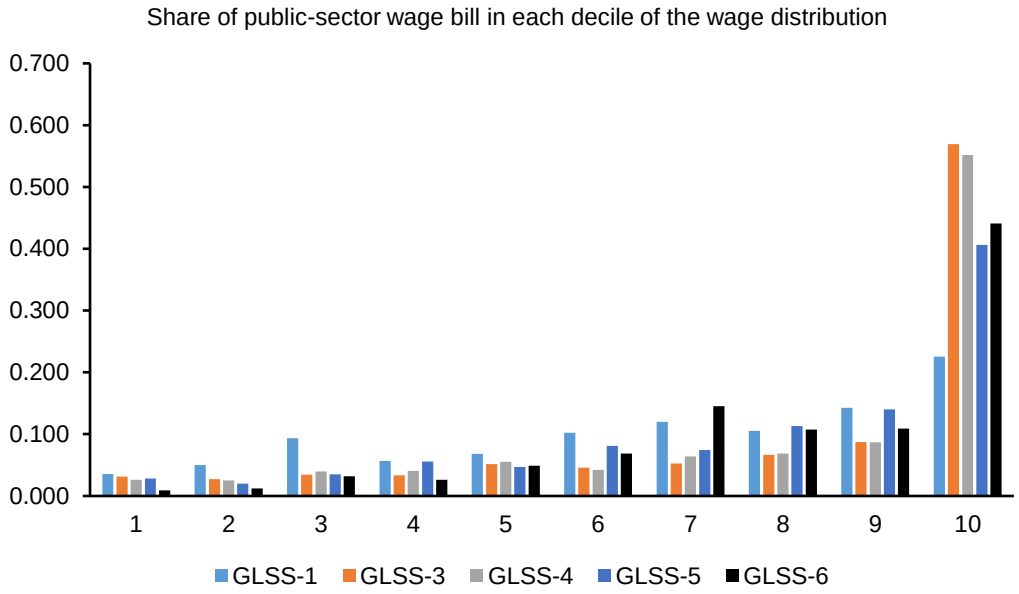
Figure 4.8 Distribution of the public-sector wage bill across deciles of the wage distribution, 1987–2013



Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

This observation has an important policy implication: although public-sector workers at the lower end of the wage distribution are usually the most overpaid, their share of the total public-sector wage bill is small, so reducing their wages would not save much money. On the other hand, the premium for public-sector work at the top end is usually smaller (and is sometimes a penalty), so that reducing the salaries that account for the bulk of the public-sector wage bill might be seen as unfair.

Figure 4.9 Distribution of the public-sector wage bill across deciles of the formal-sector wage distribution, 1987–2013



Source: GLSS and authors' calculations.
Note: GLSS = Ghana Living Standards Survey.

5. CONCLUSIONS

Ghana suffered a sharp and persistent increase in its fiscal deficit beginning in 2012, driven by increased public spending. Revenues, in fact, are at historical highs. Initially, the increased spending was driven almost entirely by increases in the public-sector wage bill. This paper assesses the extent to which Ghana's public-sector wage bill is too high, either because there are too many public employees or because those employees are paid too much.

Evidence for the former proposition is difficult to find. Compared with other developing countries and its own history, Ghana does not currently have an unusually large number of public employees. The only exception is a somewhat larger number of primary and secondary school teachers relative to pupils than in other low-income countries and African countries south of the Sahara.

Although there has been much discussion of ghost workers, the number of such ghosts is far too small to explain the sharp increase in the public-sector wage bill beginning in 2012, and the amount that the government claims to be able to save by eliminating them is only 3 percent of the public-sector wage bill.

Evidence that public-sector employees are paid too much is stronger, though perhaps not as strong as one would expect. In particular, given that the public-sector wage bill increased by almost 100 percent between 2005/2006 (the year of the GLSS-5 survey) and 2012/2013 (the year of the GLSS-6 survey), one might have expected to find that public-sector wages were double what they "should be" in 2012. Put another way, one might expect to be able to save about half of the 2012 public-sector wage bill by reducing public-sector wages to a "fair" level. If we take as a benchmark the wages of workers in the private sector, something that surely is debatable, and control for education levels and work experience, our best estimates are that public-sector workers are overpaid, on average, by 71 percent when compared with all private-sector wage workers, or by 28 percent when compared with private formal-sector wage workers. These results imply that if the government paid public-sector workers similarly to private-sector workers with the same education and work experience, the potential savings would be 37 percent of the

public-sector wage bill if public-sector wages were adjusted to match the wage rates of all private-sector workers, or 20 percent if they were adjusted to match rates of in the formal sector.

But those averages are misleading. Using methods that allow us to estimate and decompose the difference in public- and private-sector wages across the entire wage distribution, not just the mean, we find potential savings of only 28 percent (15 percent) of the 2012 public-sector wage bill if public-sector workers were to be paid similarly to workers in the private (formal) sector. These lower estimates follow from the fact that the unjustified premium for public-sector employment is greater for low-wage workers than for those at the high end, who until recently actually suffered a penalty when compared with private-sector workers and continue to do so compared private formal-sector workers. Salaries of those better-paid workers represent a large share of the total public-sector wage bill – —about 80 percent of the total is in the top three deciles of the wage distribution—so reducing them to the level of the private sector would mean only minimal or no reduction in a large share of the public-sector wage bill. On the other hand, even very large reductions in the wages of the lowest earners, which would be justified by comparisons with their private-sector peers, would do little to reduce the public-sector wage bill.

In sum, there is no easy way to reverse the large increase in Ghana's public-sector wage bill observed in 2012. The public sector is not obviously overstaffed, and although reducing its wages to rates paid in the private sector would save a significant amount of money, it is nothing like the 50 percent reduction of the 2012 wage bill that simple observation suggests. To make further reductions, policymakers must either make the normative case that public-sector workers should be paid less than private-sector workers with similar qualifications, something that will be difficult politically, or they must adjust the skill levels of public-sector employees downward, something that may not make administrative sense. There is some low-hanging fruit in the public-sector wage bill, but not enough to resolve Ghana's fiscal crisis.

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