The Nexus Between Trade Openness, Gender Gaps and Unemployment in Nigeria

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Abstract

Unemployment is a major concern for developing countries such as Nigeria, despite the deployment of several policy measures to address the challenge. Although trade is a major driver of growth and job creation, addressing unemployment remains daunting, and women are more vulnerable. This study examines the impact of trade openness and labour market gender gaps on unemployment in Nigeria using a time series analysis covering the period 1991 to 2021. This study specifically relies on co-integration and vector error correction models to analyse the long- and short-run relationships. The long-term analysis revealed the existence of a co-integrating association among unemployment, trade openness, gender gaps, and the other independent variables. The estimates indicate that trade openness negatively and significantly affects unemployment. However, the short-run estimates showed that real wages negatively and significantly impact unemployment. In contrast, the male-female labour force ratio (an indicator of the gender gap) negatively and significantly affected Nigeria's unemployment. The coefficient of trade openness was negative but statistically insignificant in the short run. The results make a case for pursuing more liberal trade policies that can complement other job-creating initiatives of the government. In addition, a move toward more market-reflective wages could be considered, while gender gaps in the labour market need to be addressed by creating more opportunities for women.

Keywords: International trade; Trade openness; Gender gap; Unemployment; Nigeria

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1 Introduction

A nation's economic progress in terms of growth and development is shaped not only by its domestic production and consumption capacity but also by its active participation in regional and global trade involving the exchange of goods and services. Globalisation through the trade and finance channels has led to significant productivity improvements. According to Gbosi (2019), international trade involves the exchange of goods and services across international boundaries, and these activities are conducted using foreign currencies. This exchange between nations facilitates job creation, especially if countries are highly export-oriented. Unemployment reflects a situation where individuals willing and able to work at a given wage rate are not engaged. International trade could generate employment as countries with high export levels experience increased employment (Humphrey and Sylvester-Alor, 2021) due to expansion by producers to meet both domestic and international demand.

The challenges posed by globalisation and trade liberalisation have led to uncertain outcomes for jobs in many developing countries, such as Nigeria (Kareem, 2010). A crucial question extensively discussed is whether freer trade has increased employment. This uncertainty arises from the increasing incidence of unemployment and job losses across different sectors in some countries despite the observed gradual post-pandemic recovery in labour markets worldwide. In 2018, the global unemployment rate was 5%, with an estimated 170 million unemployed people and an additional 140 million categorised as underutilised labour during the same year (International Labour Organisation, 2019).

Tun-Nessa, Alauddin, and Khan (2021) opine that trade openness increases unemployment, while labour market regulation and freedom could also explain labour market outcomes. However, trade openness may reduce unemployment in countries characterised by gender-neutral labour markets. Celi (2021) suggests that the labour market effects of intra-industry trade significantly contribute to the estimated factor market impact of trade in developing countries. Some other exogenous factors could affect the nature of the relationship. Andam, Edeh, Oboh, Pauw, and Thurlow (2020) show that Nigeria's GDP contracted by 34.1% during the COVID-19-induced lockdown, resulting in a total economic loss of US$16 billion. Approximately two-thirds of these economic losses were concentrated in the services sector. Also, the agriculture sector, a vital source of livelihood for a sizeable share of Nigeria’s population, experienced a 13.1% reduction in output, amounting to US$1.2 billion in losses, and the most vulnerable workers were women.

Given the coexistence of formal and informal employment, the Nigerian labour market exhibits a dualistic nature. The majority of the labour force in Nigeria is engaged in subsistence agriculture (Ogunlela and Mukhtar, 2009). Approximately 46% of the Nigerian labour force are women (World Bank, 2019), and their participation in both formal and informal segments of the labour market has shown positive growth in rural and urban areas between 1990 and 2009 but remains lower relative to men (Olowa and Adeoti, 2014). Oluwagbemiga et al. (2016) observe that female participation in the labour force has increased from about 39% in 1990 to 48% in 2011. In 2019, approximately 51% of females were employed compared to 60% of males (as a proportion of the total labour force). The involvement of women in service-oriented sectors such as transportation, education, and medical services has contributed to the marginal growth of women in actively engaged (PwC, 2020).

The evidence from the labour force Statistics of the National Bureau of Statistics (NBS) shows that women are more affected by unemployment. The report showed that unemployment hit 12.2 million females against 9.5 million men (NBS, 2022). This is quite disturbing and suggestive of the inherent marginalisation of women in the labour market. The total number of people in the labour force was estimated to be 80 million, of which 41.6 million were male and 38.6 million were female. Female unemployment rose to 31.6% from 26.6% in the third quarter of 2018, while male unemployment rose to 22.9% from 20.3% in the same period (NBS, 2022). There is evidence of gender disparity in employment, which is driven by] cultural, traditional, and other socioeconomic factors. Dabla-Norris and Kochhar (2019) opine that the uneven playing field between women and men imposes large costs on the global economy. They note that earlier studies on the economic impact of gender gaps assumed that men and women were likely to be born with the same potential, but disparities in access to education, health care, finance and technology; legal rights; and social and cultural factors inhibit women from realising their full potentials. These barriers that women face reduce the talent available to employers (Kochhar, Jain-Chandra, and Newiak 2017).

The link between trade and gender gaps has been well documented. It has become even more prominent given the 2023 Nobel Prize in Economics award to Claudia Goldin. She provided the first comprehensive account of women's earnings and labour market participation through the centuries. Her research showed the causes of change and the main sources of gender gaps. A recent study by Ivandic and Lassen (2023) showed that there could be three potential mechanisms behind the gender gap in unemployment after job displacement: (i) gender differences in human capital, (ii) the role of the childcare, and (iii) pre-displacement sorting across firms. Some others have provided evidence suggesting that postponing girl-child marriage is connected with an increase in schooling years and enhances the likelihood of getting employed (Gitter et al., 2023).

Against this backdrop, this paper aims to investigate the impact of trade openness and gender gaps on unemployment in Nigeria. This is motivated by the need to gain more insights into the nexus through the lens of gender gaps. The paper focuses on two main research hypotheses: that trade openness does not reduce unemployment in Nigeria, and (ii) gender gaps in the labour market do not. Nigeria is a useful case study because it is the most populous country in Africa and has one of the highest population growth rates in the world. The number of economically active persons (16-64 years) in 2020Q4 was 122,049,400, of which 60,421,742 were male and 61,627,657 were female. Nigeria's high unemployment rate of 33.3% in 2020Q4, up from 6.4% recorded in 2014Q4, underscores the need for an empirical investigation. Trade and gender-responsive policies can help address unemployment, one of the country's major macroeconomic challenges. The outcome of this study could provide valuable insights for actionable gender-responsive job creation policies while maximising the gains from trade reforms.

The dominant strand of the empirical trade literature was built on the Heckscher-Ohlin (H-O) model, which asserts that the basis for trade between countries is differences in factor endowments. That is, labour-rich countries will export labour-intensive goods, while capital-rich countries will export capital-intensive goods. This may not fit the empirical reality in Nigeria, where labour market frictions and rigidities combined with an enormous labour supply have increased unemployment. Therefore, the analytical

framework adopted in this paper is predicated on the vent for surplus model, which focuses on the labour market's elasticity in response to trade policy changes. The study relies on the empirical framework of the multivariate cointegration and vector error correction models. Unlike previous similar literature, we control for other important variables such as real wage and monetary and fiscal policy indicators. This is because they could affect unemployment since expansionary fiscal policies have been used to drive labour-intensive growth while changes in nominal wages have not matched the living conditions. Also, extant literature predominantly focuses on cross-country estimations, frequently omitting Nigeria from their analyses. However, this study takes a different approach by concentrating on Nigeria and encompassing a broader array of factors that could affect unemployment.

Following this introduction, Section 2 presents some stylised facts about jobs and trade in Nigeria. Section 3 reviews related literature, while Section 4 highlights the methodology adopted. Section 5 presents the result of the empirical analysis and discusses the main findings, while Section 6 concludes the paper and discusses policy implications.

2 Facts about Trade and Jobs in Nigeria

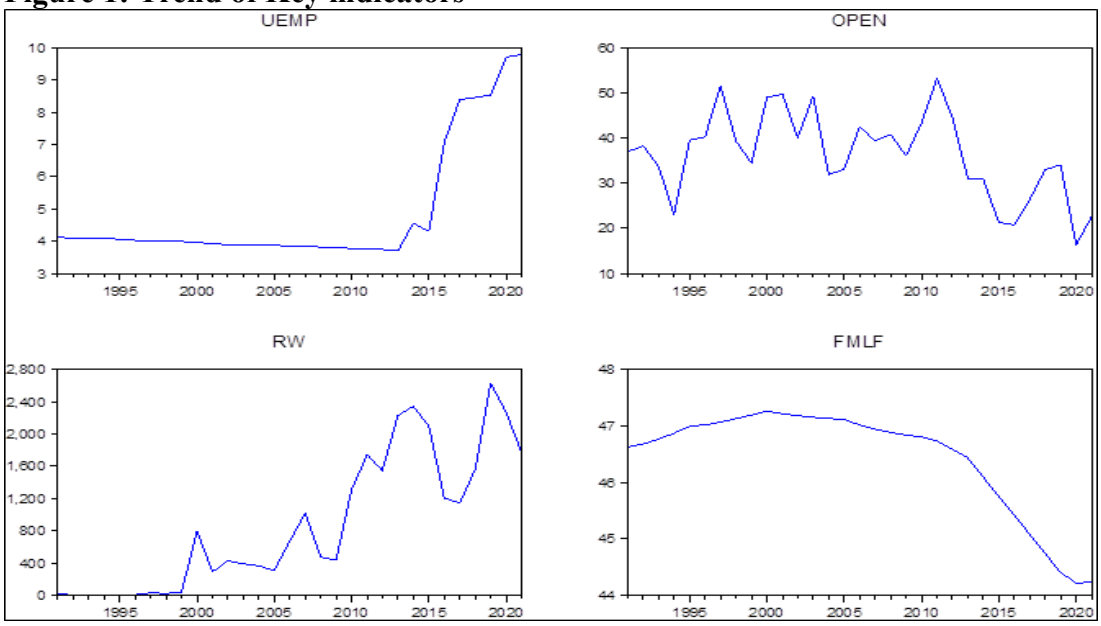
Nigeria's trade has experienced significant growth, as supported by abundant evidence. According to the National Bureau of Statistics (2021), the total trade volume in Nigeria has reached NGN 39.8 trillion. In 2020, the country's imports amounted to N5.38 trillion, showing a notable increase of 33.8% compared to 2019. Nigeria's export component witnessed a 34.85% growth to reach NGN 2.99 trillion in 2020. However, this figure represented a 43.4% decrease from the previous year. The NBS report highlights that the value of imports in 2020 reached its highest point for any quarter since 2017, while the value of exports reached its lowest level for any quarter since 2017. Due to this imbalance between lower exports and higher imports, Nigeria experienced a trade deficit of N2.38 trillion in 2020.

The 2005 United Nations Human Development Report classified Nigeria as low regarding access to education. The female adult literacy rate (ages 15 and above) in Nigeria was reported to be 59.4%, whereas the male literacy rate was 74.4%. The combined gross enrolment for primary, secondary, and tertiary schools was 57% for females and 71% for males. This disparity in educational access has made women less active than men in certain socio-economic activities (Ojo, 2002). The author provides statistics on the percentage of female workers in various professions: architects (2.4%), quantity surveyors (3.5%), lawyers and jurists (25.4%), lecturers (11.8%), obstetricians and gynaecologists (8.4%), and paediatricians (33.3%).

The NBS labour force statistics revealed that from the fourth quarter of 2020, the gender gap in the labour market widened. Out of the total employed population of 46 million, only 20 million are women, with less than a million engaged in formal employment. Most women (approximately 95%) were engaged in the informal sector, while the female unemployment rate was 35.2%. The employment rate in Nigeria dropped from about 70% in 2019 to 67% in the fourth quarter of 2020. The employment-to-population ratio increased by 0.59% from 48.3% in 2020 to 48.5% in 2021. However, there was a 0.19% decrease in the employment-to-population ratio in 2019, followed by a further decrease of 3.38% in 2021 (NBS, 2022). According to the NBS's 2020Q2 labour force report, despite women being willing and capable of working, about 32% of them remain

unemployed, compared to approximately 23% of men. Regarding the combined rate, around 63% of women are more likely to experience unemployment or underemployment than 49% of men. This means that for every two women in full employment, three are either unemployed or underemployed.

Figure 1: Trend of Key indicators



Source: Plotted by the Authors using Eviews

The line plot of trade openness shows that Nigeria's foreign trade has maintained a higher average from the 1990s to 2015 (See Figure 1). The trend has also fluctuated due to the country's vulnerability to international crude oil prices and rising trade deficit. The trend of unemployment also showed high unemployment from 2013 to 2020. Although unemployment seemed to moderate between 1991 and 2013 before rising in 2014, it declined slightly in 2015. However, in 2016, it resumed an upward trend, occasioned by the 2016 recession and the COVID-19 pandemic. The trend of real wages has increased over the years. While reviews have informed the increase of minimum wage laws, it has been accompanied by rising unemployment and a contraction in job creation. Putting in place policies that would promote trade openness could help enhance Nigeria's domestic production capacity and create jobs.

Digging further, recent evidence shows that underemployment amongst males in Nigeria stood at 26.3% 2020 compared to 31% in 2020. In 2018, underemployment was 15.4% for males compared to 26% for females. The unemployment rate stood at 5.3% in the fourth quarter of 2022 compared with the 4.1% recorded in the first quarter of 2023. This shows that most Nigerians were engaged for at least one hour weekly for pay or profit. The underemployment rate was 13.7% in the fourth quarter of 2022 and 12.2% in the first quarter of 2023.

It is pertinent to note that COVID-19 significantly affected Nigeria's demand- and supply-side activities. For example, the lockdown induced by the pandemic led to a disruption of production, which, combined with demand-side shocks, affected consumer confidence and suboptimal firm-level performance. The restrictions on movement and a decline in economic activity resulted in job losses and income

reductions, especially those in the informal sector. The disruption of global trade had severe implications for Nigeria's trade balance and economic performance. Andam, Edeh, Oboh, Pauw, and Thurlow (2020) opined that approximately two-thirds of economic losses were concentrated in the services sector. This means the labour market would be disproportionately affected relative to the product market.

3 Literature Review

There are several studies on the relationship between international trade, the labour market, and gender gaps, but the findings have been mixed and inconclusive. Carrere et al. (2014) examined the relationship between openness to trade and the unemployment rate for a panel of 97 countries from 1995 to 2009. The result showed that the link between trade openness and unemployment depends on the covariance between sectoral labour market frictions and comparative advantages. The findings show that trade liberalisation leads to higher unemployment in countries with comparative advantage in sectors with strong labour market frictions but lower unemployment in those with weak labour market frictions.

On the contrary, recent studies such as Abdul-Mumuni, Amakye, Abukari, and Insaidoo (2023) examine the nexus between trade openness and unemployment in 34 selected sub-Saharan African (SSA) countries from 1991 to 2020. Utilising panel cointegration and a nonlinear autoregressive distributed lag approach to account for potential asymmetries, the results indicate that trade openness asymmetry impacts unemployment. In the long run, the positive influence of trade openness on unemployment is more pronounced than the negative impact in the short run. Belgacem and Vacher's (2023) research on Tunisia's unemployment rate in the Middle East and Central Asia focused on how institutional factors influence unemployment. The findings suggest that weak institutions explain approximately 25% of the increase in Tunisia's unemployment rate.

Ivandic and Larsson (2023) analysed the impact of female and male job losses on labour market outcomes using data from Denmark that matched the full population employer-employee ratio. The study found substantial gender gaps in terms of job losses. For both men and women, job loss leads to a reduction in earnings. They also find that women, on average, experience a 14.2 percentage point increase in the probability of unemployment over the first two years, while it is relatively lower for men at 9.8 percentage points.

Destefanis et al. (2023) test the validity of Goldin’s hypothesis that the unexplained gender pay gap is linked to firms’ incentive to disproportionately reward individuals who work long and particular hours in Italy. Based on various survey datasets that reflect earnings, employer and employee characteristics, and work context within occupations, the findings suggest that there is a positive link between unexplained gender gaps and the elasticity of earnings for both graduate and non-graduate workers. For the former, the gender pay gap is correlated with occupational characteristics that impose earning penalties on workers seeking more workplace flexibility.

Using trend analysis, al-Taie, Ali, and Mohammad (2023) examine the link between trade and unemployment in Iraq from 2004 to 2020. The findings indicate that Iraq's trade policy seemed independent of other economic policies, which hindered economic diversification and was associated with high unemployment. Yin and Choi (2023)

analyse the impact of international trade on the gender gaps in labour force participation while considering the moderating role of information and communication technologies (ICT). The analyses of panel data for 79 developing economies from 2006 to 2019 reveal that international trade narrows the gender gap, but the interaction between trade and ICT is likely to widen it. They observed that the impact of ICT and trade on the gender gap varies across economies in terms of the level of development and region.

Some other studies have looked at gender gaps in the context of the girl child. For instance, Gitter et al. (2023) observed that child marriage remains prevalent in some developing regions such as sub-Saharan Africa, where 40% of girls and 25% of in the Middle East get married before reaching the age of 18. They opine that postponing girl child marriage is associated with an increase in the number of years of education they receive and boosts their likelihood of securing employment. However, Tun-Nessa, Alauddin, and Khan (2021) focused on the effect of trade openness on unemployment in selected least-developed countries from 1995 to 2016. The panel data estimates showed that higher trade openness increases unemployment, while more effective labour market regulations and labour freedom significantly reduce unemployment. Celi (2021) looked at the impact of international trade on labour markets in developed countries in the 1990s. The findings showed that the effects of intra-industry trade on the labour market significantly contribute to the estimated factor market impact of trade.

Onifade, Ahmet, Asongu, and Bekun (2020) examined the external trade-unemployment nexus in Nigeria and found that the country's terms of trade did not significantly explain unemployment. Hossain et al. (2018) investigate the impact of trade openness on unemployment in Bangladesh. Using the vector error correction model and Johanson cointegration, they found a long-run relationship between trade openness and unemployment. The results also showed that, in the long run, higher public spending on education led to a reduction in unemployment. In contrast, higher trade openness was associated with an uptick in unemployment. The short-run analysis also revealed that trade openness increased unemployment.

Mohler, Weder, and Wyss (2018) examine the international trade-unemployment nexus in Switzerland, where low-skilled unemployment rates increased significantly between 1991 and 2014. The study analysed manufacturing sector data and found no evidence supporting a positive relationship between import competition and the likelihood of low-skilled individuals becoming unemployed. Awad-Warrad (2018) analysed the link between trade openness, economic growth, and unemployment in seven selected Arab countries from 1990 to 2015. The results showed that trade openness and higher economic growth led to a reduction in unemployment.

In a similar study, Anjum and Perviz (2016) examined the relationship between trade openness and unemployment in a panel of 75 labour-abundant countries and 44 capital-abundant countries from 1990-2012. Using the pooled mean group estimation technique, the study found that, in the long run, trade openness had a negative and significant impact on the unemployment rate in labour-abundant countries. In contrast, in capital-abundant countries, trade openness positively and significantly impacted unemployment. Similarly, Adekunle (2016) examined the impact of trade openness on unemployment in 11 high-income countries and nine low-income countries from 1993 to 2013. The findings show that trade negatively impacts unemployment in both high- and low-income countries. The paper concluded that despite the potential

unemployment reducing the impact of trade openness, it needs to be complemented by other policies to impact unemployment significantly.

Wamboye and Seguino (2015) investigate the effect of trade on the gender gap. Analysing data from 48 Sub-Saharan African countries from 1991–2010 shows that exports reduce women's relative employment and widen the gender gap. In their sub-sample regressions, they observed that a rise in imports in mineral-exporting countries increases women's relative employment, while exports have the opposite effect. Goldin (2015) observed that when it comes to non-hourly sales positions, women tend to achieve less favourable hourly wages than men, particularly when working fewer than 40 hours per week. Notably, the study pointed out that men and women working fewer hours receive lower hourly pay. Still, given that women typically work fewer hours per week than men, they are more disproportionately affected.

Based on the empirical review, it is clear that the literature remains largely inconclusive as the results vary across countries, regions, etc. Also, these differences could be driven by the data used and the methodological approaches adopted. This is dominated by panel data models, which do not account for country-specific characteristics. This necessitates further empirical scrutiny by assessing how international trade and gender gaps affect unemployment using a country-specific framework. On the methodological front, this paper relies on a dynamic modelling approach that analyses the short- and long-run association between trade openness, gender gaps, and unemployment in Nigeria. Specifically, the Johanson cointegration test for long-run relationships and VECM for short-run analysis are used.

4 Methodology and Empirical Strategy

4.1 Analytical Framework

This study is premised on the vent for surplus model that relates international trade to unemployment. It assumes that countries engage in international trade to absorb their surplus production and create room for absorbing more labour to expand production. However, the interplay of international trade, gender, and unemployment in the Nigerian context may be influenced by several factors, such as industry-specific dynamics, trade policies, labour market frictions and rigidities, and the country's overall economic structure. While international trade stimulates economic growth, it must be carefully managed to ensure it does not worsen unemployment and, thus, the standard of living. When surplus labour is efficiently leveraged, this can lead to an expansion of employment opportunities. This forms the basis of the vent for surplus theory, which explains how countries can use external trade to absorb their excess labour supply and ensure full capacity utilisation.

Gender plays a pivotal role in the dynamics of unemployment, manifesting in differences in labour force participation, wage disparities, and the segregation of occupations. The effect of trade openness on gender-specific unemployment hinges on how the expansion of trade influences sectors predominantly occupied by women. If trade fosters the growth of these sectors, it has the potential to address gender disparity in labour markets. Conversely, if it primarily benefits male-dominated industries, it may exacerbate gender-based imbalances. The vent for surplus model posits that trade openness can assist nations in efficiently utilising their surplus resources, thereby optimising economic output. This could contribute to the reduction of unemployment.

Mynt (1958) argues that developing countries are characterised by surplus labour, surplus land, and natural resources which are idle and thus unproductive. They can be brought into productive use by opening up to trade or intensifying trade relations. In effect, international trade can serve as a vent for surplus as it creates new effective demand for the output of surplus resources that would otherwise remain unused. Hence, given Nigeria's high labour supply, increased trade can serve as a vent for generating more demand for labour.

4.2 Model Specification

This paper leans on the empirical specification of Azolibe et al. (2022), where unemployment is the dependent variable, and an array of explanatory variables are considered. The model is specified as follows:

$$lnUEMP_t = \beta_0 + \beta_1\, lnOPEN_t + \beta_2\, lnRWAGE_t + \beta_3\, FMLF_t + \beta_4\, \boldsymbol{X}_t + U_t \quad (1)$$

where UEMP denotes the unemployment rate, OPEN denotes trade openness, RWAGE denotes real wage, female-male labour force participation rate (FMLF), and X denotes a vector that accounts for other variables that potentially affect unemployment. These variables are broad money as % of GDP (MGDP), general government final consumption expenditure as % of GDP (GEXPGDP), and infrastructure *(INFRA)*. β_0 is the intercept. $\beta_1 - \beta_4$ is the slope of the coefficients of the model, and U_t is the error term.

β_2 is expected to be positive (that is $\beta_2 > 0$) because higher wages disincentivise firms to employ more labour, especially if efficiency wage is not the primary concern of employers. In other words, the coefficient of real wage is expected to be positive because when money wages rise, the cost of employing an additional worker over and above his marginal productivity will rise, thereby causing an increase in unemployment (Tule, 2004). The coefficient of β_3 is also expected to be positive, and this is because higher trade openness is associated with lower unemployment. Better gender equity in the labour market implies that more women are employed; therefore, the FMLF coefficient is also expected to be positive. In other words, a higher female participation rate in the labour market could reduce unemployment.

In terms of the control variables captured by the vector **X**, general government final consumption expenditure % of GDP *(GEXPGDP)* is expected to be negative due to the multiplier effect of government spending on unemployment (Azolibe et al., 2022), while broad money % of GDP (MGDP) is expected to reduce unemployment. This is because higher financial development shows that more resources are channelled to productive activities, which leads to higher job creation. Finally, the level of infrastructure development is expected to reduce unemployment (Umoru and Anyiwe, 2013).

4.3 Estimation Techniques

4.3.1 Long Run Analysis: Johnanson cointegration test

The analysis of the long-run association between international trade and gender gaps in unemployment is carried out using the Johansen cointegration approach. This is because it is a multivariate framework that can account for several explanatory variables. This means that it is possible to have more than one cointegrating vector. In other words, the variables in the model might form several equilibrium relationships

governing the joint evolution of all the variables. These issues are poorly addressed using other single-equation cointegration approaches, such as the Engle and Granger technique. The standard Johansen model is specified as follows:

$$\boldsymbol{Z_t} = A_1\boldsymbol{Z_{t-1}} + A_2\boldsymbol{Z_{t-2}} + \cdots + A_k\boldsymbol{Z_{t-k}} + u_t \qquad (2)$$

Where $\boldsymbol{Z_t}$ is a vector of variables (unemployment, gender gaps, real wages and other control variables) while the $\boldsymbol{A_i}$ are the vector of parameters. u_t is the random error term assumed to have a zero mean and constant variance.

4.3.2 Short Run Analysis: Vector error correction model (VECM)

Having established a long-run relationship, we analyse the contemporaneous dynamics using a VECM model which relies on an error correction mechanism. The purpose of this model is to indicate the speed of adjustment from a long-run disequilibrium. The error correction coefficient is expected to be negative and statistically significant. It lies between 0 and 1 and shows the convergence speed during a disequilibrium. The main assumption and precondition for using this approach is that all variables are I(1). The VECM model is specified as follows:

$$\Delta\boldsymbol{Z_t} = \Gamma_1\Delta\boldsymbol{Z_{t-1}} + \Gamma_2\Delta\boldsymbol{Z_{t-2}} + \cdots + \Gamma_{k-1}\Delta\boldsymbol{Z_{t-k-1}} + \Pi\boldsymbol{Z_{t-1}} + u_t \qquad (3)$$

Where $\Gamma_i = 1 - A_1 - A_2 - \cdots - A_k$ for $i = 1,2, \ldots k-1$ and $\Pi = -(I - A_1 - A_2 - \cdots - A_k)$. Note that the Π matrix is an $n \times n$ because we have a multivariate model. The matrix contains information regarding the long-run relationships. Thus we decompose the matrix such that $\Pi = \alpha\beta'$ where α will include the speed of adjustment to equilibrium coefficients while β′is the long-run matrix of coefficients. This means that $\boldsymbol{\beta'Z_{t-1}}$ is the error correction term which contains up to $n-1$ terms in a multivariate framework. Δ is the first difference operator.

4.4 Data Issues

The annual data on trade openness, unemployment, the ratio of male-female labour participation rate, real wage, broad money % of GDP, infrastructure, and general government expenditure are obtained from CBN statistical bulletin (online) and World Development Indicators (online). These data span from 1991 to 2021 (See Table 1 for a detailed description of the data).

Table 1: Data Description

S/N	Variables	Symbol	Measurement	Parameters	Source
1	Unemployment	UEMP	The percentage of the people in the labour force who are unemployed	-	WDI
2	Degree of Trade Openness	OPEN	exports plus imports as a per cent of GDP	β_1	WDI
3	Real wage	RWAGE	It is measured as nominal minimum wages divided by the inflation	β_2	Salaries And Wages Commission
4	The ratio of Male and Female labour participation rate	FMLF	The percentage of the males and females in the labour force	β_3	WDI
5	Broad Money % of GDP	MGDP	This is measured as the total sum of Money supply in a year.	β_4	WDI
6	General government final consumption expenditure (% of GDP)	GEXPGDP	Final consumption expenditure	β_5	WDI
7	Infrastructure	INFRA	Is measured in billion	β_7	WDI

5. Empirical Analysis and Discussion of Results

5.1 Preliminary Checks

5.1.1 Descriptive Statistics

Table 2 presents the descriptive analysis using measures of central tendency (mean, minimum and maximum) and a measure of variability (standard deviation). The mean shows the average of the variables for all the data points across the sample period of 1991 – 2021. The mean for openness, for instance, is closest to the minimum value. This indicates a high level of trade openness with an average over the study period. The average level of unemployment also has a standard deviation that is nearly half the size of the mean. This implies a high standard deviation, which shows a wide unemployment spread. By gender, the mean female-male labour force ratio shows that more males are in the labour force than females. The average level of inflation is 18.41% within the study period. This implies average double-digit inflation over the study period with a reducing effect on real wages.

Table 2: Descriptive Statistics

	FMLF	GEXPGDP	INFRA	MGDP	OPEN	RWAGE	UEMP
Mean	46.44	4.56	0.43	18.15	36.33	876.51	4.88
Median	46.84	4.79	0.37	15.90	37.02	474.92	4.00
Maximum	47.26	9.45	1.18	27.38	53.28	2632.32	9.79
Minimum	44.22	0.91	0.04	9.06	16.35	3.43	3.7
Std. Dev.	0.95	3.00	0.32	6.07	9.50	852.25	1.94
Jarque-Bera	9.58	2.72	3.10	3.39	0.61	3.20	16.19
Probability	0.01	0.26	0.21	0.18	0.74	0.20	0.00
Observations	31	31	31	31	31	31	31

Source: Authors Estimation using Eviews

5.1.2 Stationarity Test

Results from the stationary test showed that most variables are stationary at the first difference with the ADF and PP tests, while the KPSS test showed that most variables are stationary at levels. Nearly all the variables are stationary at a 1% critical value with the ADF and PP tests, but most are stationary at a 5% critical value with the KPSS test. Using the KPSS test, the stationary test for the variables Openness and Infrastructure was insignificant except when tested using the option with intercept. The general interpretation from the stationarity tests is that the KPSS statistic yields smaller values than the ADF and PP. Also, most variables turn out to be stationarity at levels while the variables are stationarity at first difference with ADF and PP tests.

Table 3: Results for Stationarity Test using ADF, PP, and KPSS test

	ADF		Philip-Perron		Perron Break test			
Variables	levels	I(1)	levels	I(1)	levels	break date	I(1)	break date
UEMP	4.02	3.57	-0.53	-5.57**	-9.21	2015	-11.39*	2015
RWAGE	-1.97	-6.15	-2.12	-6.56**	-5.99	1999	-8.97**	2000
MGDP	-0.77	-3.58	-1.04	-3.51*	-2.85	2017	-5.35**	2006
OPEN	-3.06	-6.11	-3.09	-8.61**	-5.15	2014	-6.37**	2017
FMLF	-3.32	-4.03	-0.47	-1.30	-4.13	2010	-6.32**	2017
GEXPGDP	-1.37	-6.00	-1.34	-6.00**	-5.22	2003	-8.09**	2004
INFRA	-1.65	-3.65	-0.86	-4.39**	-3.63	2018	-6.07**	2008

Source: Authors Estimation using Eviews

Note: *** is Significant at 1% critical value (cv); ** is significant at 5% cv; and * is significant at 10%.

5.2 Result of Long-Run Analysis

Table 4 presents the long-run relationship between unemployment and the determinants considered. The result indicates that we have at most six cointegrating vectors as the trace statistic exceeds the maximum eigenvalue statistic. This result means that real wages, openness, and trade openness explain Nigeria's long-run dynamic behaviour of unemployment. This result is statistically significant at the 5% level of significance.

Table 4 Johansen cointegration test result

No Cointegrating Equations	Eigenvalue	Trace Statistic	Max-Eigen Statistic	Decision
None *	0.83	182.85	52.12	cointegrated
At most 1 *	0.81	130.73	47.87	cointegrated
At most 2 *	0.65	82.86	30.06	cointegrated
At most 3 *	0.50	52.79	19.97	cointegrated
At most 4 *	0.47	32.82	18.52	cointegrated
At most 5 *	0.30	14.30	10.24	cointegrated
At most 6 *	0.13	4.06	4.06	cointegrated

Source: Authors Estimation using Eviews

Based on the Johansen cointegration result in Table 4, we obtain the long-run cointegrating vector, which shows the specific relationship between the variables of interest. As shown in Table 5, the empirical analysis shows that trade openness negatively and significantly affects unemployment over the long term. In other words, a 1% increase in the degree of trade openness would reduce unemployment by 0.082%.

As countries liberalise their trade regimes and prices of imported goods drop, the short-term adjustment cost on firms is high due to unfavourable competition. However, it is expected that over the long term, firms would have adjusted by adopting new technologies and skills that enhance their capacity to produce goods that compete favourably with imports.

Table 5: Long-run cointegrating equation

Cointegrating Eq:	OPEN(-1)	RW(-1)	FMLF(-1)	MGDP(-1)	GEXPGDP(-1)	INFRA(-1)	C
coefficient	-0.08	4.51E01	2.98	-0.05	0.14	-0.55	-139.92
standard error	-0.0101	-0.00	-0.162	-0.03	-0.08	-0.57	
T- statistic	[-8.10]	[0.21]	[18.38]	[-1.89]	[1.85]	[-0.96]	

Source: Authors Estimation using Eviews

The results from Table 5 also show that the coefficient of gender (FMLF), as measured by the ratio of female to male labour force, positively impacts unemployment in the long run. This means that better female participation in the labour market could help reduce unemployment in Nigeria. The positive effect of government spending on unemployment aligns with the findings of Azolibe et al. (2022) in selected developing countries.

5.3 Vector error correction model estimates

The vector error correction model was estimated to analyse the contemporaneous linkage between unemployment and the variables considered (See Table 6. The short-run estimates showed that trade openness negatively affects unemployment, but the result is not statistically significant. The coefficient of real wage is minimal, suggesting that its effect on unemployment in the short run is marginal and statistically insignificant. This could be explained by the fact that salaries are not market-driven but are determined mainly by the government, which sets a minimum wage.

Table 6: Vector Error Correction Model Estimates

Error Correction:	D(UEMP)	D(OPEN)	D(RW)	D(FMLF)	D(MGDP)	D(GEXPGDP)	D(INFRA)
CointEq1	-0.17	12.24	204.3	-0.05	0.48	0.13	0.05
	-0.23	-2.92	-198.2	-0.03	-1.03	-0.46	-0.05
	[-0.75]	[4.19]	[1.0]	[-2.06]	[0.46]	[0.29]	[1.13]
D(UEMP(-1))	-0.09	-0.55	-167.9	0.03	-2.04	-0.59	-0.05
	-0.27	-3.53	-239.4	-0.03	-1.2	-0.55	-0.06
	[-0.32]	[-0.16]	[-0.7]	[1.03]	[-1.6]	[-1.06]	[-0.94]
D(OPEN(-1))	-0.018	-0.04	6.63	-0.00	0.1	0.06	0.00
	-0.01	-0.18	-11.87	-0.00	-0.06	-0.03	-0.00
	[-1.33]	[-0.24]	[0.6]	[-1.26]	[1.70]	[2.37]	[0.36]
D(RW(-1))	-0.00	0.01	0.05	-0.0	0.00	0.001	0.00
	0.00	-0.00	-0.29	-0.00	-0.00	0.00	-0.00
	[-0.20]	[1.50]	[0.2]	[-1.43]	[0.08]	[1.60]	[-1.62]
D(FMLF(-1))	-1.72	-29.58	-815.3	1.12	-8.36	-2.90	-0.21
	-1.34	-17.28	-1171	-0.16	-6.10	-2.70	-0.28
	[-1.29]	[-1.71]	[-0.7]	[7.18]	[-1.37]	[-1.07]	[-0.77]
D(MGDP(-1))	0.03	0.00	15.02	-0.01	0.20	0.08	-0.01
	-0.05	-0.63	-42.97	-0.01	-0.223	-0.10	-0.01
	[0.54]	[0.00]	[0.4]	[-1.20]	[0.91]	[0.85]	[-0.94]
D(GEXPGDP(-1))	-0.10	-1.69	-115.0	0.03	0.55	-0.20	-0.00
	-0.10	-1.25	-84.88	-0.01	-0.44	-0.20	-0.02
	[-1.00]	[-1.35]	[-1.4]	[2.58]	[1.25]	[-1.04]	[-0.18]
D(INFRA(-1))	0.89	-18.07	-89.51	0.14	0.91	6.93	0.16
	-0.99	-12.86	-871.9	-0.12	-4.54	-2.02	-0.21
	[0.89]	[-1.40]	[-0.1]	[1.19]	[0.20]	[3.44]	[0.79]
C	0.08	-3.13	49.07	0.00	-0.07	0.02	-0.00
	-0.14	-1.76	-119.6	-0.02	-0.62	-0.28	-0.03
	[0.62]	[-1.78]	[0.4]	[0.07]	[-0.12]	[0.07]	[-0.06]

Source: Authors Estimation using Eviews
Note: Standard errors in ( ) & t-statistics in [ ]

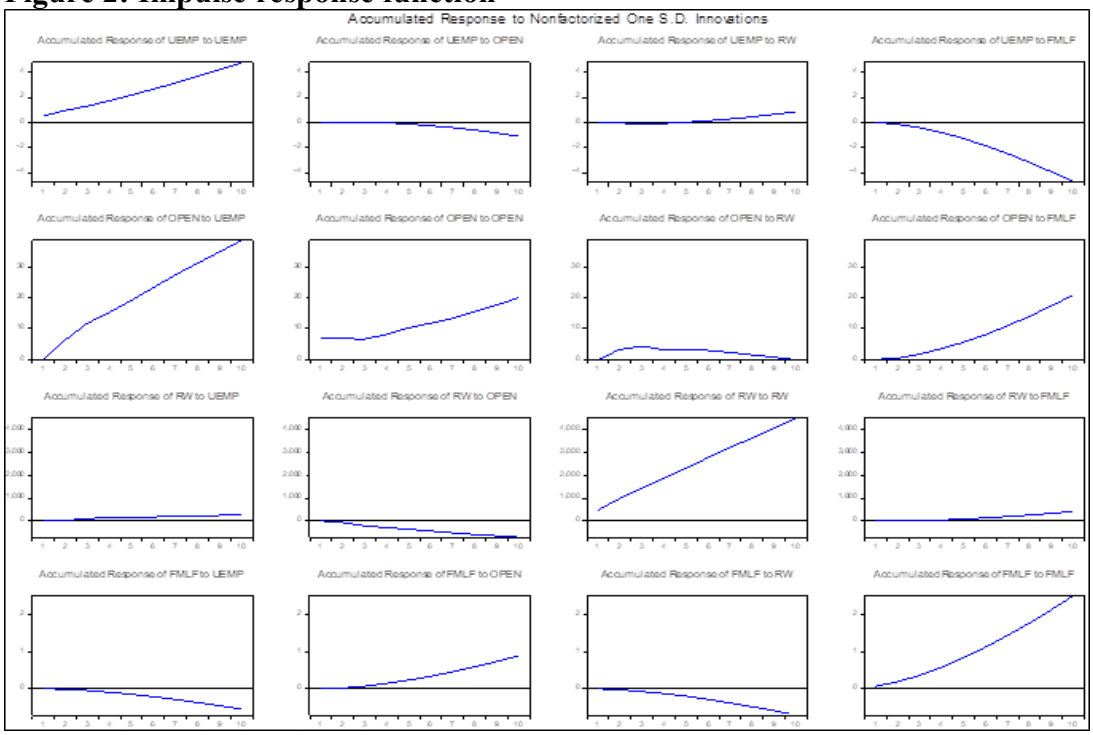
5.4 Further Analysis

5.4.1 Impulse Response Function

The impulse response analysis revealed that Nigeria's unemployment (UEMP) responds positively to shocks during the review process. This validates the AR process that characterises most time series indicators. UEMP has an asymmetric response to the degree of trade openness. As a result, it is initially positive until the first four years before responding negatively from the 5th year. This is in line with previous findings of the long-run analysis. In the initial periods, the response of unemployment to changes in real wages is close to zero but becomes positive after the 6th period. This implies that unemployment would respond to changes in real wages over the long term, indicating that firms are not likely to adjust instantaneously to changes in real wages due to higher production costs but will respond over the long term.

Finally, unemployment's response to changes in the labour market gender ratio is negative throughout the forecast horizon. This means that a standard innovation would negatively affect unemployment in terms of changes to the gender pattern of labour supply.

Figure 2: Impulse response function



Source: Authors Estimation using Eviews

5.4.2 Variance decomposition analysis results

The result revealed that the variation in the UEMP to itself is 100% in the first period, as expected, but dissipates in the 2nd period from 90% to 41% in the 10th period. The measure of trade openness (OPEN) during the review period captures about 0.2-0.6% of the variation in unemployment. This is relatively small compared with the FMLF, whose decomposed variances during the periods considered contributed more to the changes in unemployment. For instance, FMLF in the 1st and 2nd periods captures about 5% and 10%, respectively. After that, changes in the unemployment rate due to FMLF ranged from a minimum of about 22% in the 4th period, capturing about 30% in the 5th period, to about 49% in the 10th period. This implies that changes in unemployment in Nigeria are more explained by changes in the gender pattern of the labour market than any of the other factors considered.

The control variables, such as government spending as a share of GDP, explained an average of 1-2% of the variation in unemployment throughout the period considered, while infrastructure development contributed about 1-3% of the variation in unemployment in Nigeria.

Table 7: Variance decomposition analysis

VD of UEMP:								
Period	S.E.	UEMP	OPEN	RW	FMLF	MGDP	GEXPGDP	INFRA
1	0.55	100.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.77	89.78	0.58	0.80	4.74	0.24	2.42	1.45
3	0.97	82.05	0.37	1.16	12.86	0.45	2.18	0.93
4	1.18	73.31	0.39	0.86	21.56	0.90	1.98	0.99
5	1.42	64.35	0.29	0.83	29.76	1.48	1.97	1.33
6	1.67	57.39	0.21	0.86	35.83	2.05	1.83	1.82
7	1.92	51.88	0.17	0.99	40.47	2.59	1.72	2.20
8	2.17	47.41	0.16	1.16	44.13	3.00	1.61	2.54
9	2.42	43.92	0.18	1.32	46.92	3.33	1.53	2.82
10	2.68	41.16	0.22	1.45	49.09	3.59	1.46	3.04
VD of OPEN:								
Period	S.E.	UEMP	OPEN	RW	FMLF	MGDP	GEXPGDP	INFRA
1	7.11	6.43	93.57	0.00	0.00	0.00	0.00	0.00
2	9.31	20.88	60.64	10.28	0.07	1.13	0.65	6.35
3	10.48	35.73	48.29	8.24	0.95	0.94	0.79	5.07
4	11.45	42.09	41.06	7.45	3.24	1.10	0.72	4.35
5	12.43	44.67	36.80	6.32	6.02	1.58	0.70	3.91
6	13.36	46.69	32.97	5.48	8.38	2.23	0.61	3.64
7	14.34	47.97	29.26	4.89	11.12	2.77	0.55	3.45
8	15.34	47.86	26.45	4.47	14.06	3.21	0.50	3.44
9	16.31	47.16	24.39	4.11	16.75	3.68	0.47	3.43
10	17.27	46.36	22.65	3.81	19.21	4.11	0.44	3.43
VD of RW:								
Period	S.E.	UEMP	OPEN	RW	FMLF	MGDP	GEXPGDP	INFRA
1	481.89	32.61	11.92	55.47	0.00	0.000	0.00	0.00
2	684.79	32.63	11.09	54.72	0.72	0.003	0.76	0.08
3	795.84	31.41	9.07	57.55	0.62	0.003	0.63	0.72
4	892.37	32.15	8.59	57.46	0.52	0.039	0.66	0.58
5	987.84	33.14	8.55	56.73	0.45	0.032	0.60	0.50
6	1076.07	33.36	8.39	56.78	0.44	0.029	0.55	0.46
7	1153.47	33.71	8.19	56.64	0.48	0.027	0.54	0.41
8	1225.13	34.13	8.10	56.28	0.57	0.027	0.53	0.37
9	1294.88	34.48	8.10	55.88	0.68	0.030	0.51	0.33
10	1361.48	34.77	8.09	55.51	0.80	0.036	0.49	0.30
VDof FMLF:								
Period	S.E.	UEMP	OPEN	RW	FMLF	MGDP	GEXPGDP	INFRA
1	0.06	3.08	1.54	1.65	93.73	0.00	0.00	0.00
2	0.15	1.93	0.41	4.26	91.49	0.28	0.57	1.08
3	0.26	2.70	0.86	4.90	87.08	0.79	0.52	3.17
4	0.36	3.10	1.15	4.94	84.77	1.55	0.53	3.96
5	0.47	3.14	1.25	5.03	83.43	2.15	0.50	4.50
6	0.58	3.17	1.36	5.26	82.25	2.58	0.47	4.92
7	0.70	3.25	1.53	5.40	81.28	2.91	0.45	5.18
8	0.81	3.32	1.71	5.47	80.54	3.18	0.43	5.35
9	0.92	3.39	1.86	5.50	79.97	3.39	0.42	5.46
10	1.02	3.45	2.00	5.54	79.51	3.56	0.41	5.53

Source: Author's computation using Eviews.
Note: Cholesky Ordering: UEMP OPEN RW FMLF MGDP GEXPGDP INFRA

5.5 Interpretation of Findings

The study examined the impact of international trade flows on labour market dynamics in Nigeria (using unemployment as a proxy). The results revealed a long-run equilibrium relationship between the variables considered as the Johansen cointegration test, which showed six cointegration vectors. The normalised cointegrating vector concerning the variable of interest (unemployment) shows that trade openness exerts a negative and significant effect on unemployment over the long term. This means that more liberal trade regimes lead to a reduction in the price of imports, but the short-run adjustment cost is high due to the uncompetitiveness of domestic firms. The findings suggest that boosting the capacity of export-oriented firms can help create jobs and lead to economic transformation.

Although addressing gender gaps in the labour market was found to reduce unemployment in the long run, the observed equilibrium relationship was not stable in the short run. Another finding was that addressing infrastructure gaps could help alleviate unemployment in the long run. The findings on the effect of gender gaps largely align with Goldin (2015), who showed that the gender pay gap is primarily driven by the fact that women are predominantly concentrated in lower-paying occupations. The finding that gender gaps worsen and unemployment also conforms with Aminu (2010), which indicates that the critical determinants of participation of an employable household member (male or female) in wage employment are levels of education attained in Nigeria. Our findings, however, depart from studies like those of Destefanis et al. (2023), who observed that differences in educational attainment contribute to the unexplained gender pay gap and the degree to which earnings are responsive to variations in work hours.

The finding relating to external trade and unemployment is consistent with Myint's (1958) and Smith's (1976) study, which argued that international trade creates more demand for surplus labour and resources. Therefore, increased trade can help to create jobs and generate more demand for labour. Furthermore, the significant role played by infrastructure in the model is also consistent with Lall (2004), who found that trade and employment in a country depend on its infrastructure capacity, national endowments, and national development policies.

The estimated trade-unemployment elasticities we found did not align with Mohler et al. (2018) as they documented a positive and insignificant relationship between international trade and unemployment. However, our findings concurred with the results of Jaewon (2011), who found that global trade influenced unemployment through its interaction with labour market institutions. As such, policies to address gender labour market gaps should also seek to address the limited access to education for women, which dampens their employment prospects. Ivandic and Lassen (2023), in a study of Denmark, also concluded that gender gaps heighten the risk of unemployment, which is two times larger when caring for children is considered.

Unlike the study by Asaleye et al. (2017), which found a short-run relationship between trade openness and employment in Nigeria but not in the long run, this paper found the reverse. This means that facilitating external trade through trade openness may not be suitable for job creation in the short run, but it does create jobs in the long run. Belgacem and Vacher's (2023) research study made a strong case for institutional factors addressing unemployment in Tunisia. Enhancing the business environment, fostering product market competitiveness, improving labour market flexibility, and mitigating financial constraints and informal practices could decrease unemployment levels in developing nations. Similarly, Gitter et al. (2023) opined that postponing child marriage among girls would increase the number of years in school and enhance the likelihood of securing employment after school completion.

6 Conclusion and Policy Implication

The study examined the effect of trade openness and gender gaps on unemployment in Nigeria, which remains a significant development challenge and concern for policymakers. Based on the findings, it is evident that international trade and the gender gap have significantly impacted unemployment in Nigeria in the long- and short-run. While global trade has created new job opportunities, it has also led to short-term job

losses in some uncompetitive firms. The findings also suggest that the uneven distribution of benefits in the labour market has widened the labour market gender gap, which has contributed to unemployment in Nigeria. Addressing this gap through policies and initiatives to encourage female participation in the labour market can help reduce unemployment in the country. Although the Nigerian government has deployed various policies and initiatives to promote trade and create jobs, these still need to address the scourge of unemployment sustainably. We argue that the success of these policies depends on the balanced interplay of macroeconomic stabilisation policies and addressing structural challenges in the economy.

Some key policy insights emerge from the findings. First, international trade can create new employment opportunities in export-oriented industries. Therefore, policymakers in Nigeria can focus on promoting the development of export-oriented industries with high labour intensity. This includes industries like textiles, agriculture, and light manufacturing. Second, international trade can also lead to the exploitation of workers, especially in developing countries like Nigeria. Therefore, policymakers must implement measures to protect workers' rights, including the minimum wage, social protection policies, and regulations ensuring safe working conditions. This will help to ensure that the benefits of international trade are shared fairly between men and women.

Finally, boosting the availability and access to infrastructure would help address unemployment. At the same time, the positive coefficient of government spending indicates that the quality of expenditures needs to improve if the goal of job creation is to be achieved over the medium to long term. Also, capacity building and skills acquisition programs for women could be pursued to help address the educational gap between men and women and enhance female labour market outcomes. This would also encourage employers to embrace inclusive recruitment practices and establish workforces that reflect gender diversity. By addressing the gender gap in the labour market and promoting equal opportunities, societies can harness the full potential of their workforce, which in turn leads to sustained broad-based growth. Promoting and supporting women through entrepreneurship programs and improved access to finance could help address labour market gender gaps.

Several potential factors influence job creation efforts but are beyond the scope of this paper, and these serve as suggestions for research. It would be helpful to account for the influence of the COVID-19 pandemic on the nexus between unemployment, trade and gender gaps as data become more available. At the same time, environmental issues, such as climate change's impact, could dampen international trade's impact on unemployment. Therefore, the interaction effect could be considered using more granular firm-level data and estimation approaches that reflect non-economic factors that affect labour market dynamics.

References

Adekunle, S.B. (2016). The Impact of Trade on Unemployment (Master's thesis, Eastern Mediterranean University (EMU)-Doğu Akdeniz Üniversitesi (DAÜ)).

Abdul-Mumuni, A., Amakye, K., Abukari, A.L. & Insaidoo, M. (2023). Modelling trade openness–unemployment nexus in sub-Saharan Africa: the role of asymmetries. *African Journal of Economic and Management Studies*. https://doi.org/10.1108/AJEMS-02-2023-0040

Al-Taie, A.H.H., Ali, F.K., & Mohammad, A.H. (2023). Analysis of Relationship between Trade Policy Trends and Unemployment Rates in Iraq. *International Journal of Professional Business Review*, *8(1),* 1-16

Anjum, N., & Perviz, Z. (2016). Effect of Trade Openness on Unemployment in Case of Labour and Capital Abundant Countries. *Bulletin of Business and Economic (BBE) Research Foundation for Humanity (FRH), 5 (1),* 44-58.

Awad-Warrad, T. (2018). Trade Openness, Economic Growth and Unemployment Reduction in Arab Region. *International Journal of Economics and Financial Issues*, *8(1),* 179-183.

Azolibe, C.B., Dimnwobi, S.K. and Uzochukwu-Obi, C.P. (2022) The Determinants of Unemployment rate in Developing Economies: Does Banking System Credit Matter?", Journal of Economic and Administrative Sciences, https://doi.org/10.1108/JEAS-01-2022-0021.

Belgacem, A., & Vacher, J. (2023). Why Is Tunisia's Unemployment so High? Evidence From Policy Factors. *International Monetary Funds working papers No. 2023/219*

Carrere, C., Fugazza. M., Olarreaga. M., & Robert-Nicoud, F. (2014). *Trade in Unemployment. Working Papers, P101, FERDI.* https://ferdi.fr/en/publications/trade-in-unemployment

Celi, G. (2021). The Labour Market Effects of International Trade in the Presence of Vertical Product Differentiation: Some Methodological Remarks in Retrospect. *Journal of Risk and Financial Management, 14(109),* 1-24

Dabla-Norris, E., & Kochhar, K. (2019). Closing the Gender Gaps. *Finance and Development. March No. 3. International Monetary Fund, Washington DC.* https://www.imf.org/en/Publications/fandd/issues/2019/03/closing-the-gender-gap-dabla.

Destefanis, S., Mazzotta, F., & Parisi, L. (2023). Goldin's Last Chapter on the Gender Pay Gap: An Exploratory Analysis Using Italian Data. *Work, Employment and Society, 0(0).* https://doi.org/10.1177/09500170221143724

Gbosi, A.N. (2019). Modern macroeconomics and public policy. *Port Harcourt: Standard Kaycee Micro Solution*

Gitter, S., Onyemeziem, O., & Corcoran, W. (2023), Menarche, Marriage Age, Education, And Employment In Africa, *The Middle East And Central Asia, No. 2023-04, working papers, Towson University, Department Of Economics.*

Goldin, C. (2015). Hours flexibility and the gender gap in pay. Centre for American Progress.

Hossain, M.I., Tahrim, F., Hossain, M.S., & Rahman, M.M. (2018). Relationship between trade openness and unemployment: empirical evidence for Bangladesh. *Indian Journal of Economics and Development. 6(8), 1-12.*

Humphrey, N., & Sylvester-Alor, F.U. (2021). International Trade and Employment in Nigeria. *Quest Journals Journal of Research in Humanities and Social Science. 9(3),* 01-06

International Labour Organization, ILO. (2019). World Employment and Social Outlook: Trends. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_670542.pdf.

Ivandic, R., and Lassen, A.S. (2023). Gender Gaps From Labour Market Shocks. *Labour Economics, 83*, https://doi.org/10.1016/j.labeco.2023.102394

Jaewon, K. (2011). The Effects of Trade on Unemployment: Evidence from 20 OECD Countries. *Research Papers in Economics from Stockholm University, Department of Economics, 19*. http://www2.ne.su.se/paper/wp11_19.pdf

Johansen, S. (1988). Statistical Analysis of Cointegration Vectors. J*ournal of Economic Dynamics and Control, 12, .*231-54

Kochhar, K., Jain-Chandra, S., & Newiak, M. (2017). Women, Work, and Economic Growth. : International Monetary Fund

Kareem, F. O. (2010). Trade Flows and Employment Outcomes in Nigeria. *Working paper, University of Ibadan.*

Lall, S. (2004). The Employment Impact of Globalization in Developing Countries. *Understanding Globalization, Employment and Poverty Reduction* pp. 73-101. New York: Palgrave Macmillan.

Mynt, H.T.A. (1958). The Classical Theory of International Trade and the Underdeveloped Countries.*Economic Journal 68(270),* 317-37.

Mohler, L., Weder, R., & Wyss, S. (2018). International Trade and Unemployment: Towards an Investigation of the Swiss Case. *Swiss Journal of Economics and Statistics,* 154 (10).

National Bureau of Statistics, NBS. (2018). Foreign Trade in Goods Statistics Report – March

National Bureau of Statistics, (NBS). (2018). Data from the fourth quarter of 2020. Quarterly Statistics Report. https://www.nigerianstat.gov.ng/

National Bureau of Statistics (NBS). (2020). Unemployment and Underemployment Report Q2 2020 - Abridged Labor Force Survey Under Covid-19 https://www.nigerianstat.gov.ng/

National Bureau of Statistics, (NBS). (2021). Annual Statistics Report. https://www.nigerianstat.gov.ng/

National Bureau of Statistics, (NBS) (2022). Quarterly Statistics Report. https://www.nigerianstat.gov.ng/

National Bureau of Statistics, (NBS). (2023). Nigeria labour force survey Q4 2022 &Q1 2023 Quarterly Statistics Report https://www.nigerianstat.gov.ng/

Ogunlela, Y.I., & Mukhtar, A.A. (2009). Gender Issues in Agriculture and Rural Development in Nigeria: The Role of Women.*Humanity & Social Sciences Journal 4(1),* 19–30.

Onifade, S.T., Ahmet, A.Y., Asongu, S., & Bekun, F.V. (2020). Revisiting the trade and unemployment nexus: Empirical evidence from the Nigerian economy. *Journal of Public Affairs, 20(3)*

Ojo, A. (2002). "Socio-Economic Situation", in Africa Atlases (Nigeria), Paris-France, Les Editions J.A.. 126-127

Olowa, O., & Adeoti, A. (2014). Effect of Education Status of Women on Their Labour Market Participation in Rural Nigeria. *American Journal of Economics 4(1),* 72-81

Oluwagbemiga, E. A., Kolawole, E. O., & Akinwole, E. A. (2016). Religion and Labour Force Participation in Nigeria: Is there any Inequality among Women? *African Journal of Reproductive Health*

Price Water House Coopers (PwC) (2020). Impact of Women on Nigeria's Economy. https://www.pwc.com/ng/en/assets/pdf/impact-of-women-nigeria-economy.pdf

Smith, S. (1976). An Extension of the Vent-for-Surplus Model in Relation to Long-Run Structural Change in Nigeria. *Oxford Economic Papers New Series, 28(3), 426-46.*

Tule, M.K. (2004). Determinants of Public Sector Wages in Nigeria. *CBN Economic & Financial Review, 42(I), 54-86*

Tun-Nessa, H., Alauddin, M.D., & Khan, R.H. (2021). Effects of Trade Openness on Unemployment Rate: Evidence from Selected Least Developed Countries (LDCs). *Journal of Business Administration, 42(1),* 59-76

Umoru, D., & Anyiwe, M.A. (2013). Dynamics of inflation and unemployment in a vector error correction model. *Research on Humanities and Social Sciences, 3(3)*,20-29.

Wamboye, E. F. & Seguino, S. (2015). Gender effects of trade openness in sub-Saharan Africa. *Feminist Economics, 21(3),* 82–113.

World Bank (2019). Profiting from Parity: Unlocking the Potential of Women's Business in Africa. The World Bank. Washington DC.
https://openknowledge.worldbank.org/handle/10986/31421

Yin, Z.Y., & Choi, C.H. (2023). The effect of trade on the gender gap in labour markets: the moderating role of information and communication technologies. *Economic Research-Ekonomska Istraživanja, 36(1),* 2443-2462.