FISCAL POLICY DYNAMICS, UNEMPLOYMENT AND TRADE IN WEST AFRICA

J.O. Saka,[1] D.B. Olanipekun,[2] and A.G. Johnson[3]

[1]*Dept. of Economics, Lagos State University, Ojo, Lagos, Nigeria*
[2]*Dept. of Economics, Ekiti State University, Ado-Ekiti, Nigeria*
[3]*West African Institute for Financial and Economic Management*

ABSTRACT

This paper examined the link between the dynamics of fiscal policy, unemployment and trade in West Africa in the period 1991-2018. The theoretical framework emanated from public finance and Mundell-Fleming theories to capture both fiscal policy-unemployment and fiscal policy-trade relations. Two equations were specified – the unemployment and trade equations, in which fiscal policy measure was a major determinant. Trade was captured by ratio of trade to GDP, while unemployment rate data captured unemployment cases. Government expenditure and tax revenue were two variants of fiscal policy measures used as explanatory variables among other controlled variables. The methodology was based on pooled least squares which corrected for problem of data inadequacy experienced in some West African countries. The results showed that government expenditure and revenue from tax performed below expectation and, in some cases, gave contrary signs amidst rising unemployment and low trade performance. Hence, substantial increase in government expenditure toward infrastructural development would reduce unemployment rate in West Africa.

JEL classification: E24, E62, H30, J60

1. Introduction

A major concern in Africa is high unemployment rate and persistent trade deficit. The rise in unemployment and trade deficit in Africa has renewed

interest in the link between fiscal policy, unemployment and trade. One major argument in the literature is that trade deficit can occur as a result of fiscal imbalance. In the traditional view of Fleming (1962) and Mundell (1963), government budget deficit can cause current account deficit. This notion is referred to as the twin deficits hypothesis, where the fiscal and current account balances move in the same direction. The theoretical implication is that fiscal expansion leads to appreciation of the real exchange rate and increase in current account deficits (Bluedorn and Leigh, 2011). Macroeconomists would agree that fiscal expansion reduces unemployment through job creation and enhances the output of an economy.[1] A substantial increase in output could boost export and yield a favourable balance of payments. However, an expansionary fiscal policy that involves increase in government expenditure and tax cuts could lead to high public debt.

The relationship between fiscal policy dynamics, unemployment and trade is non-linear. Agnello et al. (2014) stated that the effect of fiscal policy on unemployment can operate through the demand and supply sides. On the demand side, an expansionary fiscal policy can stimulate the economy from unemployment when the expectation of further fiscal adjustment is eliminated. Conversely, on the supply side, the impact of spending cuts and tax increases on labour supply could result in unemployment. Accordingly, the channels where fiscal policy can affect unemployment include minimum wages, employment protection legislation, hiring costs and unemployment benefits (Agnello et al., 2014). One way to understand the connection of fiscal policy to trade via unemployment is that when government pursues an expansionary fiscal policy either by increasing its expenditure or tax cuts, it stimulates aggregate demand in the economy. An increase in aggregate demand in the short run, when domestic production cannot be increased to meet the level of consumption, would stimulate higher import. A higher level of import with export fixed would increase trade deficits.

West African economies have been characterized by low domestic production, high unemployment and frequent trade deficits in the last two decades even though government expenditure has increased in some of these countries. For instance, the percentage of the labour force that was unemployed

---

[1] This assertion is the Keynesian view of stimulating an economy in recession.

in Ghana increased from 4.7% in 2008 to 6.7% in 2018, while in Nigeria, it rose from 3.4% to 6.0% in the same period. Similarly, West African countries had recorded massive trade deficits over the years. In Sierra Leone, trade deficits increased from $261.7 billion in 2008 to $810.4 billion in 2018. Also, the Gambia's trade deficits increased from $40.7billion to $283.5billion in the reference period. From available statistics, government expenditure as a share of GDP in most West African countries has shown an upward trend. For example, in Ivory Coast and Togo, government consumption expenditure increased between 2008 and 2017 from 12.7% to 14.4% and 21.4% to 26.0%, respectively (WDI, 2019). This increase in fiscal spending countries, together with the high rate of unemployment in these countries, has not yielded desirable outcomes.

The research questions, based on the above problems, are as follows:

- To what extent has fiscal policy dynamics affected unemployment in West Africa?
- Does fiscal policy dynamics increase trade activities in West African countries?

Consequently, the objectives of this paper examined the relationship among the key variables, the effect of fiscal policy on unemployment, and the effect of fiscal policy on international trade flows.

This study differs from earlier studies in several ways. First, existing studies either considered the effects of fiscal policy on unemployment or how fiscal policy affects trade without considering the dynamic effect on both unemployment and trade (see for instance, Bluedorn and Leigh, 2011; Parker, 2011; Bruckner and Pappa, 2012; Battaglini and Coate, 2015; Abubakar, 2016; and Christiano, Eichenbaum and Trabandt, 2016). An inquiry into how fiscal policy affects unemployment and trade would help policy makers in taking important decisions on trade and employment issues. Second, studies on the link between fiscal policy and unemployment/employment and trade appear scanty in the region. This study is an attempt to bridge this gap. Related studies on this theme generally focussed on the United States, Europe, and Asian economies,[2]

---

[2] Delong, Summers, Feldstein, and Ramey (2012) and Blanchard and Gali (2010) focussed on the United States; Bruckner and Pappa (2012) studied OECD countries; Berument, Dogan and Tansel (2009) analysed Turkey's data.

with only a few on Africa. The macroeconomic drivers of fiscal policy, unemployment and trade in these economies are quite different from those in West Africa. Third, this study employed the pooled ordinary least squares technique, that regulates a greater number of problems in traditional methods of comparative research. Data availability is a major issue in this part of Africa. The gross inadequacy of the data set tends to affect the robustness of empirical results and so the pooled analysis, to a large extent, could be one of the ways out. This empirical investigation focussed on sixteen West African countries: Benin, Burkina Faso, Cape Verde, the Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone and Togo.

The rest of this paper is organized as follows: Section 2 addresses the stylized facts of fiscal policy dynamics, unemployment/employment and trade in West Africa. Section 3 discusses related literature. The theoretical framework and methodology are provided in section 4, and section 5 discusses the findings. The conclusion and policy implication of the study are presented in section 6.

2.   An Overview of Fiscal Policy Unemployment and Trade in West Africa

This section discusses stylized facts on fiscal policy, unemployment and trade in West Africa, highlighting various fiscal measures and policies directed towards generating employment across the countries. Trade policies and their impact on the economies of West Africa are also presented.

2.1 Development in West Africa's fiscal operations

Governments of West African countries rely mostly on fiscal policy to achieve their desired macroeconomic objectives. By adjusting government spending and tax revenues, governments can achieve objectives such as increase in employment, growth, macroeconomic stability, income redistribution and favourable current account.

The performance of public finance in West Africa has been characterized by several fiscal deficits. In most of the years, government spending exceeded its

revenue. The results of the frequent fiscal deficits were increase in public debt,[3] the underlying fiscal challenges were caused by the inability of the governments of these countries to collect sufficient tax revenues due to weak tax institutions, poorly coordinated, harmonized regional tax system and fiscal policy rules (UNCTAD, 2008). Figure 1 depicts government expenditure and revenue as a percentage of GDP in West Africa in the last fifteen years (2004-2018). The statistics show that, on average, government expenditure as a share of GDP exceeded government revenue in most of the years, except for 2006 and 2014 −2017. For instance, from 2004 to 2008, government expenditure as a percentage of GDP exceeded government revenue by 2.7%, on average. Similarly in 2010 and 2011, government expenses as a percentage of GDP recorded were 17.75% and 18.19% while its revenues were 14.09% and 14.58%, respectively. By 2018, the divergence between government expenses and revenue declined substantially and stood at 16.11% and 14.22%, in that order. The fiscal surpluses recorded in some of the years, especially from 2014 to 2017, were partly due to fiscal adjustment measures in mostly resource-dependent economies. Also, the effect of commodity price shocks between 2014 and 2016 made most of the countries in West Africa adjust their spending to meet up with shortfalls in revenue.

2.2 Trends in unemployment rate in West Africa

Unemployment is a pressing problem in West Africa over the last three decades. In this context, unemployment refers to the share of labour force that is without work but available for and seeking employment (WDI, 2018). For instance in Ghana, high unemployment was observed in most of the years in the 1990s, due to severe economic crisis experienced in the country in the 1980s which led to high rural-urban migration (see figure 2). Generally, the increase in unemployment rate in West Africa can be associated with growing youth population, poor quality education, uncertainty in job prospect as a result of poor governance and weak government institutions.

---

[3] Fiscal deficits in Africa are usually financed through external borrowing which increases external debt burden and raises the amount of resources needed to service accumulated debt.
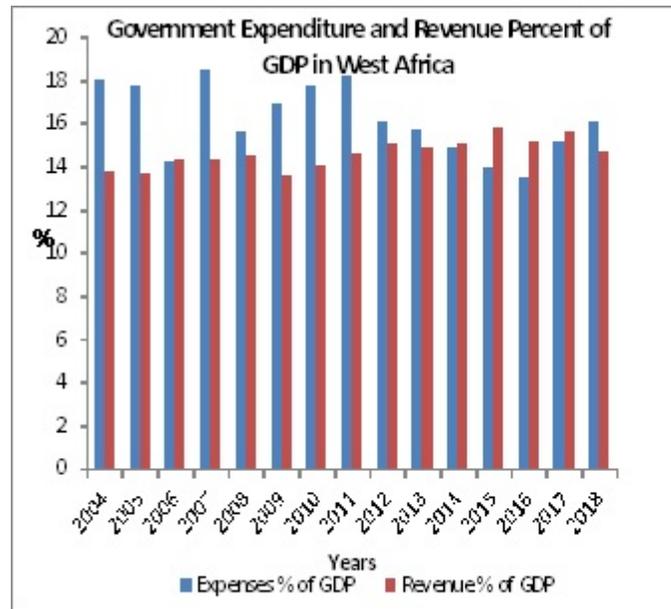
Figure 1. Government Expenditure and Revenue in West Africa.
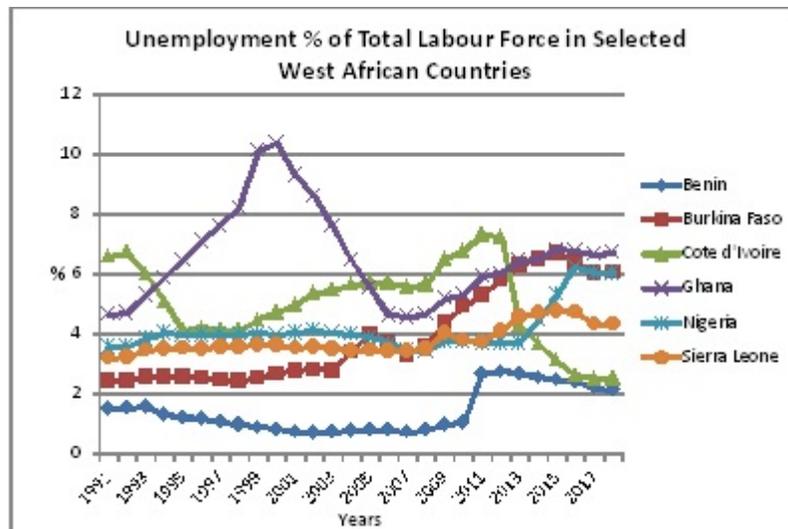

Figure 2. Unemployment Rates of Selected West African countries

High unemployment rate in West Africa has led to both intra-regional and inter-regional migration, especially among youths. Available statistics show that youth unemployment rate ranged between 12% and 20% between 2006 and 2015. Most West African countries had unemployment rates above the world average of 4.4% (% of labour force) in 2015. For example, Nigeria recorded 5.5%, Ghana was 6.8% and Burkina Faso 6.4% (WDI, 2019). These high unemployment rates are reflected in the rising poverty levels of these economies. Recently, several efforts were made by governments, non-governmental organizations and international institutions to confront the problem of unemployment in West Africa. Many of these countries increased their capital expenditure on infrastructure to create jobs and enhance growth. For example, in 2013, the Senegalese government launched a programme to absorb 300,000 job seekers by the end of 2017. Ghana instituted national youth service and empowerment programmes to assist college graduates in the acquisition of skills. Similarly, in Nigeria, various programmes to reduce unemployment were initiated, such as the N-Power programme for youths and numerous skills acquisition programmes.

The Africa Development Bank (AfDB) and the World Bank, in conjunction with various national governments, finance some of the employment programmes in West Africa. A close look at figure 2 reveals that Benin Republic witnessed the lowest unemployment rate (% of labour force) in the region due to proper implementation of its employment programmes and adequate support from the World Bank. The discovery of natural resources and the shift away from agriculture has led to substantial increase in unemployment in Ghana and Nigeria. Most of the programmes aimed at reducing unemployment in some of the West African countries have not achieved the desired goals due to distorted policies and inappropriate implementation of employment programmes.

2.3 Performance of trade in West Africa

The removal of barriers to trade in most West African countries in the mid-1980s increased the amount of trade activities in the region. Both intra and inter-regional trade flows increased substantially. In terms of the composition of trade, trade liberalization resulted in increase in imports as a percentage of GDP in the economies. The reduction of tariffs resulted in increase in the importation of manufactured products into West Africa.

According to the World Bank, trade liberalization is expected to occur in three stages. The first stage involves the rationalization of tariffs. This is the process of reducing the rates of tariffs on many imported products, relaxing a number of rules and regulations on imports and imposing tariffs on certain categories of imported products. The second stage involves reduction in the spread of tariff rates by reducing the maximum rates imposed on imported items and raising the tariffs on some imports with the lowest rates. The third stage is to reduce tariffs on all imported items in order to reduce the barriers to importation of all goods categories (UNCTAD, 2008).

Table 1 presents total trade as a percentage of GDP in West Africa. After the trade liberalization programmes of the early 1990s, Côte d'Ivoire, Togo and Gambia recorded high improvement in trade as a result of early implementation of trade reforms and removal of both tariff and non-tariff barriers to trade. However, Nigeria witnessed lower trade because of the slow implementation process of economic liberalization policies. Between 2006 and 2010, Liberia, Côte d'Ivoire and Togo had achieved significant increase in volume of trade in the region. In 2017, Guinea, Liberia and Togo had achieved a substantial increase in their share of total trade to GDP by reducing their tariffs and regulations.

Table 1. Total Trade as Share of GDP in West Africa

Country	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2017
Benin	58.334	59.097	49.934	53.928	60.457	67.577
Burkina Faso	34.354	36.947	33.328	39.596	53.109	52.341
Cote d'Ivoire	63.682	75.854	81.442	91.304	82.113	65.707
Ghana	52.919	87.192	100.533	69.553	76.382	73.648
Guinea	52.145	47.064	57.105	69.611	80.454	146.767
Gambia, The	61.074	52.383	68.155	69.798	57.720	47.120
Guinea-Bissau	48.390	55.220	43.727	50.287	50.650	58.959
Liberia	N/A	70.313	154.262	197.920	126.483	122.990
Mali	51.179	53.032	57.219	57.994	60.340	61.809
Niger	37.400	42.518	108.289	57.140	62.211	49.587
Nigeria	34.311	42.890	40.801	40.416	36.238	26.348

Country	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2017
Senegal	59.150	62.165	67.143	58.446	59.031	57.136
Sierra Leone	55.557	40.897	42.435	42.827	82.286	74.085
Togo	65.838	72.677	80.783	79.475	106.181	101.135

Source: Authors' computation.

3. Literature Review

A wide range of studies had documented different views on the effect of fiscal policy on the macroeconomy. One argument is how fiscal policy can affect an economy in recession. The Keynesian proposition suggests that an effective fiscal policy can stimulate growth during economic recession by reducing the rate of unemployment and expanding the volume of exports. The theory suggests that in recession, when markets are failing, the failure can be corrected through an expansionary fiscal policy that would return idle resources to work. However, in the Neo-classical economists' view, fiscal expansion would primarily cause a higher interest rate and crowd out private consumption and investment, hence increasing the level of unemployment in an economy. Based on an overlapping generation model, Kaas and Thadden (2004) constructed a dynamic general equilibrium model with capital accumulation and collective wage bargaining and investigated how unemployment responds to various fiscal policies. In a balanced budget, tax adjustment spurs higher unemployment but allows quick recovery of employment. Conversely, an unbalanced budget lessens unemployment on impact but the changes are likely to be high and persistent because of weaker capital accumulation and future fiscal consolidation.

Bruckner and Pappa (2012) posited that an expansionary fiscal policy reduces unemployment and stimulates employment via increase in consumption and investment. However, Delong et al. (2012) stated that expansionary fiscal policy is likely to be self-financing in a depressed economy. In an economy with cyclical unemployment, low interest rate and excess capacity, higher government purchases would not be offset by monetary authority raising interest rates and supply side bottlenecks. Similarly, Blanchard and Gali (2010) developed an utility-based New Keynesian model centred on the assumptions of labour market frictions, real wage rigidities and staggered price settings. The paper concluded that a high labour market friction increases the rate of unemployment by raising

the marginal cost of labour which leads to changes in the rate of inflation. This study only focussed on the effect of monetary shocks on unemployment without considering the fiscal shocks.

Agenor and Aizenman (1999) theoretically examined the effects of fiscal and labour market policies on output, wages and employment in a small open economy with a large informal sector, heterogeneous labour force and segmented labour market. In this model, output in the formal sector comprises traded and non-traded goods produced by both skilled and unskilled labour while production in the informal sector only consists of non-traded goods. Skilled labour productivity depends positively on wage rate relative to the wage paid in the informal sector. Unskilled workers in the formal sector are said to earn the minimum fixed wage while the wage rate in the informal sector is flexible. The authors established that an unanticipated fiscal contraction on non-traded goods leads to depreciation of real exchange rate, a fall in the informal sector minimum wage, a rise in the production of traded goods and a reduction in the private sector holding of foreign assets. A reduction in minimum wage increases output and the demand for labour in the formal sector. In the theoretical presentation of Battaglini and Coate (2015), negative shocks to the private sector would increase the rate of unemployment. Unemployment would be lowered through government's debt-financed fiscal stimulus plan that involves tax cuts and higher public production.

A few studies have examined the theoretical link between unemployment and trade. Batra and Beladi (1988) presented a two-sector model; one using capital and labour, the other using capital, labour and land. This model yielded an important conclusion; a rise in the supply of capital lowers unemployment, while a rise in the supply of land would reduce or raise unemployment depending on whether the land-using sector is labour or capital intensive relative to the other sector. Geide-Stevenson (2000) developed a specific factor model in a fully unionized economy with labour and capital as inputs. Given that the economy is largely characterized by unemployment and inter-industry wage differentials, the reward to labour is determined by the efficient bargaining power of the union. A trade liberalization policy would lead to an increase in overall employment. In a monopolistic competition model of trade, Hassan, Mitra, Ranjan and Ahsan (2012) have shown that trade openness spurs firms to demand for greater labour effort to reduce the number of their workforce; hence firms seek for a few workers to enhance within firm productivity.

Existing empirical studies have shown mixed findings on the relationship between fiscal policy and unemployment and fiscal policy and trade. Notable empirical studies that have analysed the relationship between fiscal policy and unemployment using time series include: Murwirapachena, Choga, Maredza and Maveter (2013), Tagkalakis (2013), and Abubakar (2016) for South Africa, Greece and Nigeria. For instance, Murwirapachena et al. (2013) analysed the effect of fiscal policy on unemployment in South Africa using the Vector Error Correction Model. The result showed that government consumption, expenditure and tax have positive and significant impact on unemployment; however, government capital expenditure has negative effect on unemployment in the country. However, some studies had shown that the level of unemployment can actually increase the effectiveness of fiscal policy (see for instance, Tagkalakis, 2013 and Rendahl, 2016). These studies show that given an initial level of unemployment, fiscal expansion can improve the output of an economy and further reduce unemployment by spurring aggregate demand. These studies suggest that higher taxes reduce output and increase unemployment. Abubakar (2016) investigated the dynamic effects of fiscal policy on output and unemployment in Nigeria between 1981 and 2015 using the Structural Vector Autoregression (SVAR) methodology. The findings indicate that fiscal policy shocks have no statistically significant effect on unemployment, however public expenditure promotes the output of the country.

Based on panel data estimation, previous studies utilized different techniques to investigate the relationship between fiscal policy and unemployment. In cross-sectional data from 1978 to 2009, Agnello, Castro, Jalles and Sousa (2014) examined how labour market flexibility influenced the responses of unemployment to fiscal consolidation. The study employed both the fixed effect and Generalized Method of Moments (GMM) technique on 17 industrialized countries. It was found that spending-driven fiscal consolidation has no statistically significant effect on unemployment rate, but tax-driven fiscal policy significantly increases unemployment rate. In a two-sector dynamic model, Bianchi and Ottonello (2015) studied the optimal fiscal policy in open economies with downward nominal wage rigidities with financial frictions. It was revealed that an expansionary fiscal policy would stimulate the currency union and result in a welfare-improving effect. Using an overlapping generation model of the young and old for OECD countries, Ono (2018) presented a political economy model with features of capital accumulation, collective wage

bargaining and probabilistic voting over fiscal policy. The findings are as follows: greater bargaining power by union reduces capital growth rate and results in a positive effect of fiscal policy on unemployment; a shift in the political powers to the elderly reduces growth rate and promotes government expenditure in favour of the elderly; debt finance increases growth rate and benefits to future generations; however, this is detrimental to the present-day employed and unemployed persons.

4.   Theoretical Framework and Methodology

The theoretical framework of this study considered the interaction between fiscal policy and unemployment as well as between fiscal policy and trade. In the fiscal policy-unemployment interaction, a simple dynamic process demonstrates that rising unemployment can be averted by tax cuts and increasing public spending. This is indeed a costly undertaking but can be financed through debt issuance.

Public and private sector mechanisms have some fundamental roles to play in the economy. Workers engage in the production of public goods while those in the private sector act similarly to produce private goods. The public sector relies on taxes levied on the private sector, in addition to borrowing and lending activities in the bond market, to enhance productivity level. The existence of exogenous shocks, such as oil price increase, has some expected impact on the entrepreneurs' demand for labour and thus unemployment comes in through the downward rigidity of real wages. While unemployment persists, tax reduction would increase private sector hiring of labour; likewise, increasing public production would further create jobs in the public sector. It therefore follows that tax reduction and public production increases both tend to reduce unemployment. This theory indicates that there is unlikely to be unemployment in the long run following government positive role. This benevolent attitude however tends to provide a provocative solution on how fiscal policy can regulate labour market inefficiency.[4]

In some cases, political decision-making is necessary wherein no existence of government bond and thus, with external negative shocks by the private

---

[4] A contradiction of the theory was put forward by the Ricardian Equivalence Model that financing through foreign debt as a way of increasing fiscal deficit could be offset by increasing savings.

sector, unemployment tends to rise. The existence of shocks calls for lowering the unemployment rate through increasing debt, resulting in an equilibrium level involving tax reduction and public production increase.

The framework for a fiscal policy-trade relationship is based on the theoretical links between government deficit and trade deficit, otherwise called the twin-deficit stories. This has received justification from the traditional Mundell-Fleming model framework. This model assumes that increasing government deficit policy, such as a tax cut, can increase aggregate demand. The rise in aggregate demand puts pressure on domestic real interest rate which equally induces foreign net capital inflow, thereby boosting the domestic real foreign exchange value. After a while, the aftermath effect of the expensive domestic currency causes a deficit in the trade balance of the nation concerned.

Hence, the submission of this theory is simply that, as government deficit increases, trade deficit widens and is operative under fixed and flexible exchange rate regimes, with varying mechanisms. However, there have been controversies surrounding the link between government fiscal deficit and trade deficit. The key issue here is that government spending pattern has an impact on trade deficit. The development of the theory for each as above gives an insight into the modelling framework in turn.

First is the fiscal policy-unemployment relationship. Let us consider an economy producing private goods p and public goods q. The economy also consists of entrepreneurs and workers as only two types of citizens. Entrepreneurs produce the private goods using labour l and input. There exists inelastic supply of labour from workers endowed with one unit of labour. Government produces public goods using l. The number of entrepreneurs and workers are respectively e_n and w_n so that:

$$n_e + w_n = 1 \tag{1}$$

Production is based on Leontief production technology:

$$p = a \min[l,r,e] \tag{2}$$

where e is the entrepreneur's effort and a is the productivity parameter.

The production technology lies in the fact that an entrepreneur manages workers he employs with his own effort. The public goods production takes the form:

$$q = l \tag{3}$$

The payoff function for entrepreneurs per period is:

$$p + \theta \ln q \tag{4}$$

where θ indicates the relative value which public goods possess.

Similarly, payoff function for the entrepreneur's effort is:

$$p + \theta \ln q - \phi \frac{\varepsilon^2}{2} \tag{5}$$

where $\phi \dfrac{\varepsilon^2}{2}$ is disutility arising from the entrepreneur's effort made available,

and ρ represents future discount rate.

Market exists for the private good, input and labour. The private good is considered the numeraire, and input such as energy comes from foreign suppliers with an exogenous variable price, ρ_α. And w is the labour wage, which does not go below some exogenous minimum, $\overline{w}$, in this market and it is a potential source of unemployment. A risk-free one period bond also exists with equilibrium interest rate.

$$i = \frac{1}{\sigma} - 1 \tag{6}$$

Government finances its activities through the entrepreneur's income tax at rate r, also with borrowing and lending opportunities in the bond market. Government debt and new debt are represented by d and d'. Surplus revenues are distributed to citizens through lump sum tax. Government considers impacting on the market through policies and maintaining a balanced budget, taking the cost state to be α, and the tax rate and public good level are as given. With the existing wage rate, the entrepreneur hires and chooses input and effort that maximize its utility such that:

$$Max(1-r)(a \min\{l, r, \varepsilon\} - p\alpha r - wl) - \phi \frac{\varepsilon^2}{2} \tag{7}$$

The first order conditions give $r = \varepsilon = l$. With appropriate substitution into the objective function and maximizing with respect to l gives:

$$l = \frac{(l-r)(a_\alpha - w)}{\phi} \tag{8}$$

for $a_0 = a - p_\alpha$, so that the aggregate demand for labour is $e_n \dfrac{(l-r)(a_\alpha - w)}{\phi}$.

Labour demands from the public sector angle is q and labour supply is w_n. Equating demand and supply, then the marketing clearing wage is therefore

$$a_0 - \frac{\varepsilon w_n}{n_\varepsilon(l-r)} - g$$

This minimum wage remains binding only if it is less than $\bar{w}$ and thus this is the equilibrium wage. The equilibrium unemployment is therefore

$$un = \frac{w_n - q - e_n(l-r)(a_\alpha - \bar{w})}{w_n} \tag{9}$$

The fiscal-unemployment relationship specification here considers tax cut as a main fiscal operation, otherwise called fiscal deficit to create uniformity in theoretical specification. As argued above, a tax cut results in rising productivity and hence reduces unemployment; this again must be supported by seeking foreign debt. Therefore, the above model was modified to suit the domestic environment. The model specification is therefore

$$un = \beta_0 + \beta_1 \Delta fp + \sum_i^k X_i + \varepsilon \tag{10}$$

where *un* defines unemployment rate, Δfp represents fiscal policy dynamics measured by changes in government expenditure and tax revenue, $\sum_i^k X_i$ represents other control variables to include exchange rate (*exr*),

inflation rate (*inf*), interest rate (*int*), investment (*i*) and ε is the error term, identically and normally distributed.

The investment-saving identity may be useful in the discussion of the hypothesized causal relationship in the twin deficit stories (see Branson (1985) and Bernheim (1988) as cited in Rosensweig and Tallman (1993). Due to data inadequacy and the problem of getting trade deficit for the group of countries, the trade-GDP measure was used. The mathematical relationship is as follows:

$$tr = \alpha_0 + \alpha_1 \Delta fp + \alpha_2(iv - s_p) + \sum_{i}^{k} X_i + \varepsilon \tag{11}$$

where *tr* is the trade variable measured here by trade –Gdp , *iv* represents private sector investment and s_p private sector savings. Since ($iv - s_p$) is subject to change, henceforth, we represent ($iv - s_p$) = *is*.

It is expected that fiscal policy measures in both cases foster unemployment reduction and facilitate trade. High interest rate should lower domestic investment and increase foreign investment and increase local unemployment. Exchange rate depreciation lowers employment chances while high inflation rate may reduce level of consumption and affect employment level. Depreciation makes imports highly expensive but drives exports. This weakens domestic trade. Higher interest rate encourages foreign investment and hence international trade.

Data for this study was obtained mainly from the World Development Indicators and the estimation technique employed id the pooled least squares.

5.   Results and Discussion

Table 1 presents the results of panel unit root using all methods — Levin, Lin & Chu (LLC), Im, Pesaran and Shin W-stat (IP & S), ADF-Fisher Chi-square (ADF-Fisher) and PP -Fisher Chi-square (PP-Fisher) classified under summary. This was to give room for comparative level of analysis. All the methods supported that all the variables were stationary at level except for tax revenue and government expenditure which were only stationary in their first differences.

Table 1. Panel Unit Root test

Variable	Type	Method	OI	Prob	Decision
Tr	Summary	LL&C, LP &S, ADF-Fisher, PP-Fisher	I(0)	0.00, 0.00, 0.00, 0.00	stationary
Trv	Summary	LL&C, LP &S, ADF-Fisher, PP-Fisher	I(1)	0.01, 0.00, 0.00, 0.01	stationary
Ge	Summary	LL&C, LP &S, ADF-Fisher, PP-Fisher	I(1)	0.00,0.00,0.00,0.00	stationary
I	Summary	LL&C, LP &S, ADF-Fisher, PP-Fisher	I(0)	0.00,0.00, 0.00, 0.00	stationary
Sav	Summary	LL&C, LP &S, ADF-Fisher, PP-Fisher	I(0)	0.00, 0.00, 0.00, 0.00	stationary
Exr	Summary	LL&C, LP &S, ADF-Fisher, PP-Fisher	I(0)	0.00, 0,00, 0.00, 0.00	stationary
Int	Summary	LL&C, LP &S, ADF-Fisher, PP-Fisher	I(0)	0.00, 0.00, 0.00, 0.00	stationary
Inf	Summary	LL&C, LP &S , ADF-Fisher, PP-Fisher	I(0)	0.00, 0.00, 0.00, 0.00	stationary

Source: Authors' computation.

Table 2 displays pooled regression results for both the unemployment and trade equations. In the unemployment equation, changes in government expenditure impacted positively (0.003) on unemployment rate. This was particularly true where such changes did not favour investment policy that could reduce joblessness. The interest rate variable showed a significant positive relationship (0.01) on unemployment. Theoretically, increasing interest rate retards investment growth and thus increases unemployment. In West Africa, one of the reasons for low level of investment is rising interest rate. Domestic currency depreciation, as shown, may not favour employment policy. During a recession, accompanied by currency depreciation, one of the key economic problems in West Africa is high unemployment. Higher prices tend to lead to reduction in consumption level and thus lowers the level of employment. Here, about 2% rise in unemployment results from 1% decrease in inflation. This is a theoretical argument that does not seem to apply in African countries. Investment (0.01) comes with a contrary sign; an indication of corruption in West Africa. With changes in tax revenue substituted for changes in government expenditure in the same equation, tax revenue showed a positive (0.002) and insignificant relationship with unemployment. Widening the tax base is expected to increase revenue and lower unemployment; the scenario is different in West Africa. By implication, changes in government expenditure in the first case must not have been in favour of increasing employment. Inflation rate, interest rate and exchange rate impacted on unemployment in a different dimension in this case.

Table 2. Pooled Least Square Results

	Unemployment Equation				Trade Equation			
Variable	Coeff	Coeff	Prob		Coeff	Coeff	Prob	
c	1.18	1.32	0.02	0.02	4.73	4.40	0.00	0.00
ΔTrv	--	0.002	--	--	-0.01	--	0.63	--
ΔGe	0.003	--	0.40	0.90	--	0.005	--	0.89
is	--	--	--	--	0.01	0.01	0.00	0.00
i	0.01	0.06	0.71	0.05				
Exr	-0.08	0.10	0.20	0.26	-0.03	-0.01	0.61	0.90
Inf	-0.02	-0.01	0.07	0.68	0.04	0.02	0.31	0.57
Int	-0.17	-0.17	0.05	0.17	-0.13	-0.05	0.49	0.68
ar(1)	0.98	--	--	0.00	0.90	0.00	0.00	0.00
Sigmasq	0.02	--	--	0.00	0.02	0.00	0.00	0.00
R^2	0.97	0.95			0.88	0.95	0.87	
$\bar{R}^2$	0.96	0.94			0.87	0.90	0.85	
F-stat	617.00	134.63			110.51	134.63	46.27	
DW	1.21	1.50			2.18	1.50	1.66	

Source: Authors' computation

Turning to the trade equation, changes in tax revenue in this case positively (-0.01) impacted the trade-GDP ratio. Because tariff is a form of tax, which increases government revenue as imports increase, imports tend to decline in this case and hence openness to trade reduces. This result is in line with expectation. By implication, an economy in which trade liberalization is weakened usually fosters low level of trade integration. The investment-saving identity here had a positive impact on the trade-GDP ratio, implying that the net effect of this facilitated trade. Exchange rate and interest rate come with negative coefficients. Depreciation of domestic currency fosters exports and increases the price of imports, and this has the potential of widening trade deficit. Also a lower interest rate tends to impede capital inflow through low foreign investment and hence weakens trade openness.

Changes in government expenditure spurred the trade-GDP ratio, though negligible as shown by the positive coefficient (0.005). Theoretically, government expenditure can stimulate the economy through varying multiplier effects, especially if revenue is realized through various sources. Investment-saving identity and exchange rate have similar impact on trade as stated.

Inflation, in this case too, impacted positively (0.02) on trade and is contrary to expectation. Inflation effects on trade (imports and exports) are felt through exchange rate reactions. An increase in inflation results in higher interest rates and leads to weaker domestic currency; thus competitiveness of exports at the international level. The coefficient of interest rate variable was negative (-0.05). It is however expected that a higher interest rate increases the value of a country's currency and demand and thus attracts foreign investment.

The coefficient of determination, in most cases, shows that the explanatory variables have better explanatory power and was found to range between 85 and 90 per cent. The first lag autoregressive scheme was used to correct for serial correlation in the model and was significant in all the cases.

6.   Conclusion and Policy Implications

This study examined the relationship between the dynamics of fiscal policy and unemployment and trade in West Africa. Experience has shown that fiscal deficits have been more pronounced within West Africa following tax institutions' poor coordination and harmonization of regional tax systems and fiscal rules. To a large extent, increasing government expenditure has not substantially reduced unemployment problems but has resulted in lingering fiscal deficit over time. However, intra and inter-regional trade increased to some extent due to trade liberalization schemes. This study adopted the pooled least squares technique with the results that increasing government expenditure and tax revenue have been performing below expectation following rising unemployment and low level of trade performance. It follows therefore that government expenditure needs to be directed towards the productive sector where major positive impacts are felt and which would have a substantial decrease in unemployment. Likewise, tax revenue should be monitored to exhibit the functions of national interest. Co-ordination of government expenditure and tax revenue can put in place better infrastructure financing that can act as a catalyst for unemployment reduction and trade facilitation.

References

Abubakar, A.B. (2016). Dynamic effect of fiscal policy on output and unemployment in Nigeria: An econometric investigation. *CBN Journal of Applied Statistics*, 7(2), 101-122.

Agnello, M., Castro V., Jalles, J.T. & Sousa, R.M. (2014). Fiscal adjustment, labour market

flexibility and unemployment. Economic Letters, Accessed http://dx.doi.org/10.1016/j.econlet 2014/05/29

Agenor, P.R. & Aizenman, J. (1999). Macroeconomic adjustment with segmented labor market. *Journal of Development Economics*, 58(2), 277-296.

Altenburg, L. & Brenken, A. (2008). Effort, trade and unemployment. *The Canadian Journal of Economics*, 41(3), 864-893.

Battaglini, M. & Coate, S. (2016). A political economy theory of fiscal policy and unemployment. *Journal of the European Economic Association*, 14(2), 303-337.

Batra, R.M. & Beladi, H. (1988). Specific factors, unemployment and trade theory. *Weltwirtschattlinches Archiv, Bd.* 124, 435-444.

Bernheim, B. Douglas. (1988). *Budget Deficits and the Balance of Trade in Tax Policy and the Economy.* Cambridge: MIT Press, l-31.

Branson, W.H. (1985). Causes of appreciation and volatility of the dollar, in nte U.S. Dollar-Recent Developments, Outlook, and Policy Options, Federal Reserve Bank of Kansas City Conference Proceedings, 3362.

Berument, M.H., Dogan, N. & Tansel, A. (2009). Macroeconomic policy and unemployment by economic activity: Evidence from Turkey. *Emerging Markets Finance and Trade*, 45(3), 21-34.

Blanchard, O., & Gali, J. (2010). Labour markets and monetary policy: A new-Keynesian model with unemployment. *American Economic Journal*, 2(2), 1-30.

Bluedorn, J., & Leigh, D. (2011). Revisiting the twin deficits hypothesis: The effect of fiscal consolidation on current account. *IMF Economic Review*, 59(4), 582-602.

Bianchi, J. & Ottonello, P. (2015). Unemployment, sovereign debt and fiscal policy in a currency union. https://ideas.repec.org/p/red/sed016/459

Bruckner, M., & Pappa, E. (2012). Fiscal Expansion, unemployment and labour force participation: Theory and evidence. *International Economic Review*, 53(4), 1205-1228.

Christiano, L.J., Eichenbaum, M.S., & Trabandt, M. (2016). Unemployment and business cycles. *Econometrica*, 84(4), 1523-1569.

Delong, J.B., Summers, L.H., Feldstein, M. & Ramey, V.A. (2012). Fiscal policy in a depressed economy. *Brookings Papers on Economic Activity*, (Spring 2012), 233-297.

Fleming, J. M. (1962). Domestic financial policies under fixed and floating exchange rates. *IMF Staff Papers 9,* 369–379.

Geide-Stevenson, D. (2000). Labour unions, unemployment and trade and capital liberalization. *Journal of Economic Integration*, 15(1), 76-99.

Hassan, R., Mitra, D., Ranjan, P. & Ahsan, R.N. (2012). Trade liberalization and unemployment: Theory and evidence from India. *Journal of Development Economics*, 97(2), 269-280.

Kaas, L. & Thadden, L. (2004). Budgetary policy and unemployment dynamics in and OLG model with collective bargaining. *The Economic Journal*, 114(498), 867-889.

Murwirapachena, G., Choga, I. Maredza, A. & Maveter, N. (2013). Fiscal policy and unemployment in South Africa. *Mediterranean Journal of Social Sciences*, 4(6), 579-587.

Mundell, A. (1963). Capital mobility and stabilization policy under fixed and flexible exchange rates. *Canadian Journal of Economics and Political Science*, 29(4), 475–485.

Ono, T. (2018). Growth, unemployment and fiscal policy: A political economy analysis. Macroeconomic Dynamics. Accessed https://doi.org/1017/s13651005, 15/06/2019

Parker, J.A. (2011). On measuring the effects of fiscal policy in recessions. *Journal of Economics Literature*, 49(3), 703-718.

Rendahl, P. (2016). Fiscal policy in an unemployment crisis. *The Review of Economics Studies*, 83(3), 1189-1224.

Rosensweig, J.A., & Tallman, E.W. (1993). Fiscal Policy and trade adjustment: Are the deficits really twins? *Economic Inquiry*, 31(4), 580-594.

Tagkalakis, A.O. (2013). The unemployment effects of fiscal policy: Recent evidence from Greece. *IZA Journal of European Labor Studies*, 2(11), 1-32.

UNCTAD. (2008). *Economic Development in Africa*. United Nations Conference on Trade and Development, Geneva.

World Bank. (2015). *World Development Indicators*. Washington D.C., USA: World Bank Group.

World Bank. (2019). *World Development Indicators*. Washington D.C., USA: World Bank Group.