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IMPACT OF GOVERNANCE AND ECONOMIC FACTORS ON INFORMAL EMPLOYMENT IN WEST AFRICA

Oluwaseun Isiaka Adekoya & Musa Ilias Biala Ph.D.
[1&2]Department of Economics and Development Studies, Kwara State University, Malete, Nigeria.
1adekoyaoluwaseun07@gmail.com
2bialamusa@yahoo.com

Abstract
Understanding the drivers of informal employment would go a long way in addressing such problems as underdevelopment, poverty, and unemployment. Therefore, this study investigates the impact of governance and economic factors on informal employment in West Africa. The governance factors considered are control of corruption, government effectiveness, quality of governance, regulatory quality, rule of law, political stability and absence of violence as well as voice and accountability, while the economic factors are income per capita, unemployment rate, tax burden, inflation rate, and household spending. The neo-liberal model is the theoretical framework underlying the study. Using panel dataset collected on 16 West African countries for the period of 2010-2020, the study estimated the fixed and random effects regressions of the model. The results show that quality of governance, unemployment rate, per capita income and urban population all had a negative impact on informal employment. Therefore, quality of governance, unemployment rate, per capita income and urban population negatively influence the proliferation of informal employment. Hence, policymakers should focus on improving the quality of governance, reducing the unemployment rate, increasing the income per capita, and controlling the urban population in order to discourage informality in West Africa.

Keywords: Governance factors, Informality, Informal employment, Informal sector, West Africa

INTRODUCTION

Informal employment is a global and pervasive phenomenon. About 60 per cent of the world's population are employed in the informal economy (International Monetary Fund, 2021). It is prevalent in developing economies as well as advanced economies though. However, there is great variation within and across countries. According to International Monetary Fund (2021), the informal employment represents 35 per cent of GDP in developing countries and 15 per cent in advanced economies, with Latin America and Africa having the highest levels and Europe and East Asia having the lowest levels. It is exceptionally high in West Africa where many informal workers do their businesses in

unprotected and unsecured places (Oduh, 2008). According to World Bank (2003), 50 per cent of the employment in developing countries between 1980 and 1990 are informal.

Because informal employment makes up a significant portion of the world's economy, it has become a leading topic of discussion in the countries of the world (Aikaeli and Mkenda, 2018). Informal employment is a source of income and a critical safety net for millions of people. It is central to sustainable and inclusive development, because informal employment is closely related to poverty and how fast countries grow. While some workers engage in informal employment by choice, 85 per cent of all informal workers are in precarious employment, not through choice but due to a lack of opportunities in the formal sector (Becker, 2004; International Monetary Fund, 2021). Workers who engage in it by choice do so for either economic or non-economic reasons, which include tax evasion, freedom to circumvent regulations and licensing requirements, and capacity to maintain certain government benefits (Becker, 2004). This has important economic implications. First, countries that have large informal employment tend to grow below their potential, because informal firms tend to be small, with low productivity and limited access to finance. Besides, they do not contribute to the tax base, depriving governments of resources to provide basic services to their populations. Secondly, informal workers are more likely to be poor and to earn lower wages compared to their peers in the formal sector. They lack social protection, access to credit and are generally less educated (International Monetary Fund, 2021).

Despite the wide range of informal employment economic processes and activities, current knowledge of the causes or drivers of the informal employment remains very scanty and inadequate. Understanding the drivers of informal employment is central to sustainable and inclusive development, as informal employment is critically related to poverty and how fast countries grow. Understanding the determinants of informal employment will go a long way in devising some effective control measures and in addressing such problems as low productivity and unemployment. Hence, studies such as Mubarik (2005), Schneider (2007), Matins (2018) have investigated the determinants of informal employment. This gives a basis for the present studies.

Despite the number of studies on the determinants of informal employment, many gaps are yet to be covered. One of such gaps is that most of the previous studies focused on only the economic determinants of informal employment. It would have been more enlightening if such studies had also examined the role of governance institutional factors such as control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law, and voice and accountability. This study, therefore,

investigates the impact of governance institutional factors as well as economic factors on informal employment in West Africa. Specifically, it examines, among others, the impacts of control of corruption, government effectiveness, and rule of law, voice and accountability, regulatory quality, and political stability and absence of violence on informal employment.

To achieve these objectives, panel dataset covering 16 West African countries and spanning a period of 11 years, from 2010 to 2020 were obtained. Countries covered are Benin, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo. The choice of West Africa is due to the fact that informal employment is more prevalent in the region (International Monetary Fund, 2021). The choice of the time span was informed by availability of data. At the time of carrying out the study, there were no data for West African countries prior to Year 2010 and beyond year 2020.

LITERATURE REVIEW

An employee is said to be informally employed if his or her employment relationship is not subject to income taxation, national labour legislation, social protection or entitlement to certain employment benefits such as severance pay, advance notice of dismissal, paid annual or sick leave, etc (OECD/International Labour Organization, 2019). Informal employment includes market stands, casual jobs, roadside technicians, jobs with hours of work or wages below a specified threshold (e.g. for social security contributions), drivers, hawkers, domestic workers All contributing family workers are also classified as having informal employment, irrespective of whether they work in formal or informal sector enterprises.

Many studies have been carried out on the determinants of informal employment. These studies are reviewed in this section

Munir and Pollin (2009) examined the non-linear relationship between informal employment and inflation level and economic growth for the period between 1970 and 2005 in the economy of Malaysia. Using annual data and applying new endogenous threshold autoregressive (TAR) models proposed by Hansen (2000), the authors confirmed the nonlinear relationship between informal employment and economic growth. The estimated threshold regression model suggested 3.89 per cent as the structural break point of informal employment above which inflation significantly hurts growth rate of real GDP. In addition, below the threshold level, there is statistical significant positive relationship between informal employment and growth of real GDP. The estimation techniques used did not capture the long-term effect of inflation on informal employment.

Iqbal and Nawaz (2009) conducted a study on the relationship between tax incidence, labour freedom and informal sector using annual time series data from 1961 to 2008. They found the existence of two points at 6% and 11% level where below 6% a positive relationship between labour force and growth; when labour was in between the two (6-11%), it became negative. However, if labour exceeded the 11%, it affected the informal sector negatively but the effect diminished.

Ahmed and Mortaza (2010) examined the relationship between incidence of tax and informal sector for the period between 1988 and 2008 for Bangladesh using the co-integration and error correction model. Incidence of tax was measured as total income earned minus personal income tax which was in percentage point while informal sector was measured as informal employment outside formal sector which was in thousands. The study found that there was a statistically significant long-run negative relationship between incidence of tax and informal sector. However, this study did not consider such variables as inflation and labour freedom.

Employing a simultaneous equations model, Odusola (2010) investigated the interrelationship between household expenditure, informal employment and formal employment in Nigeria. Cointegration and error correction model was adopted to estimate the interrelationship. The data for the study were generated from Central Bank Bulletin, 2009. The author observed that aggregate household expenditure was positively related to growth at 10 per cent significant level.

Ahmed and Mortaza (2014) investigated the relationship between population and informal sector empirically for the period of 1996-2010 for Asia countries using the random effect model. The variables used in the study were population, labour and informal employment. Data was generated from World Development Indicator published by World Bank. The authors found a statistically significant long-run positive relationship between population and informal sector. However, data for some other Asian countries were omitted and the use of agricultural employment in proxy for informal employment did not really capture the entire informal employment.

Obadan (2016) conduct empirical study on economic growth and self-employment in Ghana for the periods of 1985 - 2010. The variables used were growth rate of real gross domestic product, total labour force measured as seasonal worker, inflation rate measured as percentage of consumer prices annually and self-employment measured as self-employed individual. Data was generated from World development indicators published by World Bank. He used Error Correction model (ECM) and found a positive and statistical

significant relationship between economic growth and informal employment. However, the study is limited to growth rate of gross domestic product and self-employment neglecting other factors that could have affect self-employment. The time period is small in order capture the real relationship between the variables.

Ogiogio (2017) considered the impact of government expenditure on informal and formal sector over the period from 2004 to 2015 in Nigeria, adopting Cointegration Bound test. The variables used were government expenditure, informal employment, and growth rate of real gross domestic product. Government expenditure was measured in million and was used as capital expenditure while informal employment was measured in thousands and it was used as seasonal employment. The data was generated from Central Bank of Nigeria bulletin and World Development Indicator published by World Bank. However, the use of cointegration techniques is a misnomer since the study did not justify any long-run or short-run relationship between the variables.

Adopting a logit regression model, Akaeli and Mkenda (2018) investigated the determinants of informal employment in Tanzania's construction industry. The data for the study was primarily elicited through questionnaires administered to workers of the construction industries. They found a significant negative relationship between education and informal employment and positive relationship between income and informal employment in Tanzania. However, the study did not cover other industries within the country. This limits the generalisation of their results to the construction industry only.
It is obvious from this review that studies have considered the determinants of informal employment. However, only few of these studies were conducted on West Africa. Most of the earlier and recent studies on informal employment have either been on Sub-Saharan Africa, Asia, Central and Eastern Europe and South-East Europe or country specific. None of these studies has focused on West Africa. Besides, there are inconsistent findings from existing studies on the topic, which may be attributable to different prevailing economic conditions.

Furthermore, only few of the prior studies gave attention to examination of the effects of the governance institutional variables on informal employment. Most of them focused on the economic variables. Even those studies conducted with attention given to economic variables were not conducted for West Africa. But the focus on only economic factors made it difficult to draw more wide-ranging conclusions from their results. It would have been more enlightening if such studies had, in addition to economic factors, examined the governance institutional variables such as control of corruption, government effectiveness,

political stability and absence of violence, regulatory quality, rule of law, and voice and accountability as determinants of informal employment in West Africa.
Besides the foregoing gaps, there is the need for a study that is based on more recent data to update the existing findings.

METHODOLOGY

The theoretical background of the informal employment model can be found in the Neo-liberal theory which assumes that too much state interference in the free market leads entrepreneurs to make a rational economic decision to exit the formal sector and join the informal sector. Neo-liberal theory showed the importance of state intervention for rational choice decision in the free market but also suggested that their contributions to output level can be even more important. Specifically, the theory identifies tax burden and output level as the causes of informal employment. Therefore, according to the neo-classical theory,
$INFEMP = f(Tax\ Burden, RGDP)$
Thus, this theoretical framework of the determinants of informal employment in West Africa would be useful in in evaluating the results of this research work.

Model Specification

The panel data-based regression models to estimate the effects of the postulated determinants on informal employment are specified in Equations (1) through (8) below. Equation 1 shows that informal employment is a function of the economic variables without the inclusion of governance indicators while Equation 2 to 8 shows informal employment as a function of both economic variables and governance institutional indicators.

$$INFEMP_{it} = \beta_0 + \beta_1 TAXBUR_{it} + \beta_2 RGDP_{it} + \beta_3 UNEMP_{it} + \beta_4 LABFRE_{it} + \beta_5 TROPN_{it} + \beta_6 PCI_{it} + \beta_7 URBANPOP_{it} + \beta_8 HOUSPN_{it} + \beta_9 INFLA_{it} + \mu_{it} \quad --- \quad (1)$$

$$INFEMP_{it} = \beta_0 + \beta_1 TAXBUR_{it} + \beta_2 RGDP_{it} + \beta_3 UNEMP_{it} + \beta_4 LABFRE_{it} + \beta_5 TROPN_{it} + \beta_6 PCI_{it} + \beta_7 URBANPOP_{it} + \beta_8 HOUSPN_{it} + \beta_9 INFLA_{it} + \beta_{10} GOV_{it} + \mu_{it} \quad --- \quad (2)$$

$$INFEMP_{it} = \beta_0 + \beta_1 TAXBUR_{it} + \beta_2 RGDP_{it} + \beta_3 UNEMP_{it} + \beta_4 LABFRE_{it} + \beta_5 TROPN_{it} + \beta_6 PCI_{it} + \beta_7 URBANPOP_{it} + \beta_8 HOUSPN_{it} + \beta_9 INFLA_{it} + \beta_{10} CORR_{it} + \mu_{it} \quad --- \quad (3)$$

$$INFEMP_{it} = \beta_0 + \beta_1 TAXBUR_{it} + \beta_2 RGDP_{it} + \beta_3 UNEMP_{it} + \beta_4 LABFRE_{it} + \beta_5 TROPN_{it} + \beta_6 PCI_{it} + \beta_7 URBANPOP_{it} + \beta_8 HOUSPN_{it} + \beta_9 INFLA_{it} + \beta_{10} GOVEFF_{it} + \mu_{it} \quad --- \quad (4)$$

$$INFEMP_{it} = \beta_0 + \beta_1 TAXBUR_{it} + \beta_2 RGDP_{it} + \beta_3 UNEMP_{it} + \beta_4 LABFRE_{it} + \beta_5 TROPN_{it} + \beta_6 PCI_{it} + \beta_7 URBANPOP_{it} + \beta_8 HOUSPN_{it} + \beta_9 INFLA_{it} + \beta_{10} PSAV_{it} + \mu_{it} \quad (5)$$

$$INFEMP_{it} = \beta_0 + \beta_1 TAXBUR_{it} + \beta_2 RGDP_{it} + \beta_3 UNEMP_{it} + \beta_4 LABFRE_{it} + \beta_5 TROPN_{it} + \beta_6 PCI_{it} + \beta_7 URBANPOP_{it} + \beta_8 HOUSPN_{it} + \beta_9 INFLA_{it} + \beta_{10} REGQ_{it} + \mu_{it} \quad (6)$$

$$INFEMP_{it} = \beta_0 + \beta_1 TAXBUR_{it} + \beta_2 RGDP_{it} + \beta_3 UNEMP_{it} + \beta_4 LABFRE_{it} + \beta_5 TROPN_{it} + \beta_6 PCI_{it} + \beta_7 URBANPOP_{it} + \beta_8 HOUSPN_{it} + \beta_9 INFLA_{it} + \beta_{10} ROL_{it} + \mu_{it} \quad (7)$$

$$INFEMP_{it} = \beta_0 + \beta_1 TAXBUR_{it} + \beta_2 RGDP_{it} + \beta_3 UNEMP_{it} + \beta_4 LABFRE_{it} + \beta_5 TROPN_{it} + \beta_6 PCI_{it} + \beta_7 URBANPOP_{it} + \beta_8 HOUSPN_{it} + \beta_9 INFLA_{it} + \beta_{10} VAC_{it} + \mu_{it} \quad (8)$$

where *i* denotes countries, *t* denotes time, INFEMP = the number of self-employed people as % of total employment, TAXBUR = ratio of tax to income of individuals, RGDP = nominal GDP divided by GDP deflator, UNEMP = annual unemployment rate as % of total labour force, TROPN = total trade as % of total GDP, LABFRE = (labour freedom) the ratio of minimum wage to the average value per worker, PCI = per capita income as income per person, URBANPOP = urban population per year as a percentage of total population, HOUSPN = annual household and final consumption expenditure, INFLA = % change in consumer prices index (annual %), CCRR = control of corruption, GOVEFF = government effectiveness, PSAV = political stability and absence of violence/terrorism, REGQ = regulatory quality, ROL = rule of law and VAC = voice and accountability and GOV = composite institutional quality index which combines (through the use of Principal Component Analysis method) the 6 indicators of institutional variables – control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law, and voice and accountability.

Definition, Measurement and Justification of Variables

The definitions of the postulated variables and their measurement are described below, alongside the rationale behind their inclusion in the model.

Informal Employment (INFEMP) This is measured as self-employed workers as percentage of total employment working on their own account.

Tax Burden (TAXBUR) The tax burden is included as an independent variable as postulated by the Neo-liberal model. Theoretically, tax burden is expected to have a negative effect on informal employment. This has been identified both in theoretical and empirical literature as one of the important factors affecting informal employment (Becker, 2004).

Real Gross Domestic Product (RGDP) This is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Studies have identified RGDP, an indicator of the level of output, as a crucial determinant of informal employment. The neo-liberal theory also affirms that the level of output has a positive effect on informal employment. This has been confirmed by empirical studies such as Obadan (2016).

Real GDP Per Capita (PCI) Real per capita income is related to the wealth of residents of the country and also to demand effectiveness. Empirically, it is confirmed that PCI has a positive relationship on informal employment. That is, a higher real GDP per capita will lead to a rise in informal employment. This has been confirmed by empirical studies such as Williams and Abbikedir (2018) and Martin (2018) that per capita income has positive effect on informal employment.

Household Spending (HOUSPN) Household spending is the market value of all goods and services, including durable products, purchased by households. It is the amount of final consumption expenditure made by households to meet their everyday needs. According to Odusola (2010), household spending has a positive relationship on informal employment. That is, an increase in household spending will induce more of informal employment. It is measured as household consumption expenditure which is million dollar.

Inflation rate (INFLA) According to Harris et al. (2002), an increase in inflation rate leads to a fall in informal employment. Studies such as Munir (2009), also support the negative effect of inflation rate on informal employment. Inflation rate is measured as annual percentage change in the consumer price index.

Relative Size of Urban Population (URBANPOP) Urban population refers to people living in urban areas. Relative urban population is measured as a percentage of total population. Empirically, an increase in urban population leads to a rise in informal employment, according to Ahmed and Mortaza (2014).

Unemployment (UNEMP) Unemployment is the share of the labour force that is without work but available for and seeking employment. It is believed that a high rate of those people in the workforce who are working but do not have an appropriate job will fall back to informal employment. Thus, as it has been confirmed by empirical study of Nell (2000), among others, that unemployment has a positive effect on informal employment, it is expected to have a positive effect on informal employment in the present study also. Unemployment rate is measured as the ratio of unemployed people to total labour force.

Labour Freedom (LABFRE) Labour freedom is a qualitative measure of a country's labour market, including regulations concerning minimum wages, severance requirements, and measurable regulatory restraints on hiring and hours worked, plus labour force participation rate as an indicative measure of employment opportunities in the labour market. It has been empirically confirmed by Christoffersen and Doyle (2009) and Barro (2014) that labour freedom has a positive relationship on informal employment.

Trade Openness (TROPN) The level of trade openness should have positive effect on informal employment, since this variable is a good proxy for the type of relation a given country has. It is believed that a country with higher trade openness will induce more informality in the country. Openness to trade is the value of trade—sum of exports and imports of goods and services measured as a ratio of GDP.

Control of Corruption (CORR) This captures perceptions of the extent to which there is control or check on the extent to which public power is exercised for private gain, including both petty and grand forms of corruption. The degree of control of corruption in a country can determine the volume of informal employment in an economy.

Government Effectiveness (GOVEFF) Government Effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Political Stability and Absence of violence (PSAV) This variable measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism. Every informal employed person would consider political stability and absence of violence as one of its determinants since the decision whether to do business or not in a particular country should depend on the political stability of that country as this could significantly tend to positive effect on informal employment. Estimate gives a country's score on the aggregate indicator in the same manner as the CORR.

Regulatory Quality (REGQ) Regulatory Quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Efficient and effective regulatory quality creates an enabling environment for business. Regulatory quality is, therefore, expected to have positive effect on informal employment. Estimate gives a country's score on the aggregate indicator in the same manner as the *CORR.*

Rule of Law (ROL) The rule of law reflects the strength and impartiality of the legal system and popular observance of the law. It captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Several studies have also shown that inefficient institutions deter businesses and discourage informal employment.

Voice and Accountability (VAC) Voice and Accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. Voice and Accountability is expected to increase informal employment. Therefore, in the present study, the effect of voice and accountability on informal employment can be either positive or negative. Estimate gives a country's score on the aggregate indicator in the same manner as the CORR

Governance quality indicator (GOV) This is the composite institutional quality index which combines the 6 indicators of institutional variables: absence of violence/terrorism, regulatory quality, government effectiveness, voice and accountability, control of corruption, and rule of law. In the present study, the effect of composite governance variable on informal employment could be positive or negative and these variables were informed by intuition. This is measured as the simple average of its aforementioned six components.

Estimation Techniques

Three-panel methods of estimations were considered in this study: pooled-ordinary-least-squares (pooled-OLS), fixed effect (FE), and random-effect (RE) methods. The pooled OLS method of estimation assumes that there are no differences between the estimated cross-sections, and the unobservable individual effect is assumed to be zero in pooled OLS estimator (Asteriou & Hall, 2007). The FE estimator allows for the estimation of different constants for each group and includes a dummy variable for each group. It captures all effects that are specific to a particular individual and which do not vary over time. It is possible to the fixed-effect model by including a set of time dummies as well. This has the advantage of capturing any effects that vary over time but are common across the whole panel (Asteriou & Hall, 2007). The fixed effect is appropriate when focusing on a specific set of *N* units, say countries. However, it suffers from a large loss of degrees of freedom when many dummies are included and the inclusion of too many dummies aggravates the problem of multicollinearity among the regressors. Furthermore, it cannot be used to estimate the effect of any time-invariant variable (Baltagi, 2005).

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Data and Data Sources

This study employed the archival research design, in which a balanced annual panel data spanning 2010 to 2020 were collected over sixteen West African countries: Benin, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo. Data are sourced from World Bank data bank and Heritage foundation.

RESULTS AND DISCUSSION

This section presents and evaluates the results of the pre-estimation tests carried out, followed by presentation and discussion of the regression analysis results.

Descriptive Statistics

From Table 1, informal employment has mean value of about 78%, implying that on the average about 78% of total employment was self-employment in the countries under investigation. The standard deviation of the aggregate measure of informal employment is 14.05%. The average value for TAXBUR was 76.50% for the region with a minimum value of 56.2% for Guinea-Bissau in 2016 and maximum value of 89.3% for Nigeria in 2019 while the standard deviation was 7.15%. The mean value of real gross domestic product (RGDP) was 3.81%, with a minimum value of 4.77% for Benin in 2014 and a maximum value of 8.50% in Guinea in 2018 while the standard deviation was 1.03%. The unemployment rate (UNEMP) was 3.11% for the countries in the region. The standard deviation is 3.11%, indicating a relatively low deviation of the values from its mean, as compared to those of the other variables. Labour freedom, which is measured as ratio of minimum wage to total labour, had an average value of 53.45%, with a minimum value of 26.3% for Mauritania in 2011 and maximum value of 85.7% for Nigeria in 2019, while the standard deviation is 11.39%.

Table 1 Descriptive Statistics

Descriptive	Mean	Median	Std. Dev.	Coeff. of Var	Min	Max
INFEMPL	77.89	81.1	14.05	0.1804	31.82	95.1
TAXBUR	76.50	77.35	7.15	0.0935	56.2	89.3
RGDP	3.81	9.43	1.03	0.2703	8.50	4.77
UNEMP	3.11	4.48	3.11	1.0000	0.32	12.24
LABFRE	53.45	52.35	11.39	0.2131	26.3	85.7
TR	70.67	61.58	25.19	0.3564	20.72	136.97
PCI	1186.3	787.36	812.95	0.6853	401.84	3907.65
URBANPOP	63.2	35.94	20.1	0.3180	30.45	70.3
HOUSPN	2.54	6.75	6.41	2.5236	8.08	1.401

INFLA	4.70	2.73	5.27	1.1213	-3.23	23.56
GOV	8.23	6.23	1.00	0.1215	-1.88	2.99
CCRR	-0.60	-0.67	0.60	-1.0000	-1.56	0.95
GOVEF	-0.80	-0.84	0.45	-0.5625	-1.77	0.32
PSAV	-0.59	-0.49	0.72	-1.2203	-2.21	0.89
REGQ	-0.59	-0.64	0.34	-0.5763	-1.26	0.13
ROL	-0.65	-0.67	0.47	-0.7231	-1.59	0.63
VAC	-0.30	-0.30	0.57	-1.9000	-1.46	0.998

***Sources**: Authors' computation*

The average value of trade openness (TR) was 70.67 for the countries in the region, with a maximum value of 136.97 for Ghana in 2013 and a minimum value of 20.72 in Liberia in 2011. The standard deviation is 25.19%, indicating a relatively low deviation of the values from its mean. For the percentage share of per capita income (PCI), an average of 1186.3 was observed with the minimum and maximum values of 401.84 for Liberia in 2013 and 3907.65 for Ghana in 2016 respectively. Urban population, which is measured as percentage of total population, has an average population value of 63.2%, with a minimum population value of 30.45% for Mauritania in 2011 and maximum population value of 70.3% for Nigeria in 2019, while the standard deviation is 20.1%.

Household spending average with a value of 1,254,000,000 for the region had a minimum value of 80,800,000 for Guinea-Bissau in 2016 and maximum value of 1,410,000,000 for Nigeria in 2019 while the standard deviation is 6.41%. The mean rate of inflation or percentage change in consumer price index is 4.70%, with a minimum value of -3.23% for Benin in 2014 and a maximum value of 23.56% in Guinea in 2018 while the standard deviation is 5.27%.

The percentile value for Governance Institutions (capturing the rule of law, control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, and voice and accountability) is 8.23% while the standard deviation is 1%. The maximum and minimum values are 2.99% for Mauritania in 2011 and -1.88% for Liberia in 2016 respectively. The average value for Control of Corruption, Government Effectiveness, Political Stability and Absence of Violence, Regulatory Quality, Rule of Law, and Voice and Accountability are -0.60%, -0.80%, -0.59%, -0.59%, -0.65% and -0.30% respectively, while their standard deviations are 0.60 %, 0.45%, 0.72%, 0.34%, 0.47% and 0.57% respectively. Control of corruption recorded a minimum value of -1.56% for Liberia in 2012 and a maximum value of 0.95% for Ghana in 2016, government effectiveness recorded a minimum value of -1.77% in Mali in 2010 and a maximum value

of 0.32% in Ghana in 2016, political stability and absence of violence recorded a minimum value of -2.21% in Mali in 2013 and a maximum value of 0.89% in Ghana in 2016, Regulatory quality recorded a minimum value of -1.26% in Togo and a maximum value of 0.13% in Nigeria in 2015, rule of law recorded a minimum value of -1.59% in Mali in 2018 and a maximum value of 0.63% in Niger in 2014, while voice and accountability recorded a minimum value of -1.46% in Mauritania in 2012 and a maximum value of 0.998% in Ghana in 2015.

The coefficient of variation in Table 1 is the only statistic that can be used for cross-variable comparison, unlike standard deviation and the others as the unit of measurement does not affect it. Hence, this is the reason for its being singled out in this paragraph for discussion. The coefficient of variation of 0.1804 for informal employment shows a relatively low level of dispersion of the values around their mean value compared to the level of unemployment rate. Similarly, the coefficient of variation value of 1.00 for unemployment rate implies a relatively high variation compared to some other variables. For example, the coefficient of variation of tax burden is 0.0935 is relatively low compared to that of informal employment (which is 0.1804) and that of other economic variables which are 0.2703, 1.0000, 0.2131, 0.3564, 0.6853, 0.2089, 2.5236, 1.1213 for real gross domestic product, unemployment rate, labour freedom, trade openness, per capita income, urban population, household spending and inflation respectively. This means that tax burden is less dispersed than that of others. For governance variables, the coefficient of variation are -1.000, -0.5625, -1.2203, -0.5763, -0.7231 and -1.9000 for control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law, and voice and accountability respectively. This deviation shows a relatively lower variation of the governance institutional data points from the mean values. Similarly, the coefficients of variation are comparatively lower for voice and accountability than that of other governance indicators, indicating a relatively lower variation of data points in relation to the mean value.

Estimates of the Regression Equations

To present and analyse the estimates of Equation 1 and 2 on the determinants of informal employment in West Africa, which is the main objective of this study, the table of the estimates is presented followed by an evaluation of the diagnostic statistics and a discussion of the performance of the independent variables.

Evaluation of Results

From Table 3, regarding the test statistics for choosing between the pooled OLS, fixed and random effect methods of panel data estimation, the Hausman test result shows that one

have to reject the null hypothesis of random effect being preferred to fixed effect in Equations 1 to 8 because the p-values are less than 0.05 level of significance in all cases, being 0.012, 0.015. 0.029, 0.004, 0.015, 0.010, 0.000 and 0.006 respectively.
The R-squared values are 0.784, 0.787, 0.787, 0.781, 0.786, 0.781, 0.774, and 0.773 in the Equations respectively and their respective F-statistic's p-values are 0.000 in each case. Thus, these F-statistic values are statistically significant at the chosen 5% critical level. This means that the models have good fits (Table 3).

Testing further, using the Breusch-Pagan LM method, it was found that Pooled OLS is not more appropriate than either of Fixed Effects and Random Effects estimation methods in Equations as the test reports a p-value of 0.000 which in essence leads to rejection of LM test and confirms pooled OLS is not the most suitable method.

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Table 3: The OLS Estimates of the Regression Equations

	Equation 1			Equation 2			Equation 3			Equation 4			Equation 5			Equation 6			Equation 7			Equation 8		
Variables	Coeff.	T-Stat.	P-value	Coeff.	T-Stat.	P-value	Coeff.	T-Stat.	P-value	Coeff.	T-Stat.	P-value	Coeff.	T-Stat.	P-value	Coeff.	T-Stat.	P-value	Coeff.	T-Stat.	P-value	Coeff.	T-Stat.	P-value
TAXB	-0.636	-1.81	0.073	-0.066	-1.89	0.060	-0.066	-1.89	0.060	-0.06	-1.80	0.073	-0.06	-1.70	0.090	-0.065	-1.83	0.070	-0.07	-1.92	0.056	-0.07	-1.86	0.065
RGDP	1.24	2.84	0.005	1.14	2.62	0.010	1.14	2.62	0.010	1.32	3.05	0.003	1.11	2.51	0.013	1.25	2.85	0.005	1.24	2.84	0.005	1.26	2.89	0.004
UNEM	-0.322	-2.30	0.023	-0.382	-2.68	0.008	-0.382	-2.68	0.008	-0.32	-2.35	0.020	-0.296	-2.11	0.037	-0.325	-2.31	0.022	-0.35	-2.46	0.015	-0.33	-2.37	0.019
LABFR	-0.002	-0.11	0.914	-0.002	-0.07	0.941	-0.002	-0.07	0.941	0.002	0.11	0.909	-0.009	-0.41	0.682	-0.002	-0.01	0.924	0.003	0.12	0.906	-0.00	-0.13	0.901
TR	-0.006	-0.56	0.577	-0.011	-0.97	0.331	-0.011	-0.97	0.331	-0.015	-1.37	0.174	-0.007	-0.62	0.533	-0.008	-0.67	0.501	-0.01	-0.97	0.333	-0.01	-0.67	0.506
PCI	-0.0192	-15.1	0.000	-0.019	-14.4	0.000	-0.019	-14.4	0.000	-0.018	-13.80	0.000	-0.019	-15.3	0.000	-0.019	-15.0	0.000	-0.02	-14.2	0.000	-0.02	-14.0	0.000
URPOP	-3.57	-3.06	0.003	-3.10	-2.62	0.010	-3.10	-2.62	0.010	-3.68	-3.20	0.002	-3.31	-2.83	0.005	-3.61	-3.07	0.003	-3.39	-2.89	0.004	-3.49	-2.99	0.003
HOUSP	-4.20	-0.11	0.915	-7.62	-0.19	0.846	-7.62	-0.19	0.846	-1.93	-0.49	0.624	4.94	0.12	0.901	-6.48	-0.16	0.871	-8.03	-0.20	0.839	-8.21	-0.21	0.836

INFLA	-0.034	-0.91	0.363	-0.030	-0.80	0.424	-0.03	-0.80	0.424	-0.02	-0.47	0.636	-0.041	-1.10	0.275	-0.034	-0.91	0.656	-0.04	-0.92	0.359	-0.03	-0.72	0.475
GOV	-	-	-	-0.753	-2.18	0.032	-	-	-				-	-	-	-	-	-	-	-	-	-	-	-
CCRR	-	-	-	-	-	-	-1.46	-1.98	0.34				-	-	-	-	-	-	-	-	-	-	-	-
GOVEF	-	-	-	-	-	-	-	-	-	-2.06	-2.46	0.015	-	-	-	-	-	-	-	-	-	-	-	-
PSAV	-	-	-	-	-	-	-	-	-	-	--	-	0.673	1.73	0.087	-	-	-	-	-	-	-	-	-
REGQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.416	-0.45	0.656	-	-	-		-	-
ROL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-1.25	-1.29	0.198		-	-
VAC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-0.67	2.34	0.024
Hausman (P-value)	-	-	0.012	-	-	0.015	-	-	0.015	-	-	0.006	-	-	0.000	-	-	0.010	-	-	0.029	-	-	0.004
LM (P-value)	-	-	1.000	-	-	1.000	-	-	1.000	-	-	1.000	-	-	1.000	-	-	1.000	-	-	1.000	-	-	1.000

F-Wald (P-Value)	-	-	0.000	-	-	-0.000	-	-	-0.000	-	-	-0.000	-	-	-0.000	-	-	-0.000	-	-	-0.000	-	-	-0.000
Overall R-squared	0.7835	-	-	0.787	-	-	0.7865	-	-	0.773	-	-	0.7742	-	-	0.7807	-	-	0.787	-	-	0.781	-	-
No of Countries	16	-	-	16	-	-	16	-	-	16	-	-	16	-	-	16	-	-	16	-	-	16	-	-
No of Observations	176	-	-	176	-	-	176	-	-	176	-	-	176	-	-	176	-	-	176	-	-	176	-	-

Explanatory Note: The following are the meaning of the acronyms in Table 4.5: TAXB = tax burden, RGDP = real gross domestic product, PCI = real income per capita, UNEMP = unemployment rate, LABFR = labour freedom, URBANPOP = urban population, TR = trade openness, HOUSP = household spending, INF = inflation rate, GOV = institutional variables, CCRR = control of corruption, GOVEF = government effectiveness, PSAV = political stability and absence of violence, REGQ = regulatory quality, ROL = rule of law, and VAC = voice and accountability. The decision rule is to reject the poolability test if the F-statistic value is greater than 0.05. The decision rule of Hausman test is to reject random effect if the probability value is less than 0.05. The decision rule of LM test is to reject random if the probability value is greater than 0.05. The decision rule of the parameter estimate is to reject its significance if its corresponding p-value is greater than 0.05.

Sources: *Authors' computation using STATA 14.0*

As regards test for non-normality of the distribution of the residuals, the Jarque-Bera test statistic's p-value of 0.000 in each of the models means that the test statistics are significant at 5% significance level. So, the study fails to reject the null hypothesis of normally distributed error terms, which leads to the conclusion that the residuals are normally distributed.

Using the tolerance and variance inflation factor (VIF) test, the hypothesis of multicollinearity among the explanatory variables was rejected, for VIF < 10 and tolerance > 0.1 in all cases (mean VIF = 3.34). This implies that the model is devoid of severe multicollinearity. This implies that multicollinearity was not a problem in estimating the logit model.

Impact of the Explanatory Variables

After the evaluation of the result of the overall robustness and diagnostic tests of the equations, we now proceed to examine the performance of each explanatory variables based on the 3 'S' – the size, sign and the statistical significance. All results are evaluated at the 0.05 level of significance, except the evaluation of the impact of tax burden, which is evaluated at the 0.1 level of significance.

Tax Burden (TAXBUR) From Equations 1 to 8, the coefficients of *TAXBUR* are -0.636, -0.066, -0.070, -0.070, -0.066, -0.065, -0.060 and -0.062 respectively, with respective p-values of 0.073, 0.060, 0.056, 0.065, 0.060, 0.070, 0.090 and 0.073, implying that the negative coefficients are not statistically significant at the level of significance (0.10) in all the equations. Thus, on the whole and in view of the fact that all coefficients are negative, it can be concluded that tax burden in West Africa affect informal employment negatively. This is in conformity with the findings of Becker (2004).

Real Gross Domestic Product (RGDP) From the equations, the coefficients of *RGDP* are 1.24, 1.14, 1.24, 1.26, 1.14, 1.25, 1.11 and 1.32 respectively, with respective p-values of 0.005, 0.010, 0.005, 0.004, 0.010, 0.005, 0.013 and 0.003, implying that the positive coefficients are statistically significant at the 5% level of significance in all the equations. Thus, in view of the fact that all of the coefficients are positive, it can be concluded that RGDP in West Africa has a positive effect on informal employment. This finding is in line with the a priori expectation as well as the findings reported by Becker (2004) and Obadan (2016) who reported that real GDP had a positive effect on informal employment.

Unemployment rate (UNEMP) has the coefficients -0.322, -0.382, 0.350, -0.330, -0.382, -0.296 and -0.324 respectively, with respective p-values of 0.023, 0.008, 0.015, 0.019, 0.008, 0.022, 0.037, 0.020, implying that the negative coefficients are statistically significant at the 5% level of significance in all the equations. Based on this overwhelming

evidence, it is concluded that unemployment rate has a negative effect on informal employment in West Africa. This result is in line with our a priori expectation and conforms to the findings by Nell (2000) that unemployment rate has negative effect on informal employment.

Labour Freedom (LABFR) In Equation 1 to 8, the coefficients are -0.002, -0.002, 0.003, -0.001, -0.002, -0.002, -0.009 and 0.002 respectively, with respective p-values of 0.914, 0.941, 0.906, 0.901, 0.941, 0.924, 0.682 and 0.909, implying that the negative coefficients are not statistically significant at the 5% level in any of the equations. Thus, it can be concluded that labour freedom in West Africa does not determine informal employment.
Trade Openness (TR)'s coefficients are -0.006, -0.011, -0.010, -0.010, -0.011, -0.008, -0.007 and -0.015 respectively, with respective p-values of 0.577, 0.331, 0.333, 0.506, 0.331, 0.501, 0.533 and 0.174, implying that the negative coefficients are not statistically significant at the 5% level of significance in all the equations. Thus, it can be concluded that trade openness in West Africa does not affect informal employment.

*Per Capita Income (PCI)***'s** coefficients are -0.0192, -0.019, -0.020, -0.019, -0.019, -0.019 and -0.018 respectively, with respective p-value of 0.000 in each cases, implying that the negative coefficients are statistically significant at the 5% level in all the equations. Thus, in view of the fact that all of the coefficients are negative, it can be concluded that per capita income has a negative effect on informal employment. This result is consistent with our a priori expectation. It is also in agreement with Williams and Abbikedir (2018).

Urban Population (URPOP) The coefficients of *URPOP* were estimated to be are -3.57, -3.10, -3.39, -3.49, -3.10, -3.61, -3.31 and -3.68 in Equations 1 to 8, respectively, with respective p-values of 0.003, 0.010, 0.004, 0.003, 0.010, 0.003, 0.005 and 0.002, implying that the negative coefficients are statistically significant at the 5% in all the equations. Thus, in view of the fact that all of the coefficients are negative, it can be concluded that urban population in West Africa negatively affects informal employment. As postulated *a priori*, this finding is in accordance with the findings of empirical studies by Ahmed and Mortaza (2014).

Household Spending (HOUSP) From Table 3, the coefficients are -4.20, -7.62, -8.03, -8.21, -7.62, -6.48, -4.94, -1.93 respectively, with respective p-values of 0.915, 0.846, 0.839, 0.836, 0.846, 0.871, 0.901 and 0.624, implying that the negative coefficients are not statistically significant at the 5% level in any of the equations. Thus, it can be concluded that household spending in West Africa does not affect informal employment.

Inflation Rate (INFLA) Table 3 shows that the coefficients are -0.034, -0.030, -0.040, -0.030, -0.030, -0.034, -0.041 and -0.018 respectively, with respective p-values of 0.363, 0.424, 0.359, 0.475, 0.424, 0.656, 0.275 and 0.636, implying that the negative coefficients are not statistically significant at the 5% in any of the equations. Thus, it can be concluded that inflation rate does not determine informal employment in West Africa.

Governance Quality (GOV) In Equation 2, the coefficient is -0.732, with a p-value of 0.032, implying that the coefficient is negative and statistically significant at the 5% level. It is therefore concluded that high governance quality have a negative effect on informal employment. This agrees with our a priori expectation of a negative effect of governance quality on informal employment.

Rule of Law (ROL) In Equation 3, the coefficient is -1.250, with a p-value of 0.198, implying that the coefficient is negative but not statistically significant at the 5% level. It is therefore concluded that rule of law does not affect informal employment. This finding and others reported in the succeeding paragraphs are consistent with our a prior expectations, however, they are not statistically significant.

Voice and Accountability (VAC) In Equation 4, the coefficient is -0.670, with a p-value of 0.024, implying that the coefficient is negative and statistically significant at the 5% level. It is therefore concluded that voice and accountability has a negative effect on informal employment in West Africa.

Control of Corruption (CCRR): In Equation 5, the coefficient is -1.460, with a p-value of 0.340, implying that the coefficient is negative but statistically insignificant at the 5% level. It is therefore concluded that control of corruption does not determine informal employment.

Regulatory Quality (REGQ) In Equation 6, the coefficient is -0.416, with a p-value of 0.656, implying that the coefficient is negative and statistically insignificant at the 5% level. It is therefore concluded that regulatory quality does not determine informal employment.

Political Stability and Absence of Violence (PSAV) In Equation 7, the coefficient is 0.673, with a p-value of 0.087, implying that the coefficient is positive but statistically insignificant at the 5% level. It is therefore concluded that political stability and absence of violence does not determine informal employment.

Government Effectiveness (GOVEFF) In Equation 8, the coefficient is -2.058, with a p-value of 0.015, implying that the coefficient is negative and statistically significant at the 5% level. It is therefore concluded that government effectiveness has a negative effect on informal employment.

CONCLUSION AND RECOMMENDATION

This study examines the impact of economic and governance institutional factors on informal employment in West Africa. On the whole, the study has been able to address its specific objectives and answer the research questions raised at the beginning of the study and it has shed more light on the corresponding hypotheses, with some of them being accepted and some being rejected.

While tax burden has a negative effect on informal employment in West Africa, factors such as control of corruption, rule of law, absence of violence, and regulatory quality do not have statistically significant impact on informal employment. Meanwhile, unemployment rate, per capita income, urban population, governance indicators, voice and accountability, as well as government effectiveness have negative effects on informal employment while real GDP has a positive effect on informal employment.

It is important for policymakers to focus on implementing policies that help reduce informality gradually by tackling the drivers of informality found to be significant in this study. Given the negative impact of tax burden, quality of governance, and government effectiveness on informal employment, policy makers should look more into governance quality in order to discourage informal activities in the region. Moderate taxes should be levied to reduce informality. Specific measures to tackle informality may include simple tax systems including easy registration and electronic payment of taxes, simplifying registration and regulatory requirements for new firms, and labour market reforms. Taking these measures would reduce informality and enlarge the formal sector. Attacks on the sector motivated by the view that it operates illegally and evades taxes are not the answer. Considering the negative effect of per capita income on informal employment in West Africa, policy makers should work cooperatively with informal trade associations so as to provide what will meet the needs of the people in West Africa and be consistent in policy made which enhance more involvement in the informal activities.

The results and conclusions of this study have opened room for future research questions. A more in-depth investigation is needed to give more insights into the effect of the governance institutional factors on informal employment. Future researchers should examine the effect of governance institutional factors on total employment and the output

level of the informal activities, an issue that is beyond the scope of this current study. The effects of the economic factors should be investigated further by including other economic-specific determinants that this current research did not consider.

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