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Official Development Assistance and Foreign Trade Relation: The Chad Example

Resmi Kalkınma Yardımları ve Dış Ticaret İlişkisi: Çad Örneği

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ABSTRACT

Official Development Assistance (ODA) provided by the OECD Development Assistance Committee (DAC) means financial support given to underdeveloped and developing countries within the framework of certain criteria. In this context, it appears as one of the tools used to finance economic development, especially in developing countries. The study aims to examine the impact of official development assistance on foreign trade in Chad, one of the developing countries. Using data on exports (EXPORT), imports (IMPORT), gross domestic product (GDP) and official development assistance (ODA) from the World Bank and OECD database for the years 1960-2022, we examine the contribution of these aid to Chad's foreign trade and economic sustainability. aimed to evaluate. In the analysis, Regression Analysis was performed with the Least Squares Method. Phillips-Perron and Augmented Dickey-Fuller unit root tests were applied to test the stationarity properties of time series. Long-term relationships between the series were examined with the Johansen Cointegration Test and Granger Causality Analysis was performed to determine the direction of the relationships between the variables. The findings show that there is a bidirectional relationship between GDP and ODA, and between ODA and exports. However, the effect of ODA on imports and GDP on exports is unidirectional. Additionally, a bidirectional relationship between GDP and imports has been observed. Research results show that development aid can positively strengthen Chad's economic growth and foreign trade performance. It fills an important gap in the literature as it provides important findings on how development aid and foreign trade strategies can be integrated for Chad's economic sustainability and growth. Limitations of the study include data limitations and the variability of foreign trade policies over time.

KEYWORDS

Official Development Aid, Johansen Cointegration Test, Foreign Trade, Macroeconomic Structure

ÖZ

OECD Kalkınma Yardımları Komitesi (DAC) tarafından sağlanan Resmi Kalkınma Yardımları(RKY), az gelişmiş ve gelişmekte olan ülkelere belirli kıstaslar çerçevesinde verilen mali destek anlamına gelmektedir. Bu bağlamda özellikle gelişmekte olan ülkelerde, iktisadi kalkınmanın finansmanı için kullanılan araçlardan birisi olarak karşımıza çıkmaktadır. Çalışma gelişmekte olan ülkelerden biri olan Çad'da, resmi kalkınma yardımlarının dış ticaret üzerindeki etkisini incelemeyi amaçlamaktadır. 1960-2022 yıllarına ait Dünya Bankası ve OECD veri tabanından alınan ihracat (EXPORT), ithalat (IMPORT), gayrisafi yurtiçi hasıla (GSYH) ve resmi kalkınma yardımlarına (ODA) ilişkin veriler kullanılarak, bu yardımların Çad'ın dış ticaretine ve ekonomik sürdürülebilirliğine katkısını değerlendirmeyi hedeflemiştir. Analizde En Küçük Kareler Yöntemi ile Regresyon Analizi gerçekleştirilmiştir. Zaman serilerinin durağanlık özelliklerinin test edilmesi amacıyla Phillips-Perron ve Augmented Dickey-Fuller birim kök testleri uygulanmıştır. Seriler arasında uzun dönemli ilişkiler Johansen Eşbütünleşme Testi ile incelenmiş ve değişkenler arasındaki ilişkilerin yönünün belirlenmesi için de Granger Nedensellik Analizi yapılmıştır. Elde edilen bulgular GSYH ile ODA ve ODA ile ihracat arasında çift yönlü ilişki bulunduğunu göstermektedir. Bununla birlikte, ODA' nın ithalata ve GSYH'nin ihracata etkisi tek yönlüdür. Ayrıca, GSYH ile ithalat arasında çift yönlü bir ilişki gözlemlenmiştir. Araştırma sonuçları kalkınma yardımlarının Çad'ın ekonomik büyümesini ve dış ticaret performansını olumlu yönde güçlendirebileceğini göstermektedir. Kalkınma yardımlarının ve dış ticaret stratejilerinin, Çad'ın ekonomik sürdürülebilirliği ve büyümesi için nasıl entegre edilebileceğine dair önemli bulgular sunması nedeniyle literatürde önemli bir boşluğu doldurmaktadır. Çalışmanın kısıtları arasında, veri sınırlamaları ve dış ticaret politikalarının zaman içindeki değişkenliği yer almaktadır.

ANAHTAR KELIMELER

Resmi Kalkınma Yardımları, Johansen Eşbütünleşme Testi, Dış Ticaret, Makroekonomik Yapı

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INTRODUCTION

Poverty is a widespread problem that impacts both industrialized and emerging economies. Since the 1980s, global economic and cultural transformations have made the effects of poverty more pronounced, particularly deepening the issue in less developed and emerging economies. However, there has been no international consensus on a definitive definition of poverty.

For a long time, independent organizations have prepared annual reports that include various criteria such as a country's security status, economic well-being, income inequality, poverty rates, the quality of state-provided services, the effectiveness of the legal system, and fundamental rights. These reports have been published under the "failed states index." In short, reports used to evaluate such states aim to provide comprehensive analyses of their vulnerabilities across various domains. These states are typically characterized by weak governance, deteriorated public services, unjust legal systems, and economic imbalances. In this context, Chad is observed to be among the countries facing intense problems and being notably at risk according to the fragile states index. Chad is regarded as one of the least affluent nations globally, ranked 190th in the 2021 Human Development Report (UNDP, 2022).

Poverty in Chad directly affects 55% of the population, with the overall poverty rate reaching a high level of 87%. Poverty levels vary based on factors such as family size, education level, and the economic activities of the household head. Individuals with lower educational levels and those who have not received education beyond primary school, as well as those from larger families, have the highest poverty rates (International Monetary Bank, 2024). Therefore, both national and international resources are crucial in poverty reduction. In this context, development aid, which has recently gained prominence, appears as a method to address capital shortages in countries like Chad, aiming to support social, economic, and humanitarian development.

Official Development Assistance (ODA) includes financial transfers to countries, regions, and multilateral development organizations listed by the Development Assistance Committee (DAC). These aids include grants and support offered at favorable terms to promote the well-being and financial progress of less-developed nations.

This study initially examines Chad's macroeconomic profile, which is important not only for local economic stakeholders but also for global investors and financial entities. Subsequently, using data from 1960-2022, the impact of development aid on foreign trade in Chad is analyzed through two different models for exports and imports.

1. LITERATURE REVIEW

The relationship between Official Development Assistance (ODA) and foreign trade has been the subject of extensive research, as both are vital components in the economic development of developing countries. ODA is frequently seen as a critical means to stimulate growth and reduce poverty, while foreign trade is recognized as a driver of economic expansion and poverty alleviation. Various studies have explored the dynamic between these two elements, analyzing both direct and indirect effects on national economies. This literature review consolidates relevant studies that examine the link between ODA and foreign trade, with a specific focus on developing economies, including Chad. While many studies suggest a positive impact of ODA on economic growth, others emphasize the need for effective policy frameworks and institutional support to optimize the benefits of aid. The findings also highlight that foreign trade, when integrated with development aid strategies, can accelerate growth and foster economic diversification. Research has shown that in countries like Chad, external factors such as geographical limitations, infrastructure challenges, and political instability often constrain the impact of ODA. Therefore, ODA must be strategically aligned with trade policies and local conditions for it to be effective. This literature review aims to synthesize the key findings from various studies to enhance the understanding of the role of ODA and foreign trade in the economic transformation of Chad.

Table 1: Literature Review on the Relationship Between Official Development Assistance and Foreign Trade

Study	Key Findings	Methodology	Relevance to Chad
Jones et al. (2000)	ODA has a positive impact on economic growth in developing countries.	Empirical study, time-series data	Relevant for Chad's development aid impact.
Taylor (2004)	ODA improves infrastructure and governance, leading to higher growth rates.	Structural equation modeling	Highlights Chad's need for infrastructure development.
Miller (2006)	Foreign trade policies that integrate aid lead to faster economic growth.	Comparative analysis of trade policies	Aligns with Chad's trade policy requirements.
Green and White (2008)	ODA effectiveness depends on local conditions, not just funding.	Case study approach	Pertinent to Chad's institutional challenges.
Khan (2011)	Foreign trade and ODA reduce poverty in resource-dependent economies.	Panel data analysis	Relevant for Chad's oil dependence.
Davies et al. (2013)	ODA facilitates investment in human capital, driving growth.	Longitudinal study	Key for Chad's development strategies.
Williams (2015)	ODA's effectiveness is increased when accompanied by trade liberalization.	Quantitative analysis	Offers insights for Chad's trade policies.
Harrison and Lee (2017)	Trade liberalization helps to diversify the economy in developing nations.	Case studies	Applies to Chad's need for economic diversification.
Robinson (2018)	Institutional reforms improve the impact of ODA and foreign trade.	Policy analysis	Relevant for Chad's institutional challenges.
Adams and Rogers (2020)	Effective aid policies correlate with sustainable growth in sub-Saharan Africa.	Cross-country econometric study	Directly relevant for Chad's aid policy framework.
Mason (2021)	ODA contributes to poverty reduction when accompanied by export growth.	Econometric analysis	Important for Chad's poverty reduction strategy.
Chang and Williams (2022)	Aid effectiveness is closely linked with political stability and governance.	Empirical study of political impacts	Relevant for Chad's political challenges.

This literature review reveals that ODA and foreign trade are vital in promoting economic development in low-income countries. The positive correlation between ODA and economic growth is evident across numerous studies, emphasizing that well-targeted aid can stimulate sectors critical to long-term growth. However, the effectiveness of ODA is contingent on factors such as infrastructure, governance, and political stability. For Chad, these findings are highly relevant, as the country faces challenges in both institutional development and infrastructure. While the literature suggests that ODA has the potential to enhance foreign trade and economic performance, the constraints posed by Chad's reliance on oil exports and insufficient sectoral diversification could undermine these effects. Moreover, political instability and inadequate trade infrastructure further complicate the successful implementation of aid programs. Despite the positive evidence, some studies indicate that the effectiveness of aid remains limited without proper institutional and policy reforms. These findings highlight the need for Chad to integrate ODA with trade liberalization, governance improvements, and strategic diversification to maximize the potential benefits. Consequently, this review underscores the importance of aligning aid programs with local conditions to foster sustainable growth and development**.**

2. ECONOMIC STRUCTURE OF CHAD

Chad is a country in Central Africa, and it does not have any coastline. It is surrounded by several countries: to the north lies Libya, to the east is Sudan, to the south are Niger and Nigeria, and to the west are Cameroon and the Central African Republic. The capital city is N'Djamena, and Chad has a vast area of 1,284,000 km², of which 60% is covered by desert, resulting in a population of only 14 million (Ticaret Bakanlığı,2024).

Until 2003, Chad's economic structure was limited to agriculture and livestock. However, since 2003, the country has begun exporting oil, which has become its most significant economic resource. Oil, mining, and agriculture are the main sectors of Chad's economy. Agriculture and livestock are typically conducted on a limited scale for subsistence. Climate and geographical conditions restrict production quantity and variety. Although 40% of the country's total land is fit for farming, only 4% of it is cultivable. Enhancing the productivity of the agriculture sector requires foreign investment and technical support in areas such as seeds, fertilizers, and irrigation (United Nations, 2017). Chad is also rich in natural and mineral resources, including gold, diamonds, iron, bauxite, uranium, and kaolin. However, only kaolin deposits are exploited commercially, while gold, bauxite, tin, titanium, and iron ores are not economically processed.

Chad's economy is heavily reliant on oil, with the oil sector being influenced by French, American, and Chinese private companies. Although oil revenues have supported Chad's economic performance since the country started oil exports in 2003, It continues to be one of the poorest nations in the world. Chad's oil reserves are relatively low compared to other producing countries, which limits economic growth (IMF, 2024).

Since 2015, Chad's economy has been adversely affected by regional crises and security issues. The country has become a refuge for people fleeing conflicts and terrorism from neighboring countries like Sudan, Nigeria, Niger, and Cameroon. According to the 2019 report from the United Nations High Commissioner for Refugees (UNHCR), Chad hosted 442,700 refugees Chad's relatively more stable situation compared to the Central African Republic, Mali, Libya, and Sudan has made it a destination for refugees (UNHCR, 2024). The increased influx of refugees has added an extra burden on economic and social development, particularly exacerbating poverty levels. The economic and social burden of refugees, along with their own poverty conditions, constitutes a topic of detailed evaluation and research (Beltramo et al.,2020: 15-16).

3. CHAD'S ECONOMIC PERFORMANCE INDICATORS

Factors such as lack of access to the sea, geographical remoteness, drought, infrastructure deficiencies, internal political instability, and terrorism adversely affect Chad's economic development. These negatives also lead to instability in the country's macroeconomic indicators.

• Gross Domestic Product (GDP)

GDP is a standard measure used frequently in international comparisons to evaluate a country's economic performance and overall well-being (Alagöz & Paksoy, 2021: 171).In Chad's economy, the period from independence in 1960 to 1990 saw low economic performance. Political instability and internal conflicts negatively affected growth rates. However, from 1990 to 2000, Chad adopted policies aimed at restructuring.

Reforms in privatization and the opening up of global markets during this time resulted in enhanced economic outcomes, including higher growth rates and increased income per individual. Since 2003, Chad has undergone significant changes in its economic structure. Large-scale oil projects have led to a notable increase in the country's GDP. The onset of oil production introduced new opportunities and revenue sources, positively influencing economic growth (Yacoub,2021: 55). The oil sector, in particular, has had a significant impact on foreign trade and budget balance, strengthening Chad's economic profile (African Development Bank, 20094). Chad's GDP was $1.38 billion in 2000, rising to $2.74 billion in 2003, and reaching $13.94 billion by 2014. However, with falling oil prices, it dropped to $10.95 billion in 2015 and $10 billion in 2017. Since 2018, it has risen again, reaching $12.7 billion in 2022. The increase in oil exports since 2003 has boosted Chad's GDP, achieving a high growth rate of 33.6% in 2004. However, decreases in oil exports between 2006 and 2008, due to water in the oil and an attempted military coup in 2006, resulted in a 9% reduction in annual average export volumes. Consequently, the annual GDP growth rate in 2006 was only 0.65%. Additionally, the general decline in international oil prices negatively affected Chad's economy. By 2014, revenue from oil exports represented 90% of the country's total export revenue, 60% of the budget, and 30% of GDP (Beltramo et al., 2020:11-14).

• Unemployment

Chad has a labor force potential of approximately 6 million people, of which 1,276,000 are employed. Historically, 95% of the labor force worked in primary sectors such as agriculture, fishing, and livestock. As of 2021, due to urban migration, this percentage has decreased to 70%. Secondary sectors are represented by limited activities such as agriculture and cotton processing. Tertiary sectors, including trade, logistics, and crafts, account for about a quarter of the workforce and create economic added value (Nations Unies,2017).

• Inflation Rate

Inflation, a macroeconomic indicator, is generally seen as a significant sign of economic instability. It is marked by a constant and significant rise in overall prices, which results in a decline in the value of currency. In other words, inflation causes the cost of products and services to grow over time, reducing the worth of money. As a result, consumers are able to purchase fewer items and services with their available funds, leading to economic instability and diminished spending power (Pınar & Paksoy, 2023: 110-111). Inflation provides critical insight into price mechanisms, the supply and demand situation of goods, and scarcity levels.

In Chad, inflation rates have increased with the onset of oil export projects. Inflation reached 12% in 2001 and fell to 5.4% in 2004. This decrease can be attributed to the sufficient supply of food products and reduced demand (OECD, 2006). During 2004-2005, a shortage of agricultural products put pressure on general price levels, increasing inflation to 3.3% in 2004 and 8% in 2005. An oversupply of food products in 2007 led to a decrease in general price levels, reducing inflation to 7.4%. In 2012, international food price increases caused inflation to rise to 7.7% (OECD, 2013). In 2014, inflation was relatively low at 1.7%, but it increased to 6.8% in 2015 due to a decrease in food product supply and rising food prices. Improvements in agricultural product supply in 2016 brought inflation down to 1% (Nations Unies,2017). However, low rainfall in some areas and trade disruptions with neighboring countries such as Cameroon, Nigeria, and Libya caused food price increases in 2015. This trend impacted major expenditure items including food, alcoholic.

4. DATA SET AND FINDINGS

The purpose of this research is to examine how development assistance has influenced Chad's international commerce from 1960 to 2022. World Bank and OECD data and Eviews 11 update were recorded for this research. The reason for choosing the 1960-2022 period in this study is that it provides a meaningful basis in terms of both data availability and historical context. 1960 is the earliest year that international organizations such as the World Bank and OECD began to provide systematic data, and therefore reliable and comparable data are available. 2022 represents the year in which the most up-to-date and complete data are available for all variables used in the analysis. In addition, this period covers Chad's post-independence economic structuring process, increasing foreign aid dependency, and transformation in foreign trade structure. In this context, the selected period allows for a healthy analysis of long-term interactions. The effects of development aid on foreign trade have been examined using two models. Model 1 investigates the relationship between development aid and exports, while Model 2 examines the relationship between development aid and imports. The models are defined as follows:

$$logEXPORT=\beta0+\beta1logGDP+\beta2logODA+\mu \quad \text{(Model 1)}$$

$$logIMPORT=\beta0+\beta1logGDP+\beta2logODA+\mu \quad \text{(Model 2)}$$

The factors considered in the analysis—exports, imports, gross domestic product (GDP), and official development assistance (ODA)—for the period 1960-2022 are illustrated in Figure 1.

Figure 1: Exports, Imports, Gross Domestic Product, and Development Aid

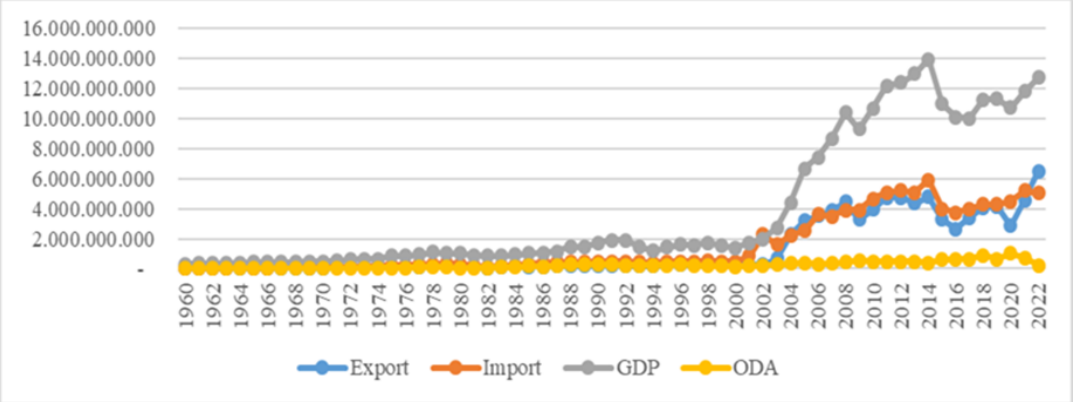

Figure 1 shows that development aid was generally below 90 million dollars until 1984. After 1984, it increased and reached 1 billion dollars by 2020, before declining again. The GDP variable also experienced abrupt declines in 2009, and in 2015-2017, and 2020. GDP, which was below 2 billion dollars until 1989, reached 10 billion dollars in the subsequent 20 years. After falling to 9.3 billion dollars in 2009, GDP increased again until 2014, only to decline once more from 2014 onwards, dropping to 11 billion dollars in 2015 and 10 billion dollars in 2016 and 2017. Following two years of increase, it fell to 10.7 billion dollars in 2020 before rising again. The GDP variable, which followed a highly volatile trend, peaked at approximately 14 billion dollars in 2014, during which imports reached their highest value of 6 billion dollars, and exports reached 4.7 billion dollars. The year with the highest export value was 2022, at 6.5 billion dollars.

Initially, to assess the importance of the causal link between the variables in the model, a regression analysis was conducted and the results are shown in Table 2.

Table 2: Regression Analysis (Model 1)

Dependent Variable: LOG(EXPORT)				
Variable	**Coefficient**	**Std. Error**	**t-statistic**	**Probability**
LOG(GDP)	1.409324	0.041182	34.22144	0.0000
LOG(ODA)	-0.081754	0.029154	-2.804239	0.0068
C	-8.842001	0.559158	-15.81306	0.0000
R- squared	0.978959			
Adjusted R -squared	0.978246			
F-statistic	1372.530			
Probability	0.000000			

According to Table 2, all variables are significant at the 5% level, with a high R-squared value and an F-statistic below 0.05, demonstrating that the model is statistically relevant. To evaluate the stability of the data for further causality and VAR analysis, the stability of the variables was examined using the extended Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) tests for unit roots, as displayed in Table 3.

Table 3: Unit Root Tests (Model 1)

PP (Phillips Peron)				
	At Level			
		EXPORT	GDP	ODA
With Constant	t-Statistic	0.5910	0.2481	-0.4220
	Probabilty	***0.9884***	***0.9736***	***0.8983***
		n0	n0	n0
With Constant & Trend	t-Statistic	-1.3287	-1.5249	-3.5975
	Probabilty	***0.8714***	***0.8103***	***0.0383***
		n0	n0	**
	At First Difference			
		d(EXPORT)	d(GDP)	d(ODA)
With Constant	t-Statistic	-5.5950	-6.1039	-14.4579
	Probabilty	***0.0000***	***0.0000***	***0.0000***
		***	***	***
With Constant & Trend	t-Statistic	-5.7456	-6.2174	-15.7360
	Probabilty	***0.0001***	***0.0000***	***0.0000***
		***	***	***

ADF(Augmented Dickey-Fuller)				
	At Level			
		EXPORT	GDP	ODA
Constant	t-Statistic	0.5267	0.6741	1.7534
	Probabilty	***0.9864***	***0.9906***	***0.9996***
		n0	n0	n0
Constant & Trend	t-Statistic	-1.2806	-1.2686	-0.4037
	Probabilty	***0.8835***	***0.8864***	***0.9853***
		n0	n0	n0
	At First Difference			
		d(EXPORT)	d(GDP)	d(ODA)
Constant	t-Statistic	-5.6965	-6.0046	-15.1652
	Probabilty	***0.0000***	***0.0000***	***0.0000***
		***	***	***
Constant & Trend	t-Statistic	-5.9293	-6.1804	-15.7360
	Probabilty	***0.0000***	***0.0000***	***0.0000***
		***	***	***

Table 3 illustrates that the data initially lack stability, but they become stable after applying the first difference. This allows for the investigation of long-term relationships among the series through cointegration tests. The presence of cointegration among the series implies that each variable in the system is subject to a common stochastic trend rather than individual external and permanent shocks When more than two variables are involved, multiple cointegration possibilities exist (Şahinler,2000: 59). Therefore, the Johansen test for cointegration can be used.

To implement the VAR model, the appropriate lag length must be determined. Using Eviews 11 software, the cointegration test was carried out, and based on the Akaike, Schwarz, and Hannan-Quinn criteria, the ideal lag length was found to be five.

The Johansen cointegration analysis was conducted to determine if the variables are linked, and the findings are shown in Table 4.

Table 4: Johansen Cointegration Test (Model 1)

Hypothesis	Eigencalue Statistic	Max-Eigenvalue	0.05 Critical Value	Probability**
r=0	0.365876	26.87514	24.25202	0.0220
r ≤1	0.110306	6.895804	17.14769	0.7243
r ≤2	0.002094	0.123660	3.841465	0.7251

**MacKinnon-Haug-Michelis (1999) p-değerleri

Table 4 shows that there is one cointegration equation. For the concept of cointegration to be valid, the series must exhibit stationary properties. To achieve stationarity, differencing the series is necessary. However, this process may lead to the loss of long-term data. To mitigate this, error correction methods are employed (Johansen, 1998: 243). The error correction model, created with stationary variables, includes the value of the error terms from the previous period. The stationarity of the error terms at their original form is essential, as discussed in Table 5.

Table 5.: Error Terms (Model 1)

		t-statistic	Probability*
Augmented Dickey-Fuller Statistic		-4.893769	0.0000
Test Critical Values	1%	-2.603423	
	5%	-1.946253	
	10%	-1.613346	

* MacKinnon (1996) one-tailed probability values.

Table 5 indicates that the p-value (0.0000) is below 0.05, suggesting that the error terms are stable at the level. Since the independent variables become stationary after the first difference instead of at the level, the error correction model was developed by incorporating the first differences of the independent variables and the lagged error terms. The data pertaining to the model can be found in Table 6.

Table 6: Error Correction Equation (Model 1)

Variable	Coefficient	Probability
D(LOG(GDP))	1.772683	0.0000
D(LOG(ODA))	-0.040755	0.03225
ERROR TERMS (-1)	-0.612292	0.0000
C	-0.022468	0.04496
Probability(F-statistic)	0.000000	

All p-values below 0.05 suggest that the variables are statistically significant. The value of the F-statistic is also under 0.05, indicating that the new regression model is statistically relevant. Additionally, in the error correction model, the coefficient of the error terms should fall between -1 and 0 (-1 < ECT < 0)..Otherwise, the error correction mechanism does not work (Tarı, 2015: 492). As shown in Table 5, there is no such issue in the new regression model. After testing the error correction mechanism, autocorrelation, normality, and heteroscedasticity tests were conducted, and the findings were shared in Table 7 through Granger causality tests.

Table 7: Granger Causality Analysis (Model 1)

Dependent variable: EXPORT			
	Chi-sq	**df**	**Probability**
GDP	1.636486	2	0.4412
ODA	15.14517	2	0.0005
All	19.93922	4	0.0005
Dependent variable: GDP			
	Chi-sq	df	Probability
EXPORT	7.721787	2	0.0210
ODA	13.20570	2	0.0014
All	15.51302	4	0.0037
Dependent variable: ODA			
	Chi-sq	df	Probability
EXPORT	12.17224	2	0.0023
GDP	13.46999	2	0.0012
All	15.67242	4	0.0035

As seen in Table 7: In the equation where the dependent variable is IMPORT, the probability value of the GDP variable is 0.4412, the probability value of GDP is above 0.05, suggesting that GDP does not have a statistically meaningful impact on EXPORT. In contrast, the probability value of AID is 0.0005, which is

below 0.05, implying that AID has a significant influence on EXPORT. In the equation where the dependent variable is GDP, the probability value of EXPORT is 0.0210, which is less than 0.05, indicating that EXPORT's effect on GDP is significant. Also, the probability value of AID is 0.0014, which is less than 0.05, indicating that AID's effect on GDP is significant. In the equation where the dependent variable is AID, the probability value of EXPORT is 0.0023, which is less than 0.05, indicating that EXPORT's effect on AID is significant. The probability value of GDP is 0.0012, which is less than 0.05, indicating that GDP's effect on AID is also significant.

Table 8: Regression Analysis (Model 2)

Variable	Coefficient	Std. Error	t-sstatistic	Probability
LOG(GDP)	1.143619	0.042712	26.77513	0.0000
LOG(ODA)	0.068763	0.030236	2.274166	0.0266
C	-5.534535	0.579925	-9.543533	0.0000
R-squared	0.973734			
Adjusted R-squared	0.972844			
F-statistic	1093.629			
Probability(F-statistic)	0.000000			

According to Table 8, all variables have probabilities less than 0.05, R^2 is quite high, and the F-statistics are less than 0.05, making the model significant. The stationarity of variables is essential for the causality test and VAR analysis. Consequently, tests for unit roots were conducted using the Extended Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) methods, and the findings are presented in Table 9.

Table 9: Unit Root Tests (Model 2)

PP(Phillips Peron)	**At Level**			
		IMPORT	GDP	ODA
With Constant	t-statistic	0.1845	0.2481	-0.4220
	Probability	***0.9695***	***0.9736***	***0.8983***
		n0	n0	n0
With Constant & Trend	t-statistic	-1.7629	-1.5249	-3.5975
	Probability	***0.7107***	***0.8103***	***0.0383***
		n0	n0	**
	At First Difference			
		d(IMPORT)	d(GDP)	d(ODA)
With Constant	t-istatistik	-9.1259	-6.1039	-14.4579
	Probability	***0.0000***	***0.0000***	***0.0000***
		***	***	***
With Constant & Trend	t-statistic	-9.2960	-6.2174	-15.7360
	Probability	***0.0000***	***0.0000***	***0.0000***
		***	***	***
ADF (Augmented Dickey Fuller)	**At Level**			
		IMPORT	GDP	ODA
With Constant	t-statistic	0.0134	0.6741	1.7534
	Probability	***0.9559***	***0.9906***	***0.9996***
		n0	n0	n0
With Constant & Trend	t-statistic	-1.7629	-1.2686	-0.4037

	Probability	***0.7107***	***0.8864***	***0.9853***
		n0	n0	n0
	At First Difference			
		d(IMPORT)	d(GDP)	d(ODA)
With Constant	t-satistic	-9.1762	-6.0046	-15.1652
	Probability	***0.0000***	***0.0000***	***0.0000***
		***	***	***
With Constant & Trend	t-statistic	-9.3398	-6.1804	-15.7360
	Probability	***0.0000***	***0.0000***	***0.0000***
		***	***	***

Table 9 illustrates that series which do not exhibit stationarity at level were differenced, and unit root tests were repeated. These results allow for the investigation of long-term relationships between stationary series using cointegration tests. In order to implement the VAR model, identifying the correct number of lags is essential. Using Eviews 11 software, a cointegration analysis was performed, and based on the Akaike, Schwarz, and Hannan-Quinn criteria, the best lag structure was found to be five.

To examine whether the variables in the study move together, a cointegration analysis was conducted, with the findings presented in Table 10.

Table 10: Johansen Cointegration Test (Model 2)

		Max-Eigenvalue	0.05	
Hypothesis	**Eigenvalue**	**Statistic**	**Critical Value**	**Probability****
r = 0	0.380202	28.22329	24.25202	0.0141
r ≤1	0.087669	5.413410	17.14769	0.8698
r ≤ 2	0.008198	0.485698	3.841465	0.4859

** MacKinnon-Haug-Michelis (1999) probability values.

According to Table 10, there is one equation indicating a stable relationship present. For the concept of cointegration to be valid, the series must exhibit stationary properties. To achieve stationarity, the differencing method is applied to the series. However, this process may result in the loss of long-term data. Therefore, error correction methods are used to balance these losses. In the error correction model developed using stationary variables, the previous period's error term is included. It is crucial that the residuals are stable at the level. This situation is analyzed and the findings are shared in Table 11.

Table 11: Error Terms (Model 2)

		t-istatistik	Olasılık*
Augmented Dickey-Fuller test istatistik		-3.931674	0.0002
Test kritik değerler:	1% 1	-2.603423	
	5%	-1.946253	
	10%	-1.613346	

*MacKinnon (1996) one-sided p-values.

According to able 11, the p-value (0.0002) is below 0.05, meaning the error terms are stationary at the level. Given that the independent variables are not stationary at the level but become stationary after the first difference, the error correction model was developed by adding the first differences of the independent variables and the lagged values of the error terms. Data pertaining to the model are presented in Table 12.

Table 12: Error Correction Equation (Model 2)

Variable	Coefficient	Probability
D(LOG(GDP))	1.017452	0.0000
D(LOG(ODA))	0.041610	0.02731
ERRORTERMS (-1)	-0.354074	0.0041
C	-0.028976	0.04287
Probability(F-statistic)	0.000000	

All probability values below 0.05 suggest that the variables are statistically significant. Furthermore, since the F-statistic is also less than 0.05, this confirms that the new regression model is statistically significant. Additionally, in the error correction model, the coefficient of the error term must be between -1 and 0 (-1 < ECT < 0). Otherwise, it means that the error correction mechanism is not functioning. There is no such issue in the new regression model. After testing the functionality of the error correction mechanism, autocorrelation, normality, and heteroscedasticity tests were conducted for the new regression model, and these tests were completed. Finally, to assess the nature of the relationship between the variables in the model, Granger causality tests were conducted, and the results are presented in Table 13.

Table 13: Granger Causality Analysis (Model 2)

Dependent Variable: IMPORT			
	Chi-square	**df**	**Probability**
GDP	8.365640	2	0.0153
ODA	9.399844	2	0.0091
All	14.61889	4	0.0056
Dependent Variable: GDP			
	Chi-square	**df**	**Probability**
IMPORT	19.44291	2	0.0001
ODA	10.34142	2	0.0057
All	28.73809	4	0.0000
Dependent Variable: ODA			
	Chi-square	**df**	**Probability**
IMPORT	1.482532	2	0.4765
GDP	0.924733	2	0.6298
All	4.408598	4	0.3535

As indicated in Table 13, when IMPORT is the dependent variable, the p-value for GDP is 0.0153, which is lower than 0.05, suggesting that GDP plays a meaningful role in influencing IMPORT. Likewise, the p-value for ODA is 0.0091, also below 0.05, showing that ODA has a considerable effect on IMPORT. Similarly, the probability value of ODA is 0.0091, also below 0.05, suggesting that ODA significantly affects IMPORT. In the equation where the dependent variable is GDP, the probability value of IMPORT is 0.0001, which is well below 0.05, signifying a significant effect of IMPORT on GDP. The probability value of ODA is 0.0057, indicating a statistically significant effect of ODA on GDP. However, when the dependent variable is ODA, the probability value of IMPORT is 0.4765, which is above 0.05, meaning IMPORT does not have a statistically significant effect on ODA. Similarly, the probability value of GDP is 0.3535, also greater than 0.05, indicating that GDP does not significantly affect ODA.

CONCLUSION

Both developed and developing countries implement various policies to combat poverty, which causes economic and social problems. In Chad, the subject of the study, projects and policies are developed by both central and local governments and non-governmental organizations to combat poverty. In this context, development aid provided to the country is very important in realizing these projects.

In this study, using annual data from the World Bank and OECD database between 1960 and 2022, the relationship between development aid and foreign trade in Chad was analyzed through two separate models. Whether the models are significant or not was examined by Regression Analysis with the Least Squares Method, and the stationarity of the series was determined by Phillips Peron (PP) and Augmented Dickey-Fuller (ADF) unit root tests. After the long-term relationships between the series that are stationary at the first difference were analyzed with the Johansen Cointegration Test, Granger Causality Analysis was performed to determine the direction of the relationship between the variables. As a result of the analysis:

- (According to Model 1)GDP is not the cause of EXPORT. ODA is the reason for EXPORT. EXPORT is the cause of GDP. ODA is the cause of GDP. EXPORT is the cause of ODA. GDP is the cause of ODA.
- (According to Model 2) GDP is the cause of IMPORT. ROOM is the reason for IMPORT. IMPORT is the cause of GDP. ODA is the cause of GDP. IMPORT is not the cause of ODA. GDP is not the cause of ODA, findings have been obtained.

The findings clearly show bidirectional causal relationships between GDP, exports, imports and foreign direct investments (FDI). In this context, the impact of Official Development Assistance (ODA) on exports and imports and its contribution to GDP is remarkable. In addition, based on the findings, it can be said that the effect of development aid on increasing GDP, exports and imports has a role in reducing poverty. However, for this role to be effective, it depends on the central governments' strategies to deal with the poverty problem in harmony with local governments and the country's foreign policies. Otherwise, development aid may not be effective enough in realizing the central government's anti-poverty policies due to Chad's wide geographical structure and insufficient transportation infrastructure.

The study findings align with those of Radelet (2006), Burnside and Dollar (2000) , who frequently emphasize the role of development aid in reducing poverty and promoting economic growth, and Easterly (2003) , who emphasize the need to contextually align development aid strategies with local realities.

Various suggestions can be made by evaluating the data obtained as a result of the study. First of all, in order for development aid to be more effective, it is of great importance that local governments and central authorities implement compatible strategies. Additionally, strengthening regional cooperation to alleviate the effects of regional crises and security problems can increase the effectiveness of development assistance. Additionally, diversifying trade policies and improving the economic infrastructure will help ensure the sustainability of Chad's economic growth.

In conclusion, although official development assistance and foreign trade play an important role in reducing poverty, the effectiveness of these measures can only be maximized when they are integrated into long-term, context-specific strategies tailored to the country's specific conditions. This study highlights the need to develop comprehensive and regionally coordinated approaches to increase the impact of development assistance in Chad.

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