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THE DYNAMICS OF TRADE BALANCE IN THE WEST AFRICAN MONETARY ZONE (WAMZ) COUNTRIES

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Abstract

The countries in the West African Monetary Zone (WAMZ) have had a persistent trade deficit despite measures adopted to mitigate these deficits. This prolonged trade deficit has been a cause of concern over the years as it has substantial adverse consequences on the economic performance of the region. The study, therefore, examined the effect of the exchange rate, gross domestic product (GDP), inflation rate, foreign direct investment (FDI), foreign reserves, and external debt on the trade balance in WAMZ countries throughout 1990 to 2018. The study employed the panel unit root test, panel cointegration test, vector error correction mechanism, and variance decomposition based on VECM to analyze the hypothesis. The result shows that FDI impacted negatively on the trade balance. It also shows that an increase in external debt will decrease the trade balance in WAMZ countries. The study recommended an alternative policy to devaluation and measures to stabilize the exchange rate and check its continuous free fall. However, the paper also recommends that various concerned government should pay special attention to export-oriented FDI by creating a conducive environment in order to attract FDI that will promote exports in WAMZ countries.

Keywords: Trade Balance, Exchange Rate, Gross Domestic Product, Foreign Reserves, VECM, WAMZ.

INTRODUCTION

International trade is the exchange of valuable goods and services between countries. Trades worldwide give consumers and countries the prospect to be exposed to items not obtainable in their own countries, or which would be more expensive domestically. Political economists like Adam Smith and David Ricardo (Alias et al, 2018) documented the significance of foreign trade in many dimensions.

Trade globally has increasingly become important, as it significantly contributes to the GDP of most countries. While trade among nations has been there throughout history (Singer, 2008); its, socio-economic and political value have increased in the modern age, largely because of globalization, industrialization, highly developed transportation, multinational corporations, and outsourcing (Alexandra and Tiago, 2016).

The trade balance is the difference between the worth of a country's imports and its exports over a given period. Trade balance also denoted to as the balance of trade or the international trade balance is the largest component of a country's balance of payments (Suphian, 2017). Economists use the balance of payment to measure the relative strength of a country's economy. Trade balance is an essential unit of an economy and it helps to determine the macroeconomic performance of any nation. Countries in Africa like Algeria, Burundi, Cameroon, Liberia and Guinea show large and persistent trade deficits. In contrast, a few developed nations such as Austria, Finland, Germany, Netherlands

and Sweden have experienced trade surpluses (Bahmani-Oskooee and Hanafiah, 2014).

Given the distinctness in the trade balances across countries and time, it is fundamental to ask, regarding the factors influencing trade balances and if there are variances in the effects across countries. The study on the dynamics of trade balance focuses on the empirical analysis of the main determinants, which have an effect on the trade balance in the WAMZ countries.

Viable factors accounting for the increasing dependence on trade in Africa include reduction in tariffs; information developments and communication technologies; global change from trade protectionism to free trade; and the increasing roles of African countries among the world economies. The role of Africa trade with the rest of the world has experienced a significant deficit. There is growing distresses that this may increase Africa's debt burden and expose the continent to a financial crunch. Studies have shown that growing deficits often herald disruptive economic trends such as sudden stops in capital flows, and severe economic slowdowns, which spawn high unemployment and poverty. Rising African trade deficits are also of enormous concern because as a role of thumb, a deficit above 5% of GDP is indicative of a long-run sustainability problems. Furthermore, the reduction of unemployment and poverty rate will be challenging particularly when the deficits are caused by growing imports of commodities that local industries can produce (Moussa, 2016).

The calculation of trade balance is the difference between

the imports and exports values as a percentage of GDP. A positive number means a trade surplus and a negative number means a trade deficit. A trade surplus is recorded when a country exports are more than it imports, this also known as a positive balance, or a "favourable balance", and conversely, if a country imports are more than it exports, it records a trade deficit, negative balance, "unfavourable balance", or informally, a "trade gap". A positive balance adds to GDP, while a negative balance subtracts from GDP.

The balance of trade in Gambia averaged -1257.03 Million GMD from 1981 to 2017, reaching an all-time high of 114.15 million GMD in the third quarter of 2016 and falling to -4540.20 million GMD in the second quarter of 2015. (Trading Economics, 2018).

Ghana's trade balance was -8.16 percent in 1992. As of 2016, Ghana had a negative trade of $508 million in net imports. As compared with their trade, balance in 1995 when they still had a negative trade balance of $484 million in net imports. In 2016, Ghana exported $10.5 Billion, making it the 64th largest exporter in the world. The most recent exports are led by Gold, which represents 42% of the total exports of Ghana, followed by Cocoa and Beans, which account for 17.9%. In 2016, Ghana imported $ 11 billion, making it the 69th largest importer in the world.

Guinea's trade balance averaged -52.02 USD Million from 1986 until 2017, reaching an all-time high of 195.72 USD Million in the first quarter of 2017 and a record low of -524 USD Million in

the fourth quarter of 2015. Guinea has the biggest bauxite reserve in the world as well as substantial iron, gold and diamond reserves, and is a principal exporter of such minerals. Guinea is also a net exporter of coffee. However, Guinea is dependent highly on imports for fuels, consumer goods, capital equipment and produce. Core trading partners of Guinea are China and the United States (World Bank, 2018).

Liberia's balance of trade averaged -0.8 Billion US Dollars from 1979 with a minimum of -2.37 Million US dollars in 2016 and a maximum of 0 billion US dollars in 1979. Liberia's systematic trade deficit is a result of high imports. Liberia's fuel import is worth (35 percent of total import) and machinery (25 percent). The leading exports are rubber (60 percent of total export), gold, diamonds and iron. Liberia's key trading partners are the United States, Canada and the Middle East.

Nigeria's balance of trade averaged 205344.05NGN Million (1981 until 2017), reaching an all-time high of 2177553.08NGN Millions in 2017 and -592200.72 NGN Million in March of 2011. Nigeria's trade surplus expanded to NGN 761.0 Billion in December of 2017. In August of 2014, as exports increased 41.9 percent yearly to NGN 1398.5 billion mostly due to higher sales of crude oil (50.5 percent), raw material (130.4 percent) and agricultural goods (247.2). (Kumah, 2018).

The Sierra Leone balance of trade averaged -0.28 billion US dollars from 1977 to 2015. As of 2017, Sierra Leone had a fall of $490M in net imports. As compared to it in 1995 when they still

had a trade deficit of \$113m in net imports. Sierra Leone's systematic trade deficit is attributable to its import dependency and weak commercial agriculture. Sierra Leone exports more diamonds and cocoa and imports more capital equipment and fuel. Main trading partners are China, Guinea, and United States (Kumah, 2018) The WAMZ countries have had a persistent trade deficit despite measures adopted to mitigate these deficits. To address this deficit, the WAMZ Governments have adopted measures like Duty/Vat remission, Export Promotion Programmes, Export Processing Zone (EPZ), Export Promotion Council (EPC) and participation in global trade arrangements. Not all these resulted in the improvement of trade balance since the WAMZ countries. Imports are growing faster than exports from 16% to 29.5% in 1980 to 14.5% as a percentage of exports to GDP in 2015, while imports have grown to 38.5% in 2016 (IFS 2016). Implying that the WAMZ Countries' balances of trade remain in deficit, which has provoked many questions on the potential causes of trade deficit (Manual, 2019)

This prolonged trade deficit has been a cause of concern over the years as it has substantial adverse consequences on the economic performance of the region. Various empirical studies have been conducted on the trade balance in both developed and developing countries (Falk, 2008; Adeniyi et al, 2011; Jacob and Peersman, 2013; Ousseini et al, 2017; Chairfontaine and Badinger, 2018; Joloudi and Harb, 2019). The literature reviewed exposes the critical factors relating to economic performance on the trade

balance. However, substantial studies specific to WAMZ countries are relatively scanty, hence the need to carry out this study.

Review of Related Literatures

The trade balance is part of the balance of payment account and the difference between exports and imports of a country. It therefore include visible imports and visible exports only. While, the balance of payments is made up of all those invisible and visible items imported and exported into the country as well as imports and exports of merchandise (Gaurav, 2012)..

2.1   Theoretical Framework

Trade balance is a component of the balance of payments (BOP) account and the theoretical framework on the dynamics of trade balance and its determinants provided by those theories, which deal with the instruments of correcting deficits in BOP. A detailed analysis of the theory or policy instruments for correcting BOP equilibrium can best be explained by three approaches, which include the elasticity approach, absorption approach and monetary approach.

This approach focuses on the trade balance and it studies the responsiveness of variables in the trade and services account, made up of imports and exports of merchandise and services relative to price changes induced by devaluation. The elasticity approach to the balance of payments is anchored on Mershall-Lerner (ML) condition (Sodersten,1998), which states that the

addition of elasticity of demand for a country's imports and export has to be greater than unity for a devaluation to have an effect positively on a country's balance of payments. If the sum of the elasticity is less than unity, the country can improve its balance of trade by revaluation.

The absorption approach points out that trade balance improvement requires revenue increase over total domestic spending, i.e., the total expenditure is key to this approach. Therefore, an increase in domestic revenues over the total expenditure is required to improve the trade balance. It shows that relative price and income are directly affected by exchange rate changes and their effect on the trade balance. (Dausa, 2007). This justifies the use of foreign direct investment as an important variable in explaining trade balance.

The monetary approach opined that the trade balance is essentially a monetary phenomenon and imbalances in the trade balance, reflect the imbalances in the money market (Prais, 1961; Mundel, 1971). Therefore, the trade balance was examined from the point of view of the demand and supply of money. If people demand money more than the Central Bank can supply, the demand will be met by the inflow of money from abroad and in this case, the trade balance will improve. If the Central Bank supplies more money than demanded, the surplus will be eliminated by outflows of money to other countries and this will worsen the trade balance. Therefore, foreign reserves, external debt and gross domestic product (GDP) as a monetary phenomenon are important

to the balance of trade.

2.2. Review of Empirical Studies

Falk (2008) investigate the determinants of the trade balance in 32 industrialized emerging economies in the years 1990-2007. The result based on fixed effects and the linear mixed models showed that the trade balance as a percentage of GDP is significantly positive. Further, real domestic GDP per capital has negatively affected the trade balance. Real exchange rate depreciation improves trade balance.

Wang and Wan (2008) on the China Trade imbalance focus on FDI inflow in determining the Chinese trade imbalance. They use aggregate annual data from 1979 to 2007 and employ unrelated Regression Equations and Auto-Regressive Distributed lag estimation models. It was discovered that although outflow FDI does not impact meaningfully on Chinese trade flows and trade balance, inflow FDI contributed to Chinese exports significantly and thus its trade surplus with the rest of the world.

Zakir and Ismail (2012) used dynamics panel data to determine the trade balance for 26 years and variables such as real GDP, relative GNI, real exchange rate and import-weighted index were employed. In their result, they discovered both short-run and long-run import-weighted index is significant while other variables were significant only in the short-run.

Shawa and Yaoshen (2013) noted that the main factors influencing Tanzania's trade balance are foreign direct investment

(FDI), human capital development, household consumption expenditure, government expenditure, inflation, natural resources availability, foreign income and trade liberalization.

Agudu, et al (2013) analyse foreign exchange dynamics in the Nigerian economy in relation to the balance of payments using the Central Bank of Nigeria (CBN) time series data, Debt Management Office (DMO) and National Bureau of Statistics (NBS). The method adopted was regression for data analysis. The result affirmed that foreign exchange is a significant predictor of variation in the balance of payment

Alessandria and Choi (2015) analyzed the trade balance and the real exchange rate for U.S. from 1980 to 2014. They reveal that trade cost and a gradual response of trade flows to past movements in the real exchange rate significantly influence trade balance.

Ali and Sharif (2016) looked at the Somalia's trade balance determinants from 1970 – 2015 with a focus on the causes of the trade deficit. They analyzed the impact of FDI, inflation rate and exchange rate. The study employed a two-country imperfect substitute model of Rose and Yellen to analyze the connection between trade balance and real exchange rate. The result revealed that there is only FDI variable influences Somalia's trade balance. FDI had negatively influenced Somalia's trade balance. The exchange rate and inflation rate factors examined had no impact on Somalia's trade balance.

Ali (2017) also investigated the factors that determine the

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Sudan's trade balance in the long run and the short run over the period 1970 – 2014. The factors examined are exchange rate, cost of finance, credit to the private sector, real per capita GDP, inflation rate as well as domestic investment. The study adopted the ARDL approach to co-integration and the associated ECM. In the long-run exchange rate exert negatively affects inflation and real per capita GDP, while the cost of finance, credit to the private sector and investment positively affect the trade balance. These results indicate that there is a weak relationship between investment and trade balance and is attributed to the prevailing situations of political instability, prolonged civil wars and other factors such as uncertainty of agricultural leases which resulted in declining investment, particularly in major agricultural projects.

Buba et al (2018) examined empirically the long-run exchange rate passing through into the trade balance in Thailand. The study included political stability in the short-run model to ascertain its effect on the trade balance. The asymmetric co-integrating adjustment method proposed by Enders and Siklos (2001) was adopted for the study. The findings of the empirical result revealed that there exists asymmetric co-integrating relationship exists between the exchange rate and trade balance.

Jaloudi and Harb (2019) empirically explored the Jordan-Turkish bilateral trade and the effect of the free trade agreement between Jordan and Turkish. The Autoregressive Distribution Lag (ARDL) model was employed. The result revealed a positive effect of the real effective exchange rate on the trade balance in the

long run and a negative effect in the short run, while the relative money supply and relative GDP have a weak effect on the trade balance in the short run and long run respectively. Similarly, the result points out that the impact of the free trade agreement is insignificant on the trade balance in the long run, which supports the position of the Jordanian government and revoked the work in this agreement.

RESEARCH METHOD

The data used for the study are secondary in nature. The data are balanced longitudinal data because they are made up of time series data, which covered the period of 29 years (1990 – 2018), and cross-sectional data of six West African Monetary Zone countries obtained from the World Bank database and the International Monetary Fund (IMF) database, making up 174 observations.

3.1   Model Specification

The model for this study established the effect of the exchange rate, gross domestic product (GDP), inflation rate, foreign direct investment (FDI), foreign reserves and external debt on the trade balance dynamics of the six countries of the West African Monetary Zone. The study covered a period of twenty-nine years from 1990 to 2018. Six countries that made up of the WAMZ were selected for the study. These include:

I. The Gambia

ii. Ghana

iii. Guinea

iv. Liberia

v. Nigeria

vi. Sierra Leone

The model of this study was specified functionally as:

$$TB = f(EXR, GDP, INFL, FDI, FR, EXDT) \quad (3.1)$$

The explicit panel estimation econometric model for this study was expressed as:

$$LogTB_{it} = {}_0 + {}_1LogEXR_{it} + {}_2logGDP_{it} + {}_3longINFL_{it} + {}_4logFDI_{it} + {}_5logFR_{it} + {}_6logEXDT_{it} + U_{it} \quad (3.2)$$

The 'a prior expectation' are as follows:

$$_{1,2,4,5} > 0; \quad _{3,6} > 0$$

Where:

TB_{1t} = Trade balance of WAMZ countries

EXR_{1t} = Exchange rate of WAMZ countries

GDP_{it} = Gross domestic product of WAMZ countries

$INFL_{it}$ = Inflation rates of WAMZ countries

FDI_{it} = Foreign direct investment of WAMZ countries

FR_{it} = Foreign reserves of WAMZ countries

$EXDT_{it}$ = External debt of WAMZ countries

U_{it} = Error terms

$_0$ is the intercept of the relationship in the model or constant and $_{1-6}$ are the coefficient of each explanatory variable or the parameters to be estimated. The subscript i and t refer to countries and periods

respectively, and log implies a natural logarithm.

The series is logged because logging i) enables the variables to be converted to the same

3.3   Variable Descriptions

Table 3.1 Va riables Description and Sources

Variable	Notation	Measurement	Data source
Trade balance	$LogTB_{it}$	The difference between the total values of exports and total imports.	IMF (2018)
Exchange rate	$LogEXR_{it}$	Real worth of foreign exchange in terms of a given domestic currency	IFS, IMF (2018
Gross domestic product (GDP)	$LogGDP_{it}$	The ratio of GDP to its price. Log (R x C)	World Bank, WDI (2018)
Inflation rate	$INFL_{it}$	Based on consumer price index in current and past year. Log $\left(\dfrac{C_t - C_{t-1}}{C_{t-1}}\right)$	World Bank, WDI (2018)
Foreign direct investment	$LogFDI_{it}$	The ratio of FDI to GDP log $\left(\dfrac{FDI}{GDP} \times 100\right)$	World Bank, WDI (2018)
Foreign reserves	$LogFR_{it}$	The ratio of foreign reserves to GDP Log $\left(\dfrac{FR}{GDP} \times 100\right)$	World Bank, WDI (2018)
External debt	$LogEXDT_{it}$	The ratio of external debt to GDP. Log $\left(\dfrac{EXDT}{GDP} \times 100\right)$	World Bank, WDI (2018)

Source: Researcher's Own Compilation

3.8   Estimation Techniques

i.   Panel Unit Root Test

ii.   Panel co-integration tests

iii.   vector error correction mechanism

iv.   Variance decomposition based on VECM

RESULTS AND DISCUSSION OF FINDINGS

Table 4.1 : Panel Unit Root Test Result Using LLC

Variable	T – statistics	Critical Value	P – Value	Order of integration
TB	- 8.30068	1% = 3.64 5%=-2.95 10%= -2.61	0.0000	1(1) `
REXR	- 7.73656	1% = 3.64 5%=-2.95 10%= -2.61	0.0000	1 (1)
GDP	- 17.9864	1% = 3.64 5%=-2.95 10%= -2.61	0.0000	1 (1)
INFL	-4.5159	1% = 3.64 5%=-2.95 10%= -2.61	0.0000	1(0)
FDI	- 13.4275	1% = 3.64 5%=-2.95 10%= -2.61	0.0000	1(1)
FR	- 10.2632	1% = 3.64 5%=-2.95 10%= -2.61	0.0000	1 (1)
EXDT	- 20.0881	1% = 3.64 5%=-2.95 10%= -2.61	0.0000	1(0)

Source: Author's Computation Using E-view Version 9

The decision rule using Levin, Lin and Chu (LLC) is that when the t-statistics is greater than the critical value at 5% significance level and the probability value (P – value) is less than 0.05, it shows that the variable is stationary at a level otherwise the difference is taken until it became stationary

The results show that the variable (except inflation rate and external debt) is non – stationary at the level, but became stationary

after taking the first difference. The inflation rate and external debt were probably stationary at the level because inflation is in percentage and external debt is a ratio variable. The t-statistics values are all greater than the critical value at the standard 5% significant level except for t- statistics for inflation and external debt which are less than 5% critical value and the probability value is greater than 0.05. Following Harris (1995) and Gujarrati (2003) cointegration, both 1 (0) and 1 (1) variables could be carried forward to test for cointegration.

4.2   Panel Cointegration Test

The Johansen Fisher Cointegration test was employed to test for panel cointegration to examine the long-run relationship for the variables using both the trace and max- eigen value test.

Table 4.2 : Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of (EG)	Eigenvalue	Trace Statistic	Prob. **
None *	0.935399	210.4	9.9999
At most 1*	0.873034	111.1	0.0000
At most 2*	0.674168	59.97	0.0006
At most 3*	0.580588	35.63	0.0004
At most 4*	0.392309	23.29	0.0253
At most 5	0.228344	15.84	0.1985
At most 6	0.036420	12.86	0.3790

Source: Author's Computation Using E-view Version 9

Trace test indicates 5 cointegration at the 0.05 level

* denote rejection of the hypothesis at the 0.05 level

** Mackinno-Haug-Michelis (1999) p – values.

Table 4.3 : Unrestricted Cointegration Rank Test (Max-Eigen)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen statistic	Prob **
None *	0.935399	141.5	0.0000
At most 1*	0.873034	61.38	0.0000
At most 2*	0.674168	30.19	0.0026
At most 3	0.580588	18.66	0.0971
At most 4	0.392309	15.29	0.2257
At most 5	0.228344	14.46	0.2721
At most 6	0.036420	12.86	0.3790

Source: Author's Computation Using E-view Version 9

Max-Eigen test indicates 3 cointegration at the 0.05 level

* denote rejection of the hypothesis at the 0.05 level

** Mackinnon-Haug-Michelis (1999) p-values

The result from both the trace statistic and the Max-Eigen statistic indicates 5 and 3 cointegrating equations respectively. This suggests the existence of a long-run relationship among the variables.

Table 4.4: Regression Results of the Effects of REXR, GDP, INFL, FDI, FR and EXDT on the TB Using VECM

Variable	Coefficient	Std. Error	t-statistic	Prob
EXR	-0.001907	0.00946	-2.016326	0.0454
GDP	4.10211	4.44211	0.922030	0.3580
INFL	-2.11706	2.59206	-0.816141	0.4156
FDI	-0.549033	0.264148	-2.078509	0.0392
FR	-3.71810	3.47210	-1.067237	0.2875
EXDT	-5.90210	3.09810	-1.911750	0.0480
Constant	14.64898	4.229925	3.463178	0.0007
R-squared	F – Statistics	Prob (F-statistics)		
0.101604	2.488081	0.018980		

Source: Author's computation Using E-view Version 9

4.1.1 The Impact of Exchange Rate on the Trade Balance

The impact of the exchange rate (EXR) on the trade balance is negative and statistically significant. The probability of exchange rate (EXR) is equal to 0.0454 or significant at 5% level. The coefficient of the exchange rate is equal to -0.001907, which means that EXR has a significant negative effect on the trade balance in the West African Monetary Zone Countries. This implies that a rise in the exchange rate leads to a decrease in the trade balance. The results are similar to a study by Eke, et al (2005); but contradicted the study of Ousseini, et al (2017).

4.1.2 The Impact of A Gross Domestic Product on the Trade Balance

The coefficient of gross domestic product (GDP) is 4.10211, which means that GDP has a positive impact on the trade

balance and its probability is therefore equal to 0.3580 and higher than 5% or insignificant at 5% level. This result is conformed to those of Yeshineh (2017), Suphian (2017) and Ousseini et al (2017).

4.1.3 The Impact of Inflation Rate on the Trade Balance

The inflation rate has shown a negative sign as expected and is statistically insignificant at the 5 percent level. The probability of inflation rate is 0.4156, which is more than 5% or insignificant at the level of 5%. The coefficient of the inflation rate is – 2.11704, which means that the inflation rate has a negative impact on the trade balance. If the inflation rate increases by 1%, the trade balance will decrease by 2.11706 percent. The results are consistent with a study by Shaw and Shen (2013).

4.1.4 The Impact of Foreign Direct Investment on the Trade Balance

The probability of foreign direct investment (FDI) is equal to 0.0392 which is less than 0.05 showing the FDI is statistically significant at 5% level. It suggests that an increase in FDI will lead to a decrease in trade balance or an increase in the imports in the West African Monetary Zone (WAMZ) countries. These results conformed to the studies by Ali and Sharif (2016), Blomstrom (1988) and Lin (1995).

4.1.5 The Impact of Foreign Reserve on the Trade Balance

Foreign reserves display negative insignificant effects on

the trade balance. The coefficient of foreign reserve (FR) is -3.71810 and the probability of foreign reserve (FR) is 0.2875. This means that if foreign reserve increases by 1%, the trade balance will decrease by 3.71810 percent. The results are in contradiction with a study by Chowdhury, et al (2014).

4.1.6 The Impact of External Debt on the Trade Balance

External debt shows a negative significant effect on the trade balance in the West African Monetary Zone (WAMZ) countries. The coefficient of external debts (EXDT) is – 5.90210 and its probability is 0.0480. This means that with an increase in external debt by 1% trade balance will decrease by 5.90210 percent. These results conformed to the findings in Khan, et al (2016), Jaward and Raza (2010).

CONCLUSION AND RECOMMENDATIONS

The West African Monetary Zone (WAMZ) is made up of six developing countries faced with the challenge of persistent trade deficit over a long period. The study analyzed the dynamics of trade balance in the WAMZ countries from 1990 to 2018. The results indicated that three out of the six variables in the equation had the expected signs that include the gross domestic product (GDP), inflation rate and FDI; while exchange rate and external debt showed a negative relationship instead of a positive relationship. The study concluded that exchange rate, foreign

direct investment (FDI) and external debt are significant determinants of WAMZ trade balance in contrast GDP, inflation rate and foreign reserves, were found to be statistically insignificant.

The government should enact policies to support exports, such as investment incentives, taxes incentive, and loans with zero-interest rates to support entrepreneurs. In addition, only external loans with favourable terms and conditions should be sort for by WAMZ countries just to avoid excessive debt burden on the economies.

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