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Exploring How the China's Economic Growth is Affected by the International Trade with Sub-Sahara Africa (SSA)

Adel Shakeeb Mohsen
Graduate School of Management (GSM), Abidjan, Cote d'Ivoire. E-mail: adelmhsen@hotmail.com

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Abstract: This study investigates the impact of China's international trade with Sub-Saharan Africa (SSA) on its economic growth over the period 1980-2024. The analysis employs the ADF unit root test, Johansen cointegration test, Granger causality test, and stability test. The Johansen cointegration test indicates that GDP is positively associated with China's trade with SSA, external debt, and energy consumption, while it is negatively related to inflation and oil price. The Granger causality test reveals a unidirectional short-run causality relationship running from GDP to China's trade with SSA and external debt, with no evidence of short-run causality relationship between energy consumption, inflation, oil price, and GDP. In contrast, the long-run analysis shows bidirectional causality relationship between China's trade with SSA, external debt, inflation, and GDP, and a unidirectional causality relationship from external debt and oil price to GDP. Finally, the stability test confirms that there are no structural changes in the model. These findings suggest that China's trade relations with SSA, alongside macroeconomic factors such as external debt and energy consumption, play a significant role in shaping its economic growth.

Journal of Economic Literature (JEL) codes: O11, E20

Keywords: China, SSA, economic growth, international trade.

1. INTRODUCTION

Prior to the initiation of economic reforms in 1978, China's economic performance was relatively weak, largely reflecting the structural rigidities of its centrally planned

socialist system. The economy was characterized by low productivity, allocative inefficiencies, and minimal integration into international markets. The adoption of the reform and opening-up policies in 1978 constituted a decisive turning point, as they liberalized foreign trade, encouraged foreign direct investment, and introduced market-oriented mechanisms into the domestic economy. These reforms fundamentally transformed China's economic structure and growth trajectory. A country that had previously been relatively poor and economically isolated subsequently evolved into a major global economic power. In the post-reform period, China experienced sustained and rapid economic growth, which enabled it to emerge as a key participant in global trade and international investment flows (Morrison, 2014).

In the contemporary global economy, China is widely regarded as one of the countries that has benefited most extensively from international trade. Its remarkable economic transformation over recent decades has been closely linked to its deepening integration into the global trading system. Persistent trade surpluses have played a crucial role in supporting rapid economic growth and have significantly contributed to China's rise as the world's second-largest economy. Chinese products are now present in nearly all global markets. According to the World Trade Organization (WTO), China advanced from the world's tenth-largest exporter in 1995 to the largest exporter globally by 2018. This sustained trade performance enabled China to accumulate the world's largest foreign exchange reserves by December 2018 (IMF, 2019). Similarly, a United Nations report in 2019 identified China as the world's largest trading nation. While China accounted for only 3% of global exports and imports in 1995, its share rose markedly to 12.4% by 2018, exceeding that of both the United States (11.5%) and Germany (7.7%). More recent World Bank data indicate that in 2024 China exported goods and services valued at USD 3.753 trillion and imported USD 3.129 trillion. In addition, China currently ranks as the world's second-largest economy, the largest merchandise exporter, the second-largest merchandise importer, the second-largest recipient of foreign direct investment (FDI), the largest manufacturing economy, and the largest holder of foreign exchange reserves (IMF, 2024).

Overall, China has consistently recorded trade surpluses, with Sub-Saharan Africa (SSA) representing one of the few regions where China's imports exceed its exports. This pattern reflects a complementary trade structure, whereby SSA

supplies China with critical natural resources and raw materials necessary for its industrial expansion, while China exports manufactured goods, capital, and technical expertise to the region. Recognizing Africa's strategic importance, China institutionalized its engagement with the continent through the establishment of the Forum on China-Africa Cooperation (FOCAC) in 2000. According to Kaplinsky and Messner (2008), China-Africa cooperation operates through multiple channels, including trade, foreign direct investment, financial flows, participation in global and regional governance institutions, migration, and environmental spillovers. Over time, Africa has emerged as one of China's major trading partners. In 2006, bilateral trade between China and Africa amounted to approximately USD 55 billion, positioning China as Africa's second-largest bilateral trading partner after the United States, whose trade volume was estimated at USD 91 billion (Mohan & Power, 2008).

Merchandise trade between China and Sub-Saharan African countries has expanded substantially, rising from USD 55 billion in 2006 to USD 166 billion in 2012. Currently, China stands as Africa's largest trading partner. Chinese foreign direct investment flows to Africa have also increased markedly, from around USD 200 million in 2000 to USD 29 billion in 2011. Beyond trade and investment, China has provided development assistance to African countries through economic and technical cooperation initiatives. Data from China's National Bureau of Statistics (NBS) indicate that the turnover of such cooperation projects grew from USD 1.2 billion in 2000 to USD 29 billion in 2011, underscoring the expanding scale of China's economic engagement with the region.

Since the 1980s, China has exported technical expertise to SSA countries, with a particular emphasis on capacity building and skills transfer in areas such as agricultural production (including rice and vegetable cultivation), food processing, and renewable energy development, especially solar power. During the 1990s, China revised its cooperation strategy toward in-kind assistance, primarily through grant-based support for non-profit projects such as the construction of schools, hospitals, and agricultural infrastructure. At the same time, Chinese firms expanded their presence in African markets, accounting for approximately 12% of the estimated USD 500 billion in Chinese manufacturing activities within SSA. China has also exported large volumes of low-cost consumer goods—such as textiles, footwear, and apparel—to African countries, which, while benefiting consumers, may pose

competitive challenges for local manufacturing industries (Zafar, 2007). Conversely, China's rapid economic expansion has significantly increased its demand for natural resources and raw materials, many of which are insufficiently available domestically. As a result, China has become increasingly reliant on imports from resource-rich regions, including Sub-Saharan Africa (Zafar, 2007).

According to the World Bank, trade relations between China and SSA were relatively limited between 1980 and 2000, with substantial economic engagement emerging only after 2000. Since then, China-SSA trade has grown steadily and assumed greater economic significance. China primarily exports manufactured and finished goods to SSA, while importing raw materials and natural resources to support its industrial production. This trade relationship has generated mutual benefits: SSA countries have gained access to capital goods, infrastructure development, and expanded export markets, while China has secured essential production inputs necessary to sustain its industrialization and long-term economic growth.

In light of the importance of international trade for economic growth and China's strategic emphasis on strengthening trade relations with Sub-Saharan Africa, this study aims to examine the impact of China's international trade with SSA on China's economic growth over the period from 1980 to 2024. The central research question addresses how trade between China and SSA contributes to China's economic growth. The remainder of the study is organized as follows: Section 2 reviews the relevant literature, Section 3 outlines the methodology, Section 4 presents the empirical results, and Section 5 concludes with key findings and policy recommendations.

2. PREVIOUS STUDIES

The empirical literature reviewed in this study examines the role of key macroeconomic variables such as international trade, external debt, oil consumption, inflation, and oil prices in shaping economic growth across different country contexts. These studies collectively highlight the multifaceted nature of growth dynamics and the varying channels through which macroeconomic factors influence economic performance.

A substantial body of research emphasizes the importance of international trade as a driver of economic growth. Hebson (2009), using Pearson correlation analysis over a 22-year period, found a positive and statistically significant relationship between international trade and economic growth in Kenya. Similarly, Abubakar

(2015) examined the Indian economy and reported a significant positive relationship between exports and GDP, underscoring the export-led growth hypothesis. Focusing on China, Sun and Heshmati (2012) employed both econometric and non-parametric techniques using balanced panel data from 31 Chinese provinces over the period 2002-2007. Their findings indicate that increased participation in global trade enabled China to capture both static and dynamic gains from trade, thereby accelerating national economic growth. Consistent with this evidence, Mohsen (2020), applying cointegration and Granger causality tests for the period 1980-2018, confirmed that international trade exerts a positive influence on China's economic growth.

Cross-country and comparative studies further reveal heterogeneity in the growth effects of trade. Antunes (2012) analysed the impact of international trade on economic growth in Portugal and the Netherlands between 1970 and 2010, finding that both exports and imports significantly contributed to growth in Portugal, whereas only exports exerted a positive effect in the Netherlands. In the case of Bangladesh, Ahamad (2018) used Pearson correlation and multiple regression analysis and found that both exports and imports significantly and positively affected GDP. Extending the analysis to trade liberalization, Mohsen and Chua (2020) investigated China's economy over the period 1980-2018 using Johansen cointegration, Granger causality tests, impulse response functions, and variance decomposition. Their results suggest that GDP is positively associated with trade openness, investment, final consumption expenditure, and inflation, while oil prices exert a negative effect on economic growth.

Yeboah *et al*. (2023) also analysed the effects of foreign trade on Ghana's economic growth over the period 1990-2020, employing the Johansen cointegration test, vector error correction model (VECM), and Granger causality test. Their findings indicate that both exports and imports positively contribute to Ghana's economic development. Similarly, Muhammad *et al*. (2023) examined the impact of international trade on economic growth in Nigeria from 2000Q1 to 2020Q4 using an Autoregressive Distributed Lag (ARDL) model and an Error Correction Model (ECM). The study found that export demand has a significant and positive effect on economic growth in both the short and long run, whereas import demand and exchange rate volatility negatively affect growth over the same periods. In Tanzania, Mwaifunga (2025) applied an ARDL model to quarterly data spanning 2001 to 2020

and reported that net exports significantly contribute to long-run economic growth while exerting a contractionary effect in the short run. Conversely, net imports stimulate short-term growth but undermine long-term economic performance. The exchange rate was found to enhance long-term growth but induce short-run volatility, whereas foreign direct investment and inflation were statistically insignificant. Extending the analysis to multiple developing countries, Kulkarni and Sharma (2025) examined the impact of international trade on economic growth in ten developing nations using data from 1991 to 2018. Their findings highlight heterogeneous trade-growth dynamics, indicating that the effects of international trade vary across countries.

Another strand of the literature focuses on the role of external debt in economic growth, with mixed empirical findings. Shahazad *et al.* (2014) examined Pakistan's economy over the period 1980-2013 using multiple regression models and found that external debt has a significant negative impact on economic growth, suggesting the presence of debt overhang effects. In contrast, Zhang *et al.* (2011), employing a Solow growth framework and multiple linear regression for developing countries between 1991 and 2011, reported a positive relationship between GDP and foreign direct investment, foreign aid, and external debt. Ayadi and Ayadi (2008) conducted a comparative analysis of Nigeria and South Africa using ordinary least squares and generalized least squares techniques. Their findings indicate that South Africa utilized external borrowing more effectively to promote growth, while in Nigeria external debt contributed positively only up to a threshold, beyond which its effect became negative.

Similarly, Senadza *et al.* (2017), applying the System Generalized Method of Moments (GMM) to panel data for Sub-Saharan African countries over the period 1990-2013, found that external debt exerts a statistically significant negative effect on economic growth in the region. In a broader emerging-market context, Prakash and Panigrahi (2024) employed unbalanced panel data estimation techniques using data from 24 emerging economies spanning 1990-2019 to assess the effects of external debt and capital formation on GDP growth. Their findings indicate that external debt adversely affects economic growth, whereas capital formation plays a significant and growth-enhancing role. Moreover, Elkhalfi *et al.* (2024) examined the relationship between external debt and economic growth in emerging economies over the period 1990-2022 and identified a nonlinear association between the two

variables. The results suggest that moderate levels of external debt can initially stimulate economic growth by easing financing constraints; however, beyond a certain threshold, excessive debt accumulation leads to diminishing returns and ultimately hampers economic performance. This nonlinear pattern underscores the importance of sustainable debt management in fostering long-term economic growth.

Energy consumption, particularly oil consumption, has also received considerable attention in the growth literature. Rahman *et al*. (2018) examined Bangladesh using annual data from 1980 to 2015 and applied Johansen cointegration and Granger causality tests, finding a unidirectional causal relationship running from oil consumption to economic growth. In Pakistan, Waleed *et al*. (2018) analysed data from 1965 to 2015 using error correction models and reported a bidirectional causal relationship, indicating that oil consumption stimulates growth while economic growth simultaneously increases energy demand. Similar evidence was found for Nigeria by Dantama and Inuwa (2012), who showed that oil consumption plays a critical role in economic growth and that efforts to conserve oil could adversely affect economic performance. Extending this line of inquiry, Mmbaga and Kulindwa (2024) examined the impact of petroleum consumption on economic growth in Eastern Africa in both the short and long run. Employing a Panel Autoregressive Distributed Lag (ARDL) model with data spanning 2000-2021, their findings indicate that petroleum consumption exerts a statistically significant and positive effect on GDP in both time horizons.

At a broader regional level, Susilo *et al*. (2024) analysed the effects of various energy sources (including coal, oil, gas, and renewable energy) on economic growth in 11 Asian countries, including China, over the period 1994-2021. Using panel data econometric techniques such as Ordinary Least Squares (OLS) and Fixed Effects models, the study found that all forms of energy consumption have a positive and statistically significant impact on GDP growth. Similarly, Komarova *et al*. (2022) investigated the relationship between economic growth and energy consumption across countries classified by development level and geographical macro-regions. Their results suggest that the growth-enhancing effect of energy consumption is stronger in non-OECD economies than in OECD countries, reflecting the more extensive and energy-intensive nature of economic development in less industrialized regions. This relationship is particularly evident in the Asia-Pacific

region, Africa, and Central and South America. Additional country-specific studies reinforce these findings. Wambui (2011) investigated Kenya over the period 1980-2009 using cointegration and error correction techniques and found that petroleum consumption has a positive impact on economic growth in both the short and long run. Bhusal (2010), focusing on Nepal from 1975 to 2009, identified a bidirectional causality between oil consumption and GDP in both the short and long run.

Regarding the role of oil prices in economic growth, existing empirical evidence reveals heterogeneous effects that vary across country characteristics, particularly oil dependence and income levels. Using a Vector Autoregression (VAR) framework, Gadea *et al*. (2016) examined the U.S. economy and found that oil price shocks exert a negative effect on economic activity, although the magnitude of this impact has diminished over time, reflecting structural adjustments and increased energy efficiency. Similarly, Katircioglu *et al*. (2015), employing panel unit root and cointegration techniques for OECD countries, reported a statistically significant negative relationship between oil prices and economic growth, suggesting that higher energy costs constrain output even in advanced economies. Extending the analysis to developing and oil-importing economies, Gamtessa and Guliani (2024) investigated the oil price-growth nexus in low- and middle-income net oil-importing countries over the period 1990-2020. Their findings indicate a significant negative long-run relationship between oil prices and economic growth, implying that rising oil prices hinder economic performance by increasing production costs, reducing investment, and worsening external balances in oil-dependent economies. Consistent with this evidence, Fadare *et al*. (2025) analysed Nigeria's economic performance using annual data from 1996 to 2022 and an Error Correction Model (ECM). The results show that oil price volatility, alongside investment and oil revenue, negatively affects economic growth in both the short and long run, underscoring Nigeria's vulnerability to external oil market shocks and its structural reliance on the oil sector.

In contrast, studies focusing on oil-exporting economies document a positive growth response to rising oil prices. Shehab (2024), applying Autoregressive Distributed Lag (ARDL) and Nonlinear ARDL (NARDL) models to quarterly data for Oman from Q1 2010 to Q4 2023, found that oil prices exert a positive linear effect on economic growth in both the short and long run. This outcome reflects the central role of oil revenues in stimulating fiscal spending, investment, and overall

economic activity in oil-exporting countries. Similarly, Taiwo *et al*. (2024) examined the effects of oil prices, unemployment, interest rates, and inflation on economic growth in the United States and found a positive association between GDP and oil prices, interest rates, and inflation, alongside a negative relationship between unemployment and economic growth. Adopting a broader regional perspective, Suleiman *et al*. (2025) analysed the influence of oil prices on economic growth across 51 African countries over the period 2005-2023. The study found that oil prices have a statistically significant positive effect on economic growth at the aggregate level. However, the impact is asymmetric across oil-exporting and oil-importing countries, highlighting the differing transmission mechanisms of oil price shocks. While Labor force expansion and capital investment support growth, inflation and exchange rate volatility were found to impede economic performance. Overall, these findings underscore the vulnerability of African economies to fluctuations in global oil prices and emphasize the importance of structural diversification and macroeconomic stability.

Finally, the relationship between inflation and economic growth has been widely debated in the literature, with evidence suggesting non-linear effects. Gokal and Hanif (2014), using non-linear least squares estimation, found a weak negative relationship between inflation and growth in Fiji. Idalu (2015) examined Nigeria over the period 1970-2013 and found that inflation exerts a small positive short-run effect on real GDP, which eventually turns into a negative and persistent shock after several years. Similarly, Olu and Idih (2015), using OLS for Nigeria between 1980 and 2013, reported a positive but statistically insignificant relationship between inflation and economic growth. Sergii (2009), focusing on CIS countries, identified a threshold effect whereby inflation below 8% promotes growth, while inflation at or above this level hampers economic performance. In contrast, Al-Taeshi (2016), using a combination of cointegration, causality tests, impulse response functions, and OLS for Malaysia from 1970 to 2014, provided strong evidence that inflation negatively affects economic growth.

3. METHODOLOGY

In order to achieve the objectives of this study, the economic growth model will be developed to test the effect of China's trade with SSA, external debt, energy consumption, inflation, and oil price on the economic growth of China.

International trade plays a crucial role in promoting the economic growth of nations. China is among the countries that have benefited substantially from international trade. Over the past few decades, trade has contributed significantly to China's transformation from a relatively underdeveloped economy into the world's second-largest economic power. In addition to trade, external debt also influences a country's economic growth. A considerable body of economic literature suggests that a moderate and well-managed level of external debt can be beneficial for both developed and developing economies by supporting investment and economic expansion (Karusi & Ada, 2018). Energy consumption is another important determinant of economic growth. As a country's economy expands, its demand for energy (particularly oil) tends to increase. In China, oil consumption has risen sharply since the implementation of economic reforms in the late 1970s, reflecting the rapid pace of industrialization and economic development. According to the World Bank (2025), China's oil consumption reached approximately 16.4 million barrels per day in 2024.

Inflation is also widely discussed in the literature as a factor influencing economic performance. While some economists argue that moderate inflation can stimulate economic activity by encouraging producers to increase output, others emphasize its potential negative effects through the erosion of consumers' purchasing power, which may reduce overall demand and production. China has historically maintained a relatively moderate level of inflation as part of its macroeconomic strategy to support sustained economic growth (Hwang & Wu, 2011). Furthermore, fluctuations in oil prices have significant implications for economic growth, particularly for countries that rely heavily on oil imports or exports. Rising oil prices tend to adversely affect oil-importing economies by increasing production costs and reducing real income. Given that China is a major oil-importing country, changes in global oil prices represent an important external factor influencing its economic growth trajectory.

The economic growth model has six variables: gross domestic product (GDP), China's international trade with SSA (TRDA), external debt (ED), energy consumption (EC), inflation (CPI) and oil price (OP). This model with lnGDP as the dependent variable is presented as follows:

$$\ln GDP = \beta 0 + \beta 1 \ln TRDA + \beta 2 \ln ED + \beta 3 \ln EC + \beta 4 \ln CPI + \beta 5 \ln OP + \varepsilon t \quad (1)$$

where β0 is the intercept, β1, β2, β3, β4, and β5 are the slope coefficients, lnGDP is the natural log of gross domestic product (USD), lnTRDA is the natural log of China's international trade (total export and import) with SSA countries (USD), lnED is the natural log of external debt (USD), lnEC is the natural log of energy consumption (kg of oil equivalent per capita), lnCPI is the natural log of consumer price index as an indicator of the inflation (2010 is the base year), lnOP is the natural log of oil price (US dollars per barrel), and εt is the error term.

This study employs annual time-series data for China covering the period 1980–2024, obtained from the World Bank (WB). All variables are transformed into natural logarithms to reduce heteroscedasticity and allow for elasticity interpretation. China's total exports to and imports from Sub-Saharan Africa (SSA) are used as a proxy for China's international trade with the region.

The vector autoregression (VAR) model is adopted due to its flexibility, ease of implementation, and relatively fewer theoretical restrictions compared to other econometric models. The VAR framework is particularly suitable for describing, analysing, and forecasting the behaviour of economic and financial time-series data, as it allows for the simultaneous estimation of multiple interrelated variables, the examination of dynamic relationships and linear interdependencies among them, the analysis of the effects of random shocks over time, and the forecasting of a system of interconnected time series.

Because this study involves time series data, it is necessary to begin the analysis with the unit root tests. Augmented Dickey-Fuller (ADF) unit root tests will be conducted on each variable in the model to find out whether the time series data are stationary at the level or first difference. After testing for stationarity and confirming the order of integration of each time series, and if the variables in the model are found to be integrated of the same order, the Johansen cointegration test will be applied to establish whether there is any long-run or equilibrium relationship between the variables in the model. If the variables are cointegrated, then the Granger causality tests will be conducted based on the VECM to determine the long and short run causality relationships among the variables in the model. However, if the Johansen test results indicate no cointegration among the variables in a particular model, then the Granger causality tests will be based on the VAR model. Lastly, stability test based on the cumulative sum (CUSUM) of recursive residuals will be used to determine whether the parameters of the model are stable over the period of the study.

4. EMPIRICAL RESULTS AND DISCUSSION

This section presents and discusses the empirical results of this study. They include the various econometric tests and estimations, namely, ADF unit root test, Johansen cointegration test, Granger causality test and stability test.

4.1. The ADF Unit Root Test Results

In the first step of the analysis, we have carried out the ADF unit root test to determine whether the variables in the model are stationary or non-stationary at the level. If any of the time series is found to contain a unit root and is not stationary at the level, the ADF test is repeated on the first differenced series. Table 1 below shows that all the variables in the model are not stationary at the level, but became stationary after first differencing at the 1% or 5% level of significance. Hence, all the variables in the model are integrated of order one, or I(1).

Table 1: ADF unit root test results

	Level			*First difference*		
	Intercept	*Trend and intercept*	*No trend & no intercept*	*Intercept*	*Trend and intercept*	*No trend & no intercept*
lnGDP	0.387268	-2.31425	3.251476	-3.68521***	-3.69088**	-1.65205**
lnTRDA	-0.954626	-2.120458	3.254268	-7.13584***	-6.84521***	-3.79630***
lnED	-1.828045	-1.753275	6.208458	-4.85248***	-5.16570***	-1.32519**
lnEC	-0.437824	-1.782611	2.312865	-3.16425**	-2.93501**	-2.05304**
lnCPI	-2.266084	-1.146083	1.972507	-3.30257**	-3.96246**	-1.85307**
lnOP	-1.302408	-2.337201	0.135879	-5.82705***	-5.86504***	-5.99285***

Note: *** denotes significance at the 1 percent level, and ** at the 5 percent level.

4.2. Johansen Cointegration Test Results

Since all the variables are stationary in the first difference, we can apply the Johansen multivariate cointegration test to determine if there is any cointegration or long-run equilibrium relationship between the variables in the model. However, before running the cointegration test we need to run the VAR model first to determine the optimal lag length, which is 3 based on the minimum AIC.

After having determined the optimal lag length, we then proceeded with the cointegration test for the model. Table 2 shows that there are four cointegration equations based on the trace test and three cointegration equations based on the maximum eigenvalue test. In other words, the results reveal that there is more than

one long-run relationship among the variables in the system comprising lnGDP, lnTRDA, lnED, lnEC, lnCPI, and lnOP.

Table 2: Johansen cointegration test results

No. of CE(s)	*Trace Statistic*	*0.05 Critical Value*	*Max-Eigen Statistic*	*0.05 Critical Value*
r = 0	203.7503***	0.0000	65.16154***	0.0000
r ≤ 1	138.5888***	0.0000	40.56169***	0.0092
r ≤ 2	98.02711***	0.0000	36.45273***	0.0004
r ≤ 3	61.57438***	0.0004	21.56852	0.0768
r ≤ 4	26.00586	0.0832	17.43808	0.1318
r ≤ 5	11.56777	0.1127	11.56777	0.1127

Notes: *** denotes significance at the 1 percent level, and ** at the 5 percent level.

After having found a cointegration relationships among the variables lnGDP, lnTRDA, lnED, lnEC, lnCPI, and lnOP, the cointegrating equation was normalized using the real GDP variable.

Table 3: Cointegration equation normalized with respect to lnGDP

lnGDP	*lnTRDA*	*lnED*	*lnEC*	*lnCPI*	*lnOP*	*C*
1	-0.612147	-0.63393	-0.576554	0.569668	0.547429	0.950675
	-0.07846	-0.0461	-0.1938	-0.15148	-0.06153	-0.01127

From Table 3, the long-run lnGDP equation can be written as:

$$\text{lnGDP} = -0.950 + 0.612\ \text{lnTRDA} + 0.633\ \text{lnED} + 0.576\ \text{lnEC} - 0.569\ \text{lnCPI} - 0.547\ \text{lnOP} \quad (2)$$

The cointegration equation given by equation (2) above shows that lnGDP is positively related to lnTRDA, lnED, and lnEC, but it is related negatively with lnCPI and lnOP.

The coefficient of TRDA indicates that a one percent increase in China's total trade with Sub-Saharan Africa (SSA) leads to a 0.612 percent increase in China's GDP, reflecting a strong and positive relationship between international trade and economic growth. International trade has long been recognized as a key driver of economic performance for both developed and developing economies, and China provides compelling empirical evidence that greater trade openness is associated with faster economic growth. Despite liberalizing its economy relatively recently,

China has achieved remarkable economic gains through deeper integration into the global trading system. Although the contribution of Sub-Saharan Africa to China's economic growth has received limited attention in the existing literature, the findings of this study suggest that trade relations with SSA play a significant and positive role in supporting China's economic expansion. On the import side, China sources a substantial share of its natural resources and raw materials from SSA countries, which serve as critical inputs for domestic production and industrial activities. Many Chinese manufacturing and industrial sectors depend heavily on these inputs to sustain production processes, enhance productivity, and ensure continuity of industrial operations; without access to such resources, industrial output and economic growth would be considerably constrained. On the export side, SSA represents an increasingly important market for Chinese goods. Chinese exports are generally price-competitive and well suited to the consumption patterns and income levels of many African economies, resulting in strong and sustained demand across the region. This expansion of exports contributes to higher production levels, employment creation, and revenue generation within China, thereby reinforcing overall economic growth. Taken together, these trade linkages highlight the mutually reinforcing nature of China–SSA trade relations. The empirical results of this study are consistent with previous findings in the literature, including Ahamed (2018) and Mohsen (2020), which also documented a positive and significant relationship between international trade and economic growth.

The coefficient of lnED indicates that a one percent increase in external debt leads to a 0.633 percent increase in China's GDP, suggesting a positive and statistically meaningful relationship between external debt and economic growth. This result highlights the constructive role that external borrowing can play in supporting economic expansion when it is effectively managed and allocated to productive uses. External debt enables governments to mobilize financial resources beyond domestic savings constraints, thereby facilitating higher levels of investment that are essential for long-term economic development. In the case of China, external borrowing has contributed to financing large-scale infrastructure and development projects, including investments in transportation networks, energy generation, and social infrastructure such as hospitals and public facilities. These investments enhance productive capacity, improve connectivity, reduce transaction costs, and stimulate private sector activity, all of which contribute to sustained economic growth.

Moreover, by easing short-term financing constraints, external debt can support macroeconomic stability and accelerate structural transformation, particularly in rapidly industrializing economies. The findings of this study are consistent with previous empirical research in the literature. For example, Ayadi and Ayadi (2018) and Senadza *et al*. (2017) also documented a positive relationship between external debt and economic growth.

The coefficient of lnEC indicates that for every one percent increase in energy consumption, the GDP of China will increase by 0.576 percent. Many countries rely heavily on energy—particularly oil—to sustain economic activity. In an energy-dependent economy such as China, energy availability constitutes a fundamental prerequisite for economic growth. Without adequate energy supply, economic activity would be severely constrained, potentially leading to stagnation. Energy in its various forms, including oil, electricity, and nuclear power, is intrinsically linked to economic development, as it is required to operate infrastructure, power industrial machinery, and support transportation systems. Chinese industries, in particular, depend extensively on a stable and sufficient supply of energy to maintain production processes. Inadequate energy supply can therefore limit industrial output and hinder overall economic performance. Consequently, oil consumption is closely associated with China's economic growth. An increase in energy consumption—especially oil consumption—often signals expansion in industrial activity and broader economic growth. The findings of this study are consistent with previous empirical research. For example, Waleed *et al*. (2018) and Inuwa (2019) similarly found that increases in energy consumption are positively associated with economic growth.

The coefficient of lnCPI indicates that for every one percent increase in inflation, the GDP of China will decrease by 0.569 percent. This result indicates that inflation has a direct and negative impact on China's economic growth. Inflation generally erodes the purchasing power of consumers, reducing their ability to demand goods and services. As consumer purchasing power declines, producers are likely to reduce output in response to lower demand, which subsequently leads to a decline in total production and a slowdown in overall economic activity. Persistent or prolonged inflation can have more severe macroeconomic consequences, potentially destabilizing the economy by increasing business costs, discouraging investment, and contributing to rising unemployment through firm closures and reduced production. Moreover, inflation is often

associated with excess liquidity in the economy, which can drive up the prices of assets such as housing and equities, as well as the prices of basic consumer goods. These asset price increases may generate spillover effects that further exacerbate inflationary pressures. In this context, the People's Bank of China plays a critical role in maintaining price stability by closely monitoring inflation and asset price movements. To curb inflationary pressures, the central bank may adopt contractionary monetary policy measures, including increases in interest rates, higher reserve requirements for commercial banks, currency appreciation, and indirect controls on bank credit. Such policy interventions are necessary to stabilize prices and support sustainable economic growth, particularly in light of the findings of this study, which confirm the adverse effect of inflation on China's economy. These results are consistent with earlier empirical studies, including Idahu (2015) and Taesh (2016), which also reported a negative relationship between inflation and economic growth.

The coefficient of lnOP indicates that a one percent increase in oil prices leads to a 0.547 percent decrease in China's GDP, implying a negative and economically meaningful relationship between oil price movements and economic growth. This result suggests that rising oil prices exert a contractionary effect on the Chinese economy, which is consistent with the country's status as a major net oil-importing nation. Higher oil prices increase production and transportation costs across a wide range of economic sectors, particularly in energy-intensive industries such as manufacturing, logistics, and construction. These higher costs are often transferred to consumers through increased prices for final goods and services. From a demand-side perspective, rising prices reduce consumers' purchasing power and suppress aggregate demand in line with the law of demand. Lower demand discourages firms from expanding output and investment, leading to reduced production levels. On the supply side, higher energy costs compress profit margins, weaken firms' competitiveness, and may result in production cutbacks or delayed investment decisions. The combined effects of reduced demand and constrained supply ultimately translate into lower output and a decline in gross domestic product (GDP), thereby slowing overall economic growth. This empirical finding is consistent with existing studies in the literature. For instance, Gadea *et al*. (2016) and Fiti (2016) similarly documented a negative relationship between oil price increases and economic growth in oil-importing economies.

4.3. Granger Causality Test Results

Since the variables in the model are cointegrated, the Granger causality tests based on the VECM are used to examine the short- and long-run causality relationships among the variables in the model. The F-test results show the significance of the short-run causal effects, while the significance of the coefficient of the lagged error correction term [ect(-1)] shows the long-run causal effect.

The Granger causality test results based on the VECM are shown in Table 4. It is clear that there are unidirectional short-run causality relationships running from lnGDP to lnTRDA and lnED, but there is no evidence of any short-run causality relationship between lnEC, lnCPI, lnOP and lnGDP. On the other hand, there are bidirectional long-run causality relationships between lnTRDA, lnED, lnCPI and lnGDP, and unidirectional long-run causality relationships running from lnEC and lnOP to lnGDP in China.

Table 4: Granger causality test results

Dependent Variables	*Independent Variables*						
	∑Δ lnGDP	*∑Δ lnTRDA*	*∑Δ lnED*	*∑Δ lnEC*	*∑Δ lnCPI*	*∑Δ lnOP*	*ect(-1)*
Δ lnGDP	-	0.020981	0.002876	0.894106	0.273829	0.026845	0.017323**
Δ lnTRDA	-3.3283**	-	0.446948	2.518709	2.598541**	0.151398	0.285166**
Δ lnED	-1.3058**	-0.072592	-	0.879983	1.208450**	-0.10389	0.122652**
Δ lnEC	-0.108699	-0.027192	-0.013576	-	0.051676	0.000453	0.010478
Δ lnCPI	-0.035537	0.039944**	0.006398	0.283903	-	-0.03012	-0.02491**
Δ lnOP	-1.0812	-0.18403	-0.295088	4.296564**	0.635217	-0.01816	0.033468

Notes: ** denotes significance at the 5 per cent level and * at the 10 per cent level.

4.4. The Stability Test Result

CUSUM statistic is used in determining the parameter stability of the model in this study. The decision about parameter stability is based on the position of the plots relative to the 5 % critical bounds. If the plots of the CUSUM statistic stay within the area in the two critical lines, then the parameters of the model are stable over the period of the study. Figure 1 indicates that the position of CUSUM plots stay within the area in the two critical lines, which means there are no structural changes in the model.

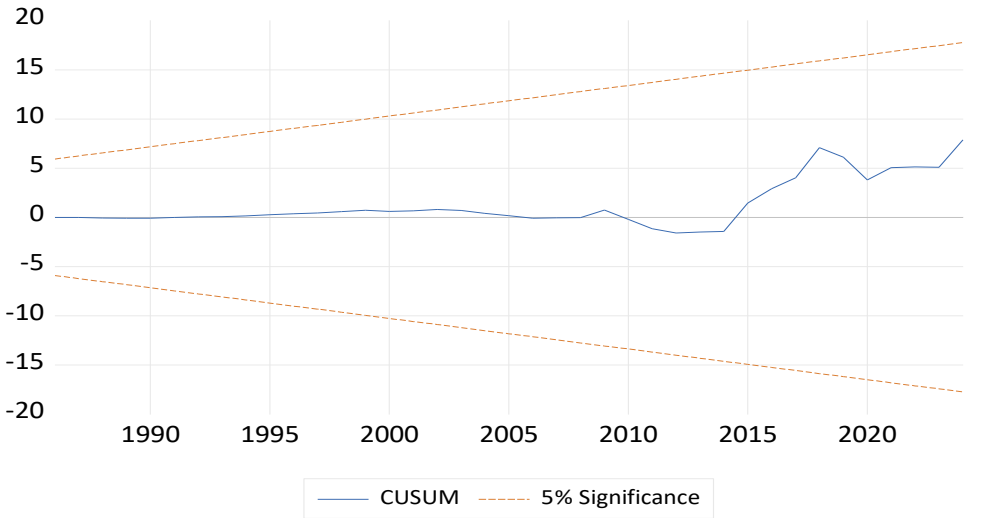

Figure 1: CUSUM test result

5. CONCLUSION

This study investigated how China's economic growth from 1980 to 2024 is affected by the international trade with Sub-Sahara Africa (SSA). The model consists of six variables, with GDP as the dependent variable, and China's international trade with SSA, external debt, energy consumption, inflation, and oil price as the independent variables. The ADF unit root test, Johansen cointegration test, Granger causality test, and stability test were used in this study.

The ADF unit root test revealed that all the variables in the model are integrated by order one. The Johansen multivariate cointegration test revealed that gross domestic product, is positively related to China's trade with SSA, external debt, and energy consumption, but it is related negatively with inflation and oil price. The Granger causality test results showed that there are unidirectional short-run causality relationship running from gross domestic product to China's trade with SSA and external debt, but there is no evidence of any short-run causality relationship between energy consumption, inflation, oil price, and gross domestic product. On the other hand, there are bidirectional long-run causality relationship between China's trade with SSA, external debt, inflation, and gross domestic product, and unidirectional long-run causality relationship running from external debt and oil price to gross domestic product in China. Lastly, the stability test indicated that there are no structural changes in the model.

The findings of this study indicate that China's economic growth is positively influenced by international trade, external debt, and energy consumption, while it is negatively affected by inflation and rising oil prices. Trade with Sub-Saharan Africa provides essential raw materials for domestic production and serves as an important export market, reinforcing industrial output, employment, and revenue generation. Effectively managed external debt supports large-scale infrastructure and development projects, enhances productive capacity, and stimulates private sector activity. Adequate energy supply underpins industrial operations and overall economic performance. In contrast, inflation erodes consumer purchasing power, reduces aggregate demand, and constrains investment and production, while higher oil prices increase production costs and reduce competitiveness, slowing economic activity. Overall, these results highlight the dual role of external and domestic factors in shaping China's growth trajectory and underscore the importance of strategic economic and policy management to sustain long-term development.

Based on the findings of this study, strengthening trade relations between China and Sub-Saharan Africa (SSA) is essential. Chinese policymakers should encourage and support good governance in SSA countries, as improved governance promotes economic development and stability. Such development can, in turn, benefit China by facilitating more reliable and efficient access to the raw materials required to sustain its industrial growth. At the same time, SSA countries should leverage their economic partnership with China to advance their own development objectives, particularly through value addition, infrastructure development, and capacity building. Furthermore, China should continue its policy of opening up the domestic economy to international trade and foreign direct investment, as this strategy has proven effective in promoting sustained economic growth. Maintaining openness will enhance productivity, innovation, and global competitiveness. In addition, the Chinese government should prioritize policies aimed at improving the living standards of its citizens, as rising incomes and welfare contribute to long-term economic stability and growth.

Macroeconomic stability remains a critical consideration. Inflation should be closely monitored and addressed at an early stage, given its adverse impact on economic growth as identified in this study. Similarly, policymakers should remain vigilant regarding fluctuations in global oil prices, as increases in oil prices negatively affect China's economy due to its reliance on oil imports. Appropriate fiscal and

monetary policy measures are therefore necessary to mitigate these risks and ensure sustainable economic growth.

REFERENCES

Abubakar, A. B. (2015). Impact of International trade on economic growth in India. *International Journal of Financial Research, 6* (3), pp. 30-35

Agarwal, V. (2021). *The effects of political shocks on international trade: evidence from China and major partners 1998-2018*. (PhD thesis). [The Australian National University, School of Public Policy].

Ahamad, H. (2018). Impact of International Trade on Economic Growth in Bangladesh. *International Journal of Science and Research*, *7* (11), pp. 1624-1627.

Al-Taeshi, H. T. A. (2016). *The impact of inflation on economic growth: evidence of Malaysia from the period 1970-2014*. (Master thesis). [Near East University, Graduate School of Social Sciences].

Antunes, A. J. (2012). *The effects of international trade on economic growth: An empirical comparison between Portugal and the Netherlands*. (Master thesis). [Lisbon University Institute].

Ayadi, F., & Ayadi, O. (2008). The impact of external debt on economic growth: A comparative study of Nigeria and South Africa. Journal of Sustainable *Development in Southern Africa*, *10* (3), pp. 234-264.

Bhusal, T. P. (2010). Econometric Analysis of Oil Consumption and Economic Growth in Nepal. *Economic Journal of Development*, *11 & 12* (1-2), pp. 135-138.

Dantama, Y., & Inuwa, N. (2012). The relationship between energy consumption and economic growth in Nigeria. *JORIND. 10* (3), pp. 293-300

Elkhalfi, Z., Chaabita, R., Benboubker, M., Ghoujdam, M., Zahraoui, K., Alaoui, H., Laalam, S., Belhaj, I., & Hammouch, H. (2024). The impact of external debt on economic growth: The case of emerging countries. *Research in Globalization, 9*, pp. 1-10.

Fadare, S. O., Oladipo1, O., & Agama, E. (2025). Oil Price Shocks and Economic Growth in Oil Exporting Countries: A Case Study of a Small Open Economy. *International Journal of Energy Economics and Policy, 15* (2), pp. 260-269.

Gadea, M. D., Gómez-Loscos, A., & Montañés, A. (2016). Oil price and economic growth: A long story? *Econometrics, 4* (4), pp. 1-28.

Gamtessa, S. F., & Guliani, H. (2024). Oil Price and Long-run Economic Growth in Oil-importing Developing Countries. *Research in Economics, 78* (4), pp. 1-18.

Gokal, V., & Hanif, S. (2004). *Relationship between Inflation and Economic Growth.* Working Paper No. 2004/04, Suva: Economics Department, Reserve Bank of Fiji.

Hwang, J. T. & Wu, M. J. (2011). Inflation and Economic Growth in China: An Empirical Analysis. *China and World Economy, 19* (5), pp. 67-84.

Hebson, O. N. (2009). *The Impact of International Trade on Economic Growth in Kenya.* (Master thesis). [University of Nairobi, School of Economics].

Idalu, R. E. (2015). *Impact of Inflation on Economic Growth: Case Study of Nigeria (1970-2013)*. (Master thesis). [Eastern Mediterranean University].

Kaplinsky, R., & Messner, D. (2008). Introduction: The Impact of Asian Drivers on the Developing World. *World Development, 36* (2), pp. 197-209.

Katircioglu, S. T., Sertoglu, K., Candemir, M., & Mercan, M. (2015). Oil price movements and macroeconomic performance: evidence from twenty-six OECD countries. *Renewable and Sustainable Energy Reviews, 44* (4), pp. 257-270.

Komarovaa, A.V., Filimonovaa, I. V., & Kartashevich, A. A. (2022). Energy consumption of the countries in the context. *Energy Reports, 8*, pp. 683-690

Kulkarni, P., & Sharma, S. (2025). *The Impact of International Trade on Economic Growth of Developing Countries*. Proceedings of the IBA IEA Conference on Economics and Public Policy (Ecofluence 2024), Advances in Economics, Business and Management Research 335, https://doi.org/10.2991/978-94-6463-766-3_3

Mmbaga, N. F., & Kulindwa, Y. J. (2024). Energy Consumption and Economic Growth: Evidence fromElectricity and Petroleum in Eastern Africa Region. *Clean Energy and Sustainability, 2* (4), pp. 1-16

Mohan, G., & Power, M. (2008). New African Choices? The Politics of Chinese Engagement. *Review of African Political Economy, 35* (115). pp. 23-42.

Mohsen, A. S. (2020). Exploring the Relationship Between International Trade and Economic Growth in China. *Asian Journal of Economics and Finance, 2* (2), pp. 75-86.

Mohsen, A. S., & Chua, S. Y. (2020). Trade Liberalization and Economic Growth in China. *Asian Journal of Economics and Business, 1* (2), pp. 169-184.

Morrison, W. M. (2014). *China's Economic Rise: History, Trends, Challenges, and Implications for the United States*. Congressional Research Service, Washington, DC.

Muhammad, S. Y., Isah, A., & Kumo, A. B. (2023). Impact of International Trade on Economic Growth: Evidence from Nigeria. *Global Academic Journal of Economics and Business, 5* (4), pp. 67-76.

Mwaifunga, N. R. (2025). The Impact of International Trade on Economic Growth in Tanzania: 2001-2020. *International Journal for Multidisciplinary Research (IJFMR), 7* (3), pp. 1-16.

Olu, J. F & Idih, E. O. (2015). Inflation and economic growth in Nigeria. *Journal of Economics and International Business Management, 3* (1), pp. 20-30.

Prakash, N & Panigrahi, S. R. (2024). The impact of external debt on economic growth in emerging economies: investigating the role of capital formation. *International Journal of Economic Policy in Emerging Economies, 19* (1), pp 1-14

Rahman, S., Amin, S., & Khan, F. (2018). The Relationship between Oil Consumption and Economic Growth in Bangladesh: An Empirical Analysis. *World Review of Business Research. 8* (3), pp. 4-36.

Senadza, B., Fiagbe, K., & Quartey, P. (2017). The effect of external debt on economic growth in Sub-Saharan Africa. International *Journal of Business and Economic Sciences Applied Research. 11* (1), pp. 61-69.

Sergii, P. (2009). *Inflation and economic growth: the non-linear relationship. evidence from CIS countries*. (Master thesis). [Kyiv School of Economics].

Shahzad, F., Zia, A., Ahmed, N., Fareed, Z., & Zulfiqar, B. (2014). Impact of External Debt on Economic Growth: A Case Study of Pakistan. *European Researcher, 89* (12-2), pp. 2133-2140.

Shehab, A. (2024). The Effects of Oil Prices on Economic Growth: Symmetric and Asymmetric Analysis in the Sultanate of Oman. *International Research Journal of Economics and Management Studies, 3* (10), pp. 175-184

Suleiman, N. N., Jamaludin, H., & Lacheheb, Z. (2025). The Dynamic Impact of Oil Price on Economic Growth in African Countries. *International Journal of Academic Research in Accounting, Finance & Management Sciences, 15* (4), pp. 371-387

Sun, P., & Heshmati, A. (2012). International Trade and its Effects on Economic Growth in China. *China Economic Policy Review, 1* (2), pp. 35-60.

Susilo, Y. S., Kartawinata, M., & Herawan, J. E. (2024). The Effect of Energy Consumption Towards Economic Growth: The Case of 11 Asian Countries. *International Journal of Energy Economics and Policy, 14* (3), pp. 600-608

Taiwo, I. A., Jayeola, L. A., & Adefokun, A. S. (2024). Impact of oil price volatility on economic growth in united states: an ordinary least square analysis. *International Journal of Science and Research Archive, 13* (1), pp. 477-485

Waleed, A., Akhtar, A., & Pasha, A. T. (2018), Oil consumption and economic growth: Evidence from Pakistan. *Energy Sources, Part B: Economics, Planning, and Policy, 13* (2), pp. 103-108.

Wambui, W. (2011). *Impact of petroleum consumption on economic growth in Kenya*. (Master thesis). [University of Nairobi, School of Economics].

Yeboah, E., Chibalamula, H. C., Atiso, F., & Amankwaa-Opoku, W. (2023). The effect of international trade on economic growth: Evidence from Ghana. *Global Journal of Business, Economics, and Management: Current Issues, 13* (1), pp. 91-105.

Zafar, A. (2007). The Growing Relationship between China and Sub-Saharan Africa: Macroeconomic, Trade, Investment, and Aid Links. *The World Bank Research Observer, 22*, pp. 103-130.

Zhang, X., Cheng, X., Yuan, J., & Gao, X. (2011). Total-Factor Energy Efficiency in Developing Countries. *Energy Policy, 39*, pp. 644-650.