How Does Government Spending Affect Labour Force Participation and Unemployment Within the WAMZ Countries?

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Abstract

This study utilizes static and dynamic models in examining the short run and long run impacts of government spending on labour force participation and unemployment within the West African Monetary Zone (WAMZ) over the period 1991-2018. While the static models are estimated using the Pooled Ordinary Least Squares (POLS) technique and the Least Squares Dummy Variables (LSDV) technique, the dynamic models are estimated using the GMM-IV technique. The GMM-IV technique better addresses endogeneity issues relative to the other techniques utilized and also, the parameters obtained from the technique are confirmed to be consistent by the Arellano-Bond test for zero autocorrelation. Accordingly, this technique is given preference in this paper. The results from the technique reveal that government spending increases the labour force participation rate but has an ambiguous impact on unemployment rate. In the long run, the parameter estimates largely remain unchanged in terms of their sign and significance; however, they increase in size. Based on these findings, this paper firstly recommends that policy makers intensify efforts in increasing government spending; as a reduction may impact negatively on the labour force participation rate. Secondly, this paper recommends the formulation and implementation of fiscal policies that are robust enough to reduce the unemployment rate as they increase the labour force participation rate.

Keywords: government spending, labour force participation, unemployment, West African Monetary Zone, POLS, LSDV, GMM-IV

1. Introduction

This paper examines the impact of government spending on labour force participation and unemployment within the West African Monetary Zone (WAMZ). The need for this study arises from two profound reasons.

Firstly, the literature is not at a consensus as regards the impact of government spending on labour force participation and unemployment. While some findings and theories reveal that government spending has a positive impact on these variables (see Abubakar, 2016; Murwirapachena et al., 2013; Brückner & Pappa, 2013; Calidoni, 2005) others suggest the existence of a negative impact (see Bidemi, 2016; Cottarelli, 2012; Pope, 2017; Ahearn et al., 2006). The lack of unanimity within the literature justifies the need for further studies.

Secondly, the empirical literature on labour supply in WAMZ, to which this study contributes directly does not consider the impact of government spending on labour force participation. The few that do, fail to rigorously address endogeneity bias and heterogeneity issues. Accordingly, this study contributes to the literature as follows. Firstly, it examines the short run and long run impacts of government spending on labour participation and unemployment using three estimation techniques viz. the Pooled Ordinary Least Squares (POLS), Least Squares Dummy Variables (LSDV) and the GMM-IV technique. While the POLS method deals with potential endogeneity arising from the omission of observed variables, the LSDV technique addresses potential endogeneity arising from the omission of unobserved variables and the GMM-IV estimation technique deals with potential endogeneity arising from reverse causality between government spending and labour force participation rate as well as between the former and unemployment. Secondly, this paper examines the level and slope effects of the global financial crisis. Thirdly, this study focusses on the effect of government spending on unemployment within the WAMZ countries.

The results obtained generally reveal that government spending has a positive impact on the labour force participation but an ambiguous impact on unemployment. As such, government spending may be increasing the labour force participation rate but not necessarily reducing unemployment. In the long run, the parameter estimates largely remain unchanged in terms of their sign ad significance. However, they increase in size.

Based on these findings, this paper firstly recommends that policy makers intensify efforts in increasing government spending; as a reduction may impact negatively on the labour force participation rate. Secondly, this paper recommends the formulation and implementation of fiscal policies that are robust enough to reduce the unemployment rate as they increase the labour force participation rate.

The rest of this study is organized as follows. Section 2 reviews the literature. Section 3 provides the empirical models and methodology. Section 4 presents the data analysis. Section 5 summarizes and concludes.

2. Literature Review

This section analyses both the theoretical and the empirical literature on government

spending, unemployment and labour force participation rate.

2.1 Theoretical Literature

The labour supply literature predicts that an increase in social spending disincentivises recipients of such spending from working. More specifically, this strand of the literature suggests that social spending shifts the budget line of an agent and if leisure is a normal good, such an increase would subsequently reduce the amount of hours an agent needs to work to attain a stipulated standard of living. The aftermath of this may be a reduction in hours supplied by labour and a potential rise in the unemployment rate (see RØed & StrØm, 2002 ; Aaberge & Colombino, 2006).

Consistent with the labour supply literature are the orthodox neoclassical economists' wage-based theories on unemployment. This strand of the literature argues that the level of unemployment is a function of the prevailing wage rate. When the wage rate rises so high that it exceeds the equilibrium level, labour supply equally rises considerably and ultimately surpasses labour demand, thereby resulting in a significant rise in the unemployment rate. Nonetheless, this strand of the literature argue that the labour market possesses a self-correcting mechanism which ultimately reduces the unemployment rate. Due to this self-correcting mechanism, the orthodox neoclassical economists suggest that discretionary fiscal expansions are unrequired to address unusually high rates of unemployment. The wage-based theories however note that the wage mechanisms of the labour market may not be effective enough to sustain market clearing wages, and as such, unemployment hardly reduces to zero (see Pigou, 1933 ; Say, 1971).

Nonetheless, the general theory on employment, interest and money of Keynes (1936) reveals that during periods of economic downturns, when many workers get retrenched, the self-correcting mechanism of the labour market may fail to promptly address unemployment issues. In such periods, government intervention through public spending is required to reduce the unemployment rate. Keynes (op. cit.) argues that the government spends copiously towards establishing vital social amenities; and by so doing, many workers regain employment, labour supply increases and the unemployment rate ultimately reduces.

2.2 Empirical Literature

This sub-section examines the empirical literature on government spending, unemployment and labour force participation rate.

2.2.1 The Empirical Literature on the Nexus Between Government Spending and Unemployment

While there exists a strand of the literature which finds that government spending reduces the unemployment rate, there equally exists another strand which arrives at diametrically opposite findings. Both strands are discussed below.

2.2.1.1 StudiesThat Find That Government Spending Reduces Unemployment

Bidemi (2016) utilizes the Error Correction Model (ECM) in investigating the impact of

government expenditure on unemployment in Nigeria over the period 1980-2013. The study finds that government spending reduces unemployment. This study deserves commendation for robustly examining the long run impact of government spending on unemployment. Nonetheless, the study fails to adequately address potential endogeneity bias arising from reverse causality between government expenditure and unemployment.

Also Cottarelli (2012) in a largely descriptive study on a sample comprising several developing countries shows that government spending in form of unemployment benefits reduce unemployment when they are distributed with short durations. This study deserves credit for critically reviewing the existing literature on unemployment. Nonetheless, this research fails to conduct adequate formal econometric tests to justify its findings. The graphs and figures provided at best reveal the existence of a correlation between government spending and unemployment; and not necessarily a causation.

2.2.1.2 Studies That Find That Government Spending Does Not Reduce Unemployment

Abubakar (2016) employs the Vector Autoregressive (VAR) methodology in investigating the impact of fiscal policy shocks on unemployment in Nigeria over the period 1981-2015. The findings of the study oppose the argument that government spending reduces unemployment. This study deserves commendation for rigorously highlighting the dynamic behaviour of unemployment through the VAR model utilized. Nonetheless, the results obtained are not free from the standard shortcomings often ascribed to VAR models (see Chari et al. 2007 and Ramey 2009).

Also, Murwirapachena et al. (2013) utilize a Vector Error Correction Model (VECM) in examining the impact of fiscal policy on unemployment in South Africa over the period 1980-2010. The study finds that government consumption spending increases the rate of unemployment within South Africa. Nonetheless, the time-span of the dataset utilized in this study fails to capture recent years and as such, results obtained may have limited implications for current trends.

2.2.2 The Empirical Literature on the Nexus Between Government Spending and Labour Force Participation

Just as there exists a strand of the empirical literature which finds that government spending reduces the labour force participation rate, there equally exists another which find that government spending increases the labour force participation rate. Both strands are discussed below.

2.2.2.1 Studies That Find That Government Spending Reduces Labour Force Participation

Pope (2017) in a descriptive study on the relationship between government expenditure and economic growth shows that social spending reduces the labour force participation rate. The study reveals that social spending reduces incentive to work and encourages the low income groups to be overly reliant on government handouts. Nonetheless, this study fails to conduct econometric tests to validate the negative relationship between government spending and labour force participation.

Similarly, Ahearn et al. (2006) employ bivariate probit regressions in investigating the impact of government payments on off-farm labour participation rate. The study finds that such payments do not increase labour force participation rate. Unlike other existing studies, this research deserves commendation for disaggregating the government payments into both coupled and decoupled payments.

2.2.2.2 Studies That Find That Government Spending Does Not Reduce Labour Force Participation

Brückner and Pappa (2013) employ a structural VAR approach in investigating the impact of fiscal expansions on a panel of 10 OECD countries. The study finds that government spending has a positive impact on the labour force participation rate. This study deserves commendation for employing a variety of VAR specifications in verifying its results. Nonetheless, the study ignores key variables such as trade openness and population density.

Similarly, Calidoni (2005) utilizes fixed effects panel methods in investigating the effects of government expenditure on labour force productivity growth within OECD countries over the period 1976-2000. The study finds that healthcare spending and social contributions have a significantly positive impact on labour productivity growth. The research goes on to provide a time trend analysis which opposes the argument that government spending reduces labour force participation rate. This study deserves credit for conducting rigorous robustness tests validating the results obtained. Nonetheless, the study fails to adequately address potential endogeneity arising between the public spending variable and the individual effects.

3. Methodology

3.1 Empirical Model

The empirical methodology adopted in this study is similar to those of O'Nwachukwu (2017) and Ogbeide et al. (2016). However, the contributions of this paper are different from those of these studies. While O'Nwachukwu (2017) adopt a static model and investigate the determinants of unemployment, Ogbeide et al. (2016) adopt a dynamic model in examining the impact of resource dependence and financial development on labour force participation rate.

This research adopts both static and dynamic models in investigating the impact of government spending on labour force participation within the WAMZ countries. While the static model is estimated using the POLS and LSDV methods. The dynamic model is estimated using the GMM-IV technique.

3.2 Model Specification

3.2.1 Static Model

$$\text{LFPR}_{it} = \alpha + \beta_1 \text{TGS}_{it} + \varphi_1 Z_{it} + v_{it} \tag{1}$$

$$\text{Unemployment}_{it} = \alpha + \beta_2 \text{TGS}_{it} + \varphi_2 Z_{it} + v_{it} \tag{2}$$

$$v_{it} = \chi_i + \theta_t + \varepsilon_{it}$$

For each country i, at time t, LFPR and Unemployment represent the labour force participation rate and unemployment rate respectively. TGS captures the total government spending and Z represents the control variables. Also χ_i and θ represent the country and time fixed effects respectively. Likewise, α, β_1, β_2, φ_1 and φ_2 represent the relevant parameter estimates and ε represents the error term. Each of the variables are expressed in logarithmic form; and as such, the model captures the degree of elasticity of the dependent variables to percentage changes within the explanatory variables.

The above static model will be estimated using the POLS and LSDV techniques.

3.2.2 Dynamic Model

$$LFPR_{it} = \alpha + \lambda_1 LFPR_{it-1} + \beta_1 TGS_{it} + \varphi_1 Z_{it} + v_{it} \tag{3}$$

$$Unemployment_{it} = \alpha + \lambda_2 Unemployment_{it-1} + \beta_2 TGS_{it} + \varphi_2 Z_{it} + v_{it} \tag{4}$$

$$v_{it} = \chi_i + \theta_t + \varepsilon_{it}$$

Equations (2) and (3) include the lagged dependent variable and as such make it possible to identify the long run impact of TGS on LFPR and Unemployment. In order to robustly address endogeneity issues arising from potential endogeneity between government spending and the dependent variables, equation (2) is estimated with the GMM-IV estimation technique of Arellano and Bond (1991).

3.3 Testable Hypotheses

Due to absence of a consensus within the literature about the impact of government spending on unemployment and labour force participation rate, this paper adopts a two tailed test. The hypotheses are stated below:

H_0: Total government spending has no significant impact on Unemployment and Labour force participation rate within the WAMZ countries.

H_1: Total government spending has a significant impact on Unemployment and Labour force participation rate within the WAMZ countries.

3.4 Endogeneity

This study robustly addresses potential endogeneity issues as follows. Firstly, the POLS method - through the inclusion of control variables - deals with potential endogeneity arising from the omission of observed variables. Secondly, the LSDV technique - through the inclusion of the time and country fixed effects - addresses potential endogeneity arising from the omission of unobserved variables (such as heterogeneity across countries and policy changes over time). Thirdly, the GMM-IV estimation technique through the inclusion of the lagged dependent variable deals with potential endogeneity arising from reverse causality

between government spending and labour force participation rate as well as between the former and unemployment.

3.5 Sample Selection

This paper examines the impact of government spending on labour force participation and unemployment within the West African Monetary Zone (WAMZ) over the period 1991-2018. The WAMZ countries include: Gambia, Ghana, Guinea, Liberia, Nigeria and Sierra Leone.

The study employs an annual data as it is popular in the literature examining government spending within the WAMZ countries. As such, the use of annual data facilitates comparability.

Also, this study adopts panel data analysis due to the fact that the WAMZ countries are similar in terms of their political and economic institutions.

3.6 Variable Selection

3.6.1 Dependent Variables

The Labour Force Participation Rate (LFPR) represents the dependent variable. It is measured the ratio of working population to the working age group. Similarly, Unemployment (Unemployment) captures the number of unemployed individuals expressed as a percentage of the labour force. Data are sourced from World Bank's World Development Indicators.

3.6.2 Primary Independent Variable

The primary explanatory variable is captured by the Total Government Spending (TGS). It is measured as the share of government spending within the GDP. Data are sourced from World Bank's World Development Indicators.

3.6.3 Control Variables

Based on the existing theories within the literature (see Philips, 1987; Okun, 1983), the control variables included in the model include: Inflation (Inflation), Population Density (PD), Natural Resource Rent (NRR), Trade Openness (TO), Investment (Investment) and Foreign Direct Investment inflows (FDI). Data are sourced from World Bank's World Development Indicators.

3.6.4 Summary Statistics

Table 1 reveals that the highest labour force participation rate contained in the data is 75 percent and the lowest is 54.7 percent. Similarly, the highest government spending as a percentage of GDP is 19.5 percent and the lowest is 0.9 percent. Also, the table reveals that the first-order autocorrelation coefficients for both labour force participation rate and unemployment are positive and large in size further justifying the inclusion of lagged dependent variables in the models adopted. This study accounts for this through the GMM-IV estimation technique.

Table 1. Summary statistics

Variable	N	Mean	SD	Minimum	Maximum	AR(1)
LFPR	168	61.542	5.976	54.736	75.022	0.998
Unemployment	168	5.141	2.558	1.964	10.626	0.991
TGS	159	9.731	4.000	0.911	19.501	0.903
Inflation	127	13.661	11.792	0.844	72.835	0.744
PD	168	92.350	54.303	20.522	225.306	1.000
NRR	153	14.284	7.946	2.000	53.627	0.792
TO	159	68.337	43.979	20.722	311.354	0.856
Investment	159	19.307	9.324	-2.424	52.669	0.804
FDI	157	6.241	14.230	-0.970	103.337	0.698

Source: Author's own computation. *Note*: SD captures the standard deviation and AR(1) captures the first-order autocorrelation coefficient.

4. Data Analysis

4.1 Main Results from POLS, LSDV and GMM-IV Estimators

As regards the results obtained using the POLS and LSDV techniques, this paper deals with autocorrelation and heteroscedasticity issues through the use of the Newey-West standard errors (Newey and West, 1987). Also, unit root tests were carried out and the tests revealed that the variables utilized in the study are stationary.

Table 2 shows the results obtained from the regression of labour force participation rate on government spending using the POLS, LSDV and GMM-IV estimation techniques. The results from the POLS estimation technique reveals that a percentage increase in the government spending brings about a 0.072 percent rise in the labour force participation rate at 1 percent significance level. Compared to the POLS, results from the LSDV and GMM-IV techniques show that the impact of a percentage increase in government spending on labour force participation rate remains positive and significant at 1 percent significance level; however, the size of the parameter estimate reduce slightly to 0.0176 and 0.002 respectively. Table 2 also shows that the models utilized in the three estimation techniques are generally significant at the 1 percent significance level.

Also, Table 2 reveals that the fixed effects are generally significant at 1 percent significance level and this reveals the potential existence of heterogeneity across countries and policy changes over time; which the LSDV technique rigorously addresses.

Additionally, Table 2 shows that the parameter estimates of the lagged dependent variable is positive and significant and this underscores the need for a dynamic model. Also, the Table reveals that the parameter estimates of the GMM-IV technique are confirmed to be consistent by the Arellano-Bond test for zero autocorrelation. Since, the GMM-IV technique better addresses endogeneity issues relative to the other techniques utilized, this technique is given preference in this paper.

Moving on to the results obtained on the regression of government spending on unemployment using the POLS, LSDV and GMM techniques. The results generally indicate that the impact of government spending on unemployment is rather ambiguous. Specifically, the results from the POLS estimation technique shows that a percentage increase in the government spending brings about a 0.052 percent rise in the unemployment rate. Compared to the POLS, results from the LSDV and GMM-IV techniques show that the impact of a percentage increase in government spending on unemployment rate remains positive; however, the size of the parameter estimate reduce slightly to 0.0139 and 0.006 respectively. Nonetheless, these parameter estimates should be interpreted with caution as they are not significant.

Table 2. Government Spending, Labour Force Participation and Unemployment: POLS, LSDV and GMM-IV estimators.

	POLS		LSDV		GMM-IV	
	LFPR	Unemployment	LFPR	Unemployment	LFPR	Unemployment
L. LFPR	–	–	–	–	0.896***	0.934***
					(0.013)	(0.029)
TGS	0.072***	0.052	0.0176***	0.013	0.002***	0.006
	(0.018)	(0.053)	(0.003)	(0.035)	(0.0005)	(0.019)
Inflation	0.061***	0.157***	0.002	0.089***	0.001***	0.001
	(0.016)	(0.044)	(0.003)	(0.035)	(0.0003)	(0.013)
PD	-0.023	0.532***	0.736***	-0.138	0.012***	-0.173
	(0.030)	(0.110)	(0.121)	(1.133)	(0.004)	(0.148)
GDP	0.009	-0.077***	-0.054***	0.271	-0.011***	0.075
	(0.011)	(0.028)	(0.019)	(0.200)	(0.002)	(0.058)
NRR	-0.056*	-0.365***	-0.014***	-0.071	-0.002***	-0.007
	(0.031)	(0.095)	(0.005)	(0.072)	(0.0005)	(0.033)
TO	0.027	0.132	-0.000	0.030	-0.001***	-0.070***
	(0.049)	(0.170)	(0.006)	(0.063)	(0.0007)	(0.013)
Investment	0.025	0.051	0.000	-0.009	-0.0008	-0.027***
	(0.032)	(0.095)	(0.004)	(0.046)	(0.0006)	(0.009)
FDI	-0.006	-0.042**	-0.002	-0.009	-0.0001	-0.001
	(0.007)	(0.019)	(0.001)	(0.011)	(0.0001)	(0.007)
Constant	3.647***	0.762	1.857**	-4.000	0.636***	-0.480
	(0.352)	(1.170)	(0.935)	(9.235)	(.093)	(0.836)
Number of observations	116	116	116	116	104	104
Adjusted R squared	0.36	0.736	0.989	0.941	–	–
Fixed effects p-value	–	–	0.000	0.000	–	–
AR(1) Test p-value	–	–	–	–	0.0479	0.025
AR(2) Test p-value	–	–	–	–	0.9703	0.782
Model significance p-value	0.000	0.000	0.000	0.000	0.000	0.000

Source: Author's own computation. *Note*: The parentheses contain the standard errors. *p < .10. **p < .05. ***p < .01.

4.2 Results for the Control Variables

This sub-section provides a brief interpretation of the results obtained on the control variables based on the GMM-IV technique the preferred technique of this paper. As regards the results obtained from the regression of labour force participation on government spending, Table 2 reveals that a percentage increase in inflation brings about a 0.001 percent rise in the labour force participation rate at 1 percent significance level. Also, a percentage increase in population density brings about a 0.012 percent rise in the labour force participation rate at 1 percent significance level. Additionally, a percentage increase in the GDP brings about a

0.011 percent reduction in the labour force participation rate at 1 percent significance level. Likewise, a percentage increase in natural resource rents brings about a 0.002 percent reduction in the labour force participation rate at 1 percent significance level. Similarly, a percentage increase in trade openness brings about a 0.001 percent reduction in the labour force participation rate at 1 percent significance level. Although investment and foreign direct investment have a negative impact on labour force participation rate, the parameter estimates obtained on both are not significant.

Moving on to the results obtained from the regression of unemployment on government spending, Table 2 revels that a percentage increase in inflation brings about a 0.001 percent rise in the unemployment rate. Also, a percentage increase in population density brings about a 0.173 percent decrease in the unemployment rate. Additionally, a percentage increase in the GDP brings about a 0.075 percent increase in the unemployment rate. Likewise, a percentage increase in natural resource rents brings about a 0.007 percent reduction in the unemployment rate. Similarly, a percentage increase in trade openness brings about a 0.070 percent reduction in the unemployment rate. Also, a percentage increase in investment brings about a 0.027 percent decrease in the unemployment rate. Further, a percentage increase in foreign direct investment brings about a 0.001 percent decrease in the unemployment rate. Nonetheless, these results should be interpreted with caution, apart from trade openness and investment – which are both significant at 1 percent significance level – other parameter estimates are not significant.

4.3 Government Spending, Labour Force Participation and Unemployment in the Long Run

In this sub-section, this paper utilizes the GMM-IV estimator in examining the long run impact of the variables on unemployment and labour force participation. Table 3 shows that although, the parameter estimates largely remain unchanged in terms of their signs and significance, their absolute values increase in size. More specifically, a percentage increase in government spending brings about a 0.020 percent increase in the labour force participation rate in the long run at 1 percent significance level. The parameter estimates for the control variables obtained in this regression also reveal that a percentage increase in inflation brings about a 0.012 percent rise in the labour force participation rate in the long run at 1 percent significance level. Also, a percentage increase in population density brings about a 0.123 percent rise in the labour force participation rate in the long run at 1 percent significance level. Additionally, a percentage increase in the GDP brings about a 0.109 percent reduction in the labour force participation rate in the long run at 1 percent significance level. Likewise, a percentage increase in natural resource rents brings about a 0.019 percent reduction in the labour force participation rate in the long run at 1 percent significance level. Similarly, a percentage increase in trade openness brings about a 0.019 percent reduction in the labour force participation rate in the long run at 1 percent significance level. Both investment and foreign direct investment retain their negative impact on labour force participation rate. Also, the parameter estimates remain non-significant in the long run.

Turning to the results obtained for the long run impact of government spending on unemployment; Table 3 shows that a percentage increase in government spending brings

about a 0.103 percent increase in the unemployment rate in the long run. The parameter estimates for the control variables obtained in this regression also reveal that a percentage increase in inflation brings about a 0.023 percent rise in the unemployment rate in the long run. Also, a percentage increase in population density brings about a 2.66 percent decrease in the unemployment rate in the long run. Additionally, a percentage increase in the GDP brings about a 1.161 percent rise in the unemployment rate in the long run. Likewise, a percentage increase in natural resource rents brings about a 0.120 percent reduction in the unemployment rate in the long run. Similarly, a percentage increase in trade openness brings about a 1.081 percent reduction in the unemployment rate in the long run. Both investment and foreign direct investment retain their negative impact unemployment rate. Again, these parameter estimates should be interpreted with caution as they are not significant.

Table 3. Government Spending, Labour Force Participation and Unemployment in the Long run

	LFPR	Unemployment
TGS	0.020***	0.103
	(0.004)	(0.331)
Inflation	0.0129***	0.023
	(0.003)	(0.204)
PD	0.123***	-2.66
	(0.036)	(3.334)
GDP	-0.109***	1.161
	(0.018)	(1.288)
NRR	-0.019***	-0.120
	(0.006)	(0.513)
TO	-0.019***	-1.081*
	(0.006)	(0.602)
Investment	-0.008	-0.423
	(0.006)	(0.333)
FDI	-0.001	-0.022
	(0.001)	(0.100)

Source: Author's own computation
Note: The parentheses contain the standard errors. $*p < .10$. $**p < .05$. $***p < .01$.

4.4 Sensitivity Analysis

4.4.1 Controlling for the Global Financial Crisis

In this sub-section, the 2007-2009 global financial crisis is included as an additional variable. Following Arestis and Phelps (2018), this research captures the crisis years using dummy variables which take the values of 1 during crisis years and 0 outside the same period. Also, a dummy variable interaction term comprising the crisis variables and government spending is included in the model. As regards the regression of government spending on labour force participation rate, results from the POLS technique as seen in Table 4 show that the level effect

of the global financial crisis is 0.510 percent at 1 percent significance level. This implies that on the average, labour force participation rate increases by this percentage during the crisis years. Also, the slope effect of the global financial crisis is -0.220 percent at 1 percent significance level. This implies that the impact of government spending on labour force participation rate reduces by 0.220 percent during the crisis years. Compared to the POLS results, the parameter estimates from the LSDV and GMM techniques remain unchanged in terms of their signs. However, there exist some differences in terms of their size and significance.

Moving on to regression of government spending on unemployment rate, results from the POLS technique as seen in Table 4 show that the level effect of the global financial crisis is 1.236 percent at 1 percent significance level. This implies that on the average, unemployment rate increases by this percentage during the crisis years. Also, the slope effect of the global financial crisis is -0.611 percent also at 1 percent significance level. This implies that the impact of government spending on unemployment rate reduces by 0.611 percent during the crisis years.

Again, other parameter estimates are similar to those obtained from the baseline regression model.

Table 4. Robustness Test: Controlling for the Global Financial Crisis

	POLS		LSDV		GMM-IV	
	LFPR	Unemployment	LFPR	Unemployment	LFPR	Unemployment
L. LFPR	–	–	–	–	0.896***	0.928***
					(0.014)	(0.032)
TGS	0.072***	0.061	0.017***	0.013	0.002***	0.002
	(0.019)	(0.051)	(0.003)	(0.035)	(0.0006)	(0.017)
GFC	0.510***	1.236***	0.156***	0.013	0.0002	-0.200***
	(0.149)	(0.238)	(0.031)	(0.374)	(0.004)	(0.057)
TGS. GFC	-0.220***	-0.611***	-0.003	0.005	-0.0004	0.085***
	(0.062)	(0.107)	(0.010)	(0.105)	(0.0018)	(0.023)
Inflation	0.059***	0.152***	0.002	0.089***	0.001***	0.001
	(0.016)	(0.043)	(0.003)	(0.035)	(0.0003)	(0.013)
PD	-0.016	0.526***	0.734***	-0.135	0.013***	-0.165
	(0.029)	(0.101)	(0.122)	(1.148)	(0.004)	(0.139)
GDP	0.009	-0.077***	-0.054***	0.272	-0.011***	0.074
	(0.010)	(0.026)	(0.019)	(0.204)	(0.002)	(0.054)
NRR	-0.053*	-0.343***	-0.014***	-0.071	-0.002***	-0.009
	(0.030)	(0.089)	(0.005)	(0.073)	(0.0005)	(0.033)
TO	0.045	0.140	-0.0007	0.029	-0.002***	-0.074***
	(0.049)	(0.154)	(0.006)	(0.065)	(0.0007)	(0.012)
Investment	0.026	0.021	0.000	-0.009	-0.001*	-0.030***
	(0.030)	(0.091)	(0.004)	(0.046)	(0.0006)	(0.010)
FDI	-0.008	-0.041*	-0.002	-0.009	-0.00008	-0.000
	(0.007)	(0.021)	(0.001)	(0.011)	(0.0001)	(0.006)
Constant	3.546***	0.805	1.871**	-4.021	0.646***	-0.452
	(0.358)	(1.040)	(0.950)	(0.669)	(0.095)	(0.763)
Number of observations	116	116	116	116	104	104
Adjusted R squared	0.404	0.761	0.989	0.940	–	–
Fixed effects p-value	–	–	0.000	0.000	–	–
AR(1) Test p-value	–	–	–	–	0.045	0.030
AR(2) Test p-value	–	–	–	–	0.956	0.799
Model significance p-value	0.000	0.000	0.000	0.000	0.000	0.000

Source: Author's own computation. *Note*: The parentheses contain the standard errors. *p < .10. **p < .05. ***p < .01.

Table 5. Robustness Test: Exclusion of Liberia from Sample Selection

	POLS		LSDV		GMM-IV	
	LFPR	Unemployment	LFPR	Unemployment	LFPR	Unemployment
L. LFPR	–	–	–	–	0.899***	0.942***
					(0.014)	(0.035)
TGS	0.048***	-0.020	0.020***	0.011	0.003***	-0.0006
	(0.015)	(0.041)	(0.004)	(0.035)	(0.0005)	(0.021)
Inflation	0.046***	0.117***	0.001	0.086**	0.001***	0.003
	(0.013)	(0.032)	(0.003)	(0.036)	(0.0003)	(0.012)
PD	-0.065***	0.429***	1.029***	2.017	0.017***	-0.212
	(0.031)	(0.072)	(0.141)	(1.536)	(0.0048)	(0.184)
GDP	0.013*	-0.063***	-0.024	0.691***	-0.014***	0.101
	(0.008)	(0.024)	(0.022)	(0.238)	(0.002)	(0.078)
NRR	-0.045***	-0.341***	-0.016***	-0.061	-0.002***	-0.005
	(0.025)	(0.061)	(0.005)	(0.061)	(0.0006)	(0.032)
TO	0.128***	0.485***	0.002	0.053	-0.00003	-0.075***
	(0.036)	(0.127)	(0.010)	(0.117)	(0.0009)	(0.019)
Investment	-0.005	-0.047	0.0008	0.016	-0.001*	-0.027**
	(0.026)	(0.078)	(0.004)	(0.043)	(0.0006)	(0.011)
FDI	0.002	-0.022	-0.001	-0.029	-.00009	-0.003
	(0.006)	(0.019)	(0.0018)	(0.020)	(.0002)	(0.009)
Constant	3.504***	-0.011	-0.181	-23.415**	0.665***	-0.874
	(0.289)	(0.882)	(1.021)	(11.517)	(0.097)	(1.145)
Number of observations	100	100	100	100	89	89
Adjusted R squared	0.620	0.797	0.990	0.911	–	–
Fixed effects p-value	–	–	0.000	0.0000	–	–
AR(1) Test p-value	–	–	–	–	0.092	0.041
AR(2) Test p-value	–	–	–	–	0.682	0.941
Model significance p-value	0.000	0.000	0.000	0.000	0.000	0.000

Source: Author's own computation. *Note*: The parentheses contain the standard errors. *p < .10. **p < .05. ***p < .01

4.4.2 Exclusion of Liberia from Sample Selection

Due to data limitations with regards to Liberia, this study carries out robustness tests by excluding Liberia from the sample. As seen in Table 5 the parameter estimates obtained from the multiple estimation techniques utilized are largely similar to those presented previously. This confirms that results obtained from the baseline regression are not affected by the data limitations experienced with regards to Liberia.

5. Conclusion

This paper examines the impact of government spending on labour force participation and unemployment within the West African Monetary Zone (WAMZ). The relevance of this paper derives from two crucial reasons.

Firstly, the literature is not at a consensus as regards the impact of government spending on labour force participation and unemployment. While some findings reveal that government spending has a positive impact on these variables (see Abubakar, 2016; Murwirapachena et al., 2013; Brückner & Pappa, 2013; Calidoni, 2005) others suggest the existence of a negative impact (see Bidemi, 2016; Cottarelli, 2012; Pope, 2017; Ahearn et al., 2006). The absence of a consensus within the literature highlights the academic and empirical relevance of this study. Secondly, the empirical literature on labour supply in WAMZ, to which this study contributes directly does not consider the impact of government spending on labour force participation. The few studies that do, fail to rigorously address endogeneity bias and heterogeneity issues. Accordingly, this study contributes to the literature by examining the short run and long run impacts of government spending on labour force participation and unemployment using three

estimation techniques viz. the Pooled Ordinary Least Squares (POLS), Least Squares Dummy Variables (LSDV) and the GMM-IV technique.

Since, the GMM-IV technique better addresses endogeneity issues relative to the other techniques utilized, this technique is given preference in this paper. The results obtained from the study generally reveal that government spending has a positive impact on the labour force participation rate.

Meanwhile, the results also indicate that the impact of government spending on unemployment is ambiguous. As such, government spending may be increasing the labour force participation rate but may not necessarily be reducing unemployment. The findings of this study are similar to those of Bruckner and Pappa (2012).

Also, in the long run, the parameter estimates largely remain unchanged in terms of their sign ad significance. However, they increase in size.

Based on these findings, this study firstly recommends that policy makers intensify efforts in increasing government spending; as a reduction may impact negatively on the labour force participation rate. Secondly, this paper recommends the formulation and implementation of fiscal policies that are robust enough to reduce the unemployment rate as they increase the labour force participation rate.

At this point it is necessary to observe that this study encountered data limitations with regards to Liberia. Nevertheless, in the sensitivity analysis section, the regression model was re-estimated with the exclusion of Liberia and the results obtained where similar to those obtained from the baseline regression model. This suggests that the results obtained in this study are not biased or driven by the data of Liberia.

Finally, future research works may widen the scope of this study by considering the impact of government spending on labour participation and unemployment within the ECOWAS countries.

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