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The Impact of Export Trading on Unemployment in Cameroon: A Time Series Analysis

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Abstract

The study examines the effect of export trading on unemployment in Cameroon, with particular emphasis on the export of raw materials and finished goods. The primary objectives are to assess the extent to which exports of raw materials and finished goods influence the unemployment situation in Cameroon. Secondary data were sourced from a range of credible national and international institutions, including the Cameroon National Institute of Statistics, the Ministry of Agriculture and Rural Development of Cameroon, the World Bank, the International Labour Organization, the African Development Bank and the World Trade Organization. The research utilises an ordinary least squares regression model to analyse the time series data, while controlling for variables such as government effectiveness, tertiary education enrolment, GDP growth rate, and inflation. The findings reveal that raw material export has a significant positive impact on unemployment, with coefficients of 0.289 for general unemployment and 0.542 for youth unemployment. This result supports the resource curse hypothesis whereby natural resource abundance is associated with lower benefits for the population as they are exported in the raw form without value addition. Conversely, finished goods export demonstrates a negative but statistically insignificant relationship with unemployment, with coefficients of −0.377 for general unemployment and −0.862 for youth unemployment. The study also highlights that government effectiveness is a significant predictor of lower unemployment, with coefficients of −6.071 for general unemployment and −9.182 for youth unemployment. In contrast, inflation is associated with higher unemployment. Based on these findings, the study recommends that Cameroon's policymakers should pursue economic diversifica-

tion, promote value-added manufacturing and enhance government effectiveness to reduce unemployment and foster sustainable economic growth. Additionally, policies designed to stimulate finished goods exports and support economic expansion such as Free Trade Agreements to reduce tariffs and improve market access, financial incentives, and streamlined clearance systems can help mitigate the adverse effects of raw materials exports on unemployment.

Keywords

Export Trading, Raw Materials, Finished Goods, Unemployment, Cameroon

1. Introduction

As of January 2025, the population of Cameroon was estimated at approximately 29,517,259 people according to Worldometer's analysis of the latest United Nations data. Notably, over 60% of the population is under the age of 25, making Cameroon one of the youngest countries globally, with a median age of 17.9 years (U.N. Department of Economic and Social Affairs, 2025). Economically, Cameroon is classified as a lower-middle-income country (AFSIC, 2025). Cameroon, like many other African nations, has a long-standing history of foreign trade, which can be traced back to the colonial era. The historical and continuing impact of exports driven by European colonisers and Western nations has had profound economic consequences. These include the exploitation of natural resources, such as minerals, timber, and agricultural products, often without equitable compensation or benefits for local communities (Arezki et al., 2024). Furthermore, many African countries, including Cameroon, have become heavily reliant on primary commodity exports, such as cocoa, coffee, and timber, which expose their economies to instability and vulnerability due to fluctuations in global market prices (IMF, 2020). This dependence on raw material exports has also hindered the development of local industries and value addition, limiting the country's capacity to fully capitalise on its natural resource wealth. Consequently, Cameroon is often unable to derive the maximum economic benefit from its export earnings, constraining its potential for sustainable economic growth (AfDB, 2024).

Cameroon's trade agreements and policies play a crucial role in shaping the relationship between export trading and unemployment. The country maintains a range of investment and commercial agreements with numerous nations, including the European Union, Canada, China, Japan, Russia, South Korea, Türkiye, the United Kingdom, and the United States. Among these agreements, one of the most significant is the Economic Partnership Agreement (EPA) between Cameroon and the European Union, which also involves the eight countries of the Central African region. This agreement, which came into force in 2014, provides Cameroon with duty-free and quota-free access to the European market. In return, Cameroon committed to the gradual liberalisation of duties and quotas for European goods entering its domestic market (EPA, 2023). Such trade arrangements

are pivotal in influencing Cameroon's export performance, economic diversification, and, by extension, employment dynamics, as they determine the scope, competitiveness, and profitability of both raw material and finished goods exports.

Cameroon ratified the African Continental Free Trade Area (AfCFTA) Agreement in 2020, a landmark initiative aimed at fostering trade and economic integration across the African continent by establishing a single, unified market. The agreement was initially signed in 2018 and officially came into force on 30 May 2019, with the final ratification completed on 5 February 2021 (AU, 2021). The AfCFTA has significantly enhanced trade facilitation by streamlining trade procedures and reducing non-tariff barriers, thereby making it easier for countries to exchange goods and services across borders (De Melo et al., 2024). In addition, the agreement has attracted greater investment into Africa by improving the business climate and mitigating the perceived risks associated with investing in the continent. Despite these advancements, several challenges persist. Inadequate infrastructure such as poorly developed roads, ports, and logistics facilities, remains a major constraint to efficient trade. Furthermore, non-tariff barriers, including bureaucratic delays, corruption, and inconsistent standards, continue to impede the smooth flow of goods and services. Nevertheless, the AfCFTA holds significant potential to stimulate intra-African trade, promote sustainable economic growth, and alleviate poverty across member states. By fostering a more integrated and competitive continental market, the agreement could enhance economic resilience, create employment opportunities, and support long-term development objectives for countries like Cameroon.

These agreements and policies have both positive and negative influences on unemployment in Cameroon; they promote export-led growth, which can create jobs. On the other hand, the economy's reliance on primary commodities limits job creation in other sectors. Furthermore, Cameroon's export-led growth model has not been effective in reducing poverty and inequality (World Bank, 2020). The general unemployment rate in Cameroon was 3.65% in 2023 (O'Neil, 2024). There are approximately 65 million youths unemployed globally (ILO, 2024). The youth unemployment rate in Cameroon saw no significant changes in 2023 compared to 2022 and remained at around 6.44 percent. Some of the suggested reasons for youth unemployment include difficulties in transitioning from school to employment, limited job opportunities, especially in urban areas due to rural-urban migration, high competition for jobs among youth and limited skills and education among youth.

Youth unemployment is a significant issue in Cameroon (World Bank, 2024). Studies have emphasized the importance of entrepreneurship and self-employment in addressing youth unemployment (ILO, 2024). The Cameroon government, on its part, has implemented initiatives to address youth unemployment, such as providing training and skills development programs for youth, encouraging entrepreneurship and job creation and improving education and vocational training. The concept of the entrepreneurial university emphasizes the develop-

ment of entrepreneurial mindsets, skills and culture among students and staff. By creating their own opportunities, youth reduce their dependence on limited government employment. Young people in Cameroon have the potential to contribute significantly to the country's agricultural sector, including exporting food products and having access to new markets hence increasing demand for local products as well as having networking opportunities to connect with international buyers, suppliers, and partners, thereby expanding their professional networks (USDA, 2022).

The National Development Strategy (NDS30) aims to promote employment and economic inclusion of Cameroon youth through the development of small enterprises (Global Partnership, 2022). In line with this is the National Employment Fund that aims to address youth unemployment by providing technical support to young entrepreneurs. Worth mentioning is also the Improvement of the Business Climate Policy which aims to make it easier for young entrepreneurs to start and grow their businesses by simplifying regulations and reducing bureaucracy (Kouam, 2020). In Cameroon, several ministries such as the Ministry of Youth Affairs and Civic Education, the Ministry of Employment and Vocational Training, the Ministry of Labour and Social Security and the Ministry of Economy, Planning and Regional Development play a role in youth employment. These ministries often collaborate with other government agencies, non-governmental organizations (NGOs), and private sector organizations to address youth employment challenges in Cameroon. These policies demonstrate the government's commitment to supporting youth entrepreneurs in Cameroon.

Despite the implementation of these trade policies and agreements, Cameroon continues to face considerable challenges in addressing unemployment, particularly among its youth. Although the country is endowed with abundant natural resources and occupies a strategically advantageous location, it has struggled to translate these assets into sustainable employment opportunities. Cameroon's general unemployment rate has experienced fluctuations over the past decades. For instance, the rate was 8.93% in 1991, increased to 13.22% in 1992 and 13.32% in 1993, declined to 7.46% in 2001, and further decreased to 3.87% in 2020 (Trading Economics, 2023). Similarly, youth unemployment has also varied, recorded at 13.16% in 1991, 11.25% in 2001, 6.98% in 2020, and 6.44% in 2023. These trends indicate that while some progress has been made, unemployment especially among young people remains a significant socio-economic challenge. Export trading has been identified as a potential mechanism for fostering economic growth and mitigating unemployment. Cameroon's economy is substantially dependent on exports, which accounted for approximately 20% of GDP. The country's leading exports in 2020 included crude petroleum ($1.43 billion), gold ($345 million), cocoa ($244 million), timber ($194 million), and coffee ($143 million) (OECD, 2022). Despite the importance of exports, the empirical evidence on the relationship between export trading and unemployment in Cameroon is limited and inconclusive. Thus, this work is designed to assess the extent to which raw materials and finished good export influence the unemployment situation in Cameroon.

This work offers valuable benefits for a range of stakeholders. By exploring the relationship between export trading and unemployment, the research provides scholars with a more nuanced understanding of the complexities inherent in international trade and its effects on domestic labour markets. The findings would serve as a foundation for future research, enabling further exploration of related issues and contributing to the expansion of existing knowledge. In addition, by examining the influence of government effectiveness and other institutional factors, the study offers insights into how policy decisions shape economic outcomes. This analysis fosters critical thinking skills and informs evidence-based decision-making among policymakers, academics, and economic analysts. The findings are also relevant to young entrepreneurs, who can leverage the understanding of the export-unemployment nexus to identify business opportunities within both local and international markets. By doing so, they may contribute to job creation and stimulate economic growth.

2. Literature Review

Export trading represents a fundamental driver of economic growth and development. Several studies have explored its determinants and effects in the context of Cameroon. For instance, Ngouhouo and Makolle (2013) examined the factors influencing export trade in Cameroon, highlighting the critical roles of exchange rates, lagged export values, and trade openness in shaping export performance. Similarly, Ofeh (2014) investigated the interplay between export-income, economic growth, and the Human Development Index (HDI), finding evidence of a one-way causality from the HDI to export-income, suggesting that improvements in human development can stimulate export performance. Further research by Ngouhouo and Nchofoung (2020) revealed that trade openness exerts a positive and significant influence on employment in Cameroon, indicating that a more liberalised trade environment can enhance job creation. Ngouhouo et al. (2020) demonstrated that economic openness combined with public investment has the potential to reduce unemployment, underscoring the importance of integrated economic policies. More recently, Buinwi and Buinwi (2024) analysed the dynamics of Cameroon's trade policies and economic integration, emphasising the need for substantial infrastructure investment and the streamlining of regulatory processes to improve trade efficiency, attract investment, and support broader economic development objectives. Collectively, these studies underscore the significance of export trading not only as a mechanism for fostering economic growth but also as a potential strategy for reducing unemployment and enhancing overall human and institutional development in Cameroon.

The relationship between unemployment and economic growth is multifaceted and influenced by various socio-economic factors. Nguena and Nanfosso (2014) reported a negative correlation between GDP growth rate and unemployment, suggesting that economic expansion tends to reduce joblessness. Similarly, Kouam and Asongu (2022) investigated the impact of female unemployment on economic growth in Cameroon, finding a significant negative relationship, indicating that

high female unemployment may hinder overall economic performance. Youth unemployment remains a particularly pressing challenge in Cameroon. Hyéfouais (2019) examined the characteristics and determinants of underemployment, emphasising the importance of skills development and job creation to address this issue. Avom et al. (2021) evaluated the role of public policies in enhancing youth employment and found that technical and financial support can positively influence employment outcomes. Furthermore, Meka'a et al. (2023) highlighted the potential of information and communication technologies (ICTs) to improve the quality of youth employment, while Etoh-Anzah et al. (2022) demonstrated that the type and level of education significantly affect youth employment status and opportunities. Nkwelle (2020) also underscored the broader societal implications, noting the link between youth unemployment and political instability. Entrepreneurship has been identified as a key strategy for poverty reduction. Wujung and Mbella (2014) reported that entrepreneurship exerts a significant negative impact on poverty, suggesting that entrepreneurial activity can reduce economic deprivation in Cameroon. In addition, Vukenkeng et al. (2016) observed a bi-directional positive causality between entrepreneurship and poverty alleviation, indicating that entrepreneurship not only reduces poverty but is also fostered by improvements in socio-economic conditions. More recently, Ibrahima et al. (2024) highlighted the characteristics of Cameroonian entrepreneurs, including optimism, resilience, and a strong fighting spirit, which contribute to their ability to innovate and drive economic growth.

Trade policies and regulations play a critical role in shaping export performance. For example, Assoua et al. (2024) found that sanitary and phytosanitary measures have no significant impact on coffee exports from Cameroon, suggesting that other factors may be more influential in determining export outcomes. In contrast, Njimanted and Molem (2015) highlighted the importance of export diversification and the enhancement of labour productivity as key strategies to improve export performance. Additionally, Ngameni et al. (2023) reported that, in some cases, corruption can inadvertently facilitate export diversification in Cameroon, illustrating the complex and sometimes counterintuitive nature of institutional influences on trade. Innovation has also been identified as a vital driver of job creation and economic growth. Kede and Tsafack (2024) found that innovation can promote the formalisation of informal SMEs and generate employment opportunities, while Mambe and Djoumessi (2024) emphasised the importance of a favourable investment climate in influencing investment decisions and stimulating job creation. Several studies have explored broader aspects of Cameroon's economic growth and development. Kum (2018) discussed the challenges related to economic growth and poverty reduction, whereas the IMF (2023) highlighted the necessity for horizontal policies, including investments in human capital and infrastructure, to promote sustainable development. Bikai (2021) examined strategies for sustaining small businesses engaged in coffee exports, and Fokam et al. (2019) demonstrated that employment can act as a conduit through which economic growth translates into poverty reduction.

A synthesis of this literature is presented in Table 1, providing a concise overview of the key studies, findings, and implications for export performance, innovation, employment, and economic development in Cameroon.

Table 1. Summary literature on concepts of export trade, unemployment and related factors.

Concept	Author(s)	Method	Findings
Export Trading and Economic Growth	Ngouhouo and Makolle (2013)	Regression Analysis	Exchange rate, lagged export values, and trade openness significantly affect Cameroon's export trade
	Ofeh (2014)	Granger Causality Test	A one-way causality exists from human development index to export income
	Ngouhouo and Nchofoung (2020)	FMOLS and DOLS	Trade openness has a positive and significant effect on employment in Cameroon
	Ngouhouo et al. (2020)	Quarterly time series data analysis	Economic openness and public investment can reduce unemployment in Cameroon
	Buinwi and Buinwi (2024)	Qualitative Analysis	Cameroon's trade policies face challenges, including infrastructural deficits and regulatory inefficiencies
Unemployment and Economic Growth	Nguena and Nanfosso (2014)	VECM	A negative correlation exists between GDP growth rate and unemployment in Cameroon
	Kouam and Asongu (2022)	Regression Analysis	Female unemployment has a negative and significant impact on economic growth in Cameroon
	Hyéfouais (2019)	Logistics Regression Analysis	Skilled and unskilled workers are highly likely to experience income-related underemployment
Youth Unemployment and Employment	Avom et al. (2021)	Survey Analysis	Public policies have a positive impact on youth employment in Cameroon
	Meka'a et al. (2023)	Regression Analysis	ICTs can enhance the quality of youth employment in Cameroon
	Etoh-Anzah et al. (2022)	Logistics Regression Analysis	Education type and attainment significantly affect employment status and options of youths in Cameroon
	Nkwelle (2020)	Qualitative Analysis	Youth unemployment can lead to political instability in Cameroon
	Wujung and Mbella (2014)	Granger Causality Test	Entrepreneurship has a significant negative impact on poverty in Cameroon
Entrepreneurship and Poverty Reduction	Vukenkeng et al. (2016)	Co-integration and Error Correction Techniques	Entrepreneurship development is a key determinant of economic growth in Cameroon
	Ibrahima et al. (2024)	Survey Analysis	Cameroon entrepreneurs are optimistic and have a fighting spirit
	Assoua et al. (2024)	Gravity Model Analysis	Sanitary and phytosanitary measures do not significantly affect coffee exports from Cameroon

Continued

Trade Policies and Regulations	Njimanted and Molem (2015)	Regression Analysis	Export diversification and labour productivity growth are essential for Cameroon's economy growth
	Ngameni et al. (2023)	Regression Analysis	Corruption can favour export diversification in Cameroon
	Kede and Tsafack (2024)	Probit Model Analysis	Innovation can enhance formalization and job creation in informal SMEs in Cameroon
Innovation and Job Creation	Mambe and Djoumessi (2024)	Regression Analysis	Investment climate plays a crucial role in shaping investment decisions and job creation in Cameroon
	Kum (2018)	Review Analysis	Cameroon's economy growth has not been inclusive, and poverty remains a significant challenge
Others	IMF (2023)	Report Analysis	Cameroon's economy growth is expected to remain stable, but structural reforms are needed to boost private sector growth
	Bikai (2021)	Qualitative Analysis	Small businesses exporting coffee from Cameroon face challenges, including lack of access to finance and markets
	Fokam et al. (2019)	Regression Analysis	Employment plays a crucial role in transmitting economic growth to poverty reduction in Cameroon

3. Materials and Methods

Cameroon's economy is heavily dependent on export trading, with the country's primary exports including crude oil, timber, cocoa, coffee, and cotton, while its manufactured exports encompass wood products, textiles, foodstuffs, and chemicals (MINEPAT, 2020). The export sector is largely dominated by a few key industries, most notably the oil and gas sector, which contributes the majority of the nation's export earnings. Despite the pivotal role of export trading in Cameroon's economy, the country continues to experience persistently high unemployment. In 2023, the overall unemployment rate showed little change compared to 2022, remaining at approximately 3.65% (O'Neil, 2024). Nevertheless, 2023 marked the second consecutive year of decline in the unemployment rate. Among the youth (ages 15 - 24), unemployment was reported at 6.444% in 2023 (World Bank, 2025c), highlighting the ongoing challenge of creating sufficient employment opportunities for young people. Export trading contributes significantly to employment generation, with sectors such as oil and gas, agriculture, and related industries providing job opportunities. However, a large portion of employment remains concentrated in the informal sector, which is often characterised by low productivity, limited social protection, and minimal contribution to long-term economic growth. These conditions underscore the need for economic diversification, structural reforms, and investment in higher-value industries to create sustainable employment opportunities and reduce dependency on a narrow range of export commodities.

3.1. Variables, Data Sources and Pre-Estimation Tests

3.1.1. Variables and Data Sources

This study adopts a retrospective research design, which entails analysing existing data spanning the period from 1991 to 2023. This approach allows for the identification of long-term trends and patterns in the relationship between export trading and unemployment in Cameroon over a substantial timeframe. However, due to missing data, the final sample size retained was 23 as missing data were treated using the complete case analysis method. Though this method risks bias and reduces power if data is not missing completely at random, it is scientifically accepted in data treatment for empirical analysis (Newman, 2003). The research relies on data obtained from reputable national and international sources, ensuring the reliability and consistency of the information used. Key sources include the World Bank's World Development Indicators (WDI), the International Labour Organization's (ILO) Key Indicators of the Labour Market (KILM), the United Nations Conference on Trade and Development (UNCTAD) database, the International Monetary Fund (IMF) eLibrary, the Cameroon National Institute of Statistics (INS), the Ministries of Trade and Industry and Agriculture, and the African Development Bank (AfDB) database. These sources provide comprehensive data on export trading, macroeconomic indicators, and unemployment in Cameroon. Secondary data for the study will be accessed through online databases and official publications. The collected data will undergo a systematic process of filtering, cleaning, and transformation to ensure it is in a suitable format for rigorous analysis. In addition, the study will draw on existing literature and empirical research relevant to export trading and unemployment. This enables a holistic understanding of the complex interactions between trade dynamics, macroeconomic factors, and employment outcomes in the Cameroonian context.

The dependent variables are general unemployment (UN) and youth unemployment (UY). The independent variables include export trading (ET), GDP growth rate, inflation rate, government effectiveness, and student enrollment in tertiary education. The Unemployment Rate (UN) is the percentage of the labor force that is currently not employed, actively seeking employment, and available to start work. It is a key indicator of the health of the economy and the labor market. For measurability UN can be measured as a percentage using data from the various sources such as World Bank's World Development Indicators (WDI) database, International Labour Organization's (ILO) Labour Market Indicators database and National Institute of Statistics (NIS) of Cameroon. UY is the percentage of the youth labour force typically 15 to 24 years old that is unemployed and actively seeking employment. This can be measured using data from labour force surveys, national statistic agencies, or international organizations. Amongst the independent variables are Export Trading (ET) which refers to the total value of goods and services exported by Cameroon (World Bank, 2025d) and this will be disintegrated into export trading of raw material (RAWME) and export trading of finished goods (FINISH_GE). It is an important component of a country's bal-

ance of trade and can have a significant impact on the economy. It can be measured in billions of XAF or USD using secondary data from trade statistics, customs department, or international trade data bases.

Gross Domestic Product growth rate (GDPGROWTH), another independent variable, is the rate of change in the gross domestic product (World Bank, 2025b). This too can be measured using data from national statistical agencies or the World Bank. Inflation Rate (IR) is the rate of change in the general price level of goods and services (World Bank, 2025b). It is measured as the percentage change in the consumer price index (CPI) over a given period of time. Government effectiveness (GE) is a measure of the government's ability to implement policies, provide public services and maintain stability (The Global Economy, 2024). It can be measured using data from governance indicators such as the Worldwide Governance Indicators (WGI) data set. Student enrolment Tertiary (SET) refers to the number of students enrolled in tertiary education institutions in Cameroon (World Bank, 2025a). This can be measured using data from education statistics, national statistical agencies or internal organizations such as UNESCO. These variables are all interconnected and can have an impact on one another. For example, an increase in export trading can lead to an increase in economic growth, which can lead to a decrease in the unemployment rate. An increase in the inflation rate can lead to a decrease in the purchasing power of consumers, which can lead to a decrease in economic growth. Labor market institutions can have an impact on the unemployment rate and the inflation rate by influencing the supply and demand for labor.

3.1.2. Pre-Estimation Tests

The descriptive statistics serve as a foundation for understanding the distribution and characteristics of each variable in the study. When the data exhibit normality, the mean provides a reliable measure of central tendency, while the standard deviation accurately reflects the extent of variation or dispersion from the mean. Normality also ensures that statistical tests, such as t-tests and F-tests, are interpreted correctly. In a normally distributed dataset, approximately 68% of observations lie within one standard deviation of the mean, and about 95% of observations fall within two standard deviations. By confirming the normality of the data, the study enhances the reliability of regression results, thereby providing a solid basis for policy recommendations. To assess potential multicollinearity, the study employs pairwise correlation analysis using the Pearson correlation coefficient. A strong positive correlation, typically defined as a coefficient (r) greater than 0.7 or 0.8, signals the presence of multicollinearity, which may affect the reliability of regression estimates. Unit root test was conducted to determine whether time series variables are stationary (I (0)) or non-stationary (I (1)), guiding the selection of the appropriate estimation technique as presented in **Table 2**.

The unit root test results suggest that all the variables are stationary at levels (I (0)), but for general unemployment, youth unemployment and general export, which become stationary after taking the first difference (I (1)). When variables

have different orders of integration, it is necessary to difference the I (1) variables to make them stationary before using them in regression analysis. Variables that are stationary at levels can be used directly in regression analysis without worrying about spurious correlations or non-stationarity issues.

Table 2. Unit root test.

Variable	Level		First Difference		Order
	Z(t)	*p*-value	Z(t)	*p*-value	
UN	−2.469	0.1232	−5.355	0.0000	I (1)
UNY	−2.500	0.1154	−5.545	0.0000	I (1)
EXPORT	−0.731	0.8385	−5.860	0.0000	I (1)
RAWME	−4.083	0.0010			I (0)
FINISH GE	−4.172	0.0007			I (0)
GE	−3.480	0.0085			I (0)
SET	−0.862	0.8002	−4.015	0.0013	I (0)
GDP GROWTH	−3.273	0.0161			I (0)
INFL	−5.270	0.0000			I (0)

The null hypothesis (H_0) in unit root testing posits that a variable possesses a unit root, indicating it is non-stationary and that its statistical properties, such as mean and variance, change over time. Rejection of this hypothesis confirms stationarity (no unit root problem) and validates the use of the variable in an ARIMA, ARMA, VAR or standard regression models. However, we opted for the OLS model because of its BLUE properties (Ngangnchi et al., 2022).

3.2. Model Specification

The study employs a linear regression model, where the dependent variables are the general unemployment rate and the youth employment rate, while the independent variables include export trading, GDP growth rate, inflation, government effectiveness, and student enrolment in tertiary education. To provide a more detailed analysis, the model also incorporates raw material exports and finished goods exports as sub-variables, enabling an assessment of their specific effects on unemployment levels. The regression equations specified for the analysis are as follows:

$$\text{D.UN} = \beta_0 + \beta_1(\text{RAWME}) + \beta_2(\text{FINISH\_GE}) + \beta_3(\text{GE}) + \beta_4(\text{SET}) + \beta_5(\text{GDPGROWTH}) + \beta_6(\text{INFL}) + \varepsilon$$

$$\text{D.UNY} = \beta_0 + \beta_1(\text{RAWME}) + \beta_2(\text{FINISH\_GE}) + \beta_3(\text{GE}) + \beta_4(\text{SET}) + \beta_5(\text{GDPGROWTH}) + \beta_6(\text{INFL}) + \varepsilon$$

where:

- D. UN = Unemployment rate
- D.UNY = Youth unemployment rate

- RAWME = Raw material exports
- FINISH_GE = Finished goods exports
- GE = Government effectiveness
- SET = Student enrollment in tertiary education
- GDPGROWTH = GDP growth rate
- INFL = Inflation rate
- β0: Constant term
- β1 - β6: Coefficients of the independent variables
- ε = Error term

3.3. Estimation Techniques and Post-Estimation Tests

The study employs Ordinary Least Squares (OLS) regression analysis as the statistical technique to analyse the relationship between the unemployment rate and the selected independent variables. This method is suitable for variables with no unit root problems as established on the test result presented in **Table 2**. The assumption of Best Linear Unbiased Estimator holds firm in the absence of unit root problem in the dataset (Njimanted et al., 2019). The purpose of this method is to develop a linear model that most accurately predicts the dependent variable by 187 minimizing the sum of the squared deviations between the observed values and the values predicted by the model. The OLS relies on assumptions like linearity, independence of errors, homoskedasticity (constant variance of errors), normality of errors, and no multicollinearity among independent variables.

Other confirmatory tests are used in the model, such as the F-statistic test, which indicates whether the overall regression model is statistically significant. The *p*-values associated with these F-statistics would reveal if the independent variables jointly improve the fit of the model. Adjusted R^2, another confirmatory test, measures the strength of the relationship between the model and the dependent variable while accounting for the number of predictors. It is a more accurate assessment of the model's fit than the regular R^2, especially when comparing models with different numbers of predictors. In the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity, the null hypothesis (HO) states that the variance of the residuals is constant across all levels of the independent variables. It assumes that the residuals have homoskedasticity (constant variance). The test will be using the fitted values of the dependent variable unemployment (D. UN-first difference of Unemployment rate) to check for heteroskedasticity and examining whether the variance of the residuals changes as the predicted values of unemployment change.

4. Findings

Analysis of Trends and Patterns

This study investigated the impact of export trading on unemployment in Cameroon, with a focus on raw materials and finished goods exports. The analysis of trends and patterns in the data revealed a decline in general and youth unemploy-

ment rates over the years, with fluctuations. The general unemployment rate decreased from 8.59% in 1995 to 3.95% in 2021 (Figure 1), while the youth unemployment rate decreased from 12.74% in 1995 to 6.84% in 2021 (Figure 2).

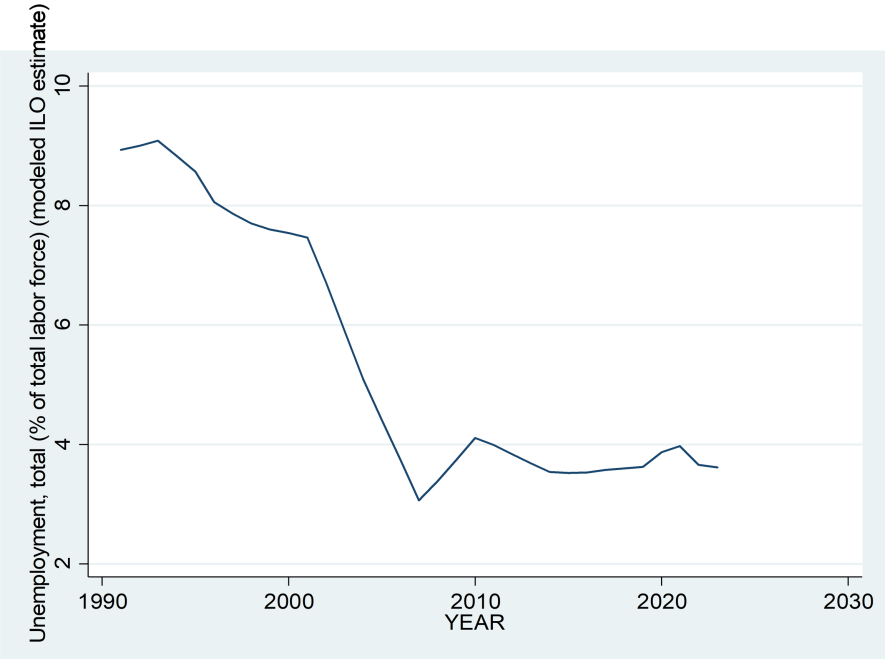

Figure 1. General unemployment rate 1995-2021.

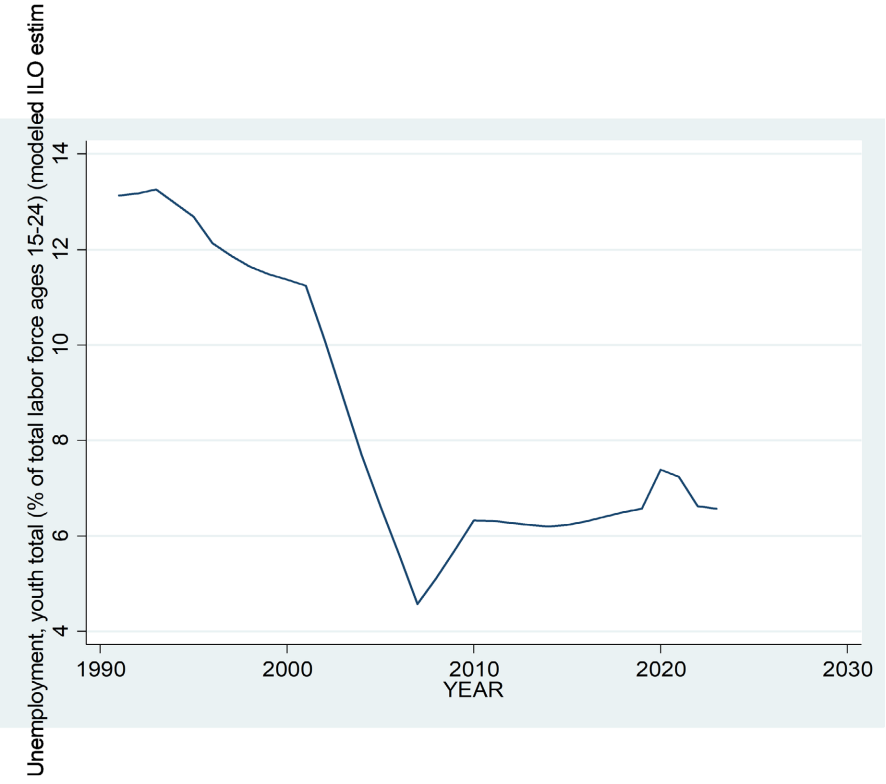

Figure 2. Youth unemployment rate.

Raw material exports increased, from $1.12 billion in 1995 to $2.82 billion in 2021 with some fluctuations possibly due to changes in global commodity prices, which can impact export earnings (Figure 3). Finished goods export increased with fluctuations from $0.056 billion in 1995 to $0.686 billion in 2021(Figure 4). In our data, there is relatively low growth in finished goods export compared with raw materials export and this could be attributed to limited value addition.

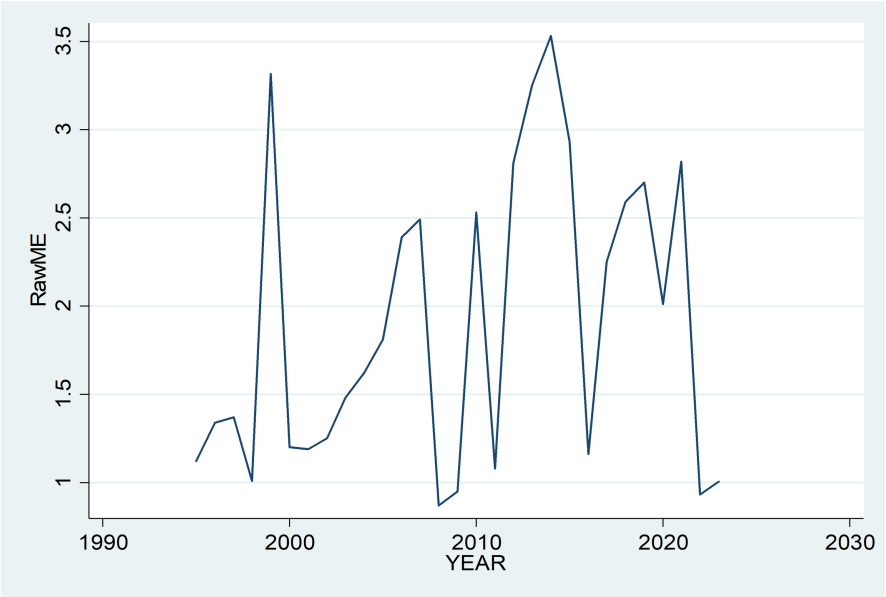

Figure 3. Raw material export.

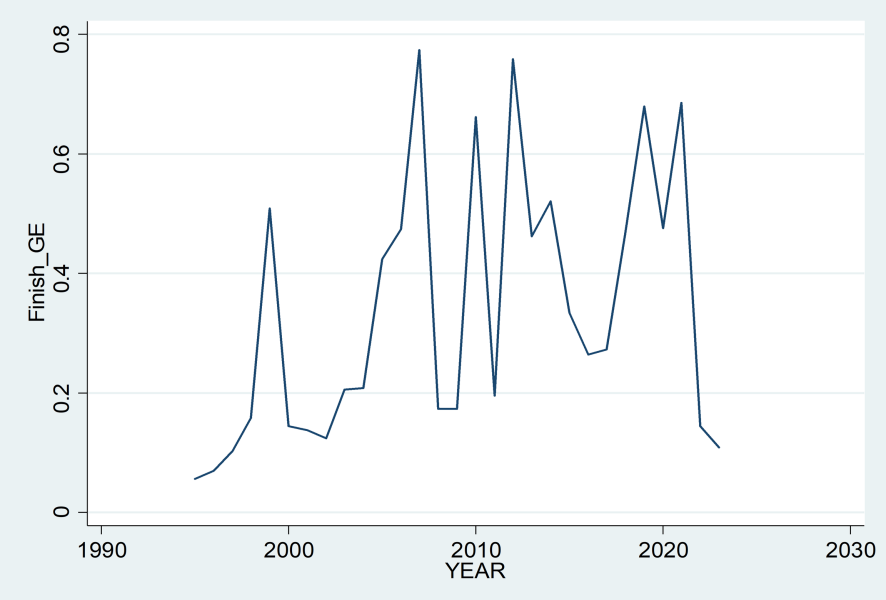

Figure 4. Finished goods export trend.

A look at Cameroon's economy during the study period shows fluctuations. The GDP growth rate trend fluctuated over the years, with a range of 0.26% to

7.93% (Figure 5). There is no clear upward or downward trend. Some of the notable years of growth were 5.4% in 2003 and 5.72% in 2014. For 2023, the growth rate was 3.99%, a 0.41 increase from 2022, which had a growth rate of 3.58%, which depicted an increase of 0.24% from 2021.

There was a high inflation rate in 1994, as shown in Figure 6. The inflation rate fluctuated, with a range of 0.06% to 35.09%. From 2009 to 2025 the annual inflation rate averaged 2.85%.

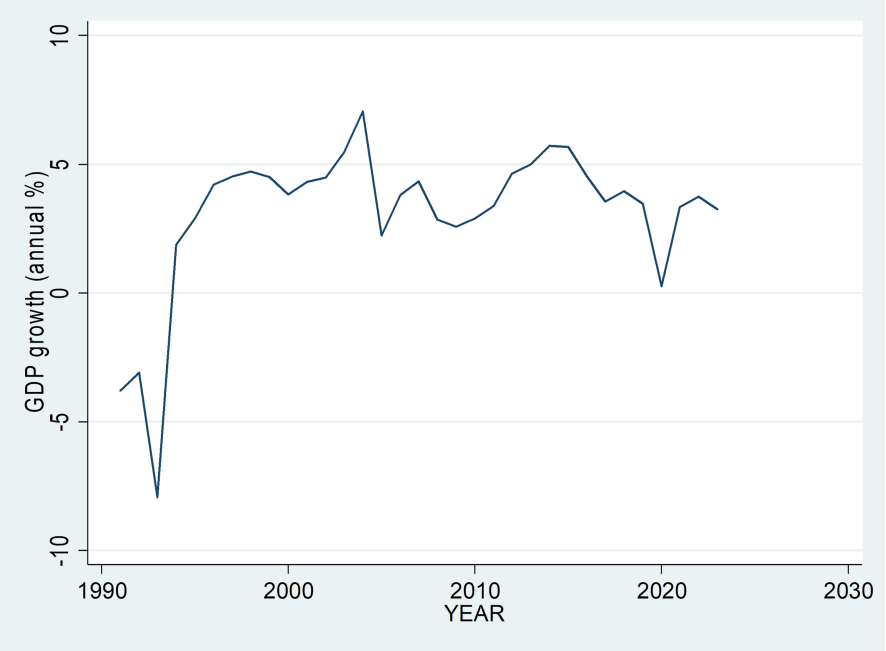

Figure 5. GDP growth (annual %).

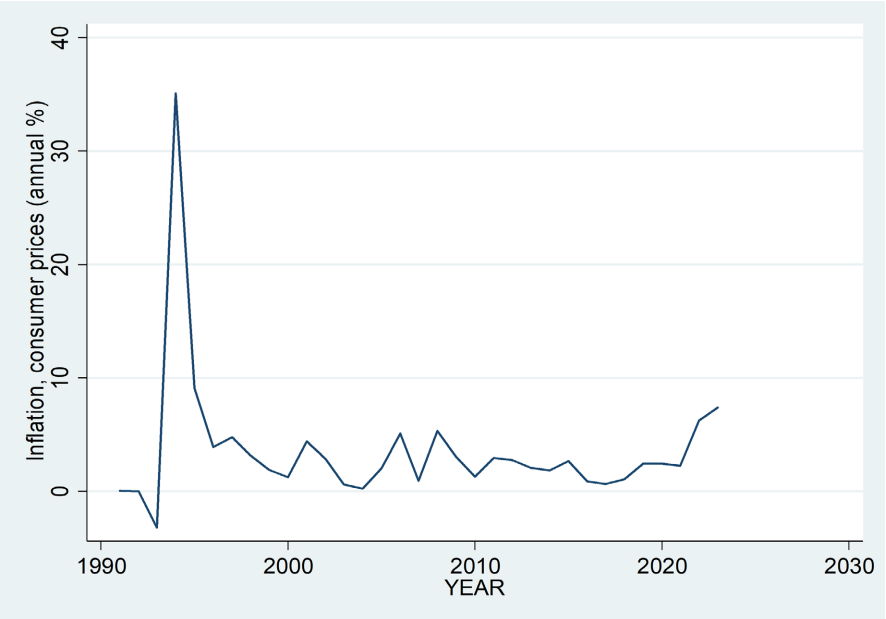

Figure 6. Trend of inflation consumer prices.

The average for government effectiveness for Cameroon from 1996 to 2023 is −0.88 points (Figure 7). The minimum value, −1.08 points, was reached in 1996, and the maximum of −0.81 points was registered in 2004. The estimates have been fluctuating over the years, but for the most part have remained between −9 and −8.

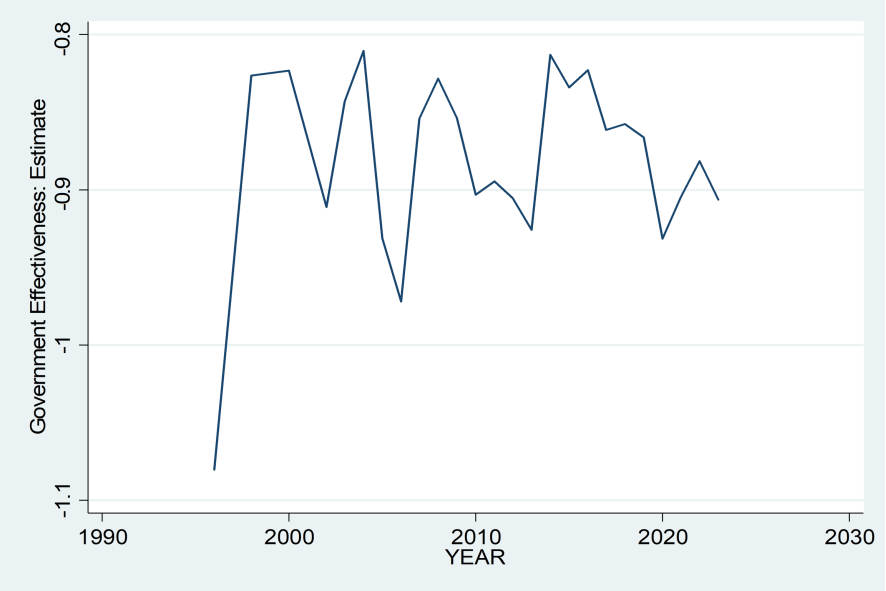

Figure 7. Trend of Cameroon government effectiveness.

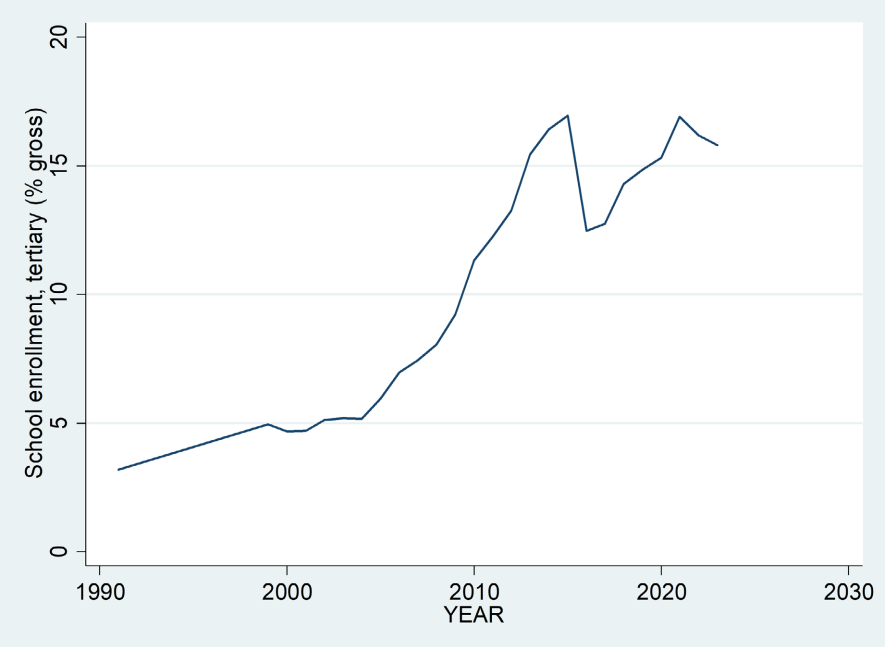

Figure 8. Cameroon school enrolment tertiary (% Gross).

The tertiary school enrolment in Cameroon is the number of students in tertiary level education as a percentage of all people who have completed secondary school in the last five years. The school enrolment at the tertiary level shows a

steady rise overall, with the maximum 16.96% gross recorded in 2015, followed by a post 2015 decline and again by a steady rise (**Figure 8**). The growth in tertiary enrollment might be due to the expansion of universities and other higher education institutions in Cameroon (Ofeh, 2005). Government policies and initiatives aimed at increasing access to higher education, such as scholarships, subsidies, or infrastructure development, might have contributed to the rise (Bloom et al., 2005). The decline around 2015 could be due to budget constraints that might have affected government funding for education, leading to a decline in enrolment rates. Other factors, such as security concerns or demographic shifts, might also contribute to the decline (**Table 3**).

Table 3. Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
UN	33	5.417	2.172	3.063	9.089
UNY	33	8.5	2.904	4.576	13.258
EXPORT	33	5.134	2.35	1.91	8.77
RAWME	29	1.897	0.846	0.87	3.53
FINISH GE	29	0.337	0.225	0.056	0.774
GE	25	−0.882	0.06	−1.08	−0.81
SET	26	10.568	4.763	3.19	16.956
GDP GROWTH	33	4.016	1.432	0.26	7.93
INFL	33	3.559	6.129	−3.207	35.094

The mean unemployment rate was 5.417% with a standard deviation of 2.172%, while the mean youth unemployment rate was 8.5% with a standard deviation of 2.904% (**Table 3**). The youth unemployment rates are higher than the overall unemployment rates. Youth unemployment is therefore a significant issue in Cameroon. Overall export has a mean of $5.134 billion with a standard deviation of 2.35. When disintegrated into the subunit, raw materials export (RAWME) has a mean of $1.97 billion with a standard deviation of 0.846 billion, while for finished goods export (FINISH GE), the mean is $0.337 billion with a standard deviation of 0.225 billion. The export sector, therefore, shows moderate variability, with raw materials export having a relatively low standard deviation when compared with finished goods export. Government Effectiveness (GE) has a mean of −0.882 with a standard deviation of 0.06, showing very low variability, indicating consistency in its measurement. Student Enrollment in Tertiary Education (SET) has a mean of 10.568 with a standard deviation of 4.763, indicating high variability. GDP Growth Rate (GDPGROWTH), with a mean of 4.016% and a standard deviation of 1.432%, is showing relatively low variability, indicating perhaps stability in the economy. On the other hand, the inflation rate (INFL), with a mean of 3.559%

and a standard deviation of 6.129%, indicates high variability.

The regression results indicate that raw material exports are positively associated with unemployment rates, whereas finished goods exports exhibit a negative relationship. The weak negative relationship reflects the low level of industrialization of the country. Very little or no effort is made in adding value to raw materials, as exports primarily consist of raw materials. This is partly due to the poor investment climate, with doing business rank according to the World Bank (2020) of 166/190. Specifically, a one-unit increase in raw material exports corresponds to a 0.289 unit increase in general unemployment and a 0.542 unit increase in youth unemployment. Conversely, a one-unit increase in finished goods exports is associated with a 0.377 unit decrease in overall unemployment and a 0.862 unit decrease in youth unemployment. The coefficients for raw material exports were found to be statistically significant at the $p < 0.1$ level, whereas the coefficients for finished goods exports did not reach conventional levels of statistical significance. These findings align with prior research suggesting that over-reliance on raw materials export can contribute to economic instability and heightened unemployment (Mora & Olabisi, 2023). Furthermore, the results lend support to the export-led growth hypothesis, which posits that the export of manufactured goods can stimulate economic growth and facilitate job creation (Tyler, 1981; Johnston, 2024). Overall, the analysis underscores the importance of economic diversification and value-added manufacturing in mitigating unemployment risks associated with dependence on primary commodity exports.

The study also found that government effectiveness is strongly associated with lower unemployment rates. A one-unit increase in government effectiveness was associated with a 6.071-unit decrease in unemployment and a 9.182-unit decrease in youth unemployment. The coefficients for government effectiveness were statistically significant at the $p < 0.001$ level. The strong negative relationship between government effectiveness and unemployment rates underscores the significance of good governance in addressing unemployment challenges. Additionally, GDP growth rate had a negative effect on unemployment, with a one-unit increase in GDP growth rate associated with a 0.252-unit decrease in unemployment and a 0.423-unit decrease in youth unemployment. The coefficients for GDP growth rate were statistically significant at the $p < 0.001$ level. The study's results suggest that GDP growth rate is an important factor in determining unemployment rates, and policymakers should implement policies that promote economic growth.

Furthermore, the study found that inflation rate has a moderate positive effect on unemployment rates. A one-unit increase in inflation rate was associated with a 0.0668-unit increase in unemployment and a 0.0907-unit increase in youth unemployment. Though the coefficient is not statistically significant, it reflects significant issues in macroeconomic analysis known as stagflation. This occurs when inflation creates macroeconomic instability, prohibiting new investments with consequences on hiring, thereby forcing the co-existence of high levels of inflation with high levels of unemployment. Most of the inflation in the country is imported

as manufacturing is at an extremely low level. This theoretical logic is contrary to the Phillips Curve that suggest high inflation is only possible with lower levels of unemployment.

The study also examined the impact of student enrollment in tertiary education on unemployment rates. The results showed that the coefficient for student enrollment in tertiary was not statistically significant, indicating that changes in school enrollment rates do not have a significant impact on unemployment rates in this model. This is partly justified by the fact that the country is still implementing colonial education programmes with little focus on entrepreneurship and job creation. Over 75% of educational establishments deliver general education as opposed to technical education, making their contribution insignificant and irrelevant in resolving unemployment issues in the country (Figure 9).

VARIABLES	(1) D.UN	(2) D.UNY
RAWME	0.289*	0.542*
	(0.158)	(0.261)
FINISH_GE	-0.377	-0.862
	(0.532)	(0.879)
GE	-6.071***	-9.182***
	(1.902)	(3.141)
D.SET	0.00609	-0.00203
	(0.0603)	(0.0996)
GDPGROWTH	-0.252***	-0.423***
	(0.0603)	(0.0997)
INFL	0.0668	0.0907
	(0.0406)	(0.0670)
Constant	5.534***	8.518***
	(1.682)	(2.778)
Observations	23	23
R-squared	0.580	0.571
rank	7	7
r2_a	0.422	0.410
F	3.681**	3.552**

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of D.UN
chi2(1) = 4.68
Prob > chi2 = 0.0003

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 9. Regression analysis coefficients.

The F-statistic test (3.681 for unemployment and 3.552 for youth unemployment) indicated that the overall regression model is statistically significant. The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity indicated evidence of heteroskedasticity in the residuals, which was addressed by including robust statistical errors in the regression analysis, which keep the estimated OLS coefficients but adjust standard errors to be valid despite heteroscedasticity.

5. Conclusion and Policy Implication

The findings of this study carry significant implications for policymakers in Cam-

eroon. They emphasise the necessity of recognising the influence of trade policies on employment outcomes and economic stability. To address unemployment effectively, policymakers should prioritise strategies that promote value-added manufacturing and the export of finished goods, while simultaneously enhancing government effectiveness and ensuring that inflation remains low and stable. Drawing from the study's results, the following policy recommendations are proposed to strengthen employment generation and economic growth in Cameroon:

1) The Cameroonian government should place a strong emphasis on diversifying the country's export base, shifting focus from raw materials towards finished goods. This strategy can help reduce unemployment by creating jobs in manufacturing and value-added sectors.

2) Efforts should be directed at improving government effectiveness, including the quality of public services, efficiency of the civil service, and the formulation and implementation of coherent policies that support economic growth and employment generation.

3) The paper recommends the encouragement of value-added production, such as offering fiscal and non-fiscal incentives to industries that manufacture finished goods. This approach can stimulate domestic production, create employment opportunities, and increase export revenues.

4) The government should pursue monetary policies that ensure inflation remains low and stable. Price stability helps protect the purchasing power of households and supports business planning, thereby contributing indirectly to job creation and economic stability.

In conclusion, this study offers valuable insights into the dynamics between export trading and unemployment in Cameroon. The analysis indicates that fostering value-added manufacturing and encouraging the export of finished goods can play a significant role in mitigating unemployment. Additionally, factors such as government effectiveness and the GDP growth rate were identified as key determinants influencing employment levels. By adopting and implementing the recommended policy measures, policymakers in Cameroon can create a more conducive environment for economic growth, promote job creation, and address both general and youth unemployment. Overall, the study underscores the importance of strategic economic diversification and effective governance in achieving sustainable employment outcomes and broader economic development.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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