

# Effect of International Trade on Unemployment Rate in Nigeria

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## Abstract

Literature acknowledges international trade as ideal for influencing a country's unemployment level. Previous studies have not paid attention to export diversification and competitiveness as a more tertiary indices for describing international trade impacts, focusing more on an aggregated international trade measure. With the Stolper-Samuelson model as framework and with data sourced from World Bank Development Indicator, and the CBN Statistical Bulletin, this study investigated the impact of international trade on Nigeria's aggregate unemployment rates within the ARDL model. From the findings, it was discovered that export diversification does not have a significant effect on aggregate unemployment. Export competitiveness, on the other hand, was found to have a significant negative effect on aggregate unemployment in the long run. Given the findings, the study recommends, among other things, the need to diversify the export basket of the country and increase its competitiveness in the international market through research and development (R & D), which improves productivity. This will increase aggregate demand and also boost export earnings, which in turn creates jobs and lowers the country's unemployment rate.

**Keywords:** *Economic Growth, Export Competitiveness, Export Diversification, International Trade, Unemployment Rate*

**JEL Codes:** *B27, C02, F10, J64*

## Introduction

The biggest issue facing developing and poor nations is unemployment, which poses serious issues for their labor markets as well as for every part of their overall economies. According to the Nigerian Bureau of Statistics (NBS, 2017), unemployment is the ratio of people in the labor force who are actively seeking employment but were unable to do so for at least 20 hours per week (labour force). Chronic unemployment not only lowers a country's standing in the world, but it also causes terrible issues in the home country. Financial challenges, homelessness, criminality, frustration, and a host of other issues, including family breakup and conflict, social isolation, loss of confidence, and low self-esteem, are all inevitably caused by long-term unemployment and contribute to the downfall of a healthy society (Oniore, Bernard & Gyang, 2015). Bakare (2010), on the other hand, claimed that unemployment causes some psychological issues such as discouragement, frustration, and animosity as well as a gradual inclination for some obviously unemployed persons to engage in a variety of criminal activity. Maqbool, Sattar, and Bhalli (2013) contend that every government's primary goal should be to increase job prospects through a variety of productive endeavors that make use of all available production-related inputs.

Unemployment rate increased from 5.1% in 2010 and 6.0% in 2011 to 10.6% and 10.0% in 2012 and 2013 respectively. This figure dropped to 7.8% in 2014, but went back up to 9.0% in 2015. Unemployment rate as at 2017 rose to 16.5% from 13.4% in 2016 (NBS, 2017). Recently, the economically active or working age population (15 – 64 years of age) increased from 111.1 million in Q3, 2017 to 115.5million in Q3, 2018. The number of persons in the labour force (i.e. the number of new entrants into the job market looking for jobs) increased from 75.94 million in Q3 2015 to 80.66 million in Q3 2016 to 85.1 million in Q3, 2017 to 90.5million in Q3, 2018. The total number of people in employment (i.e with jobs) increased from 68.4 million in Q3 2015, to 68.72 million in Q3 2016, to 69.09 million in Q3 2017 and 69.54 million in Q3 2018. The total number of people in full-time employment (at least 40 hours a week) increased from 51.1 million in Q3 2017 to 51.3 million in Q3, 2018. The total number of people in part-time employment (or underemployment) decreased from 13.20 million in Q3 2015 to 11.19 million in Q3 2016 but increased to 18.02 million in Q3 2017 and to 18.21 million in Q3 2018. The total number of people classified as

unemployed, which means they did nothing at all or worked too few hours (under 20 hours a week) to be classified as employed increased from 17.6 million in Q4 2017 to 20.9 million in Q3 2018. The number of people within the labour force who are unemployed (did not have a job and did nothing at all) or that were in some part time work or underemployed increased from 15.9 million and 18.0 million in Q3 2017, to 20.9 million and 18.2 million in Q3, 2018 respectively. Total unemployment and part-time/underemployment rates combined increased from 40.0% in Q3 2017 to 43.3% in Q3, 2018 (NBS, 2018).

In Nigeria, structural factors like the nature of the educational system and how it interacts with the labor market (i.e., the mismatch problem), technological advancement, persistent shifts in the demand for goods and services, and the skill level of the labor force are some of the most frequent causes of unemployment. The underlying changes in the unemployment rate are also influenced by cyclical factors, such as shifts in the total amount of domestic and international demand for goods and services (i.e., the volume of international trade), and institutional factors, such as the existence of powerful labor unions and labor laws (Bakare, 2011). Low economic growth, a hostile international trade policy framework, inadequate education, a lack of skilled labor, and unfavorable labor laws are just a few of the major contributors to unemployment in Nigeria.

International trade is the exchange of capital, goods, and services across international borders or territories. For most countries, such trade represents a significant share of Gross Domestic Product (GDP). While international trade has existed throughout history, its economic, social and political importance has been on the rise. International trade is very important in the expansion of the economy of a country because it allows for the development of markets, creates employment, reduces the rate of poverty and breaks monopolies by discouraging the domination of a market by a few.

Following the 2008 financial crisis, countries worldwide are seeking ways to revive economic growth, with export-led growth being a promising pathway. Government policies aim to increase export competitiveness, which involves the ability to sell domestically produced goods and services on global markets. Competitiveness is defined by factors such as product quality, innovation, and capacity to adjust to customer needs. If competitiveness worsens, tradable goods produced abroad become cheaper, leading to decreased demand, less incentive to shift resources, and reduced capital inflows. Insufficient competitiveness can lead to economic downswing, unemployment, stunted tradable goods sector, reduced long-run growth, and an unviable external position (Ketels, 2010). On the other hand, economic development in a country is often influenced by its specialization in production and trade. Adam Smith's concept of division of labor and specialization, as well as the Heckscher-Ohlin Samuelson model, suggests that countries should specialize in producing goods with a comparative advantage. However, post-World War II, export diversification was suggested as a means to achieve economic growth and development. Developing countries, like Nigeria, often rely on a small range of agricultural commodities, leading to export instability and adverse impacts on investment and employment. Diversifying exports can help overcome these constraints (Ghosh & Ostry, 1994; Bleaney & Greenaway, 2001).

Nigeria's unemployment rate has been steadily increasing over the past decade, despite massive reconstruction and public sector investments post-Civil War. The country's economy has seen a significant increase in revenue through oil boom, but this has not necessarily led to a reduction in unemployment. To address this issue, international trade flow has been considered an ideal strategy. However, concerns over job loss due to import competition and deindustrialization have been raised. Government policies have been implemented to diversify the country's export base, including export promotion strategies and internship programs, but the effectiveness of these policies remains uncertain.

Some empirical studies like Guneri and Erunlu, (2020); Li *et al.*, (2019); Awad and Yussof, (2016); and Naude and Rossoow, (2011); found international trade policies effective in reducing unemployment rate. Other studies like Mohler *et al.*, (2018); Yolanda, (2017); Gozgor, (2014); and Medani and Zabihi, (2012); mixed evidences. This clearly establishes a case of disagreements in both empirical and theoretical evidences. Fewer studies on the effect of international trade on unemployment rate exist for the Nigerian economy and these studies adopted different proxies (measurements) of international trade variable and also different methodologies for instance Kareem, (2010); and Otto *et al.*, (2018); measured international trade as the value of import and export, while Nweke *et al.*, (2015); used trade openness as a proxy for international trade. These proxies are too elementary and no longer applicable to the current realities. Hence the use of export diversification and export competitiveness as a more suitable measure in the study. To achieve the aforementioned, two export indices are considered in this study. These are the export diversification

index and exports competitiveness index as they make for more robust interrogations. More so, previous studies used the ordinary least squares, vector error correction mechanism and the Engle – Granger co-integration test respectively. These methods failed to explain whether current unemployment rate in the country is partly determined by international trade as recorded in recent past years. These highlight the dynamic nature of the relationship which has largely been ignored in previous studies and therefore calls for a more suitable method such as the autoregressive distributed lag (ARDL) model which makes for a more in-depth analysis. Suffice it to say that this approach (ie the use of export diversification and export competitiveness as proxies for international trade as well as, the use of ARDL model) has not been sufficiently explored in extant literature thereby creating a gap in the literature which the present study hopes to fill.

## Literature Review

### (a) Concept of Unemployment

Unemployment is a phenomenon of job-seeking resulting out of joblessness. The International Conference of Labour Statisticians (ICLS) of the International Labour Organization (ILO) considers a person of working age to be unemployed if during a specified reference period (either a day or a week), that person had been: (i) without work, not even for one hour in paid employment or self-employment of the type covered by the international definition of employment; (ii) currently available for work, whether for paid employment or self-employment; and (iii) Seeking work, by taking active steps in a specified recent period to seek paid employment or self-employment.

In effect, a jobless person who is available for work but fails to make an effort to seek work is described as a discouraged worker rather than unemployed. Additionally, a person who is working but engages in job-seeking for the purpose of obtaining additional income or diversifying his/her job portfolio among other reasons as a moonlighter cannot be described as unemployed (Baah-Boateng, Adjei & Oduro 2013).

### b.) Concept of International Trade

International trade is exchange of capital, goods, and services across international borders or territories. As discussed earlier, international trade will be proxy by two (2) concepts which are discussed below.

#### *Concept of Export Competitiveness*

Export competitiveness is defined differently by scholars, with Porter's framework focusing on productivity (Porter, 1990; Porter, 1998). The World Global Competitiveness Report agrees with Porter's definition, but it's important to differentiate between traded and non-traded sector industries. Competitiveness is related to a nation's economic health, not just productivity. A better definition is value-added, which is the amount of value traded sector firms add to inputs. This study defines export competitiveness as a region or country's ability to export more in value-added terms than it imports, considering government discounts and import barriers.

#### *Concept of Export Diversification*

Export diversification, by definition is the changing of a country's export structure. This can be attained by changing the existing basket of commodities or by embellishing them through innovation and technology. Dennis and Shepherd (2007) define export diversification as widening the range of products that a country exports. As a matter of fact, export diversification can take two forms, namely, horizontal and vertical. Horizontal diversification causes changes in the primary export mix in order to reduce the effect of the fluctuation of global commodity prices. It also implies that the number of export sectors has increased. This reduces the dependency on a few sectors to lead export-oriented growth (Marianne, Matthee & Wim Naudé, 2008). It brings forth stabilisation in export earnings (Al-Marhubi, 2000). On the other hand, vertical diversification involves contriving further uses for existing and new innovative commodities by means of value-added ventures such as processing and marketing (United Nation, June 2004). Vertical diversification occurs when the export mix of a country shifts from primary products to manufactured products. The production of primary exports does not result in as many spill-overs as the production of manufactured exports (Marianne Matthee & Wim Naudé, May 2008).

## Empirical Literature

Awad and Yussof (2016), empirical studies examining whether exposure to international trade creates or destroys jobs produce inconclusive findings. They examined the impact of international trade policies on unemployment for 10 Arab countries over the period of 1991–2012 using a theoretical framework incorporating trade and search-generated unemployment. In addition to the trade policy measurements, their study controls for variables that represent macroeconomic policies; demographic change (population); governance, institutional quality and labour market regulation. Using different proxies for trade policies, the results of the pooled mean group (PMG) show that trade liberalization policies have a positive impact on unemployment in the long run, but a negative impact in the short run. The finding supports contemporary calls to participate in international trade to facilitate job creation. However, further studies are required to identify the specific channels through which trade policies can affect unemployment in the Arab region. They examined the impact of international trade policies on unemployment for 10 Arab countries and also included variables that represent macroeconomic policies; demographic change, governance, institutional quality and labour market regulation.

Yolanda (2017) studied the impacts of export development on unemployment in Indonesia. The study analyzes the effect of interest rate (BI Rate), Foreign Direct Investments (FDI), inflation and Rupiah exchange rate on Indonesian export performance by using data from 1986–2016 with multiple linear regression analysis. The impact of the export development is on unemployment. In the period 1986–2016 Indonesian exports in general showed a positive development despite a decline in the period 2012–2016. The study finds that BI rate has a negative and significant effect on export, positive and significant on Foreign Direct Investments, positive and significant on inflation and positive and significant influence on exchange rate toward Indonesian exports. While the impact of export development on unemployment is positive and significant, it reflects that export activities do not absorb much labor. This study centers on the Nigerian economy with different attributes from Indonesia. Making it necessary to investigate whether export development as captured by the export indices used in this study would result to similar or different results.

Mohler, Weder, and Wyss (2018), motivated by the rising unemployment rate of low-skilled relative to high-skilled labour in Switzerland. Between 1991 and 2014, Switzerland experienced the highest relative increase in the low-skilled unemployment rate among all OECD countries. The study states that the natural culprit for this development is globalization as indicated by some mass layoffs in Switzerland and as commonly voiced in public debates all over the world. The analysis, which is based on panel data covering the years 1991 to 2008 and approximately 33,000 individuals employed in the Swiss manufacturing sector, does not, however, confirm this presumption. The study did not find strong evidence for a positive relationship between import competition and (low-skilled) individuals' likelihood of becoming unemployed.

Otto, Egbuche and Kalu. (2018), studied the effect of foreign trade on unemployment in Nigeria. The study queried the international trade impact on unemployment in Nigeria, 1981–2017. This work proxy unemployment (UNE) as regressand, import (MPT), export (XPT), exchange rate (EXR) and EDB ranking served as regressors. Descriptive statistic and ECM were employed for data analysis. The result elicited long run relationship exists between trade and work force cutback, determined from the Engle-Granger co-integration test. Import reduced unemployment, but exports, currency rate plus ease of doing business increased unemployment from 1981–2017. Like previous studies reviewed above for the Nigerian economy, the possible reason for these outcomes are probably due to the country trading majorly in primary products which are largely uncompetitive and the non-diversification of the productive base of the economic such as the overdependence on oil exports.

Onifade, Ay, Asongu and Bekun (2019), explores the link between trade and unemployment for the case of Nigeria with the intention of exploring how the unemployment crisis has been impacted within the dynamics of the country's trade performance. The empirical evidence shows that the nation's terms of trade were insignificant to unemployment rate while trade openness and domestic investment, on the other hand, have significant opposing impacts on unemployment in Nigeria over the period of the study. Further breakdowns from the empirical analysis also revealed that the Philips curves proposition is valid within the Nigerian economic context while the evidences for the validity of Okun's law only exist in the short-run scenario.

Guneri and Erunlu (2020) investigates the effects of trade liberalization and export diversification on unemployment rate for a group of OECD countries for the period between 1991 and 2014. Using several liberalization and export diversification indices as well as various control variables, the results of the empirical analysis show that as countries

engage more in international trade and diversify their export baskets, unemployment rate decreases. Thus, it can be argued that OECD countries should follow policies that are in favor of trade liberalization rather than protectionism. Moreover, diversification of export baskets instead of specialization is of great importance in decreasing the unemployment rate. The present study focused on the Nigerian economy in order to verify if actually by diversifying its export baskets can generate more jobs for the unemployed.

## Research Methods

### Theoretical Framework

The study anchors on a hybrid of theories starting with the Keynesian theory of unemployment to the Heckscher-Ohlin (H-O) theory and then the Stolper-Samuelson (S-S) theorem respectively. The H-O theory believes that the factor endowment of a nation or region determines the patterns of trade and production in that region. It states that countries should export products that use their abundant and cheap factor, and import products that use the country scarce factor. This also implies that the aggregate preferences are the same. The relative abundance in capital will cause the capital-abundant country to produce the capital-intensive good cheaper than the labor-abundant country and vice versa. This theory considers a two-country, two-commodity and two-factor (labour and capital) case. As a result of the abundance of land and unskilled labor in Africa, H-O implied that developing countries would specialize in producing primary items in which they have a competitive advantage. Indeed, as a country specialized in the manufacture and export of primary commodities, a major thrust of what became the Heckscher-Ohlin-Samuelson (HOS) framework was that employment would eventually be re-distributed from the import-substituting sector to the export sector. If commerce is able to stimulate growth, it has the potential to increase employment through derived demand.

The Stolper-Samuelson theory, on the other hand, provides a one-to-one correlation between product and factor prices, implying that trade liberalization would likely increase demand for resources utilized in commodity export production. The Stolper-Samuelson (S-S) theorem assumed two homogeneous goods A and B, each produced under constant returns to scale using labor L and capital K, but with good A using more capital than good B and good B using more labor. This means that good A requires a lot of finance, whereas good B requires a lot of lobbying. Both elements are considered to be freely mobile between industries in the two nations and fixed in total supply.

Mathematically expressed as:

$$L_A + L_B = L$$

$$K_A + K_B = K$$

The assumption of full employment holds here and this implies that the economy's overall capital-labour ratio K can be expressed as the weighted average of capital-labour ratio  $K_A$  and  $K_B$  used in the two industries.

$$\lambda_A K_A + \lambda_B K_B = K,$$

where  $\lambda_A = L_A/L$  and  $\lambda_B = L_B/L$  are the shares of the total labour supply used in the two industries,  $\lambda_A + \lambda_B = 1$ . Thus, as the production mix moved towards specialization in good A and  $\lambda_A$  approaches unity, the capital-labour ratio used in good A production must fall towards K.

The assumption of perfect competition and factor mobility imply that the equilibrium factors wage (w) and rent (r) are equal across industries and the returns to each factor is equal to the value of its marginal product in the industry: thus,

$$w = P_A$$

The ratio of the marginal physical products of the two factors must therefore be equal across industries.

Because many African countries have a comparative advantage in the export of labor-intensive goods, trade liberalization is likely to result in an increase in labor employment. As a result, protectionist policies would limit commodity output and, as a result, employment. Trade policy, particularly export liberalization, on the other hand, would boost employment in industries that produce the commodity that would benefit from liberalization. However, such a commodity does not have to be a primary product. Indeed, resource commodity production (mining) is likely to be relatively capital intensive, with little effect on employment. The essential question is hence whether export

diversification implies more labor-intensive production and, as a result, more employment than primary product production (UNCTAD, 2018).

### Model Specification

In outlining the theoretical framework, this research follows the exposition of Onifade *et al* (2019) which states there model as:

$$LnUNEMP = \beta_0 + \beta_1 LnTOPEN + \beta_2 LnTOT + \beta_3 LnINFLAT + \beta_4 LnDOMINVS + \beta_5 LnRGDPC + \mu_t \quad (3.1)$$

Where  $LnUNEMP$  is national unemployment rate;  $LnTOPEN$  is trade openness, measured as the sum of total imports and exports as a ratio of the GDP;  $LnTOT$  is terms of trade, measured as the percentage ratio of the export unit value indexes to the import unit value indexes, calculated relative to the base year 2000;  $LnINFLAT$  is consumer price index inflation rate;  $LnDOMINVS$  is domestic investment proxied by real gross capital formation measured as percent of the GDP; and  $LnRGDPC$  is real gross domestic product per capita which captures the market size of the Nigerian economy.

In order to achieve the objective of the study, two major indicators for international trade were used; namely export diversification index and export competitiveness index. This study also explore three other critical factors which contribute to high level of unemployment rate in Nigeria. These include population growth, power (electricity) generation, and quality of institution. Therefore, the study propose a modified version of the Onifade *et al* (2019) model in a way that makes it more realistic model that can accommodate unemployment variations in Nigeria. Thus, we present the following statistical model:

$$UNR = f(XDIV, XCI, INF, GCF, PG, EG, QS) \quad (3.2)$$

Where  $UNR$  is unemployment Rate;  $XDIV$  is export diversification index;  $XCI$  is export competitiveness index;  $INF$  is inflation rate;  $GCF$  is gross fixed capital formation;  $PG$  is population growth;  $EG$  is electricity generation; and  $QS$  is quality of institution.

We rewrite (3.2) in an econometric form as:

$$LnUNR = \beta_0 + \beta_1 LnXDIV + \beta_2 LnXCI + \beta_3 LnINF + \beta_4 LnGCF + \beta_5 LnPG + \beta_6 LnEG + \beta_7 LnQS + \mu_t \quad (3.3)$$

Equation 3.3 implies that unemployment (UNR) in the current period depends on the current level of export diversification, export competitiveness, inflation, gross capital formation, population growth, electricity generation and quality of institution. In most case, the current behaviour of most economic variables may be explained by past behaviour of its fundamentals. This implies that unemployment in the current period may be explained by the current and past behaviour of export diversification, export competitiveness, inflation, gross capital formation, population growth, electricity generation and quality of institution. Therefore, to capture this possibility, we express equation 3.3 in its dynamic form. We obtain the following distributed lag (DL) model.

$$LnUNR_t = \beta_0 + \beta_1 LnXDIV_{t-1} + \beta_2 LnXCI_{t-1} + \beta_3 LnINF_{t-1} + \beta_4 LnGCF_{t-1} + \beta_5 LnPG_{t-1} + \beta_6 LnEG_{t-1} + \beta_7 LnQS_{t-1} + \mu_t \quad (3.4)$$

Where,  $LnXDIV_{t-1}$ ,  $LnXCI_{t-1}$ ,  $LnINF_{t-1}$ ,  $LnGCF_{t-1}$ ,  $LnPG_{t-1}$ ,  $LnEG_{t-1}$ , and  $LnQS_{t-1}$ , are lagged series of export diversification, export competitiveness, inflation, gross capital formation, population growth, electricity generation and quality of institution respectively. Where  $i-1$  is the maximum lag length. The appropriate lag length is determined using either the Akaike Information Criterion (AIC) or Schwarz Information Criterion (SIC) or both.

### Result Presentation

Descriptive statistics were first obtained, after which the preliminary test results, which are necessary to determine the best befitting method of estimation to use. In addition to the descriptive statistics, results presented include the unit root test, ARDL result, ARDL bounds cointegration test, and residual and stability test in that order. Summarily, the result presentation starts with the preliminary tests results and rounds off with the diagnostics tests.

**Result of the Descriptive Statistics****Table 1: Descriptive Statistics**

	<b>UNR</b>	<b>XDIV</b>	<b>XCI</b>	<b>INF</b>	<b>GCF</b>	<b>PG</b>	<b>EG</b>	<b>QS</b>
Mean	13.60250	5.922258	0.138370	24.17375	1454558.	2.583884	109.7952	2.598813
Median	12.05000	5.970840	0.067024	18.27500	351596.2	2.576310	98.55668	2.630556
Maximum	33.30000	6.216210	0.810878	72.80000	5488391.	2.719177	167.1301	3.000000
Minimum	1.900000	5.129960	0.016685	5.400000	8799.480	2.495003	50.70674	1.602500
Std. Dev.	10.22111	0.207338	0.171369	17.52918	1802916.	0.066317	33.06707	0.349918
Skewness	0.598719	-1.896297	2.335761	0.989515	0.957858	0.291479	0.342123	-0.908416
Kurtosis	1.984187	7.514802	8.112492	3.025603	2.423321	1.885169	1.815665	3.465605
Jarque-Bera	4.109554	57.94533	79.93449	6.528691	6.670878	2.637815	3.118070	5.862780
Probability	0.128121	0.000000	0.000000	0.038222	0.035599	0.267427	0.210339	0.053323
Sum	544.1000	236.8903	5.534783	966.9500	58182302	103.3554	4391.809	103.9525
Sum Sq. Dev.	4074.370	1.676578	1.145332	11983.61	1.27E+14	0.171518	42643.82	4.775274
Observations	40	40	40	40	40	40	40	40

**Source: Researchers' Computation using Eviews 10**

The result on Table 4.1 shows the descriptive statistics of the study data for the Model computed between 1981 and 2020 for the variables of the study. The relevant results in the table include the mean, median, maximum and minimum and the Jarque-Bera statistics with its estimated probability and the variables of interest are the unemployment rate and international trade as proxied by export diversification and export competitiveness.

From the result on Table 4.1 that the mean values which gives the average value for each of the variables are 13.6 for unemployment rate, 5.9 for export diversification, 0.1 for export competitiveness, 24.2 for inflation rate, 1454558.0 for gross capital formation, 2.6 for population growth rate, 109.8 for electricity generation, and 2.6 for quality of institution. The median simply tells us the middle values of each of the variable under study and they are 12.05 for unemployment rate, 5.97 for export diversification, 0.07 for export competitiveness, 18.28 for inflation rate, 351596.2 for gross capital formation, 2.58 for population growth rate, 98.56 for electricity generation, and 2.63 for quality of institution, while the maximum and minimum values tells u the highest and lowest figures in each of the variable. The standard deviation of 10.22 for unemployment rate, 0.21 for export diversification, 0.17 for export competitiveness, 17.53 for inflation rate, 18799.5 for gross capital formation, 2.50 for population growth rate, 50.71 for electricity generation, and 1.60 for quality of institution shows the deviation from the sample mean with respect to each of the variable.

The skewness measures the degree of asymmetry of the series. From Table 4.1 population growth rate and electricity generation with skewness of 0.2 and 0.3 respectively, mirrors a normal distribution that is, the distribution is symmetric around its mean. Unemployment rate, export competitiveness, inflation rate, and gross capital formation with skewness of 0.5, 2.3, 0.9, and 0.9 respectively has a positive skewness (long right tailed) this mean more higher value than the sample mean, while export diversification and quality of institution with skewness of -1.8 and -0.9 has a negative skewness (long left tailed) this means more lower value than the sample mean. The kurtosis on the other hand, measures the peakness or flatness of the distribution of the series. From Table 4.1 inflation rate and quality of institution with kurtosis of 3 and 3.4 respectively are mesokurtic which means a normal distribution. Export diversification and export competitiveness with kurtosis of 7.5 and 8.1 respectively are said to be leptokurtic which means positive kurtosis ( $7.5 > 3$  and  $8.1 > 3$ ), while unemployment rate, gross capital formation, population growth rate, and electricity generation with kurtosis of 1.9, 2.4, 1.9, and 1.8 respectively are said to be platykurtic which means negative kurtosis ( $1.9 < 3$ ,  $2.4 < 3$ ,  $1.9 < 3$ , and  $1.8 < 3$ ). The Jarque-Bera statistic measures the difference between the skewness and kurtosis of each of the variables from those of a normal distributed variable. From the summary statistics, unemployment rate, population growth rate and electricity generation are said to be normally distributed, while export diversification, export competitiveness, inflation rate, gross capital formation, and quality of institution are not.

### Unit Root Test Result

The importance of unit root test is to identify which of the variables has unit root or not, and also to ascertain the order of integration of the variables in order to apply necessary precautions to overcome the problem of spurious results characterized by the use of ordinary least squares (OLS) regression involving non-stationary variables. In view of the aforementioned above, the Perron unit root tests have been carried out on the relevant time series. The Perron unit root test was chosen ahead of the ADF and PP tests because the latter display weak power in the face of structural breaks. Hence, the use of the Perron unit root test that allows for unknown structural break as reported on Table 2.

**Table 2: Perron Unit Root Test (Showing the Break Year)**

Variable	Perron Unit Root Test	Order of Integration	Structural Break Year
LNUNR	-10.21924	1(1)	1999
LNxDIV	-5.045560***	1(0)	2013
LNxCI	-6.013154	1(1)	1988
LNINF	-7.639356	1(1)	1988
LNGCF	-5.773130**	1(1)	1987
LNPG	-8.284162	1(1)	2012
LNEG	-5.059312***	1(0)	2003
LNQS	-7.736710	1(1)	2007

NB: \*\* implies significant at 5% level; \*\*\* implies significant at 1% level.

*Source: Researchers' computation using Eviews 10*

From Table 2, the result of the Perron unit root test shows that, variables such as LNUNR, LNxCI, LNINF, LNGCF, LNPG, and LNQS are non-stationary at their level state but became stationary after first differencing. This implies that the variables in question are integrated at order one, 1(1). However, the result reveals that variables such as LNxDIV and LNEG are stationary at their level state, meaning they are order one variables, 1(0). At the same time, the test identifies endogenously the point of the single most significant break year in each of the variables examined. It should be noted that the break years as identified above have important implications. As opined by Piehl et al. (1999), the knowledge of break point is central for accurate evaluation of any programme intended to bring about structural changes such as tax reforms, banking sector reforms, trade reforms and regime shift, etc. The structural break that took place in Nigeria as identified by the Perron test are as follows: For unemployment rate it was in 1999 which was the year Nigeria moved to a democratic system of government. Export diversification was in 2013 and it's as a result of various government trade policies (most importantly export promotion policies). Export competitiveness, inflation rate, and gross capital formation all happened in 1988, 1988, and 1987 respectively. This was an aftermath of the structural adjustment program of the government in 1986. Electricity generation on the other hand took place in 2003 can be liken to the effect of the power sector reform of the Nigeria government in 2001 which ultimately led to the unbundling and privatisation of electricity generation and distribution companies. Finally, population growth rate and quality of institution occurred in 2012 and 2007 respectively.

### Cointegration Test

The cointegration test which shows the existence of a long-run relationship between the variables under consideration is tested using the Bound F-statistic (bound test for cointegration). It is carried out on each of the variables as they stand as endogenous variable while others are assumed as exogenous variables. In doing this, current values of the said variable(s) are excluded from ARDL model approach to cointegration. The F-statistic is carried out on the joint null hypothesis that coefficients of the lagged variables are zero. The distribution of this F-statistic is non-standard, irrespective of whether the variables in the system are I(0) or I(1). They give two (2) sets of critical values: the first assumes that the variables are I(0) (that is, lower critical bound) and second assuming that all the variables are I(1) (that is, upper critical bound). If the computed F-statistic is greater than the upper bound critical value, then the variables are cointegrated. If the F-statistic is below the lower bound critical value, then there is no cointegration. Finally if the computed F-statistic falls within the critical value band, the result of the inference is inconclusive and depends on whether the variables in question are of I(0) or I(1). The results of the bound test for cointegration are summarized on Table 3:

**Table 3: Bound Test Result for Cointegration (LNUNR)**

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.332565	10%	2.03	3.13
k	7	5%	2.32	3.5
		2.5%	2.6	3.84
		1%	2.96	4.26

*Source: Researchers' Computation using Eviews 10*

From the result on Table 4.3, it shows that there is cointegration among the underlying variables. In other words, there exists a long-run relationship among the variables under study. This is seen in the F-statistic figure of 4.332565 which is greater than the critical value at 1% of the upper critical bound I(1) value of 4.26.

### Estimated Long Run ARDL Result

Having established the existence of long-run relationship between the aggregate unemployment and the chosen explanatory variables, we go ahead to estimate the long-run coefficients of the model. Table 4.4 shows the estimated coefficients derived from the ARDL result as presented below:

#### (a) The Aggregate Unemployment Model

**Table 4: Estimated ARDL Result for Long-run and Lag Coefficients for the Unemployment Model.**

Dependent Variable: LNUNR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNxDIV	-7.914705	4.860368	-1.628417	0.1243
LNxCI	-1.044875	0.466794	-2.238407	0.0408
LNINF	-0.793832	0.331153	-2.397174	0.0300
LNGCF	-0.060579	0.230763	-0.262514	0.7965
LNPG	11.36327	9.142290	1.242934	0.2330
LNEG	-0.582007	1.414950	-0.411327	0.6866
LNQS	-2.411117	1.223821	-1.970155	0.0676

*Source: Researchers' Computation using Eviews 10*

Table 4 shows the long run result for the aggregate unemployment rate model. From the result export diversification has no significant effect on unemployment rate in the long run. Export competitiveness on the other hand, has a long run negative significance on unemployment rate which means a 1% increase in export competitiveness will result to a 1% decrease in unemployment rate. The lag value of both export diversification and export competitiveness was found not to have a statistically significant effect on unemployment rate.

Other variables like gross capital formation, population growth rate, electricity generation and quality of institution were also found not to have a statistically significant effect on unemployment rate be it current or lag values. Inflation rate on the other hand, was seen to have a statistically significant negative effect on unemployment rate so also its lag value was also found to have a statistically significant negative effect on unemployment rate. That is, for a 1% increase in inflation rate (current and lag value), unemployment rate is expected to be reduced by 0.8% and 0.5% respectively.

### Estimated Short Run ARDL Result

The error correction model results give the short run dynamics of the variables in question for all the models considered in the study. The results of the short run models are in its parsimonious form using general to specific framework of specification derived from its over parameterized version. In other words, the result presented here deals with the variables that have relationship with the dependent variable in the short run. It is important to note here that all the cointegrating vectors in our models show a negative significant sign meaning the models will surely converge to its equilibrium position in the long run after a short run shock. Table 5 shows the estimated coefficients error correction model derived from the ARDL result as presented below:

**(a) The Aggregate Unemployment Model**

The result on Table 4.5 shows that the estimated aggregate unemployment model has a relatively high coefficient of determination. This could be seen from the values of the R-squared and Adjusted R-squared of about 0.782313 and 0.633890 respectively. The R-squared shows that about 78.0% of total variations in aggregate unemployment are accounted for by variations in the explanatory variables of the model. On the other hand, the value of the adjusted R-squared suggests that even in the face of losses in degree of freedom, the explanatory variables still account for about 63.0% of the total variations in aggregate unemployment. The value of the F-statistic is 5.270832 with probability value of 0.000248, which is statistically significant at 1% level. This implies that the overall model is robust and as such, all the explanatory variables jointly explain variations in aggregate unemployment. The Durbin-Watson (DW) statistic is about 2.4 which is approximately 2, meaning it is safe to conclude that the estimated model is not plagued by autocorrelation of any order.

**Table 5: Estimated Error Correction Model (ECM) for Aggregate Unemployment Model**

Dependent Variable: D(LNUNR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.357250	0.462450	7.259703	0.0000
D(XDIV)	-0.174117	1.146914	-0.151813	0.8814
D(XDIV(-1))	2.392905	1.262973	1.894661	0.0776
D(XCI)	-0.089130	0.148486	-0.600258	0.5573
D(XCI(-1))	0.043205	0.143393	0.301307	0.7673
D(INF)	-0.277148	0.061017	-4.542133	0.0004
D(INF(-1))	0.267068	0.069289	3.854384	0.0016
D(GCF)	-0.266389	0.202844	-1.313270	0.2088
D(GCF(-1))	-0.376905	0.201471	-1.870761	0.0810
D(PG)	12.90930	9.240288	1.397067	0.1827
D(PG(-1))	19.95063	8.355763	2.387649	0.0806
D(EG)	0.197492	0.324483	0.608636	0.5519
D(EG(-1))	0.534737	0.276055	1.937069	0.0718
D(QS)	-0.397663	0.722257	-0.550583	0.5900
D(QS(-1))	-0.233444	0.743085	-0.314155	0.7577
CoIntEq(-1)*	-0.690427	0.096836	-7.129897	0.0000

R-squared = 0.782313

Adjusted R-squared = 0.633890

F-statistic = 5.270832

Prob. (F-statistic) = 0.000248

Durbin-Watson statistic = 2.467024

*Source: Researchers' Computation using Eviews 10*

From the ECM result for model 1, only inflation rate is seen to have a statistically significant negative effect on aggregate unemployment in the short run. That is a 1% increase in inflation rate will result to a 0.28% increase in aggregate unemployment in the short run. On the other hand, the lag values of inflation rate was also seen to have a statistically significant positive effect on unemployment rate in the short run. This means a 1% increase in lag value of inflation rate will bring about a 0.27% increase in unemployment rate.

Other variables like export diversification, export competitiveness, gross capital formation, population growth, electricity generation, and quality of institution were all found not to have any statistically significant effect on unemployment rate in the short run.

**Residual Diagnostic Tests****(a) Serial (Auto) Correlation of the Residual**

The Breusch-Godfrey Serial Correlation LM test was used to test for serial correlation of the residuals for the aggregate and other categories of the unemployment models as seen on Table 6.

**Table 6: Breusch-Godfrey Serial Correlation LM Test**

<b>Model</b>	<b>F-statistic</b>	<b>Prob.</b>
Aggregate Unemployment Model	2.301877	0.1394

*Source: Researches' Computation using Eviews 10*

From the result on Table 4.6, the probability value of the F-statistic for the unemployment model is more than 0.05. Thus, we could not reject the null hypothesis of no-autocorrelation at 5% level of significance. Therefore, we conclude that unemployment is not plagued by the problem of serial correlation of any order.

### (b) Heteroskedasticity Test

The Breusch-Pagan-Godfrey test was used to test for heteroskedasticity for the aggregate and other categories of the unemployment models as seen on Table 7.

**Table 7: Breusch-Pagan-Godfrey Heteroskedasticity Test**

<b>Model</b>	<b>F-statistic</b>	<b>Prob.</b>
Aggregate Unemployment Model	1.532502	0.1992

*Source: Researcher's Computation using Eviews 10*

The results from Table 7, shows that the probability value of the F-statistic of the unemployment model is greater than 0.05. As such, we could not reject the null hypothesis of homoscedasticity (constant variance of the residuals) at 5% level of significance. Thus we safely conclude that the residual of the unemployment model is homoscedastic, meaning that the variance of the residual in the model is constant throughout the observations.

### (c) Normality Test

One of the assumptions of the OLS regression is that the error term is normally distributed, hence the need for the normality test. Thus, the normality of the residuals in each model was carried out using the Jaque-Bera (JB) normality test as shown on Table 8.

**Table 8: Jaque-Bera Normality Test**

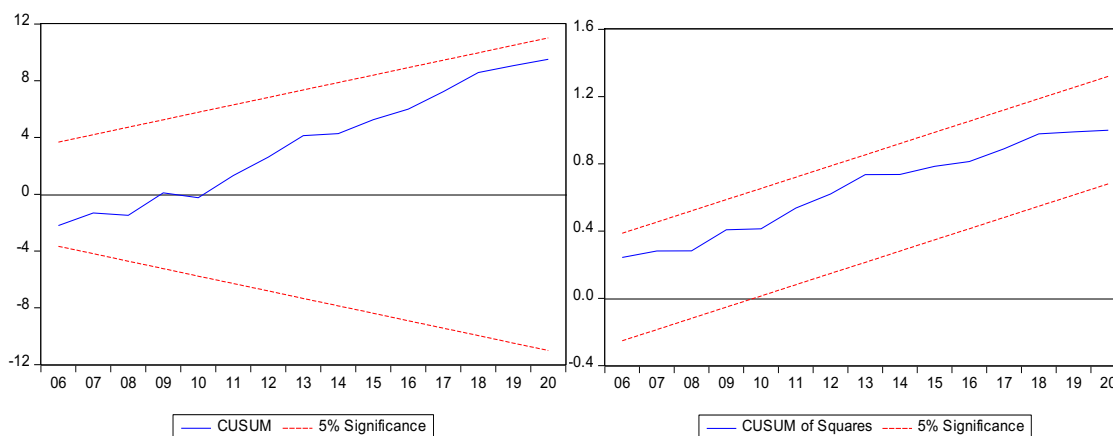
<b>Model</b>	<b>F-statistic</b>	<b>Prob.</b>
Aggregate Unemployment Model	2.284048	0.319172

*Source: Researchers' Computation using Eviews 10*

From the results on Table 8 the probability value associated with the JB statistic is more than 0.05 for the unemployment model. We therefore could not reject the null hypothesis of normality of the residuals at 5% level of significance. Hence, we conclude that the error term in the model is normally distributed.

### (d) Stability Test

It is important to test the consistency of the long run coefficients of each model over the period under study. This is to ensure the reliability of these coefficients for long term policy formulation. The cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMQ) were used to test the stability of each model and the results are reported in Figures 1.



**Figure 1: Stability Test of Aggregate Unemployment Model**

From Figure 1, it is apparent that the estimated long run coefficients of the unemployment is dynamically stable over the time period under review. This is because the fitted line (appearing in thick blue ink) for the unemployment model falls within the upper and lower bounds (represented by the dotted red line) at the 5% level of significance for both the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMQ).

### Evaluation of Research Hypotheses

In line with the objectives of this study, the two hypotheses that were formulated to guide the study are restated and evaluated as follows:

1. **H<sub>0</sub>**: Export diversification does not have a significant effect on aggregate unemployment rate in Nigeria.  
**H<sub>1</sub>**: Export diversification have a significant effect on aggregate unemployment rate in Nigeria.

From the long run result on Table 4.10, the coefficients of export diversification is -7.9, with probability of t-value of 0.12. Since the probability significance of the t-value for export diversification is 0.12 which is greater and 0.05, we do not reject the null hypothesis and conclude that export diversification do not have significant effect on aggregate unemployment in the long run. From the short run result on Table 4.14, the coefficient for export diversification is -0.17, with probability of t-value of 0.88. Since the probability significance of the t-value for export diversification is 0.88, which is greater than 0.05, we do not reject the null hypothesis and conclude that export diversification has no significant effect on aggregate unemployment in the short run.

From the long run result of the ARDL model, the coefficient of the lag value of export diversification LNXDIV (-1) is -5.46, with probability significance of t-value of 0.13. Since the probability significance of t-value for export diversification is 0.13 which is greater than 0.05, we do not reject the null hypothesis and conclude that the lag value of export diversification has no significant effect on aggregate unemployment in the long run. From the short run result of the ARDL model, the coefficient of the lag value of export diversification LNXDIV (-1) is 2.39, with probability significance of t-value of 0.07. Since the probability significance of t-value for export diversification is 0.07 which is greater than 0.05, we do not reject the null hypothesis and conclude that the lag value of export diversification has no significant effect on aggregate unemployment in the short run.

2. **H<sub>0</sub>**: Export competitiveness does not have a significant effect on aggregate unemployment rate in Nigeria.  
**H<sub>1</sub>**: Export competitiveness have a significant effect on aggregate unemployment rate in Nigeria.

From the long run result on Table 4.4, the coefficients of export competitiveness is -1.04, with probability of t-value of 0.04. Since the probability significance of the t-value for export competitiveness is 0.04, which is less than to 0.05, we reject the null hypothesis and conclude that export competitiveness has a significant effect on aggregate unemployment in the long run. From the short run result on Table 4.5, the coefficient for export competitiveness is -0.08, with probability of t-value of 0.55. Since the probability significance of the t-value for export competitiveness

is 0.55, which is greater than 0.05, we do not reject the null hypothesis and conclude that export competitiveness has no significant effect on aggregate unemployment in the short run.

From the long run result of the ARDL model, the coefficient of the lag value of export competitiveness LNXCI (-1) is -0.72, with probability significance of t-value of 0.06. Since the probability significance of t-value for export competitiveness is 0.06 which is greater than 0.05, we do not reject the null hypothesis and conclude that the lag value of export competitiveness has no significant effect on aggregate unemployment in the long run. From the short run result of the ARDL model, the coefficient of the lag value of export competitiveness LNXCI (-1) is 0.04, with probability significance of t-value of 0.76. Since the probability significance of t-value for export competitiveness is 0.76 which is greater than 0.05, we do not reject the null hypothesis and conclude that the lag value of export competitiveness has no significant effect on aggregate unemployment in the short run.

### **Discussion of Findings/Policy Implications**

The main objective of this work is to examine the effect of international trade as proxied by export diversification and export competitiveness on unemployment rate in Nigeria. The study also disaggregated unemployment rate into various categories - male, female, rural and urban unemployment. In pursuance of these objectives, the following findings were made.

#### **Aggregate Unemployment Model**

##### **1. Aggregate Unemployment and Export Diversification**

From our findings export diversification was found not to have any statistical significant relationship on aggregate unemployment in Nigeria both in the long and short term. Looking also at the effect of the previous value of export diversification, it was also discovered not to also have any statistical significant effect on aggregate unemployment in Nigeria both in the long and short term. This result suggests that Nigeria as an economy have not fully embrace diversification as a tool to curb unemployment in the country. Nigeria still relies heavily on oil as its major source of export revenue which has overtime experienced fluctuations which is not healthy to any economy. The composition of Nigeria's export basket predominantly consist of primary goods which have inelastic foreign demand and inelastic home demand respectively, and so do not cause significant shifts in domestic demand for labour (or unemployment level). On the other hand, the oil sector in Nigeria has never been a labour intensive industry, this makes it difficult for growth in it to affect aggregate unemployment in the country.

The result of this study supports the work of Naude and Rossouw (2011) which found export diversification not to have effect on unemployment in countries like Brazil and India. But contradicts the work of Guneri and Erunlu (2020) which found export diversification to significantly reduce unemployment in some OECD countries. This study further raise the question, whether export diversification in the developing countries have the potential to reduce unemployment.

##### **2. Aggregate Unemployment and Export Competitiveness**

In the short run export competitiveness is negative but found not to have a significant effect on aggregate unemployment in Nigeria. Its previous value (lag value) was also negative and insignificant to unemployment in Nigeria. This could be that it takes a nation years and years of research and development (R&D) to be able to improve productivity that gives them that competitive edge in the international market.

However, in the long run, export competitiveness was found to have a negative and significant effect on aggregate unemployment in Nigeria. That is, if the government wants to reduce unemployment rate by 1.04% all it needs do is to increase by 1% its level of competitiveness in the international market. This implies that Nigeria can reduce unemployment rate simply by increasing its competitiveness in the international market. Increased competitiveness will bring about increase in export revenue, which results to expansion in the export competing industries which in turn reduces unemployment in the country. The lag value was also negative and slightly significant. Slightly because the probability of the coefficient was 0.06 and not 0.05 the accepted level of significance.

##### **3. Aggregate Unemployment and Inflation**

In the short run, inflation was seen to have a negative and significant effect on aggregate unemployment in Nigeria. This conform to the a priori expectation and it implies that a 1% increase in inflation will reduce unemployment by

0.3% making inflation inelastic to aggregate unemployment in Nigeria in the short term. The lag value of inflation on the other hand, shows a positive and significant effect on aggregate unemployment in the short run. This could be as a result of economic shocks (oil and monetary policy shocks) in the economy.

In the long run, both the current and lag values of inflation shows a negative and significant relationship with aggregate unemployment in Nigeria. This is in line with the Philips curve theory which conformed to our a priori expectation. It implies that a 1% increase in the current and lag value of inflation will bring about a reduction in aggregate unemployment in Nigeria by 0.8% and 0.5% respectively. Our study finds inflation rate to be inelastic to aggregate unemployment rate in Nigeria both in the short and long term.

#### **4. Aggregate Unemployment and Gross Capital Formation**

Gross capital formation shows a negative and insignificant relationship with aggregate unemployment in Nigeria both in the short and long run. The lag values of gross capital formation also show a negative and insignificant effect on aggregate unemployment in Nigeria both in the short and long run. Although the sign conformed to our a priori expectation, a plausible economic intuition for the insignificant effect of gross capital formation on aggregate unemployment is that perhaps Nigeria's gross capital formation is not sufficient enough to create new jobs for the unemployed. It is also possible that the little been generated is pushed to a more capital intensive sector which does not affect the unemployment rate in the country.

#### **5. Aggregate Unemployment and Population Growth**

Population growth rate shows a positive and insignificant relationship with aggregate unemployment in Nigeria both in the short and long run. The long and short run lag value also shows a positive and insignificant effect on aggregate unemployment in Nigeria. This conform to the a priori expectation. A plausible economic intuition for the insignificant effect of population growth rate on aggregate unemployment is that perhaps the rate of growth in population is not sufficient enough to pose a challenge to the labour market in Nigeria.

#### **6. Aggregate Unemployment and Electricity Generation**

Electricity generation shows a positive and insignificant relationship with aggregate unemployment in Nigeria in the short run (both in the current and lag values). On the other hand, it showed a negative and insignificant effect on aggregate unemployment in the long run (both in the current and lag values). The signs of short run results did not conform to the a priori expectation while that of the long run conformed to the a priori expectation. A plausible economic intuition to those is the peculiar state of the Nigerian power sector. The inability of the government to solve the power problem have resulted to it not having a significant effect in reducing unemployment both in the short and long run.

#### **7. Aggregate Unemployment and Quality of Institution**

Quality of institution shows a negative and insignificant relationship with aggregate unemployment in Nigeria in the short and long run respectively. Although the signs conformed to the a priori expectation, a plausible economic intuition for the insignificant effect of quality of institution on aggregate unemployment is that perhaps is the issue bureaucratic bottle necks and of corruption. These are the major reason why institutional quality may not be sufficient in reducing unemployment in Nigeria.

### **Conclusion**

This research on the effect of international trade on unemployment rate in Nigeria stirs from the fact that most studies conducted in this area are cross country analysis. The few studies that tried to look at this nexus in Nigeria made use of different international trade measures. This study however, made use of export diversification and export competitiveness as a measure for international trade which was lacking in most studies carried out in Nigeria. In surveying the literature the researcher was able to understand what has been carried out in the given subject and what have been left unexplored. A hybrid model based on the Keynesian theory of unemployment, Heckschar-Ohlin (H-O) theory and the Stolper-Samuelson (S-S) theorem was adopted as the theoretical framework and with the aid of the Auto-Regressive Distributed Lag (ARDL) model the study was able to achieve its stated objectives of whether the chosen indices of international trade which are export diversification and export competitiveness where significant in affecting unemployment rate in Nigeria.

### **Recommendations**

From the findings, it is pertinent to provide policy recommendations that would be applicable to the Nigerian economy.

- The study recommends that government should encourage competitiveness by giving investment grants and subsidies, and also by tax incentives. This will make the export goods more competitive in the international market and encourage new product development. Also keeping interest rate low is also a good strategy that would encourage investment and in addition, keeping them as stable as possible would increase certainty and reduce risk. This will create jobs for the unemployed and reduce the rate of unemployment in the country.
- The study recommends the diversification of the export basket, this will increase export sectors and also it will reduce the dependence on a limited number of commodities that are subjected to extreme price and volume fluctuations. This will not only boost export earnings.
- The study recommends the use of monetary and fiscal policy measures targeted toward inflation to bring about reduction in aggregate unemployment.
- The study recommends that the institution of government should be strengthened, also unnecessary bureaucratic practices in various ministries, departments and agencies to be checkmated to avoid corrupt practices and should ensure that due process is followed and also training and re-training of staff of the ministries will go a long way to put the country in the right track.

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