





Union ‘facilitation effect’ and access to non-wage benefits in the Ghanaian labour market

Nkechi S. Owoo, Monica Puoma Lambon-Quayefio, Jorge Dávalos & Samuel B. Manu


To cite this article: Nkechi S. Owoo, Monica Puoma Lambon-Quayefio, Jorge Dávalos & Samuel B. Manu (2020) Union ‘facilitation effect’ and access to non-wage benefits in the Ghanaian labour market, *Oxford Development Studies*, 48:3, 240-255, DOI: [10.1080/13600818.2020.1808603](https://doi.org/10.1080/13600818.2020.1808603)

To link to this article: <https://doi.org/10.1080/13600818.2020.1808603>

 View supplementary material [↗](#)

 Published online: 04 Sep 2020.

 Submit your article to this journal [↗](#)



 Article views: 261

 View related articles [↗](#)

 View Crossmark data [↗](#)



Union ‘facilitation effect’ and access to non-wage benefits in the Ghanaian labour market

Nkechi S. Owoo^a, Monica Puoma Lambon-Quayefio ^b, Jorge Dávalos ^c
and Samuel B. Manu^d

^aDepartment of Economics, University of Ghana, Accra, Ghana; ^bDepartment of Economics, University of Ghana, Accra, Ghana; ^cDepartment of Business Administration, Universidad del Pacífico, Lima, Peru; ^dInstitute of Economic Affairs, Accra, Ghana

ABSTRACT

Effective access to mandatory non-wage benefits is key to workers achieving decent working conditions. This paper investigates the effects of union presence on workers’ access to non-wage benefits in the Ghanaian labor market. The study draws its data from the 2012–2013 Ghana Living Standards Survey (GLSS 6) and specifies a multivariate model that simultaneously controls for endogeneity and potential sample-selection biases. We find that unions have a significant effect on facilitation among workers by improving awareness of and access to work benefits. Other factors that affect benefit entitlements in Ghana include the gender of a worker, urbanization, firm size, sector formality, public v.s. private sector jobs, type of occupation, and the presence of work contracts amongst others. Results presented here indicate that workers from formal-sector firms with union presence are more likely to have access to non-wage benefits. It is also found that despite the statutory nature of these non-wage benefits, non-compliance was common, predominantly in the informal sector but also in the formal sector. This is particularly the case with respect to maternity leave benefits and indicates a need for greater enforcement of these laws.

KEYWORDS


Non-wage benefits; sample-selection; unions; labour markets; structural equation modelling

1. Introduction

How can compliance with universally mandated social benefits be consolidated and increased in order to ensure the welfare of vulnerable populations? This is a key policy concern for the Ghanaian labor force, whose poverty rate is around 30%, and where laws governing access to non-wage benefits are not fully complied with. This paper studies the role of unions as facilitators of access to such mandated benefits.

Accessing such benefits is particularly important for women. In the past, many women stayed at home to care for children and perform household duties. Today, however, women continue to perform domestic and care work but are also increasingly engaging in the labour market. While self-employment provides the kind of flexibility for mothers to combine work with household activities, those who are wage workers often have difficulty in finding an appropriate balance between domestic and market work. This is especially so where there is an absence of benefits such as paid holidays, sick leave and maternity leave. These employment laws not only enhance the quality

CONTACT Monica Puoma Lambon-Quayefio  mplambon-quayefio@ug.edu.gh

 Supplemental data for this article can be accessed [here](#).

© 2020 Oxford Department of International Development

of jobs, but also help to reduce the inherent incompatibilities between family and work life, and ensure continued labor market participation, especially by women.

While ensuring high employment levels has always been a main policy concern, there is an increasing focus on employment *quality*, as stated in Ghana's 2015 national employment policy. As noted by Helppie and Macis (2009), non-wage benefits are a main determinant of a job's overall quality. Non-wage benefits such as sick leave and maternity leave are particularly important for women, a vulnerable segment of the labor force, who often assume the dual responsibility of employment and household responsibilities. However, oftentimes workers are not even aware of already-existing benefits available to them. This paper therefore examines the effectiveness of an often-overlooked and significant role that unions play in increasing access to already-existing statutory non-wage benefits in Ghana.

Unionization plays a role in workers' access to benefits through two main mechanisms (Freeman, 1981; Freeman & Medoff, 1979): *i*) a monopoly effect and *ii*) a collective voice effect. A further third effect of unions is what has been termed 'facilitation effect' (Budd, 2007) which describes how unions can ensure workers' knowledge and awareness of existing benefit packages (Leigh, 1976). The presence of unions and their ability to educate workers about their benefit entitlements, in addition to guidance on the most efficient means of accessing them, encourages employees to better exercise their legitimate non-wage benefit endowments, which in turn, is beneficial from both an economic and social perspective.

The present study on the evidence for union facilitation effect in the Ghanaian labour market is motivated by the sparse economic literature on this area in sub-Saharan Africa in general, and Ghana in particular. This research, to the best of the authors' knowledge, is the first of its kind in Ghana and will shed light on the critical role of unions in ensuring a higher quality of work life through their facilitation. The empirical analysis included here builds on individual-level data from the sixth round of the Ghana Living Standards Survey (Ghana Statistical Service [GSS], 2019). The econometric model relates the non-wage benefits to union presence and controls for potential endogeneity and sample selection biases. Union facilitation effect is assumed to be heterogeneous, that is, conditional on firms' size, whether public or private sector, and formality status (Budd, 2005). The study therefore examines the moderating effect of these elements on the relationship between union presence and access to non-wage benefits.

Specific research questions explored include: Do unions play a role in workers' indicated entitlements to non-wage benefits in Ghana? And, is this 'facilitation' effect heterogeneous across the sector and firm size?

A review of the relevant literature is provided in the following second section, which includes a description of the state of labor unionization in Ghana and a brief theory of unions and unionization. The third section presents a description of the empirical methodology, data sources and summary statistics of the variables of interest. The results of the empirical findings are summed up and discussed in section four, while section five concludes and provides potential policy applications of the research findings.

2. The role of unions and facilitation effect

According to the seminal framework by Freeman and Medoff (1979), Freeman (1984), unions have two main functions, and each is expected to result in greater benefit packages for their members. The first already mentioned, is the 'monopoly' effect of unions. This refers to the situation where workers receive wage and non-wage benefits above the competitive level necessary to clear the market. It is often achieved through a union's threat of strike action against employers. The second is a union's 'collective voice'. It occurs when unionized workers receive higher levels of employee benefits through a re-negotiation of their total compensation package. This includes more benefits and fewer wages but holds the total compensation constant. This mechanism assumes that unions base their negotiations on the needs of the average worker (Freeman & Medoff, 1984).

Almost all studies of access to non-wage benefits, however, have been conducted in developed countries and tend to assume that workers have complete and full information about their benefit plans (for example, see Freeman & Medoff, 1984; Buchmueller et al., 2002; Sullivan & To, 2014). It is possible in other cases; then, that a worker who indicates a lack of non-wage benefit entitlement may simply be ignorant of these entitlements. An examination of differential response patterns among individual workers may therefore be indicative of awareness, rather than availability. This situation gives rise to the third role of unions, the union 'facilitation' effect (Budd, 2007). This refers to the ability of unions to facilitate workers' knowledge and awareness of existing benefit packages. For example, Leigh (1976) found that unionized employees were more knowledgeable about their pension plans than non-union employees. With the facilitation effect, unions do not necessarily increase the actual quantity of employee benefits, but they increase the coverage of these benefits by raising awareness of their existence.

According to Budd (2007), a critical preliminary indicator of union facilitation effect is the higher reporting of union benefits in workplaces with a heavier union presence, even if those benefits are legally mandated with expected universal coverage. The presence of unions and their ability to educate workers on their benefit entitlements and the most efficient means of accessing them encourage employees to better exercise their legitimate non-wage benefit endowments, which is beneficial from both economic and social perspectives. According to Budd (2005), union facilitation effect differs by the productivity of workplaces, the sector of employment and by the size of establishments. In this study, interactions are therefore constructed between union presence, firm size and formality. This helps to correct for potential heterogeneity in union facilitation effect in the study.

When it comes to statutory universal non-wage benefits, unions do not necessarily increase the total compensation of workers (monopoly effect), or its distribution (collective voice effect). They instead work in the following ways: i) increase effective coverage by increasing awareness of existing benefit packages, ii) inform on how these may be accessed, and, iii) provide protection from employer retaliation as a result of the valid accessing of these benefits. Due to the higher cost to employers of providing these benefits, it may be against their best interests to encourage worker awareness of existing benefits. Collective agreements and compensation packages may also be complex and difficult for workers to understand. Hence, unions play an important role in channeling this information to workers through, for example, circulation of union publications and regular training workshops.

Although few studies on the facilitation effect of unions (compared to other effect -monopoly and collective voice) exist, these studies consistently show a positive role played by unions in ensuring employees' coverage of benefits. For instance, according to Kramer (2008) and Budd (2005), union-represented workers in the United States are more likely, compared to nonunionized workers, to file worker compensation claims and receive more unemployment benefits. Union members are also more knowledgeable about their benefit packages (Budd & Brey, 2003). Furthermore, in the United States, unionized workers are 1.3 times more likely than nonunionized workers to be allowed to use their own sick time to care for a sick child, representing 37%, compared to 28%, respectively (Lovell, 2004). Generally, unions make it easier for employees to not only be aware of these rights, but also to take advantage of them, and in the most appropriate ways.

Although not all studies on union facilitation effect account for the potential self-selection bias, selection into union status may be a function of both worker and employer choices (Abowd & Farber, 1982). Workers may choose to enter a job with an active union presence, with the expectation of better working conditions (wage and non-wage benefits). However, not all workers who desire union employment can find union jobs (Bryson & Freeman, 2006). Thus, this paper estimates a multivariate model coupled with an instrumental variable approach to correct for this potential source of self-selection bias. The assessment of the union facilitation effect was conducted by comparing access to benefits by workers who reported that there is union presence at their workplaces and workers who did not.

Labor unionization in Ghana

According to the 2015 Labour Force Report (GSS, 2016) approximately two-thirds of the working-age population – 15 years and older – are employed; with a higher proportion of men (71%) than women (65%). The total unemployment rate is 11.9%, higher among women (12.5%) than men (11.1%). Although at the time of independence, state-owned enterprises employed the majority of the labour force, the introduction of the Economic Reforms of the 1980s in response to macroeconomic imbalances in the economy, and subsequent privatization of these state-led institutions, led to a massive loss of jobs and relegation of workers to the informal economy. The informal sector now employs 90% of the currently employed labour force, with men making up 45.1% and women 54.9%. The main occupations in Ghana are skilled agriculture, forestry and fishery, although the majority of women are employed in the sales and service sector, particularly in urban areas.

Unionization in Ghana began in the mid-1900s, with protests by miners and other employees of the Public Works Department of what was then the Gold Coast, due to delays in their pay. Strikes by domestic workers and teachers also took place throughout this period so that by 1945, 14 trade unions came together to form the Trade Union Congress (TUC) of the Gold Coast. These included the Government School Teachers Union (1925); Motor Drivers Association (1928); Carpenters Association (1929); and the Motor Transport Union of Ashanti (1931), to name a few.

Trade Union rights are recognized by national legislation in Ghana through the ratification of a number of ILO conventions, and also through the 1992 Constitution and Labor Act. Eligible trade unions acquire collective bargaining certificates from the Labor Department and therefore have the right to enter into collective bargaining with employers. The percentage of unionized workers in the country declined sharply in the wake of the implementation of the World Bank and IMF Structural Adjustment Programmes (SAP) of the 1980s, and the subsequent retrenchment of a number of public sector workers. According to the Ghana Statistical Service (GSS, 2008), more recently, the proportion has declined from 52% in 1999 to 37% in 2006, largely due to the inability of the formal sector to expand.

The two main trade union federations in Ghana are the Ghana Trade Union Congress (GTUC) with about 350,000 members, mostly from the formal sector; and the Ghana Federation of Labour (GFL) with about 10,000 workers. A number of other trade unions are not affiliated with either of these two federations and together have over 200,000 members (Britwum, 2009). Trade unions provide three main services: the collective negotiation of monetary and non-monetary benefits,¹ legal representation, and education, training and research. By law, all workers (whether in the private or public sector, or formal or informal economy) are entitled to certain statutory non-wage benefits such as social security, paid maternity leave, paid sick leave, paid annual leave, work injury compensation, paid overtime, and severance pay. Non-statutory benefits include free medical care, loans, education bursaries, free transport, to name a few.

Gallin (2001) discusses two tracks by which the unionization of the informal sector occurs: first, when new trade unions are created specifically to organize workers in the informal sector (e.g. Self Employed Women's Association-SEWA in India); and second, when a traditional union extends its field of activity to include the informal sector. The latter appears to be more common (country examples include Canada, Senegal, Hong Kong, Benin, Brazil, Australia, etc.). In Ghana, this second track has also been adopted. As mentioned above, over 90% of Ghana's total workforce is employed in the informal sector and almost all newly created jobs are based in this informal economy. The situation has galvanized the Ghana TUC, a traditional union, to prioritize the organization of informal sector workers into sector unions in order to protect their labour rights and work conditions. To this end, the Ghana TUC has established a special union called the Union of Informal Workers Association (UNIWA), which has a mandate to organize different informal economy worker associations into its fold (Trade Union Congress (TUC), 2012). UNIWA currently represents 20 informal economy associations comprising primarily of own-account traders,

caterers, porters, musicians, actors, and physically disabled workers, among others. Organizing informal sector workers has advantages for the GTUC as well; given the declining percentage of unionized formal sector workers, the numerical strength of UNIWA and TUC Ghana improves their political advantage over other stakeholders.

Although informal sector workers are largely heterogeneous, the Ghana TUC currently prioritizes the organization of own-account workers (apprentices and informal sector wage employees are less visible and more difficult to organize). The efforts of UNIWA are supplemented by the organization of members of the informal sector by formal sector unions such as GAWU (General Agricultural Workers Union), TWU (Timber Workers Union) and GPRTU (Ghana Private Road Transport Union).

Interviews with executives of the Ghana Trade Union Congress indicate that apart from wage benefits, it is often the case that workers have little or no information about other non-wage benefits contained in their collective agreements, indicating some scope for improved dissemination activities by unions within the country. The Trade Unions in Ghana provide training to UNIWA informal associations on a range of topics including organizing, labour rights, collective bargaining and negotiations with local authorities. Unions have also engaged in dialogue on issues of importance to the informal sector. In Ghana, according to Baah (2007), trade unions in Ghana have achieved some successes in improving the conditions of work of some informal sector workers in the areas of policy advocacy (e.g. tax exemption for minimum wage earners in the informal sector in 2005); and economic gains and capacity enhancement (e.g. GPRTU and GAWU facilitate access to institutional credit and basic tools such as cutlasses, for their members). Trade unions have also led high-profile delegations to national tripartite boards on matters related to the extensions of social protection and health insurance schemes to the informal economy.

Nonetheless, because informal sector activities often occur outside the formal reach of the law, where the law is not effectively enforced, it is not surprising that despite the statutory and universal nature of non-wage benefits in the Ghanaian labour, workers in the informal sector have lower indicated benefit entitlements, regardless of union presence (see Table 2). An additional complication is that despite the mandatory nature of non-wage benefits, negotiations between the employer and the employee can lead to different combinations of wage and fringe benefits for different workers, especially in the private sectors and informal economies. Personal characteristics of workers such as their gender, age and socioeconomic backgrounds may therefore be other important considerations of workers' non-wage entitlements.

3. Data and methods

The sixth round of the Ghana Living Standards Survey (GLSS 6) is used in this research study. This survey covered a nationally representative sample of 18,000 households and over 70,000 individuals in 1200 enumeration areas. A two-stage stratified sampling design was adopted with the 1200 enumeration areas selected as the primary sampling units (PSU) for the study. At the secondary stage, 15 households were systematically selected from each PSU to arrive at the 18,000 observations for the study. Detailed information is collected on households' demographic characteristics; education; health; employment and time use; migration and tourism; housing conditions; household agriculture; and access to financial services and asset ownership. Previous rounds of the survey have always identified a special focus of the data collection activity. In the sixth round, the Labor Force Module is the focus of interest, with additional information collected on child labor and household financial services (see also Owoo, 2016).

Of the over 70,000 individuals sampled, about 39,986 are within the working ages of 15 and 65 years of age (the period that individuals are legally able to be employed in Ghana). Since the NWB Ghanaian legislation does not apply to the self-employed population, our sample of interest is composed of paid workers, domestic workers, apprentices and the like, totalling 6,541 workers.

Table 1. Descriptive statistics of study variables.

(a) (Full Sample)				
	Mean	SD	Minimum	Maximum
Dependent Variables				
Indicated entitlement to paid holidays	0.387	0.49	0	1
Indicated entitlement to sick leave	0.397	0.49	0	1
Indicated entitlement to maternity leave	0.162	0.37	0	1
Explanatory Variables				
Gender of worker (male = = 1)	0.651	0.48	0	1
Union	0.285	0.45	0	1
Potential experience	20.992	11.11	3	57
Urban residence	0.682	0.47	0	1
Education (years)	12.209	2.43	0	16
Occupation				
Clerical workers	0.042	0.20	0	1
Craft workers	0.196	0.40	0	1
Managers	0.034	0.18	0	1
Plant and machine operators	0.107	0.31	0	1
Professionals	0.215	0.41	0	1
Service and sale workers	0.222	0.42	0	1
Technicians and Associate professionals	0.051	0.22	0	1
Unskilled workers	0.105	0.31	0	1
Skilled agricultural workers	0.029	0.17	0	1
Poor households	0.108	0.31	0	1
Firm size (i.e. # people employed)	19.612	100.91	0	2800
Public sector worker	0.267	0.44	0	1
Formal sector worker	0.447	0.50	0	1
North region residence	0.120	0.33	0	1
Signed contract at time of employment (No = 1)	0.237	0.43	0	1
Housing Expenditure (cedis per annum)	900	391	318	1565
Transport Expenditure (cedis per annum)	897	381	368	15,310
Education Expenditure (cedis per annum)	12,355	432	424	1824
No religion	0.048	0.213	0	1
Christian religion	0.815	0.389	0	1
Muslim religion	0.138	0.344	0	1
Observations	4410			
(b) Woman-Only Sample				
	Mean	SD	Minimum	Maximum
Dependent Variables				
Indicated entitlement to maternity leave	0.260	0.44	0	1
Explanatory Variables				
Union	0.254	0.44	0	1
Potential experience	16.246	7.87	3	40
Urban residence	0.708	0.45	0	1
Education (years)	11.991	2.57	0	16
Occupation				
Clerical workers	0.055	0.23	0	1
Craft workers	0.186	0.39	0	1
Managers	0.024	0.15	0	1
Plant and machine operators	0.007	0.08	0	1
Professionals	0.205	0.40	0	1
Service and sale workers	0.400	0.49	0	1
Technicians and Associate professionals	0.030	0.17	0	1
Unskilled workers	0.077	0.27	0	1
Skilled agricultural workers	0.015	0.12	0	1
Poor households	0.121	0.33	0	1
Firm size (i.e. # people employed)	18.103	94.36	0	1998
Public sector worker	0.253	0.43	0	1
Formal sector worker	0.415	0.49	0	1
North region residence	0.130	0.34	0	1
Signed contract at time of employment (No = 1)	0.253	0.43	0	1
Housing Expenditure (cedis per annum)	883	386	318	1565
Transport Expenditure (cedis per annum)	883	374	368	1531

(Continued)

Table 1. (Continued).

	(a) (Full Sample)			
	Mean	SD	Minimum	Maximum
Education Expenditure (cedis per annum)	1218	432	425	1824
No religion	0.023	0.150	0	1
Christian religion	0.858	0.349	0	1
Muslim religion	0.119	0.324	0	1
Observations	1,389			

Table 2. Share of workers (%) with union and non-union presence with indicated non-entitlement to non-wage benefits, by formality, GLSS 6.

	Paid Holidays		Sick Leave		Maternity Leave*	
	Formal	Informal	Formal	Informal	Formal	Informal
Union Presence						
10.8%	77.00%	13.10%	74.70%	41.10%	90.70%	
Non-Union Presence						
47.00%	90.20%	44.60%	87.50%	61.80%	88.00%	

*Women-only sample; aged 15–49 (childbearing age).

Data on non-wage benefits are available for 6,530 of these workers. Missing information on several exogenous variables of this study further reduces the sample to 4,410. Summary statistics based on the latter sample are presented in Table 1; whereas Table 1 presents descriptive statistics for women in their childbearing years only (1,389).

In the full sample, about 39%, 40% and 16% of workers in the sample answered in the affirmative to the question about whether they have access to paid holidays, sick leave and maternity leave, respectively. This is despite the fact that these are universal statutory non-wage benefits which are expected to cover *all* formal and informal sector workers. Approximately 29% of workers report that there is trade union presence at their place of work. Here, the survey question asked was ‘Is there a trade union at the place where (Name) works?’ This may be represented by a union office at the workplace, or workers who are also executives of the union. Where present, there is therefore a feeling on the part of workers that unions are interested and involved in matters relating to worker welfare, and continually negotiating on their behalf for improved terms of service. This, however, varies by industry with the highest rates of unionization in Ghana observed in the utilities sector, and the lowest in the constructions sector.

Sixty-five percent of workers in the sample are men, and the average worker has about 21 years of potential working experience. Potential working experience is calculated as the difference between workers’ current age, and the age at which education was completed. This difference is used as a proxy for the amount of time that workers may have spent working. The average worker has about 12 years of education, with the majority of more educated workers being men. In Ghana, this disparity in educational attainment among men and women has been noted in the literature (Baah-Boateng, 2012). Sixty-eight percent of the sample reside in urban areas and, with respect to incomes, about 11% of workers have been classified as ‘poor’ in the GLSS dataset. This was done using the expenditure of a minimum consumption basket required by an individual to fulfill his or her basic food and non-food needs.

With respect to firm size, the average number of workers in the firms in which the respondents work is about 20, with a range of between 0 and 2,800 workers. Twenty-seven percent of workers are engaged in the public sector and less than half (45%) of the workers are employed in the formal sector. The informal economy includes both enterprises that are not legally regulated and employment relationships that are not legally regulated or socially protected Firms which have their businesses registered with the Registrar-General in Ghana are considered to be fully formal. Degrees of formality are typically present in the Ghanaian labour market, and for purposes of this research, the following are classified as belonging to the formal sector in the GLSS data: workers

in the civil service, other public service, parastatals, NGOs, co-operatives, international organizations and ‘private formal’ sectors. In the GLSS, informality is defined as firms that have no established procedures for keeping records, recruitments, promotions and dismissals.

In addition to descriptive statistics of the study variables, we also present a table of the share of workers who belong to unions but do not receive non-wage benefits; this is disaggregated by formal and informal sector workers.

About 11%, 13% and 41% of all workers with union presence in the formal sector report that they do not receive paid holidays, sick leave and maternity leave benefits, respectively. These proportions are however considerably lower than rates observed in the informal sector. In the informal sector, 77%, 75% and 91% of workers who belong to unions do not report access to these benefits. The situation is, however, worse for workers without union presence. Here, a larger proportion of workers in both formal and informal sectors indicate non-entitlements to the various benefits, compared to their counterparts with union presence.

3.1. Econometric specification

Our population of interest refers to wage workers, the only ones that may benefit from union presence and that may be granted non-wage benefits. Hence, we must control for a potential self-selection bias in our regression analysis. Self-selection (endogeneity) bias may be present if individuals deliberately select themselves into paid jobs offering statutory non-wage benefits over self-employment among others. More specifically, more able workers may be more likely to seek high-quality wage employment characterized by union presence and granting higher total compensation packages (higher wages and non-wage benefit compliance). As this ability is not fully observed by the econometrician through survey data, it is considered as an unobserved determinant of the non-wage benefit (ε_i) and union presence ($Union_i$). This induces a correlation between union presence and the error term in the following relation (1):

$$NWB_i = \beta Union_i + \gamma' X_i + \theta_1 \lambda_i + \varepsilon_i \quad (1)$$

where NWB_i represents the dichotomous outcome of interest, access to paid holidays, sick leave or maternity leave; $Union$ is a dummy variable for union presence while β measures the union facilitation effect; X_i is a vector of control variables (including the constant term) and γ is its corresponding parameter vector. A zero mean random term (ε_i) stands for the factors that remain unobserved. Moreover, the Ghanaian labor survey data described in the preceding section are characterized by a high rate of non-response regarding non-wage benefits (of about 75% of the employed sample) which might be attributed to lack of awareness regarding the compliance with NWB at the workplace. Such an important missing-responses rate motivates a sample selection bias correction in order to deal with a potential ‘missing not-at random’ (MNAR) pattern in the data (Rubin et al., 1995). In this setup, the selection probability corresponds to an individual being employed or having a non-missing answer to the NWB question.

Since (1) is observed only for the salaried employed population ($E_i = 1$) and censored for those unemployed, self-employed and the like ($E_i = 0$), we apply a two-step Heckman sample selection correction by introducing the Inverse Mills-ratio (IMR) – noted λ_i – in Equation (1). It should be noted that Heckman’s probabilistic modeling of main outcome’s missing pattern fits general setups beyond the wage censoring case (Koné et al., 2019). We obtain empirical identification of the estimated parameters, without exclusion restriction (verified by variance inflation factors), from the implied non-linearity in the IMR. Analog identification strategies have already been implemented in the literature by Leung and Yu (1996, 2000), Puhani (2000), and Millimet and Tchernis (2013).

Even though we do not focus on the effect of workers unionization (clearly endogenous), but on the effect of *union presence at the workplace*, we account for the potential endogeneity with statutory non-wage benefits. Hence, we implemented an instrumental variable approach where a set of

instruments (Z_i) only related to NWB_i through $Union_i$ and not correlated to ε_i are required in order to identify the union effect (β). Our approach follows Budd and Na (2000) who identified a broader set of analogous instruments to identify unions' impact on monetary benefits in the US. In regions where certain services are expensive, workers have higher incentives to join unions according to what they can provide for members (e.g. housing, children education, health subsidies and the like). These regional costs, however, are not expected to determine whether a worker is granted non-wage benefits. We also include workers' religion fixed effect as instruments. Belonging to a religious group may imply that a person enjoys social and community networks; and may therefore also belong to a union. Schnabel and Wagner (2005) put this hypothesis to the test and found that religious associations are an important determinant of unionization. A worker's religion however is not expected to determine whether an employer grants him/her NWB. Specifically, we chose, as instruments, per capita regional costs (education, housing and transportation) and workers' religion fixed effect. Thus, the auxiliary equation is defined as:

$$Union_i = \gamma_2'X_i + \theta_2\lambda_i + \gamma_3Z_i + u_i \quad (2)$$

where $Union_i$ represents the dichotomous variable of interest that describes whether or not the i th worker reports union presence, X_i is the vector of exogenous variables while λ_i is the IMR regressor that must also be introduced in the auxiliary equation as in any standard 2SLS-IV.

3.1.1. Heterogeneous effect

Existing literature indicates the potential for heterogeneous union facilitation effect according to firm and sector characteristics (Blanchflower & Bryson, 2004; Saavedra & Torero, 2002). We therefore employ interaction effect between union presence and firm size (Union*Employees); union presence and formality (Union*Formal) and union membership and public sector employment (Union*Public).

3.1.2. Functional form

Despite the linear probability model (LPM) limitations, Anderson (1987) and Deke (2014) argue that it provides consistent estimates of the impact of a binary treatment variable (Union) on a binary outcome (NWB) that neither a probit nor a logit can provide.² Although an endogenous probit specification could be a textbook choice³ for Equations (1) and (2) and auxiliary equations, they imply a complex likelihood function that requires the empirical identification of second-order moments, such as the implied conditional correlations between them. It should be noted that sequential probits with endogenous dummy regressors could theoretically be identified by the non-linearities imposed by the parametric distribution (without instruments or exclusion restrictions), as argued by Wilde (2000), if there is enough variability among X_i 's to exploit the non-linearities. Nevertheless, a preliminary estimation of such a model with exclusion restrictions (instruments) pointed to a lack of empirical identification due to the complexity of the likelihood function dealing with a fourth dimensional integral; which is in line with the computational stability issues highlighted by Keane (1992). Thus, we posit the more parsimonious LPM for the equations.

4. Estimation results and discussion

We examine results from a base linear probability model, which indicate higher likelihoods of indicated non-wage benefits for workers with union presence.⁴ However, given the potential sample selection and endogeneity, estimation results of our preferred econometric model, which correct for these potential issues, are presented for each non-wage benefit in Table 3: paid holidays, sick leave and maternity leave. Regressions for maternity leave are restricted only to women of childbearing age in the sample, by definition. Results from the NWB equations (Equation (1)) are presented in Table 3, while results for the auxiliary equations are included in Appendix A.

Table 3. Regression results – determinants of non-wage benefits (Heckman-IV model).

Variables	Paid Holidays	Sick Leave	Maternity Leave
Union	0.330*** (6.01)	0.166** (2.20)	0.0824 (0.66)
Male	0.0357* (1.75)	0.214*** (11.11)	
Potential Experience	0.000503 (0.72)	0.000214 (0.32)	0.00251 (1.58)
Urban	0.0675*** (2.66)	0.0647** (2.54)	-0.0183 (-0.44)
Education (none)	-0.0207 (-0.77)	-0.00413 (-0.16)	-0.0285 (-0.58)
Occupations (base group is skilled agric. workers)			
Clerical	0.206*** (4.97)	0.160*** (3.86)	0.182** (2.46)
Craft	-0.0468 (-1.31)	-0.00673 (-0.19)	0.0616 (1.09)
Managers	0.256*** (4.54)	0.216*** (3.95)	0.262** (2.33)
Plant and machinery	0.0141 (0.36)	-0.00881 (-0.22)	0.0483 (0.38)
Professionals	0.304*** (8.22)	0.209*** (5.46)	0.248*** (3.80)
Service and sales	0.0618* (1.73)	0.130*** (3.69)	0.0517 (1.02)
Technical and Assoc.Prof	0.187*** (4.22)	0.145*** (3.65)	0.271*** (3.12)
Unskilled	0.0202 (0.55)	-0.0225 (-0.72)	0.0625 (1.03)
Poor	-0.000333** (-2.36)	-0.0000870 (-0.38)	-0.000167 (-0.39)
Firm size	0.000158*** (3.19)	0.000113 (1.29)	-0.0000633 (-0.43)
Union*firm size	-0.000225** (-2.58)	-0.0000805 (-0.64)	-0.000283 (-1.32)
Public sector	0.144*** (4.99)	0.0137 (0.38)	0.128** (2.29)
Union* Public sector	-0.00347 (-0.08)	-0.00609 (-0.12)	-0.117 (-1.11)
Formality	0.215*** (10.80)	0.186*** (7.29)	0.110** (2.55)
Union*Formality	0.104*** (2.97)	0.0403 (0.77)	0.211** (2.16)
Northern Ghana	-0.049* (-1.78)	-0.061** (-2.46)	0.029 (0.50)
No contract	-0.059*** (-3.57)	-0.058*** (-2.95)	-0.048 (-1.32)
Mills – ratio Inverse	-0.009 (-0.23)	-0.009 (-0.21)	-0.046 (-0.49)
Constant	-0.007 (-0.08)	-0.084 (-0.90)	0.089 (0.43)
# Observations	4,410	4,410	1,389

t statistics in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In Table 3, union presence is positively and significantly linked with an increased likelihood that workers will indicate entitlements to paid holidays and sick leave. This is consistent with the above-discussed ability of unions to educate and raise awareness of workers' non-wage benefit entitlements (Budd, 2007). For instance, Osei-Boateng and Torgbe (2012) describe how during training and education sessions held in Ghana to improve members' understanding of the processes and contents of their collective bargaining agreements, it was observed that members had limited or no knowledge of the non-wage benefit entitlements contained in their agreements.

We also examined the moderating effect of formality, the public sector and firm size on unions' facilitation effect. With respect to formality, it is observed that formal sector workers with union presence were more likely to report access to paid holidays and maternity leave entitlements. Positive and significant interaction effect also suggests that union presence strengthened the relationship between formal sector workers and their non-wage entitlements. The greater access to non-wage benefits among formal sector workers may be related to the higher degree of enforceability in the formal sector. The heterogeneous union effect between formal and informal sectors may be explained by two factors; first, the proportion of unionization is much lower in the informal compared to the formal sector, which limits union activity and coverage, and therefore the ability of unions to raise awareness of statutory benefits. Additionally, in the informal sector, there is a higher degree of non-compliance, even with union presence (illustrated in Table 2), due to the lack of enforcement and monitoring from the labor regulatory institution.

We find that public sector workers are more likely to report paid holiday and sick leave benefits, compared to workers in the private sector. Again, this may be explained by the high rate of enforceability in public institutions, given the statutory nature of these benefits. Bigger firms have more benefit entitlements, compared to smaller firms; indeed, Figure 1 shows that the proportion of non-wage benefit entitlements increases with firm size, except for the maternity leave. We note, however, that workers in larger firms with union presence are less likely to report access to paid holidays.

Although not the focus of the empirical analyses, other findings are worthy of mention. Generally, men are more likely to report access to sick leave, compared to women. This gender differential in entitlements should be explored in greater detail to ensure a more balanced distribution within the country, given the usefulness of these benefits in easing noted incompatibilities between work and family among women (Lovell, 2004). Workers in urban Ghana are more likely to report access to benefits, compared to rural workers. With respect to occupational categories, where skilled agricultural workers constitute the reference group, clerical workers, managers, sales/service, professionals and technicians are more likely to have access to non-wage benefits. Workers from

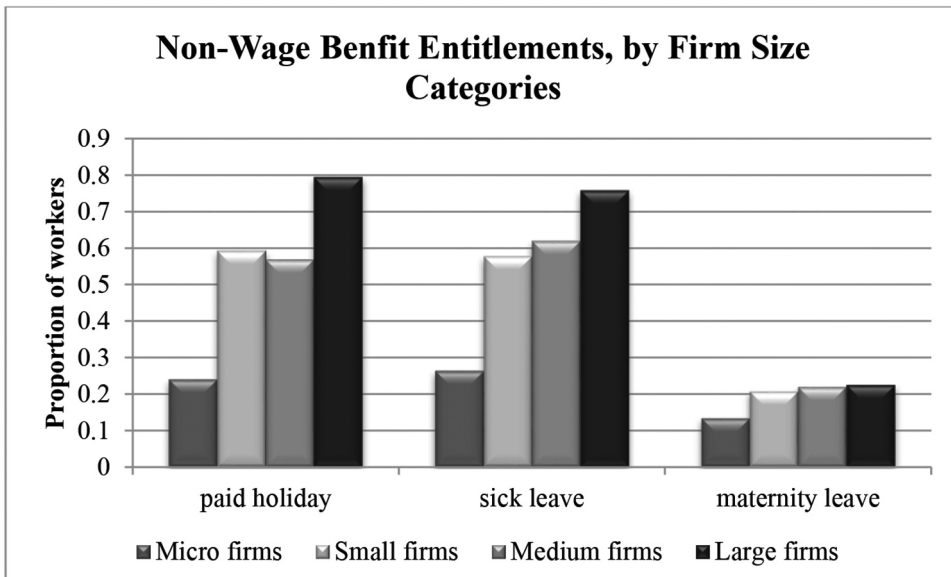


Figure 1. Reported Entitlements of Non-Wage Benefits, by Firm size, GLSS 6. *Maternity leave is calculated only for women in the sample.

poorer households were less likely to report access to paid holidays while the absence of written terms of employment reduced the likelihood of reporting access to benefits. Finally, workers in northern Ghana were less likely to report access to non-wage benefits, compared to workers in southern parts of the country.

5. Conclusion and policy implications

This paper's main objective was to study the role of unions as facilitators of statutory social benefits in the Ghanaian labor market. We found that despite the statutory nature of these benefits, not all workers reported access to non-wage benefits. In Ghana, several laws and provisions exist to regulate the employment relationship including the 1992 constitution, the Labour Act, 2003 (Act 651) and Labour Relations, 2007 (L. I. 1833), among others. In some cases, employers are ignorant of the rights and compensations that their workers are entitled to by law, while in other cases, employers blatantly violate these labour regulations (Amankwah & Anku-Tsede, 2013). An explanation for the latter case may be due to the under-resourced nature of the National Labour Commission (NLC), which inhibits its ability to properly monitor and ensure compliance of labour rules. A research study by Aryeetey et al. (2011) found that many Ghanaian organizations require employees to work for more than the stipulated eight hours provided for in the country's Labour Act, with no overtime compensation; a practice clearly against the existing labour laws. Although Ghana has signed on to international labour agreements and treaties, international organizations such as the ILO may not possess the required enforcement and sanctioning mechanisms to compel compliance with certain labour standards. Particularly given that some employers may adopt tactics to prevent workers from unionizing (ILO International Labour Office, 2006), it is important to take steps to ensure and protect workers' rights to unionize, given that, as this study finds, it can directly impact their wellbeing.

As expected, we verify that the union facilitation effect is stronger among formal workers compared to informal ones. We also find evidence of higher union facilitation effect among formal-sector firms. Workers in larger firms and in the public sector also have more benefit entitlements.

We also highlight important gender effects from our analyses. Our regression results indicated that men are more likely to report sick leave entitlements, compared to women. Interestingly, men are more likely to report union presence, compared to women, indicating that women may not feel as affected by union's activities at their workplaces, in comparison to men. Indeed, female workers report very low access to maternity leave benefits, even in larger firms (see Figure 1). We therefore note that unions have an important role to play in bridging the gap in NWB. Women should be encouraged to participate more fully in union activities in order to gain better knowledge of their statutory rights and how to access them. Additionally, unions may play an important role in protecting women from being unfairly targeted as a result of accessing benefits. For example, Amankwah and Anku-Tsede (2013) found that although women in Ghana may be given their maternity leave benefits, they often lose their end-of-year bonuses, a supposed penalty for the leave from work. Although not the focus of this work, additional research needs to be undertaken to examine existing consequences of accessing non-wage benefits in the Ghanaian labour market, particularly as it affects women.

The empirical evidence from this research suggests that in order to reach development goals, it will be important to pay attention to the enforcement of existing laws to provide non-wage benefits. This might imply greater work on the part of the umbrella union bodies to increase awareness of workers' entitlements. Indeed, these efforts would be neatly aligned with a main objective of the National Employment Policy by Ministry of Employment and Labour Relations (Ministry of Employment and Labour Relations [MELR], 2014) of Ghana, which seeks to improve the quality of work among those who are already employed.

Notes

1. It is estimated that about 2/3rd of all formal sector jobs are subject to collective bargaining agreements.
2. Further discussion and references for this are provided by Caudill (1988) and Horrace and Oaxaca (2006).
3. Such models bound the estimated probability within the 0–1 interval whilst the linear-probability model does not. Nevertheless, neither model is supposed to be the true one.
4. Results available upon request.

Acknowledgments

This research work was carried out with financial and scientific support from the Partnership for Economic Policy (PEP) with funding from the Department for International Development (DFID) of the United Kingdom (or UK Aid), and the Government of Canada through the International Development Research Center (IDRC). This paper is developed from the working paper by Owoo et al. (2017). The authors are also grateful to Prof. Luca Tiberti for technical support and guidance.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Partnership for Economic Policy; Department for International Development (DFID); International Development Research Center (IDRC).

Notes on contributors

Nkechi S. Owoo: Her work ranges a number of topics including Food security, health and labour. She completed her PhD in Economics from Clark University, Massachusetts in the USA in 2012, and is now a senior lecturer at the University of Ghana. Nkechi works as a Research Associate at ARUA ACEIR.

Monica Puoma Lambon-Quayefio: In 2014, she completed her PhD at Clark University, Massachusetts in the USA. She is now a senior lecturer in the Department of Economics at the University of Ghana with broad research interest in demography and health economics. Monica is a Research Associate at ARUA Africa Center of Excellence for Inequality Research (ACEIR).

Jorge Dávalos: is an Associate Professor at Universidad del Pacífico in Lima, Peru. His research focuses on applied labour econometrics, impact evaluation and trade and labor market outcomes in developing countries (funded by a Swiss National Fund research grant). He was an econometrician at ILO's Regional Office for Latin America & the Caribbean. He collaborated in consultancy projects with the World Bank and other financial institutions. In collaboration with United Nations-ILO, he developed employment projection models with the purpose of forecasting skills mismatches at the sectorial level based on econometric and Input-Output methodologies for Peru, Costa Rica, Algeria and Ecuador. Jorge holds a Ph.D. in econometrics from the University of Geneva.

Samuel B. Manu: is a Ph.D candidate at the School of Economics at the University of Cape Town (UCT) in South Africa, and a Research Officer at the Institute of Economic Affairs (IEA) Ghana. His doctoral research focuses on investigating the macroeconomic and welfare implications of foreign exchange intervention in inflation targeting developing economies. Samuel has considerable experience in macroeconomic modelling and survey data analysis. He holds an MPhil in Economics from the Kwame Nkrumah University of Science and Technology.

ORCID

Monica Puoma Lambon-Quayefio  <http://orcid.org/0000-0003-4126-6430>
Jorge Dávalos  <http://orcid.org/0000-0002-9428-9313>

References

- Abowd, J., & Farber, H. S. (1982). Job queues and the union status of workers. *Industrial & Labor Relations Review*, 35(3), 354–367. <https://doi.org/10.1177/001979398203500305>
- Amankwah, M. O., & Anku-Tsede, O. (2013). Enjoyment of statutory employee rights? A myth or a reality in Ghana? *International Journal of Business Administration*, 4(6), 6. <https://doi.org/10.5430/ijba.v4n6p145>
- Anderson, G. J. (1987). Prediction tests in limited dependent variable models. *Journal of Econometrics*, 34(1–2), 253–261. [https://doi.org/10.1016/0304-4076\(87\)90074-1](https://doi.org/10.1016/0304-4076(87)90074-1)
- Aryeetey, M., Yeboah, F. Y., & Sanda, A. (2011). Learning towards enabling work life balance for female professionals in Ghanaian organisations. *Business & Management Quarterly Review*, 2(4), 1–13.
- Baah, Y. A. (2007). *Organizing the informal economy: Experience and lessons from Asia and Africa*, Ghana TUC (LOFTF (Denmark) Project). TUC-Accra.
- Baah-Boateng, W. (2012). *Labour market discrimination in Ghana: A gender dimension*. Lambert Academic Publishing.
- Blanchflower, D. G., & Bryson, A. (2004). What Effects Do Unions Have on Wages Now and Would Freeman and Medoff be Surprised?. *Journal of Labour Research*, 25(3), pp. 383–414.
- Britwum, O. A. (2009). *Union democracy and the challenge of globalisation to organized labour in Ghana* [Doctoral dissertation]. Maastricht University.
- Bryson, A., & Freeman, R. (2006). *Worker needs and voice in the US and the UK* (Working Paper #12310). NBER.
- Buchmueller, T. C., DiNardo, J., & Valletta, R. G. (2002). Union effects on health insurance provision and coverage in the United States. *Industrial & Labor Relations Review*, 55(4), 610–627. <https://doi.org/10.1177/001979390205500403>
- Budd, J. W. (2005). The effect of unions on employee benefits: Updated employer expenditure results. *Journal of Labor Research*, 26(4), 669–676. <https://doi.org/10.1007/s12122-005-1004-6>
- Budd, J. W. (2007). The effect of Unions on Employee Benefits and Non-Wage Compensation: Monopoly Power, Collective Voice, and Facilitation. In: I. James T. Bennett and Bruce E. Kaufman, ed. *What Do Unions Do? A Twenty Year Perspective*. Piscataway, NJ: Transaction Publishers, pp. 160–192.
- Budd, J. W., & Brey, A. (2003). Unions and family leave: early experience under the family and medical act. *Labor Studies Journal*, 28(3), 85–105.
- Budd, J. W., & Na, I. G. (2000). The union membership wage premium for employees covered by collective bargaining agreements. *Journal of Labor Economics*, 18(4), 783–807. <https://doi.org/10.1086/209977>
- Caudill, S. B. (1988). Practitioners corner: An advantage of the linear probability model over probit or logit. *Oxford Bulletin of Economics and Statistics*, 50(4), 425–427. <https://doi.org/10.1111/j.1468-0084.1988.mp5004005.x>
- Deke, J. (2014). *Using the linear probability model to estimate impacts on binary outcomes in randomized controlled trials* (Mathematic Policy Research (Reports 62a1477e274d429faf7e0c71b)). Mathematica Policy Research.
- Freeman, R. B. (1981). The effect of unionism on fringe benefits. *Industrial & Labor Relations Review*, 34(4), 489–509. <https://doi.org/10.1177/001979398103400401>
- Freeman, R. B. (1984). *What do unions do?* Basic Books.
- Freeman, R. B., & Medoff, J. L. (1979). The Two Faces of Unionism. *The Public Interest*, 57(Fall, 1979), pp. 69–93.
- Freeman, R. B., & Medoff, J. L. (1984). *What Do Unions Do?* New York: Basic Books
- Gallin, D. (2001). Propositions on trade unions and informal employment in time of globalization. *Antipode*, 19(4), 531–549. <https://doi.org/10.1111/1467-8330.00197>
- Ghana Statistical Service (GSS). (2008). *Ghana living standards survey fifth round (GLSS 5)*, Ghana Statistical Service.
- Ghana Statistical Service (GSS). (2016). *2015 labour force report*.
- Ghana Statistical Service (GSS). (2019). *Ghana living standard survey (GLSS 6) main report*.
- Helppie, B., & Macis, M. (2009). *The impact of non-wage benefits on job quality and labour market outcomes in the developing world* (World Bank Employment Policy Primer (No. 13)). The World Bank.
- Horrace, W. C., & Oaxaca, R. (2006). Results on the bias and inconsistency of ordinary least squares for the linear probability model. *Economics Letters*, 90(3), 321–327. <https://doi.org/10.1016/j.econlet.2005.08.024>
- ILO International Labour Office. (2006). *International Labour Office National labour law profile: Ghana*. [Online] Available at: https://www.ilo.org/ifpdial/information-resources/national-labour-law-profiles/WCMS_158898/lang-en/index.htm [Accessed 25 August 2020].
- Keane, M. P. (1992). A note on identification in the multinomial probit model. *Journal of Business and Economic Statistics*, 10(2), 193–200.
- Koné, S., Bonfoh, B., Dao, D., Koné, I., & Fink, G. (2019). Heckman-type selection models to obtain unbiased estimates with missing measures outcome: Theoretical considerations and an application to missing birth weight data. *BMC Medical Research Methodology*, 19(1), 231. <https://doi.org/10.1186/s12874-019-0840-7>
- Kramer, B., (2008) *Employee ownership and participation effects on firm outcomes* [Doctoral dissertation]. The City University of New York.

- Leigh, D. (1976). The occupational mobility of young men, 1965-1970. *Industrial & Labor Relations Review*, 30(1), 68-78. <https://doi.org/10.1177/001979397603000106>
- Leung, S. F., & Yu, S. (1996). On the choice between sample selection and two-part models. *Journal of Econometrics*, 72(1-2), 197-229. [https://doi.org/10.1016/0304-4076\(94\)01720-4](https://doi.org/10.1016/0304-4076(94)01720-4)
- Leung, S. F., & Yu, S. (2000). Collinearity and two-step estimation of sample selection models: Problems, origins and remedies. *Computational Economics*, 15(3), 173-199. <https://doi.org/10.1023/A:1008749011772>
- Lovell, V. (2004). *No time to be sick: Why everyone suffers when workers don't have paid sick leave*. Institute for Women's Policy Research.
- Millimet, D. L., & Tchernis, R. (2013). Estimation of treatment effects without an exclusion restriction: With an application to the analysis of the school breakfast program. *Journal of Applied Econometrics*, 28(6), 982-1017. <https://doi.org/10.1002/jae.2286>
- Ministry of Employment and Labour Relations (MELR). (2014). *National employment policy* (Vol. 1), Ministry of Employment and Labour Relations.
- Osei-Boateng, C., & Torgbe, M. A. (2012). Trade union services and benefits in Ghana. In T. Kalusopa, K. N. Otoo, & H. Shindondola-Mote (Eds.), *Trade union services and benefits in Africa*, (pp. 125-168). African Labour Research Network.
- Owoo, N. S. (2016). Determinants of choice of economic sector in the non-farm economy in Ghana. *African Journal of Economic and Sustainable Development*, 5(1), 31. <https://doi.org/10.1504/AJESD.2016.074442>
- Owoo, N. S., Davalos, J., Lambon-Quayefio, M. P., & Manu, S. B. (2017). *An empirical assessment of the union facilitation effect in the Ghanaian labor market*. (Working Papers (PMMA from PEP-PMMA)). Partnership for Economic Policy . <https://econpapers.repec.org/paper/lvlpmmacr/2017-08.htm>
- Puhani, P. (2000). The Heckman correction for sample selection and its critique. *Journal of Economic Surveys*, 14(1), 53-68. <https://doi.org/10.1111/1467-6419.00104>
- Rubin, D., Stern, H., & Vehovar, V. (1995). Handling 'don't know' survey responses: The case of the Slovenian plebiscite. *Journal of the American Statistical Association*, 90: 431,822-828. doi: : 10.1080/01621459.1995.10476580
- Saavedra, J., & Torero, M. (2002). *Union density changes and union effects on firm performance in Peru* (Research Network Working Paper No.R-465). Inter-American Development Bank.
- Schnabel, C., & Wagner, J. (2005) *Determinants of union membership in 18 EU countries: Evidence from micro data, 2002/03*. (IZA Discussion Papers, No. 1464). IZA.
- Sullivan, P., & To, T. (2014). Search and non-wage job characteristics. *Journal of Human Resources*, 49(2), 472-507. <https://doi.org/10.1353/jhr.2014.0013>
- Trade Union Congress (2012). *Policies 2012 - 2016*. Accra: TUC.
- Wilde, J. (2000). Identification of multiple equation probit models with endogenous dummy regressors. *Economics Letters*, 69(3), 309-312. [https://doi.org/10.1016/S0165-1765\(00\)00320-7](https://doi.org/10.1016/S0165-1765(00)00320-7)

Appendix A.
Table A1. Union presence regressions (Equation (2)).

Variables	Paid Holidays	Sick Leave	Maternity Leave
Male	-0.0571** (-2.38)	-0.0572** (-2.38)	-
Potential Experience	0.00506*** (7.78)	0.00504*** (7.74)	0.000785 (0.55)
Urban	0.0115 (0.27)	0.0347 (0.81)	0.00532 (0.10)
Education (None)	-0.119*** (-4.06)	-0.118*** (-4.03)	-0.0411 (-0.83)
Unskilled workers	-0.146*** (-7.51)	-0.147*** (-7.68)	-0.107*** (-2.69)
Poor	-0.000625** (-2.45)	-0.000635** (-2.51)	-0.000679 (-1.51)
North	0.190*** (8.03)	0.192*** (8.23)	0.168*** (3.83)
No contract	-0.190*** (-13.33)	-0.191*** (-13.50)	-0.179*** (-7.26)
Firm size (<i>ref is micro firms</i>)			
Small firm	0.219*** (11.38)	0.211*** (9.56)	0.224*** (5.58)
Medium firm	0.224*** (4.90)	0.229*** (4.81)	0.212*** (2.84)
Large firm	0.479*** (5.73)	0.493*** (6.16)	0.522*** (4.00)
Religion (no religion is base)			
Christian	0.0647*** (2.79)	0.0633*** (2.77)	0.0733 (1.38)
Muslim religion	0.0443 (1.33)	0.0354 (1.13)	0.0358 (0.57)
Housing costs (per capita)	-0.0000843 (-0.65)	-0.0000896 (-0.72)	-0.000228 (-1.25)
Transport costs (per capita)	0.000168** (2.01)	0.000130 (1.43)	0.000706*** (3.04)
Education costs (per capita)	-0.000389*** (-3.07)	-0.000451*** (-3.52)	-0.000788*** (-4.01)
Mills ratio inverse	-0.104 (-1.58)	-0.106 (-1.61)	-0.195** (-2.18)
Constant	0.348*** (2.75)	0.365*** (2.88)	0.578*** (2.94)

t statistics in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.