# Benefits of Membership in a Labor Organization in Benin

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**Abstract:**

Labor market institutions, broadly defined as government regulations and union activity, affect labor outcomes in developing countries. This paper conducts an empirical examination of the impact of unionization on formal and informal sector workers in Benin. The study explores a database derived from the integrated regional survey on employment and the informal sector in West African Economic and Monetary Union (WAEMU) member states conducted in 2017. The methodological approach is based on the estimation of an endogenous switching regression model that allows for problems related to selectivity and endogeneity bias. The results show that union's membership has a positive effect on workers' pay. Workers' membership of trade unions enables them to increase their pay level by an average of 33.06 %. Moreover, this pay is influenced by workers' skill levels and the length of time spent at work. On the other hand, employees in the formal sector are the most likely to be unionized. In a context of weakening purchasing power due to exogenous shocks to the Beninese economy, these results call for the repositioning of trade unions in their mission of intermediation between workers and employers, and the State.

**Keywords**: Union Membership, Wage, Endogenous Switching Regression, Benin

**Classification JEL** : J01, J08, J31, J51.

## 1. Introduction

The functioning of the labor market, in particular the role of institutions such as trade unions, has been the subject of much work in developed countries in recent decades (Schmidt, 2021; Card et al., 2020). Since the seminal work of Dunlop (1944), Ross (1948) and Lewis (1963), it has been accepted that trade unions contribute to the increase in the wages of their members and are therefore likely to reduce any increase in the wages of their members. wage inequalities. The main objective of trade unions is to improve the well-being of union members by negotiating higher wages, better working conditions and increased tenure (Manda et al., 2005). To achieve this, trade unions use many legal means at their disposal, ranging from platforms for discussions with employers and/or public authorities to strike action.

However, restrictions on union activities limit their ability to use strikes to gain benefits from employees. However, unions can influence the level of pay and working conditions of their members through collective bargaining. It is noted that these unions sometimes lack the resources to hire negotiators whose skills and capabilities are comparable to those of full-time employer negotiators. Despite the difficulties, union leaders were required to insist on workers' demands for substantial results in order to continue to enjoy the support of their rank and file (Sandbrook, 1975).

Despite the ever-increasing body of research on the impact of unions on wages and wage inequality in developed countries, empirical evidence of the impact of unions on incomes in developing countries, particularly in Africa, is still scarce (Kerr and Wittenberg, 2021; Manda et al, 2005). Worldwide, most empirical studies on the influence of trade unions on wages are based on the experiences of industrialized countries, and few attempts have been made to estimate the relationship for less developed countries, particularly in sub-Saharan Africa. Freeman (2010) argues that there has been relatively little research on the impact of trade unions in developing countries. Better still, he believes that the few works available are mainly based on small, unrepresentative samples. Benin is an interesting context for studying the impact of trade unions on wages.

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Indeed, several changes have been made in recent years to the regulatory framework, including the Labor Code and the law on the exercise of the right to strike. Périsse (2014) notes that these changes often stem from endemic labor disputes that stem from the existence of a concentration of industries and low- or unskilled workers that cannot be regulated by the labor code focused on the individual employment contract. Thus, recent policy reforms in Benin's labor market are expected to both promote private sector expansion and ensure the continuity of public services. However, it is believed that the new environment thus defined seems to have caused a weakening of trade union power because of the right to strike abolished for some trades and reframed for others. The relevance of the role of trade unions in improving working conditions must therefore be questioned. Torm (2018) questions the effectiveness of trade unions due in part to their marginal independence, employer dominance, and the generally low incidence of collective agreements.

Amendments to labor regulations in Benin in recent years reinforce the Beninese context, which is becoming a relevant case study for analyzing the functioning of labor markets. In addition, the evolution of the guaranteed interprofessional minimum wage (SMIG) since 1994 reflects a certain upward rigidity in wages. Indeed, it has increased annually by an average of CFAF 1,150 from 1994 to 2022.[3] In a context where Benin's economy is dependent on exogenous shocks, the most recent of which are the Covid-19 pandemic and the Russian-Ukrainian conflict, the erosion of purchasing power is likely to exacerbate tensions between workers and employers.

The objective of this article is to assess the wage impact of unionization of workers in Benin. The contribution of the article is twofold. First, it is one of the few studies exploring the effects of workers' union membership in the West African sub-region. Less is known, therefore, about the gains from union membership for the worker in Africa. The countries dealing with this theme are mostly developed countries (Keune, 2018; Borland, 1996) or developing regions other than Africa (Liu et al, 2020; Torm, 2018). The work of Manda et al. (2005) in Kenya and Ngom (2021) in Senegal are exceptions. But this article differs from the study by Manda et al (2005) in that it deals with all sectors of activity from primary to tertiary. Similarly, unlike Ngom (2021), this study uses a methodology to correct for potential problems of endogeneity and unobserved heterogeneity that may occur in these regressions. The decision to join a trade union is voluntary or prompted by the existence of trade union organizations in the branch of activity. In addition, awareness of the benefits inherent in union struggle could be associated with the worker's level of education and experience. This results in self-selection that generates endogeneity problems, the failure to take into account of which can lead to biased results.

Second, we consider duality, which is characteristic of labor markets in the majority of African countries where the formal and informal sectors coexist. Taking this aspect into account is of particular importance because the informal sector occupies a prominent place in developing economies, particularly in Africa (Freeman 2010). For example, in Benin, about 80% of workers work in the informal sector (Yedomon, 2016). The methodological approach used to achieve the objective relies on regime-change regression models to address potential issues of selectivity and endogeneity bias. The results show that membership of a trade union organization positively affects the level of pay. There has been a 33.06% increase in average hourly wages associated with unionization. In addition, this remuneration is influenced by the skill levels of the workers as well as the length of time spent in work. On the other hand, employees in the formal sector are the most likely to unionize.

The rest of the article is organized as follows. Section 2 presents Benin's institutional framework, while Section 3 summarizes the available literature on the effects of trade union membership. The fourth section is devoted to the description of the methodological approach as well as the data. The results and discussions are discussed in Section 5 while the last section concludes.

## 2. Institutional framework of the trade union movement in Benin

The trade union movement in Benin is historically linked to the main characteristic phases of the country's political history, from the pre-independence period to the post-conference of the nation's vital forces of February 1990, marked by multiple structural reforms (Friedrich Ebert Stiftung, 2015). The Beninese trade union landscape underwent a major upheaval in the 1990s with the emergence of trade union pluralism, thanks to the full multiparty system devoted to the national conference of February 1990. Trade union pluralism is in harmony with Benin's labor regulations, which recognize the right of workers to form or join trade unions.

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[3] Decree No. 94-148 of 27 May 1994 raising the Guaranteed Interprofessional Minimum Wage.
Decree No. 2022-692 of December 7, 2022 raising the Guaranteed Interprofessional Minimum Wage.

In the era of democratic renewal, there was an increase in the number of trade unions organized into federations or confederations. The Danish Trade Union Development Agency counts in 2019, eight trade union confederations for more than 500 affiliated unions. Trade unions operate in both formal and informal sectors. The formal sector is characterized by strong unionization. Environ 75% of employees in this sector belonged to a union in the early 2010s. However, formal employment accounted for only 10% of total employment. As for the informal sector, trade union action began by covering workers in this sector with the existence of a confederation dedicated to informal workers, namely the "Centrale des Syndicats du Privé et de l'Informel du Bénin" (CSPIB) even if the latter has seen a decline in the number of its members. In addition, 23% of unions affiliated to the National Union of Workers' Unions of Benin (UNSTB) operate with organized workers from the informal economy (DTUDA, 2022).[4]

The public sector has a strong unionization characterized by a preponderance of organizations in the education subsector followed by the health subsector. The education subsector alone accounts for nearly 40 per cent of rank-and-file unions in the public sector. The importance of unionization in education is explained both by the large proportion of teachers out of all public sector workers and by the visibility of their union actions. Indeed, the staff of the ministries of the three levels of education, as shown in Figure 1, represented in 2017 more than 50% of the civil staff of the State (Ministry of Labor and the Public Federation (MTFP), 2018). In addition, the strike movements usually called in the education subsector have the particularity of affecting most Beninese households that have their children enrolled in public education. The health subsector comes in second place with a total of forty-three (43) rank-and-file unions divided into corporatist unions, national unions or representative unions of departmental and university hospitals. In addition to these two main subsectors, there are a significant number of trade unions in the public administration, particularly in the various ministerial departments.

**Figure 1:** Number of civilian government employees between 2011 and 2017 in the three levels of education
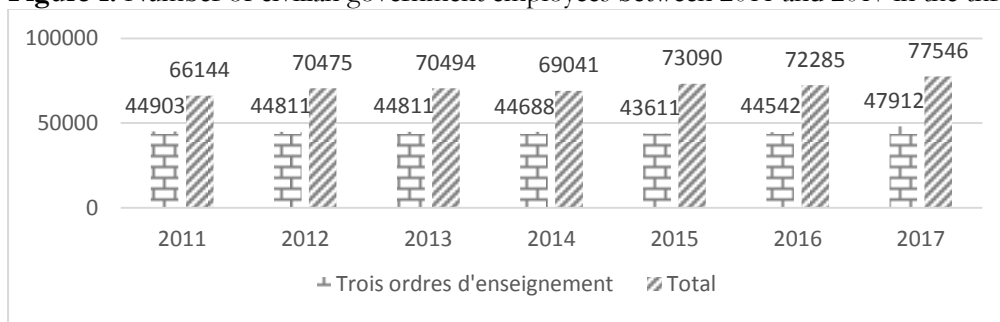


Source: Authors, based on MTFP data (2018)

In contrast to the public sector, there is low unionization in the private sector. In this private sector, a distinction must be made between the informal and the formal. In the formal private sector, trade unions are mainly concentrated in the cement industry, the banking sector, the press and the service sector. On the other hand, in the informal private sector, they are made up of actors from the agricultural and craft sectors (Friedrich Ebert Stiftung, 2019). The low visibility of trade union action in the formal sector can be explained either by a relative success of social dialogue or a lack of knowledge of the texts governing workers' rights. Although the Beninese State has adopted a political and regulatory framework favorable to their development, trade unionism in the informal sector is unsuccessful. This is due to illiteracy, the strong presence of women and the lack of awareness of workers' rights. However, the informal sector remains the main sector providing employment, with more than 80% of the workforce employed. It should be noted, however, that the informal economy is experiencing slow but increasing unionization with the emergence of large unions, even if they have limited influence (Friedrich Ebert Stiftung, 2019).

All in all, Benin's economy has seen an increase in the membership of rank-and-file unions in recent decades. There are eight (08) confederations that took part in the 2021 professional elections for more than 674 rank-and-file unions. Three of the eight confederations were elected to be interlocutors in negotiations with the State. However, the unionization rate of employment fell by four percentage points during the 2010s, falling to 11% in 2019, a relatively high level compared to other West African countries. There is also a proliferation of trade unions sometimes operating in the same sector with the same objectives. The result is a war of leadership, political clientelism and internal governance problems that relegate to the background the mission of defending workers' rights.

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[4] Danish Trade Union Development Agency

Despite problems of organization and governance, trade union struggles have for decades produced significant social and economic results in some sectors. For example, in the public sector, education workers have been granted an increase in the index point through negotiations with the government. For example, the salary index for kindergarten, primary and secondary school teachers increased 1.25-fold from January 2011.

Since October 2010, higher education teachers have benefited from an improvement in their index point, which has been multiplied according to grade by coefficients ranging from 1.5 to 3 (General Directorate of the Economy, 2014). Similar benefits were also granted to workers in the Ministry of Finance as well as to the corporation of magistrates. The positive results have been achieved following numerous strikes that reduce the performance of the economy. In 2014, the General Directorate of the Economy estimates the losses induced by the 2010 strike at around 94,189,680,000 FCFA and 33,747,624,076 FCFA respectively for GDP and tax revenues.

Following an inventory of the trade union struggle, the public authorities undertook a reform with a view to reorganizing trade union action in Benin. The reform consisted of the adoption of new laws to regulate the right to strike as well as the scope of action of the various trade union organizations. For example, the National Council for Social Dialogue (CNDS) was created by decree in 2017 to ensure the organization and management of social dialogue on socio-economic issues of common interest to the State, employers and trade unions. The CNDS introduced changes in hiring, placement of labor and termination of the employment contract. It was dissolved in 2022 and replaced by the National Commission for Consultation, Consultation and Collective Bargaining. Another reform concerns the law on the exercise of the right to strike has been amended, limiting the maximum duration of a strike to 10 days per year for all employees. Several groups are banned from strikes, such as the military, paramilitaries (police, customs, water, forests, hunting, etc.) and health personnel. Another provision provides that strikes motivated by the violation of universally recognized trade union rights may not be deducted from wages (Danish Trade Union Development Agency, 202-2).

The reforms thus implemented can be interpreted as the consequence of potential adverse effects on economic performance. But analyzed fromthis point of view, it would obscure the ability of trade unions to improve the living conditions of workers, who can in turn be encouraged to increase their productivity. Such reforms then raise questions about the usefulness of trade union organizations in the various sectors of activity in Benin. The idea is to compare the effects of these trade union organizations on the lives of Beninese workers with the results provided by the literature.

## 3. Literature Review

Recent research has failed to identify a general law on the effects of institutions on labor market outcomes, but it has led to new, sometimes surprising, conclusions about how institutions affect outcomes (Kerr and Wittenberg, 2021; Card et al., 2020; Ge, 2014; Liu et al., 2020; Yao and Zhong, 2013). Economic circumstances and institutions probably vary too much from country to country to allow for a single generalization, may be the reason. The absence of such a general law leads to a more measured view of what institutions do. The synthesis of previous work proposed here first examines the general theoretical framework before highlighting the main results obtained in the empirical literature.

Economists use three types of theories to analyze labor institutions. The first, which Freeman (2010) calls distortions, suggests that institutions disrupt the equilibrium of a competitive market. Union-led wage negotiations would result in higher labor costs, which in turn leads unionized companies to reduce employment. As a result, some workers turn to lower-paying and less productive non-unionized jobs, reducing economic efficiency. The higher the elasticity of labor demand, the greater the distortion in resource allocation. In contrast to the first theory, the second type of theory views institutions as effective negotiation mechanisms that promote optimal resource allocation. In an effective negotiation model, the consensus reached benefits both managers and employees, thus avoiding the waste of resources. This is Coase's theorem at work in the world of labor institutions (Freeman, 1993). As a result, rules determined by the institutions, such as employment protection legislation, affect the distribution of resources but not production. The third theory focuses on the idea that institutions eliminate information asymmetries and facilitate cooperative behavior, which increases productivity. Freeman and Lazear (1995) view work councils as institutions that increase communication within firms and enable management and workers to make more informed decisions. On the other hand, where there is pronounced wage inequality due to lack of competition, as is the case in monopsony (Manning, 2013) or due to information failures or other factors, collective bargaining or government regulations may bring wages closer to the market equilibrium level.

There are theoretical arguments that unions increase, reduce or do not affect the well-being of workers. Freeman (1980) and Freeman and Medoff (1984) argued that in addition to increasing their members' wages, unions reduced inequality and had other non-wage benefits, which they argued stemmed from the collective voice/institutional response aspect of union activity. These include solidarity and impacts on wage inequality, improving firms' productivity by providing a voice for workers that facilitates communication between workers and management, and a voice in broader societal debates. The reduction in wage inequality was achieved through the "standard rates" that unions negotiated both within and between companies. Freeman (1980) called the reduction of inequality in the union sector the intra-sectoral effect. He showed that this intra-industry effect was large and negative in the United States in the 1970s, meaning that the overall impact of unions was to reduce inequality, particularly in the manufacturing sector.

Empirical work is also part of the same logic but emphasizes more the benefits of union membership for workers (Card et al., 2020; Ge, 2014; Bryson, 2014; Laroche, 2004; Coutrot, 1996; Najem and Paquet, 2007). Research to estimate the extent to which unions raise their members' wages has indeed stimulated a growing literature on causal inference (Card et al., 2020; Ge, 2014; Yao and Zhong, 2013; Read et al., 2010). But the work in general is more the responsibility of developed countries or developing countries (DCs) other than those of Africa. For example, Lu et et al. (2010) using firm-level data, find that unions lead to better benefits and more contract signings. However, workers in unionized companies do not enjoy higher wages and bonuses than their counterparts in non-unionized companies. Zhang et al. (2011) also conclude that trade unions in China do not play a significant role in the incidence of industrial labor income. For its part, Ge (2014) notes that unions in the workplace significantly improve wage and non-wage compensation, as well as employee training. Based on company data, the author shows that the presence of unions within the same region and industry generates positive spin-offs for employee compensation. Yao and Zhong (2013) found that unionized firms were associated with significantly higher average wages and a larger fraction of employees covered by a pension. In contrast, Budd et al. (2014) found that union density does not affect average wage levels, even though it is positively associated with employee productivity and overall output.

When it comes to work in developing countries, particularly in Africa, very few are interested in the effects of unionization (Kerr and Wittenberg, 2021; Ngom, 2021; Manda et al., 2005). Manda et al. (2005) report a positive wage effect of trade union membership in Kenya. In other words, the unionization of the worker generates a wage premium. The study further shows that elite workers tend to refrain from unionizing. More recently, Kerr and Wittenberg (2021) note extremely high union wage premiums in South Africa leading to a slight increase in pay inequality in recent years. But unlike Manda et al. (2005), Kerr and Wittenberg (2021) find that union membership has become increasingly concentrated at the top of the wage distribution and in the public sector. Kerr and Wittenberg (2021) nevertheless argue that unions do more for those at the bottom than for those at the top. Card et al. (2004) note that this result could be generated by positive selection in unions at the bottom and negative selection at the top, so that unions appear to reduce inequality more than they actually do. Ngom (2021), for his part, highlights the lack of a correlation between the unionization rate and labor productivity in Senegal. However, unionization has positive effects in terms of wage levels.

It emerges from this literature that the effects of affiliation lead to rather contrasting results in terms of wages or working conditions. Overall, the empirical literature supports a positive effect of union membership, although in some cases the authors highlight a lack of correlation. In Benin as in the West African region, few studies have focused on the impact of unionization. This study attempts to examine the role of unionization in improving workers' wages in Benin. It is based on an adapted methodology for estimating the impact of unionization on wages.

## 4. Methodology and data used
In this section, we describe the estimation strategy adopted and then present the data used.

### 4.1. Estimation method

Since the purpose of this article is to examine the effects of membership of a trade union organization on the level of wage compensation, it is important to consider the methodological problems associated with such an analysis. Estimating the effects of unionization on wages comes up against the problem of endogeneity which, if not taken into account, would lead to biased results. Indeed, membership of a trade union is either voluntary or induced by the existence of a trade union in the branch of activity and the awareness of the advantages inherent in the trade union struggle. Knowledge of the interests of union membership can be improved through education and experience. For example, workers with a high level of education have a deeper knowledge of the issues associated with unionization and are likely to join than workers with no or low levels of education. Thus, self-selection in union membership is an important source of endogeneity.

Moreover, the literature has shown that affiliation to a union depends not only on the observable characteristics of workers, but also on certain unobservable characteristics (Laroche, 2017). Failure to take these into account can lead to overestimating, underestimating or reporting the impact where it does not exist at all. Several methods have been developed and proposed in the literature to address potential self-selection bias and to allow comparability of the two groups. These are Heckman selection methods, instrumental variables, propensity score matching and regime-change regression.

In addition to the limitations specific to each method, they are, for the most part, unable to correct selection biases related to the endogeneity of the treatment variable (Heckman et al., 1997; Khonje et al., 2015), resulting in biased results. A suitable method for such situations is regression with regime change (Lokshin and Sajaia, 2004[5]; Maddala, 1983; Lee, 1978). Nahm et al. (2017) also draw attention to these methodological issues in the analysis of the effects of unionisation. The approach used in this article to estimate the gain from union membership is therefore based on a regression model with regime change.

To do this, we start from two earnings functions, one for unionized workers (equation 1a) and the other for non-unionized workers (equation 1b).

$$W_{ui} = \varphi_1' X_i + \mu_{1i} \qquad (1a)$$
$$W_{ni} = \varphi_2' X_i + \mu_{2i} \qquad (1b)$$

where is the log hourly earnings of unionized workers and the log hourly earnings of non-unionized workers. The vector includes the standard explanatory variables, while and are the error terms. $W_{ui} W_{ni} X \mu_1 \mu_2$

Equation 2 represents the choice of union membership

$$d_i^* = \alpha + \beta X_i + \gamma Z_i + \varphi(W_{ui} - W_{ni}) + \vartheta_i \qquad (2)$$

$$d_i = \begin{cases} 1 \text{ si } d_i^* \geq 0 \\ 0 \text{ si } d_i^* < 0 \end{cases} \qquad (3)$$

where is a latent variable determining whether union membership, , is observed, and is our estimate of union premium. is a vector of instrument variables which do not directly influence the worker's wage level but which intervene in the decision on union membership. In this study we use as an instrument the availability or absence of trade union organization in the company. $d_i d_i (W_{ui} - W_{ni}) Z_i$ The availability of trade union organization determines the decision to join, but has no effect on the level of wages unless the workers join and are active in it. $\alpha$ , and are parameters to be estimated. The error terms in both regimes $(\vartheta_i, \mu_{1i}, \mu_{2i})$ are assumed to follow a trivariate normal distribution with a zero mean and a covariance matrix equal to $\Omega$.

The earnings equations and the choice equation are a regime change regression model and can be used to estimate $1a 1b 2$ the determinants of union membership and its effect in terms of wage premiums. It is highly likely that the error terms in equations 1 and 2 are correlated, resulting in selectivity bias. Indeed, in equations 1 and 2, represents a vector of variables likely to influence both membership of a trade union organization and wage level. These are the characteristics of the worker such as qualification, age, sex, level of education, length of employment, etc. $X_i d_i^* W_i$

Unobserved factors such as skill and motivation that affect the selection system could also affect the employee's level of compensation. For example, more skilled workers might be those who are more likely to join the union in the belief that they are asserting their rights. The same workers are those who are more likely to have high productivity and therefore high pay. Lee (1978) and Maddala (1983) note that the terms of errors and can be correlated and render inconsistent the estimators resulting from the application of ordinary least squares (OLM). To address this problem posed by the regime change regression model, the selection and wage equations $\mu_i \vartheta_i$ are estimated simultaneously using the full-information maximum likelihood method. This method has the advantage of providing robust standard error estimates in contrast to step-by-step methods by estimating equations separately (Guirkinger and Boucher, 2008; Lee, 1978). Under the assumptions made about the distributions of the error terms of equations 1 and 2, and according to Lokshin and Sajara (2004), the likelihood log function of the regression model with change of regime is given by:

$$\ln L = \sum_i \{ d_i [\ln(F(\eta_{1i})) + \ln(f(\mu_{1i}/\sigma_1)/\sigma_1)]$$
$$+ (1 - d_i)[\ln(1 - F(\eta_{2i})) + \ln(f(\mu_{2i}/\sigma_2)/\sigma_2)] \} \qquad (4)$$

Where is a cumulative normal distribution function, is a density distribution normal function and: $F(.) f(.)$

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$$\eta_{ji} = \frac{(\alpha + \beta X_i + \delta Z_i + \gamma(W_{ui} - W_{ni})) + \rho_j \varepsilon_i^j / \sigma_j}{\sqrt{(1 - \rho_j^2)}}, \text{ avec } j = 1,2 \qquad (5)$$

With the correlation coefficient between and ;  the correlation coefficient between and , with and respectively the covariances of and , and . , and represent the respective standard deviations of , and . $\rho_1 = \sigma_{1v}^2 / \sigma_v \sigma_1 \vartheta_i \mu_{1i} \rho_2 = \sigma_{2v}^2 / \sigma_v \sigma_2 \vartheta_i \mu_{2i} \sigma_{1v} \sigma_{2v} \vartheta_i \mu_{1i} \vartheta_i \mu_{2i} \sigma_v \sigma_1 \sigma_2 \vartheta_i \mu_{1i} \mu_{2i}$

The estimation results of equation 4 using the full-information maximum likelihood method will be used to determine the potential gains or losses from union membership or the level of compensation that could be obtained by non-unionized employees if they had been unionized. The procedure will therefore consist of estimating for non-unionized employees. According to Maddala (1983), conditional expected gains are calculated using equation 6. $\Delta W_i = W_{ui} - W_{ni}$

$$E(\hat{\Delta} W_i | d_i = 1) = (\hat{\varphi}_1 - \hat{\varphi}_2) X_i + (\hat{\beta}_1 - \hat{\beta}_2) Z_i \qquad (6)$$

Where and are parameters to be estimated from the regime change regression model. $\hat{\alpha} \hat{\beta}$ The higher the value of the differential forecast, the greater the loss due to non-affiliation. If necessary, it would then be urgent to set up a mechanism to better organize the social partners that are the trade unions.

## 4.2. Data used and descriptive statistics

The data used in this article come from the Integrated Regional Survey on Employment and the Informal Sector (IRS-EIS) in the Member States of the West African Economic and Monetary Union carried out in 2017. The integrated regional survey on employment and the informal sector was conducted using a two-stage area probability survey with first-stage stratification. The objective of the survey was to produce statistically reliable estimates of indicators, at the national level, for urban and rural areas, and for each of the twelve departments of the country.

A total of 23 survey strata were defined. Within each stratum, the samples of Zones of Enumeration (ZD) and households were divided according to the largest entities of the administrative division of the country and the place of residence. At first level, 680 ZDs were selected out of the 13,000 defined during the census cartographic work as part of the fourth RGPH (General Population and Housing Census) carried out in 2013. The ZDs were drawn with a probability proportional to the number of households. At the second level, a fixed number of fifteen (15) households was selected in each of the ZDs selected at the first degree with three (3) replacement households. The sample size of the ERI-ESI is 10,200 households.

The ERI-ESI survey covers two parts, the first of which concerns the collection of data on the socio-demographic characteristics and employment of the population and the second relates to the collection of data from informal non-agricultural production units identified in the first component. Four types of questionnaires were used, including an employment questionnaire administered in each household to all individuals aged 10 and over. The individual employment questionnaire comprises several modules including employment status, main activity, general job satisfaction, social protection, vocational training and further training, unemployment, trajectory and prospects, income outside employment, etc. The employment database obtained from the information collected using this questionnaire includes 22,027 observations. 1,775 individuals declared themselves employees while 10,318 declared themselves self-employed. 1,184 receive family help.

We extracted from the employment database, the observations relating to the 1,775 employees spread throughout the national territory. After clearance, a total of 1 135 employees were retained on whom the analyses were carried out.  The remaining observations were suppressed for reasons related to the lack of declared salaries. The workers surveyed are concentrated in the Littoral and Atlantic department with 21.76% and 12.69% respectively. The importance of workers on the coast is justified by the fact that this department is home to the municipality of Cotonou, the main metropolis and generally referred to as the economic capital of the country.

The variables included in the analysis are composed of the dependent and independent variables. The dependent variables are union status for the probit model, and log hourly wages for earnings functions. Union status is a binary variable that takes the value 1 if the worker declares that he belongs to a trade union or similar association of employees who can defend his labor rights or participate in collective bargaining and 0 otherwise. Hourly wages are calculated by dividing monthly wages by the total number of hours worked in a month (that is. hours worked in a week multiplied by 4.3 weeks in a month). Explanatory variables include socio-demographic characteristics such as age, sex, marital status and education level.

Other variables used to determine wage levels and unionization were mobilized. These are sectors of activity (public/private and formal/informal), vocational qualification, length of service and number of working hours per month.

Table 1 shows the differences in the socio-economic characteristics of workers according to whether they belong to a trade union organization or not. The average comparison tests show that the two groups of employees differ fundamentally in terms of socioeconomic characteristics such as age, salary, sex, marital status and length of service.

**Table 1**: Socioeconomic characteristics of employees by affiliation

| Variables | Together | Unaffiliated | Affiliated | T-test |
|---|---|---|---|---|
| Average hourly wage | 535,554 | 515,892 | 616,419 | -1,269*** |
| Age | 36.165 | 35.398 | 39.315 | -4.795*** |
| Formal sector | 36.39 % | 26.51 % | 77.03 % | -15.421*** |
| Female sex | 23.00 % | 24.10 % | 18.47 % | 1.788* |
| Educational attainment | | | | |
| None | 27.05 % | 29.24 % | 18.02 % | 3.391*** |
| Primary | 14.71 % | 16.32 % | 8.11 % | 3.108*** |
| Secondary | 35.68 % | 34.50 % | 40.54 % | -1.685* |
| Upper | 22.56 % | 19.93 % | 33.33 % | -4.316*** |
| Marital status | | | | |
| Bachelor | 13.04 % | 14.56 % | 6.76 % | 3.110*** |
| Polygamous married | 10.40 % | 9.64 % | 13.51 % | -1.697*** |
| Monogamous married | 65.81 % | 64.73 % | 70.27 % | -1.561 |
| Widowed/Divorced | 10.75 % | 11.06 % | 9.46 % | 0.691 |
| Length of service | | | | |
| 15 to 24 years | 3.35 % | 3.40 % | 3.15 % | 0.180 |
| 10 to 14 years | 12.69 % | 11.17 % | 18.92 % | -3.121*** |
| 5 to 9 years | 17.71 % | 15.22 % | 27.93 % | -4.482*** |
| 2 to 5 years | 25.90 % | 27.93 % | 17.57 % | 3.172*** |
| Less than 2 years | 40.35 % | 42.28 % | 32.43 % | 2.688*** |
| Actual | 1 135 | 913 | 222 | |

Note: ***, ** and * indicate significance levels at thresholds 1%, 5% and 10%, respectively.
Source: Authors using ERI-ESI data, 2017

The average hourly wage of unionized workers is higher on average than that of their non-unionized counterparts. In addition, unionized employees appear to be older and more in the formal sector. On the other hand, women are less prone to unionization, as are single people and workers with no level of education or those with a primary level. It should be noted, however, that employees who have reached secondary and higher levels are more likely to join trade unions. In addition, we realize that the proportion of unionized workers decreases with seniority measured by duration in work. As the worker spends more time in the company, he or she is less likely to join a trade union organization. No doubt that the employee over time, manages to develop a relationship with the employer and has a mass of information about the company that reduces information asymmetries.

## 5. Results and discussions

The results presented are of two kinds. First, we analyze the determinants of union membership and wage compensation depending on whether the individual is unionized or not. It should be noted that this result is intermediate which leads us, in a second step, to estimate the gain in remuneration associated with union membership, that is the impact of membership of a trade union organization.

## 5.1. Analysis of the determinants of union membership and compensation

Table 2 presents the main econometric results for the effects of union membership on workers' compensation. The estimates lead to two main results. On the one hand, they make it possible to identify the main determinants of workers' trade union membership. The main factors explaining wage remuneration, depending on whether or not a trade union is affiliated to a trade union, are also highlighted.

The results essentially show that industry, level of education, marital status, duration of employment or seniority and the existence of trade union organization in the enterprise affect the likelihood of union membership. The coefficient associated with the variable "existence of union organization" is positive and significant, supporting the idea that this variable is a valid instrument in this model. A first interesting result concerns the higher tendency of workers in the formal sector to join trade unions compared to their peers in the informal sector. Such a result is not surprising in view of the Beninese context where most unions recruit more in the formal sector, particularly the public sector, as we have shown in section 2 above.

With regard to employment status, our results show that workers with more than 25 years' experience are less likely to join a trade union organization than their counterparts with less than 10 years' seniority.   One explanation for the higher probability of older workers joining a union may be explained by the desire of entry-level workers to engage in organizations in order to improve their employment experience and fully enjoy their rights. The significant effect of job tenure is at odds with the results of Manda et al. (2005). Manda et al. (2005) realizes that the probability of being unionized increases with seniority.

**Table 2**: Regime change regression model estimation results

| Independent variables | Dependent variable: Average hourly wage | | Selection equation |
|---|---|---|---|
| | Unaffiliated | Affiliated | |
| Formal (Ref.: Informal) | 0.097 | -0.364** | 0.461*** |
| | (0.059) | (0.159) | (0.159) |
| Public sector (Ref: Private sector) | 0.186*** | -0.012 | 0.062 |
| | (0.058) | (0.177) | (0.193) |
| Female (Ref.: Male) | -0.001 | 0.047 | 0.001 |
| | (0.051) | (0.101) | (0.122) |
| Log Age | 0.121 | -0.069 | 0.144 |
| | (0.088) | (0.203) | (0.208) |
| Marital status (Ref.: Widowed/Divorced) | | | |
| Bachelor | 0.206** | 0.115 | -0.095 |
| | (0.102) | (0.144) | (0.189) |
| Polygamous married | 0.240** | -0.374** | 0.555*** |
| | (0.117) | (0.179) | (0.197) |
| Monogamous married | 0.206** | 0.004 | 0.180 |
| | (0.100) | (0.108) | (0.146) |
| Level of education (Ref, : None) | | | |
| Primary | 0.126* | 0.068 | -0.151 |
| | (0.071) | (0.157) | (0.191) |
| Secondary | 0.147** | 0.139 | 0.083 |
| | (0.062) | (0.109) | (0.137) |
| Upper | 0.143* | 0.268** | 0.017 |
| | (0.081) | (0.131) | (0.165) |
| Length of service (Ref.: Less than 10 years) | | | |
| 10 to 25 years | 0.028 | 0.010 | 0.057 |
| | (0.057) | (0.097) | (0.116) |
| Over 25 years | -0.315* | 0.328 | -0.505* |
| | (0.162) | (0.232) | (0.282) |
| Qualification (Ref.: Unskilled or semi-skilled employee) | | | |
| Qualified employee | 0.440*** | 0.289** | -0.090 |
| | (0.052) | (0.127) | (0.121) |
| Middle or senior management | 0.911*** | 0.865*** | 0.083 |

| Independent variables | Dependent variable: Average hourly wage | | Selection equation |
|---|---|---|---|
| | Unaffiliated | Affiliated | |
| | (0.072) | (0.127) | (0.153) |
| Number of hours worked in the month | -0.006*** | -0.005*** | |
| | (0.000) | (0.000) | |
| Existence of trade union organization (Ref, : Yes) | | | 1.396*** |
| | | | (0.281) |
| Constant | 6.156*** | 7.738*** | -2.674*** |
| | (0.305) | (0.810) | (0.725) |
| σ | 0.711*** | 0.760** | |
| | (0.058) | (0.139) | |
| ρ | 0.860*** | -0.966*** | |
| | (0.196) | (0.281) | |
| Wald test of indep, Eqns, (chi2(2)) | 88.430 | Prob | 0.000 |
| Log pseudolikelihood | -1371.007 | Pseudo R² | |
| N | 1.135 | | |

\* p<0.1; \*\* p<0.05; p<0.01

Source: Authors using ERI-ESI data, 2017

With respect to the determinants of the average hourly wage, the estimation results show that the wage level of affiliates is significantly determined by the level of education. However, only the coefficients of the modalities related to secondary and higher education are significant at the 10 percent and 5 percent thresholds, respectively. For non-union members, we note that the coefficient increases with the level of education, corroborating the idea of an increase in the average private return to education highlighted by Manda et al (2005). Similarly, among affiliates, workers in the formal sector earn less than those in the informal sector in hourly terms. The difference can be explained by the absence of taxes in the informal sector affecting wage compensation. The same result is obtained for polygamous marriages, which appear to have a lower average hourly wage than widowed or divorced marriages.

Not surprisingly, the level of qualification significantly affects the wage remuneration of workers for both affiliated and non-affiliated workers. It appears that the average hourly wage increases with the worker's qualification. Thus, laborers and other semi-skilled workers are paid less than middle or senior managers.

### 5.2. Gain from unionization

Table 3 shows the average effect of treatment on the Treaties, that is the difference in the average hourly wage of affiliated workers and their wage level if they had not been affiliated. The results show that the wage premium associated with unionization is positive and significant. In other words, workers' membership of trade unions allows them to increase their wage remuneration level by an average of 33.06%.

The positive impact of trade union membership highlighted confirms the predictions of previous work (Schmidt, 202-1; Ngom, 2021; Nahm et al., 2017). For example, Schmidt (202-1) shows that membership of a local union for expatriate workers results in a reduction in the wage gap between expatriate workers and national workers. Similarly, Nahm et al. (2017) also estimate a positive gain associated with unionization. Using a gender analysis, the authors show that unionized men and women earn 12% and 18% more respectively than their non-unionized counterparts.     Maleka et al. (2021) argue that union membership has a dampening effect on satisfaction levels. The explanation for this is that unions negotiate higher wages, which ultimately leads to greater job satisfaction.

**Table 3**: Wage differential (en FCFA) by union affiliation or not

| | Affiliated | Unaffiliated | Effect of treatment |
|---|---|---|---|
| Unionized workers | (a) 539,962 | (b) 405,808 | 134,154*** |
| Non-unionized workers | (c) 1241,077 | (d) 1119,158 | 121,919*** |

**Note: (**a) and (d) represent the average hourly wage. (b) and (c), the expected counterfactual average hourly wage.

Source: Authors, based on estimation results

**5.3 Analysis of robustness of results**

To test the sensitivity of results from regime-change models, we use propensity score matching (PSM) methods typically used in impact assessment studies. Impact analysis using MSP is preceded by the estimation of propensity scores for treatment variables from the probit model, the results of which are presented in Tableau A1 in the Appendix.

Propensity scores, as Lee (2013) points out, are useful for balancing the distribution of observed covariates between treated and untreated groups. In general, most variables in the model have the expected signs. The figure 2 presents the distribution of estimated propensity scores and the region of common support. Visual analysis of density distributions for both groups reveals that all treated and untreated individuals are in the common support region. In other words, each individual had a positive probability of being either a union affiliate or a non-affiliate. Thus, the common support hypothesis that requires each treated individual to have a corresponding untreated individual as a match, is satisfied.

**Figure 2:** Distribution of estimated propensity scores and common support region



Source: Authors using ERI-ESI data, 2017

The results of the model of the impact of union membership on the level of wage compensation estimated with the Kernel Matching (KM) method, the Nearest Neighbor Matching (NNM) method and the radius matching (RM) method are presented in Table 4. All three matching methods indicate that union membership has a positive and significant impact on the hourly level of wage compensation. These results confirm those obtained from the regression method with regime change in the previous section. They are also consistent with those obtained by Manda et al. (2005), Bryson (2014) and Ngom (2021).

Manda et al. (2005) showed the existence of a positive effect of trade union membership on wage compensation. Bryson (2014) concludes that workers organized in unions benefit from higher wages called union wage premiums. For his part, Ngom (2021) also finds that employee compensation increases with the existence of a union in a company. In other words, unionized workers have higher wages than non-unionized workers. Our results also corroborate those found by Laroche (2004), Coutrot (1996) and, Najem and Paquet (2007). For example, Coutrot (1996) reported a 3% wage increase in organizations where there was at least one union representative. It thus confirms the existence of a causal link between the presence of a trade union in the undertaking and the level of salary. Najem and Paquet (2007) highlight the difference in hourly wages between unionized and non-unionized employees in favour of the former.

**Table 4:** Impact of Union Membership on Hourly Wages

| Matching methods | THAT |
|---|---|
| Kernel Matching (KM) | 0,164*** |
| | (0,069) |
| Nearest Neighbor Matching (NNM) | 0,092** |
| | (0,078) |
| Radius Matching (RM) | 0,326*** |
| | (0,062) |

Note: Standard errors are in parentheses. p<0.01; ** pp<0.05; * pp<0.1.

Source: Authors using ERI-ESI data, 2017

Overall, it seems reasonable to conclude that the effects of trade unions on wages in Benin are positive. Such a result is very important in a Beninese context where the role of trade unions in corporate governance has been the subject of multiple reforms. Public authorities must consider labor organizations as privileged institutional partners in the service of the well-being of their union members. The advantages inherent in trade union action ultimately prove beneficial to the companies themselves because they are sources of motivation and commitment to work (Christian et al., 2011). However, the effect is not systematic and depends on several factors (Bryson, 2014). Ngom (2021) also notes for Senegal that productivity was relatively low in companies with a strong union presence.

## 6. Conclusion

The objective of this article is to empirically assess the impact of unionization of workers in Benin. To do this, we used a methodological approach that allows us to take into account the potential problems of endogeneity of the decision to join a workers' trade union organization and unobserved heterogeneity. The results show that the probability of union membership is significantly influenced by industry, level of education, marital status, duration of employment or seniority and existence of trade union organization in the enterprise. The level of wage compensation is determined by the sector of activity, the level of education and the level of qualification.

More interestingly, unionization produces positive effects in terms of wage compensation. Concretely, we show that membership of a trade union organization allows the worker to increase his average hourly wage by about 33.06%. It is inferred that union membership promotes higher workers' wages. The existence of a wage premium associated with unionization suggests that trade unions play an important role in improving working conditions. In a Beninese context where wage levels are quasi-rigid regardless of exogenous shocks that erode workers' purchasing power, it seems necessary for trade union organizations to fully invest their mission of negotiating with the State and private employers. The results obtained can help umbrella organizations anticipate behavioral responses by paying attention to salary levels and union membership. It can also influence collective bargaining processes.

The union wage premium can have a positive impact on employers when they induce an increase in worker productivity through the worker selection mechanism, that is. if the best workers are attracted to wages above the market rate. Similarly, the positive effects of union membership benefit employers provided that workers increase the effort through efficiency wages. Firms can also benefit by becoming more capital-intensive in response to increases in the relative price of labor. In any case, this is an avenue of research to be explored in the context of developing countries. An additional dimension to be taken into account in this evaluation is the impact of union membership on individual employee satisfaction. Salary is a component of job satisfaction. Future analyses should investigate the potential effect on worker satisfaction. Such a line of research is interesting to explore because joining a union has a cost in terms of union dues and lost wages due to write-offs related to possible strikes.

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**Appendix**

**Table A1:** Proscript regression for estimating propensity scores

| Variables | Coefficient |
|---|---|
| Dependent variable | Trade union membership |
| Formula | 0.690*** |
|  | (0.241) |
| Female (Ref. Man) | -0.208 |
|  | (0.264) |
| Level of education (Ref. None) |  |
| Primary | -0.789** |
|  | (0.401) |
| Secondary | -0.204 |
|  | (0.292) |
| Upper | -0.414 |
|  | (0.304) |
| Age | -0.028 |
|  | (0.062) |
| Age squared | 0.000 |
|  | (0.001) |
| Marital status (Widowed/divorced ref.) |  |
| Bachelor | -0.581 |
|  | (0.453) |
| Polygamous married | 0.909** |
|  | (0.436) |
| Monogamous married | 0.227 |
|  | (0.338) |
| Union availability | 5.342*** |
|  | (0.629) |
| Constant | -5.002*** |
|  | (1.286) |
| Observations | 1,135 |

Note: Standard errors are in parentheses. $p<0.01$; ** $pp<0.05$; * $pp<0.1$.
Source: Authors using ERI-ESI data, 2017