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The Effects of Trade Tariffs on Inflation in Cameroon in the Context of Exchange Rate Dynamics

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Abstract

This study investigates the impact of trade tariffs on inflation in Cameroon, with a particular focus on the moderating role of exchange rates, using data from 1990 to 2022. By employing the Autoregressive Distributed Lag (ARDL) estimation technique, the study examines how both import and export tariffs influence inflation dynamics. The findings reveal a significant long-run relationship among the variables at the 1% significance level. Specifically, export tariffs demonstrate a strong positive association with inflation in both the short and long run, whereas import tariffs exhibit a negative but statistically insignificant effect. Moreover, exchange rates are found to have a negative correlation with inflation, suggesting that currency fluctuations play a crucial role in shaping price stability. With regard to the moderating effect, the results indicate that exchange rates influence inflation through the import tariff channel, although this effect is statistically insignificant. Based on these insights, the study recommends that the Cameroonian government consider increasing import tariffs as part of its import substitution policy. Raising import tariffs could reduce reliance on foreign goods, thereby helping to curb inflationary pressures driven by imported inflation. Additionally, given that export tariffs contribute to inflation, policymakers should assess the possibility of lowering export duties. Reducing these tariffs would enhance the competitiveness of Cameroonian goods in global markets, stimulate higher productivity, and ultimately alleviate inflationary pressures.

Keywords: *Import Tariffs, Export Tariffs, Inflation, Exchange Rate*

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1. Introduction

The creation of the World Trade Organization (WTO) in 1995 marked a significant step toward trade liberalization, leading to multiple rounds of negotiations aimed at reducing tariffs. The relationship between trade tariffs and inflation is a widely debated topic in economic literature, with various theoretical perspectives offering different insights. One key perspective is rooted in the concept of import price inflation, which explains how tariffs drive up the cost of imported goods, leading to higher prices in domestic markets. Since tariffs function as taxes on imports, they increase the cost of foreign goods for both consumers and businesses. As a result, domestic producers may gain greater pricing power, enabling them to raise prices and potentially fueling inflationary pressures (Amiti & Weinstein, 2019). Another crucial aspect of this debate concerns the impact of tariffs on market competitiveness. By making imported goods more expensive than domestic alternatives, tariffs can reduce competition from foreign producers.

With reduced competitive pressure, domestic firms may gain greater market power, allowing them to raise prices, which in turn contributes to inflation (Bown, 2020). Additionally, inflationary effects can arise from the rational expectations and consumers may adjust their behavior if they anticipate continued or increased tariffs. Firms might foresee rising input costs due to tariffs and preemptively increase prices, while consumers, expecting future price hikes, may alter their spending habits. These expectation-driven behaviors can further contribute to inflation (Fajgelbaum et al., 2020). From an economic policy perspective, tariffs are typically imposed as taxes on imported and exported goods, affecting their prices and, consequently, inflation. Inflation, in turn, refers to the overall increase in the price level of goods and services over time. Empirical studies (Johnson & Noguera, 2018; Freund & Ornelas, 2010; Bown, 2018, 2019; Cavallo et al., 2019) suggest that trade agreements lowering tariffs tend to reduce inflationary pressures and decrease consumer costs.

Cameroon employs various trade tariffs to regulate international trade, influencing inflation through multiple channels. Higher import tariffs increase the cost of imported goods, which, if heavily consumed, can exert upward pressure on inflation. At the same time, tariffs protect domestic industries by making foreign goods relatively more expensive. This protection may allow local producers to charge higher prices, further driving inflation if domestic goods replace tariffed imports. Moreover, exchange rates play a crucial role in this dynamic, as tariffs can influence the supply and demand for foreign currency, leading to exchange rate fluctuations. These fluctuations affect the cost of imported goods and raw materials, potentially amplifying inflationary pressures. The case of Cameroon illustrates this relationship through historical tariff and inflation trends.

In 2019, import tariffs stood at 15.46%, having fluctuated from 12.70% in 2014, 12.99% in 2013, and 11.70% in 2012. Recent statistics show that import taxes were 15.11% in 2017, 13.48% in 2018, 12.93% in 2019, 12.41% in 2020, and 12.70% in 2021, while export taxes ranged from 0.91% in 2017 to 1.36% in 2021 (WDI, 2023). Despite fluctuations, the general trend suggests a decline in tariffs compared to previous decades. Similarly, Cameroon's inflation rate has experienced significant variations. The highest recorded inflation rate of 6.25% in 2022 followed much lower rates in preceding years: 2.27% in 2021, 2.43% in 2020, 2.45% in 2019, 1.06% in 2018, and 0.64% in 2017 (WDI, 2023). This 6.25% inflation rate is the highest since 1995, when inflation peaked at 9.06%. Such statistics suggest a link between tariffs and inflation, making it necessary to explore the underlying mechanisms driving this relationship.

Several studies suggest that trade tariffs can contribute to inflation by raising the prices of imported goods and production inputs (Amiti et al., 2019). Tariffs may also disrupt global supply chains, leading to increased manufacturing costs and inflationary pressures (Felbermayr et al., 2020). While some research finds a strong link between tariffs and inflation, others argue that the effect is limited due to the imperfect pass-through of tariff costs to consumer prices (Amiti & Konings, 2019; Cavallo et al., 2019). The relationship between trade tariffs and inflation is not uniform across countries or time periods (Bown & Crowley, 2019). Factors such as economic structure, government policy responses, and trade patterns influence how tariffs affect inflation. For example, Fajgelbaum et al. (2019) found that U.S. tariffs on imported goods significantly raised the consumer price index, a finding echoed by Coibion et al. (2020). Similarly, studies suggest that trade liberalization can lower consumer price inflation, implying that protectionist policies may exacerbate inflationary pressures (Fajgelbaum et al., 2019; Hanley & Limão, 2020). However, some researchers argue that the inflationary impact of tariffs is minimal. They contend that because tariffs apply only to specific categories of goods, their effect on the overall price level is limited (Amiti & Weinstein, 2019; Goldberg & Khandelwal, 2019; Cavallo et al., 2019). Meanwhile, others assert that tariffs can trigger broader economic disruptions, including supply chain bottlenecks, retaliatory trade policies, and reduced productivity, all of which could have inflationary or deflationary effects (Fajgelbaum et al., 2020; Blanchard et al., 2021).

Theoretical perspectives on the link between trade tariffs and inflation remain divided. According to New Growth Theory, increased trade openness is associated with lower inflation, as greater competition and efficiency drive down prices. Romer (1993), using cross-sectional data from 114 countries between 1973 and 1988, found that trade protectionism tends to increase inflation, whereas trade openness lowers it. This suggests a positive relationship between tariffs and inflation. Conversely, the Cost-Push Myth presents an alternative viewpoint, arguing that open economies are highly vulnerable to imported inflation due to external shocks like exchange rate fluctuations and disruptions in global supply chains (Mayer, 2003; Aron & Muellbaur, 2003). This perspective suggests that rather than lowering inflation, trade openness might expose economies to inflationary risks from external markets. Given the inconsistencies in the trade tariff-inflation relationship, further research is needed to clarify the mechanisms at play, particularly in the context of Cameroon. Existing studies on this topic in Cameroon remain scarce or inconclusive, necessitating a deeper investigation into how trade tariffs influence inflation, especially when moderated by exchange rate fluctuations. Thus, the primary objective of this study is to examine the effects of trade tariffs on inflation in Cameroon, with a specific focus on the moderating role of exchange rates. The study seeks to achieve the following:

1. To investigate the effect of import and export tariffs on inflation in Cameroon.
2. To examine the moderating role of exchange rates in the trade tariff-inflation relationship.

The remainder of this paper is structured as follows: Section 2 reviews relevant literature, Section 3 presence the data sources and model specification, Section 4 details the methodology, Section 5 presents the empirical analysis, and Section 6 concludes with policy recommendations.

2. Literature Review

Amiti et al. (2019) analyzed the impact of U.S. trade tariffs on Asian economies using the difference-in-differences (DID) methodology. Their findings indicated that tariffs

significantly increased consumer prices and exacerbated inflationary pressures, highlighting that affected Asian economies experienced rising consumer costs due to U.S. trade tariffs, leading to heightened inflation concerns. Similarly, Cavallo et al. (2019) investigated tariff pass-through in the U.S. and found that tariffs on Chinese imports led to higher consumer prices, disproportionately affecting low-income households. Using DID analysis and other empirical techniques, their study revealed that a substantial portion of tariffs imposed on Chinese imports was passed on to American consumers, suggesting compensatory measures to mitigate the regressive nature of trade tariffs. Building on these findings, Bornhorst and Mody (2012) examined the relationship between trade tariffs and economic growth in Europe, employing panel data analysis and fixed effects models, and concluded that higher tariffs negatively affected economic growth and inflation. Lower economic growth rates were associated with higher trade tariffs, emphasizing the potential economic benefits of reducing trade barriers. Expanding on these insights, Richardson et al. (2020) used an enhanced Phillips curve model to analyze the impact of trade restrictions in Sub-Saharan Africa and Europe, finding that developed economies were more negatively affected by trade restrictions than developing economies, with an estimated trade-off of 2.66% in Sub-Saharan Africa and 4.31% in the European Union.

Extending the discussion to trade openness, Henri and Atangana (1969) explored its impact on inflation and economic growth in Cameroon using Generalized Method of Moments (GMM) estimations, finding a positive correlation between trade openness and inflation. This aligns with the findings of Darkwah et al. (2023), who studied trade openness and inflation in ECOWAS nations, revealing a significant positive long-term association but a negative short-term relationship, suggesting that trade liberalization initially leads to price fluctuations but stabilizes over time. However, Mukhtar (2010) examined the impact of trade openness on inflation in Pakistan, confirming Romer's hypothesis that trade openness reduces inflation. This conclusion was further supported by Romer (1993), who analyzed data from 114 countries and found that trade openness generally led to lower inflation levels, except in a few industrialized nations. In contrast, Ibrahim et al. (2020) analyzed the impact of trade openness on employment in Cameroon, using Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) regression techniques, and found a significant positive effect of trade openness on employment, indicating that trade liberalization could enhance job opportunities.

Moving to the role of monetary factors, Vivian et al. (2019) examined the relationship between money supply and inflation in Ghana using semiannual time series data from 1990 to 2017, finding a strong long-term relationship between money supply growth and inflation, though no significant short-term impact was observed. This finding is consistent with Okeke (2023), who analyzed Nigeria's money supply and inflation using the ARDL technique, based on data from 1981 to 2021, and found a significant long-term positive relationship between money supply growth and inflation. Likewise, Hicham (2020) studied Algeria's money supply and inflation using co-integration and causality analysis on annual data from 1970 to 2018, concluding that money supply growth had no significant impact on economic growth, supporting the monetarist theory of inflation control. Similarly, Oumbe (2018) examined monetary policy in Cameroon using the ARDL approach and Johansen's co-integration test, finding a significant long-term relationship between money supply and inflation, thus recommending price stability policies to control inflationary pressures.

Considering the influence of exchange rates, Ndongo (2020) investigated the exchange rate pass-through to inflation in Cameroon and Kenya using secondary data from 1991 to 2013, applying a structural Vector Autoregression (VAR) analysis, and found incomplete pass-through in the short run but a strong long-term impact. Dahiru et al. (2017) further analyzed Nigeria's exchange rate and inflation over a 45-year period using the ARDL approach, concluding that exchange rate fluctuations significantly influenced inflationary pressures, highlighting the need for exchange rate stability policies. Ndze and Dobdinga (2022), investigated the impact of price volatility and exchange rate on trade flows in Cameroon with the aim of determining how these factors affect commerce in the country. Secondary time series data gathered from the World Bank database's World Development Indicators (WDI) between 1980 and 2019 were used in the study. The Autoregressive Distributed Lag (ARDL) model was used in the study to analyze these impacts over both the short and long term. Additionally, it tested the impacts of the case both with and without an interacting variable.

The results of the study demonstrate that, in the short run, the exchange rate has a negative significant relationship with trade flows without an interactive variable at a 1% significant level and a positive significant relationship with trade flows with an interactive variable at a 5% significant level. In the same period, the consumer price index has a negative insignificant effect with trade flows without an interactive variable at a 5% significant level and a positive significant effect with trade flows with an interactive variable at a 1% significant level. Additionally, it showed that, over the long term, the exchange rate's relationship with trade flows in the model was significantly negative both with and without an interactive variable at the 1% significant level. In contrast, the consumer price index showed a negative, insignificant relationship with trade flows over the long term, with significant levels of 5% and 1% with and without interactive variables, respectively. The authors suggested that governments, investors, and people make the decision to adopt an exchange rate regime that will ensure exchange rate stability over the long term as well as the short term. Furthermore, the authors suggested that in order to optimize sales, producers have to temporarily raise prices while gradually lowering them.

In terms of economic growth, Lishan (1999) studied trade protectionism and inflation in 35 developing countries, finding a negative correlation between tariffs and economic growth, a conclusion reinforced by Adeleye et al. (2019), who analyzed inflation in Nigeria using Johansen co-integration and vector error correction models, identifying external factors such as exchange rate fluctuations and trade openness as major contributors to inflationary pressures. Mohammed and Ndzembanteh (2016) examined factors affecting Cameroon's economic growth and found that imports negatively impacted GDP growth, while exports and investment had positive effects, supporting the findings of Orhan & Abdul-Razak (2019), who studied the relationship between inflation, economic growth, and FDI in Ghana and found a positive relationship between FDI and economic growth but an inverse relationship between inflation and both variables. Similarly, Alexander and Danpome (2015) identified exchange rates, money supply, and imports as major long-term drivers of inflation in Nigeria, recommending targeted monetary policies to control inflation. Finally, concerning public debt and inflation, Ewane and Etape (2023) analyzed the asymmetric effect of external debt on inflation in Cameroon using a nonlinear ARDL approach, finding that external debt accumulation significantly impacted inflation in the long term, urging caution in debt management. In the same vein, Akingbade and Nicholas (2021) examined Ghana's public debt and

inflation, concluding that rising public debt had a considerable positive impact on inflation, necessitating prudent fiscal policies.

Despite the importance of understanding how trade policy interacts with domestic price dynamics, studies specifically examining the impact of trade tariffs on inflation remain limited. Existing research in Cameroon has largely focused on the broader determinants of inflation, without paying sufficient attention to trade tariffs as a distinct instrument of protectionism. For example, scholars such as Oumbe (2018), Ndongo (2020), and Ewane and Etape (2023) have explored the influence of various macroeconomic variables on inflation, yet their analyses devote little emphasis to the direct relationship between tariffs and inflationary pressures. Globally, only a few studies have investigated this linkage, and even those tend to be context-specific and geographically distant from Cameroon.

Amiti et al. (2019) and Cavallo et al. (2019) assessed the effects of tariffs on prices and welfare in the United States and several Asian economies, respectively. While insightful, their findings may not necessarily reflect the structural and policy dynamics of Cameroon's economy. Within the Cameroonian context, no empirical studies to date have explicitly focused on the effects of trade barriers, particularly import and export tariffs, on inflation. Although Henri and Atangana (1969) analyzed trade openness, inflation, and economic growth and found a positive association between trade openness and inflation, the study offers little to no insight into how specific tariff measures influence inflation. This gap highlights the need for a comprehensive empirical investigation of how trade tariffs shape inflationary trends in Cameroon. By examining both import and export tariffs and integrating key control variables such as GDP, FDI, exchange rates, and external debt, the present study seeks to contribute new evidence to the literature and enhance the understanding of tariff–inflation dynamics in the Cameroonian context.

3. Data Source and Model Specification

The study utilized time series data collected on Cameroon from 1990 to 2022. This time span is justified by the significant events that have occurred in Cameroon and the availability of data for all relevant variables. Researchers such as Alexander & Danpome (2015), Ewane & Etape (2023), and Ndze Dobdinga (2022) support the use of time series data for such analyses. The data was primarily sourced from the World Bank's World Development Indicators (WDI) and the United Nations University World Institute for Development Economics Research (UNUWIDER) database. Scholars like Ibrahim et al. (2020) and Ndze and Dobdinga (2022) have also utilized these sources. Specifically, the UNUWIDER database was used to gather data on export and import tariffs, while the WDI was used to collect data on inflation, exchange rates, GDP, foreign direct investment, and external debt.

Table 1: Data Sources and Measurement of Variables

Variables.	Symbol	Description.	Measurement	Source of Data	Expectation
Inflation	INF_t	A sustained Increase in the general price level of goods and services in the economy.	Consumer price index (annual %)	World Development Indicator (WDI)	
Export Tariffs	XT_t	Taxes imposed on exported goods.	Export tax duties	United Nations University World Institute for Development Economics Research (UNUWIDER)	Positive (+)
Import Tariffs	MT_t	Taxes imposed on imported goods.	Import and custom duties	UNUWIDER	Negative (-)
Exchange Rate	ER_t	The value of domestic currency relative to foreign currency	Official exchange rate	WDI	Negative (-)
Gross Domestic Product	GDP_t	Total value of goods and services produced in the economy.	GDP per capita (Annual %)	WDI	Positive (+)
Foreign Direct Investment	FDI_t	Foreign direct investment inflows	FDI net inflows in index form	WDI	Negative (-)
External debt	ED_t	Total amount of money owed by a country to International creditors.	External debt Stock (US$)	WDI	Negative (-)

Source: Author's Own Creation

The model employed in this study is descriptive, aiming to show the relationship between the dependent variable (inflation) and the independent variables (trade tariffs and other macroeconomic factors). Based on this approach, the researcher formulated the following function to examine the effects of trade tariffs on inflation: Inflation (*INF*) = f {Export tariffs (*XT*), Import tariffs (*MT*), Exchange rate (*ER*), Export tariffs (*XT*)*Exchange rate (*ER*), Import tariffs (*MT*)*Exchange rate (*ER*), Gross domestic product (*GDP*), Foreign direct investment (*FDI*), and External debt (*ED*)}, written as:

$$INF_t = \beta_0 + \beta_1 XT_t + \beta_2 MT_t + \beta_3 ER_t + \beta_4 ER_t * XT_t + \beta_5 ER_t * MT_t + \beta_6 GDP_t + \beta_7 FDI_t + \beta_8 ED_t + \mu t$$

Where:

INF_t: *Inflation at time t*
XT_t: *Export tariffs at time t*
MT_t: *Import tariffs at time t*
ER_t: *Exchange rate at time t*
GDP_t: *Gross domestic product at time t*
FDI_t: *Foreign direct investment at time t*
ED_t: *External debt at time t*
β_0: *Intercept*
β_1: *Coefficient for export tariffs*
β_2: *Coefficient for import tariffs*
β_3: *Coefficient for exchange rate*
β_4: *Coefficient for interactive variable of exchange rate and export tariffs*
β_5: *Coefficient for interactive variable of exchange rate and import tariffs*
β_6: *Coefficient for gross domestic product*
β_7: *Coefficient for foreign direct investment*
β_8: *Coefficient for external debt*
μ_t: *Error term at time t*

4. Methods of Estimation

The study will employ the Autoregressive Distributed Lag (ARDL) co-integration technique to assess the dynamics between the variables in the model, as recommended by Ndze and Dobdinga (2022), due to the time series data spanning a 33-year period. A key consideration when applying co-integration techniques and the ARDL model is the order of integration of the variables, which refers to the number of times a variable need to be different to achieve stationarity. The econometric estimation method is grounded in the principle that the mean and variance of the uncertain population should be projected objectively. Given the increasing non-stationarity of macroeconomic variables, especially in the context of the global economy's heightened volatility where this issue becomes even more critical. Failure to properly address the non-stationarity of the variables in the regression analysis could lead to significant problems, potentially resulting in inaccurate regression outcomes. Without co-integration relationships, non-stationary variables exhibit statistical characteristics, such as mean and variance, that fluctuate over time. This makes it difficult to construct stable relationships and draw valid conclusions from regression analysis *Khan et al.* (2020). Therefore, understanding the time series properties of the model's variables is crucial for avoiding errors and ensuring accurate forecasts.

In the below equations used within the bounds testing framework, the first-difference operator is represented by Δ, and ε_t denotes the disturbance (error) term. The null hypothesis being examined is $H_0: \delta_0 = \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0$, whereas the alternative hypothesis is $H_1: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq \delta_5 \neq \delta_6 \neq \delta_7 \neq 0$, implying the existence of a long-run relationship among the variables under investigation. The decision on cointegration relies on the computed F-statistic from the bounds testing approach. When the estimated F-value is greater than the upper critical bound, the null hypothesis of no

cointegration is rejected. However, if the F-value falls between the lower and upper bounds, the outcome is considered inconclusive *Khan et al.* (2020).

$$\Delta INF_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta INF_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta ER_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \delta_1 INF_{t-i} + \delta_2 XT_{t-i} + \delta_3 MT_{t-i} + \delta_4 ER_{t-i} + \delta_5 FDI_{t-i} + \delta_6 ED_{t-i} + \delta_7 GDP_{t-i} + \varepsilon_{1t}$$

$$\Delta XT_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta XT_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta ER_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \delta_1 XT_{t-i} + \delta_2 INF_{t-i} + \delta_3 MT_{t-i} + \delta_4 ER_{t-i} + \delta_5 FDI_{t-i} + \delta_6 ED_{t-i} + \delta_7 GDP_{t-i} + \varepsilon_{1t}$$

$$\Delta MT_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta MT_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta ER_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \delta_1 MT_{t-i} + \delta_2 INF_{t-i} + \delta_3 XT_{t-i} + \delta_4 ER_{t-i} + \delta_5 FDI_{t-i} + \delta_6 ED_{t-i} + \delta_7 GDP_{t-i} + \varepsilon_{1t}$$

$$\Delta ER_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta ER_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \delta_1 ER_{t-i} + \delta_2 INF_{t-i} + \delta_3 XT_{t-i} + \delta_4 MT_{t-i} + \delta_5 FDI_{t-i} + \delta_6 ED_{t-i} + \delta_7 GDP_{t-i} + \varepsilon_{1t}$$

$$\Delta FDI_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta FDI_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta ER_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \delta_1 FDI_{t-i} + \delta_2 INF_{t-i} + \delta_3 XT_{t-i} + \delta_4 MT + \delta_5 ER_{t-i} + \delta_6 ED_{t-i} + \delta_7 GDP_{t-i} + \varepsilon_{1t}$$

$$\Delta ED_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta ED_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta ER_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \delta_1 ED_{t-i} + \delta_2 INF_{t-i} + \delta_3 XT_{t-i} + \delta_4 MT_{t-i} + \delta_5 ER_{t-i} + \delta_6 FDI_{t-i} + \delta_7 GDP_{t-i} + \varepsilon_{1t}$$

$$\Delta GDP_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta GDP_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta ER_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta ED_{t-1} + \delta_1 GDP_{t-i} + \delta_2 INF_{t-i} + \delta_3 XT_{t-i} + \delta_4 MT_{t-i} + \delta_5 ER_{t-i} + \delta_6 FDI_{t-i} + \delta_7 ED_{t-i} + \varepsilon_{1t}$$

Moreover, ARDL can be applied regardless of whether the variables are integrated at level I (0), at first difference I (1), or a combination of both. It is also capable of determining whether a long-run relationship exists between the variables, even without pre-testing the order of integration or the number of co-integrating relationships. Ultimately, ARDL is preferred for its ability to reduce the frequency of errors, such as the identification of co-integration vectors, and most importantly, for its flexibility in being converted into an Error Correction Model (ECM). This transformation, achieved through a simple linear procedure, combines long-term and short-term adjustments without discarding any data, as noted by Ndze and Dobdinga (2022). The error-correction model (ECM), which captures the short-run dynamic interactions among the variables, is formulated as follows:

$$\Delta INF_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta INF_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta ER_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \Phi_1 ECT_{t-i} + \varepsilon_{1t}$$

$$\Delta XT_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta XT_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta ER_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \Phi_2 ECT_{t-i} + \varepsilon_{1t} \quad + \varepsilon_{1t}$$

$$\Delta MT_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta MT_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta ER_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \Phi_3 ECT_{t-i} + \varepsilon_{1t}$$

$$\Delta ER_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta ER_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta FDI_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \Phi_4 ECT_{t-i} + \varepsilon_{1t}$$

$$\Delta FDI_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i}\Delta FDI_{t-i} + \sum_{i=0}^{q_2} \beta_{2i}\,\Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i}\,\Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i}\,\Delta MT_{t-1} + \sum_{i=0}^{q_5} \beta_{5i}\,\Delta ER_{t-1} + \sum_{i=0}^{q6} \beta_{6i}\,\Delta ED_{t-1} + \sum_{i=0}^{q7} \beta_{7i}\,\Delta GDP_{t-1} + \Phi_5 ECT_{t-i} + \varepsilon_{1t}$$

$$\Delta ED_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i} \Delta ED_{t-i} + \sum_{i=0}^{q_2} \beta_{2i} \Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i} \Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i} \Delta MT_{t-1} + \sum_{i=0}^{q_5} \beta_{5i} \Delta ER_{t-1} + \sum_{i=0}^{q6} \beta_{6i} \Delta FDI_{t-1} + \sum_{i=0}^{q7} \beta_{7i} \Delta GDP_{t-1} + \Phi_6 ECT_{t-i} + \varepsilon_{1t}$$

$$\Delta GDP_t = \alpha_1 + \sum_{i=1}^{q_1} \beta_{1i} \Delta GDP_{t-i} + \sum_{i=0}^{q_2} \beta_{2i} \Delta INF_{t-1} + \sum_{i=0}^{q_3} \beta_{3i} \Delta XT_{t-1} + \sum_{i=0}^{q_4} \beta_{4i} \Delta MT_{t-1} + \sum_{i=0}^{q_5} \beta_{5i} \Delta ER_{t-1} + \sum_{i=0}^{q6} \beta_{6i} \Delta FDI_{t-1} + \sum_{i=0}^{q7} \beta_{7i} \Delta ED_{t-1} + \Phi_7 ECT_{t-i} + \varepsilon_{1t}$$

In the above equations, Φ_1 *to* Φ_7 represent the adjustment coefficients, while ECT_{t-i} denotes the error-correction term. The coefficient of the error correction term is expected to be negative and statistically significant, confirming the system's movement back toward the long-run equilibrium.

5. Results and Discussion

The summary statistics of the variables in this study examine the mean, standard deviation, minimum value, maximum value, skewness, and kurtosis of all variables included in the model. The results presented in Table 2 reveal the following patterns. Inflation has a mean of 3.368 and a median of 2.272, with values ranging from -3.207 to 35.094. This wide range suggests considerable volatility in price levels over the study period. Import tax has a mean of 0.0167 and a median of 0.018, with a narrow spread between its minimum (0.009) and maximum (0.019); this indicates relative stability in import tariff rates. Export tax also shows a very small range, with a mean of 0.002, a median of 0.001, a maximum value of 0.011, and a minimum of 9.53E-05, implying modest and fairly consistent export tax levels. Gross domestic product (GDP) has a mean of 2.39E+10 and a median of 2.24E+10, with values between 1.32E+10 and 4.02E+10. The spread in GDP figures reflects steady economic growth over the sample period. Foreign direct investment (FDI) shows a mean of 1.263 and a median of 1.511, with a maximum of 4.069 and a minimum of -0.916, indicating that while FDI inflows were generally positive, there were periods of decline or net outflows. The official exchange rate has a mean of 523.314 and a median of 527.338, fluctuating between 264.692 and 732.398, which points to moderate but noticeable exchange rate variability. Finally, external debt records a mean of 7.52E+09 and a median of 8.55E+09, ranging from 2.58E+09 to 1.31E+10. This distribution suggests that the country's debt burden increased significantly at certain points but remained within a manageable long-term trend.

Table 2: Descriptive Statistics of Variables

Variable	INF_t	MT_t	XT_t	GDP_t	FDI_t	ER_t	ED_t
Mean	3.368217	0.016535	0.002428	2.39E+10	1.263402	523.3138	7.52E+09
Median	2.271858	0.017502	0.001365	2.24E+10	1.511445	527.3380	8.55E+09
Maximum	35.09446	0.019231	0.010794	4.02E+10	4.068985	732.3977	1.31E+10
Minimum	-3.206555	0.009113	9.53E-05	1.32E+10	-0.916249	264.6918	2.58E+09
Std. Dev.	6.103918	0.002467	0.002761	8.63E+09	1.084159	114.9257	3.24E+09
Observations	33	33	33	33	33	33	33

Source: Author's Own Creation

The correlation coefficient is a statistical measure that quantifies the relationship or association between two continuous variables. It is widely regarded as the most effective method for assessing the strength and direction of the association between variables of interest, as it is based on covariance. The correlation coefficient provides information about both the magnitude and direction of the relationship. From Table 3 below, it is observed that each variable is perfectly correlated with itself, with a coefficient value of 1. The correlation coefficient between inflation and import tariff is -0.559, indicating a moderate negative relationship between the two. Similarly, the correlation coefficient between inflation and export tariff is 0.480, which indicates a moderate positive relationship. The correlation coefficient between inflation and gross domestic product (GDP) is -0.186, showing a weak negative relationship between inflation and GDP. Likewise, the correlation coefficient between inflation and foreign direct investment (FDI) is also -0.186, reflecting a weak negative relationship. The correlation coefficient between inflation and the exchange rate is 0.179, suggesting a weak positive relationship. Finally, the coefficient between inflation and external debt is 0.091, indicating a weak positive relationship between the two variables.

Table 3: Correlation Matrix Results

Variable	**INF_t**	**MT_t**	**XT_t**	**GDP_t**	**FDI_t**	**ER_t**	**ED_t**
INF_t	1.000000						
MT_t	-0.559056	1.000000					
XT_t	0.480112	-0.679247	1.000000				
GDP_t	-0.186347	0.609960	-0.558112	1.000000			
FDI_t	-0.185849	0.481928	-0.344659	0.602836	1.000000		
ER_t	0.179277	0.188258	0.018382	0.293969	0.47982	1.000000	
ED_t	0.090553	-0.301753	0.346853	0.188639	0.145398	0.457136	1.000000

Source: Author's Own Creation

The estimation results of the unit root test, conducted using the Phillips-Perron (PP) stationarity test at the 5% critical value, are presented in Table 4.3 below. The results indicate that all variables were non-stationary at the level but became stationary after first differencing at the 5% critical value. This conclusion is supported by the PP statistic values, critical values, and p-values of the respective variables estimated in the test. The unit root test checks whether a series is stationary, meaning that the statistical properties governing the series do not change over time. If a series is stationary at the level, it is integrated at order (0). However, if a series is integrated at order (1), it becomes stationary only after first differencing. In this study, the Phillips-Perron test for stationarity is applied, and the results are presented in the table below. Table 4.3 shows the Phillips-Perron (PP) stationarity test results for trend and intercept at both the level and first difference. It is evident from the table that, at the level, inflation and foreign direct investment (FDI) were stationary, while import tariff, export tariff, gross domestic product (GDP), exchange rate, and external debt only became stationary after first differencing.

Table 4: Philips-Perron Test for Unit Root

Variable	Statistics				
	PP Statistic	Prob.*	First difference	Prob.*	Integration Order
INF_t	-2.877480	0.0592	--	--	I (0)
MT_t	-2.387246	0.1531	--	--	I (0)
XT_t	-1.788716	0.3791	-6.513219	0.0000	I (1)
GDP_t	0.876485	0.9938	-3.176367	0.0312	I (1)
FDI_t	-4.107084	0.0032	--	--	I (0)
ER_t	-2.598063	0.1038	-5.546015	0.0001	I (1)
ED_t	-1.370767	0.5840	-3.263369	0.0256	I (1)

Source: Author's Own Creation

Table 5 below presents the results of a structural breaks unit root test. According to Vogelsang (1993), all the variables are stationary at the 5% significance level. Inflation, import tariffs, foreign direct investment (FDI), and the exchange rate are stationary at the level, with break dates in 2004, 2015, 2008, and 2013, respectively. In contrast, export tariffs, gross domestic product (GDP), and external debt become stationary after first differencing, with break dates in 2007, 2005, and 2006, respectively. These structural break periods coincide with significant events, such as the Lake Nyos disaster and the petroleum crisis of the 1980s to 1993, the local currency devaluation and post-electoral crisis from 1994 to 2006, the global financial crisis of 2007 to 2009 that affected many economies, including Cameroon, and the ongoing Boko Haram crisis in the north and the Anglophone crisis in the two English-speaking regions of Cameroon since 2012.

Table 5: Vogelsang Unit Root Test with Structural Breaks

Variables	Break Date	t-Statistics	Critical Values 5%	Prob.	Stationarity
INF_t	2004	-5.768	-4.4436	< 0.01	I (0)
MT_t	2015	-7.256	-4.4436	< 0.01	I (0)
XT_t	2007	-6.834	-4.4436	< 0.01	I (1)
GDP_t	2005	-7.908	-4.4436	< 0.01	I (1)
FDI_t	2008	-6.362	-4.4436	< 0.01	I (0)
ER_t	2013	-4.808	-4.4436	< 0.01	I (0)
ED_t	2006	-7.0998	-4.4436	< 0.01	I (1)

Source: Author's Own Creation

After having ascertained the usability of the variables specified in this study as well as conducting the above pre-tests, the ARDL technique was used to estimate the model whose result are presented on table 6 below. The results show the effect of each variable included in the model on inflation both in the short run and long run periods. Export tariffs (XT) have a positive effect on inflation in both the short run (3.2984) and long run (3.1801), significant at 10% both in the short run (0.0585) and in the long run (0.0635).

That is, a 1% increase in export tariff will increase the inflation rate in Cameroon by 3.2984% in the short run, and by 3.1801% in the long run. Also, import tariffs (MT) have a negative effect on inflation in Cameroon both in the short run (-1.9502) and in the long run (-1.8803), but insignificant both in the short run (0.4145) and long run (0.4078). This shows that a 1% increase in import tariff will decrease the inflation rate in Cameroon by 1.9502% in the short run, and by 1.8803% in the long run. Furthermore, exchange rate (ER) has a negative effect on inflation in Cameroon both in the short run (-2.5597) and in the long run (-2.4678), this is significant both in the short run (0.0398) at 5% level of significance and in long run (0.0612) at 10% level of significance.

This shows that a 1% increase in exchange rate will decrease the inflation rate in Cameroon by 2.5597% in the short run, and by 2.4678% in the long run. Again, the interactive variable of exchange rate and export tariff (ER*XT) have a negative effect on inflation in Cameroon both in the short run (-0.5411) and in the long run (-0.5217), significant at 5% level in the short run (0.0463) and 10% in long run (0.0615). This shows that a 1% increase in interactive variable of exchange rate and export tariff will decrease the inflation rate in Cameroon by 0.5411% in the short run, and by 0.5217% in the long run. More so, the interactive variable of exchange rate and import tariff (ER*MT) have a negative effect on inflation in Cameroon both in the short run (-0.2714) and in the long run (-0.2617), this is however insignificant both in the short run (0.4661) and in long run (0.4762). This shows that a 1% increase in interactive variable of exchange rate and import tariff will decrease the inflation rate in Cameroon by 0.2714% in the short run, and by 0.2617% in the long run.

Focusing on control variables, gross domestic product per capita (GDPC) has a positive effect on inflation in both the short run (0.6749) and long run (0.6506), significant at 5% both in the short run (0.0103) and in the long run (0.0211). That is, a 1% increase in gross domestic product per capita will increase the inflation rate in Cameroon by 0.6749% in the short run, and by 0.6506% in the long run. Furthermore, external debt (ED) has a negative effect on inflation both in the short run (-0.5938) and long run (-0.5725), significant at 1% both in the short run (0.0000) and in the long run (0.0000). This shows that a 1% increase in external debt will decrease the inflation rate in Cameroon by 0.5938% in the short run, and by 0.5725% in the long run. Likewise, foreign direct investment (FDI) has a negative effect on inflation in Cameroon both in the short run (-0.2239) and in the long run (-0.2158) and thus significant at 10% level both in the short run (0.0960) and in the long run (0.0963). This shows that a 1% increase in FDI will decrease the inflation rate in Cameroon by 0.2239% in the short run, and by 0.2158% in the long run. Lastly, the error correction term (ECT) coefficient of -1.0372, being negative and statistically significant at 1% level of significant, indicates a significant speed of adjustment towards the long run equilibrium relationship between the variables. This suggest that any deviations in inflation in the short run are corrected at the rate of 1.0372% per year, on average. This supports the existence of a long run equilibrium between the variables.

Table 6: ARDL Regression Result

Variable	Short run coefficients			
	Coefficient	**Std. Error**	**t-Statistic**	**Prob.**
D (LINF$_t$ (-1))	0.051941	0.032616	1.592511	0.1262
D (LXT$_t$)	3.298451	1.648566	2.000800	0.0585
D (LMT$_t$)	-1.950291	2.342546	-0.832552	0.4145
D (LER$_t$)	-2.559666	1.167836	-2.191802	0.0398
D (LER$_t$*XT$_t$)	-0.541151	0.267868	-2.020215	0.0463
D (LER$_t$*MT$_t$)	-0.271394	0.365607	-0.742312	0.4661
D (LGDP$_t$)	0.674853	0.239641	2.816096	0.0103
D (LED$_t$)	-0.593770	0.100550	-5.905217	0.0000
D (LFDI$_t$)	-0.223864	0.128456	-1.742732	0.0960
ECT(-1)	-1.037211	0.068641	-15.110559	0.0000
	Long run coefficients			
LXT$_t$	3.180115	1.622945	1.959472	0.0635
LMT$_t$	-1.880322	2.226188	-0.844638	0.4078
LER$_t$	-2.467835	1.247553	-1.978140	0.0612
LER$_t$*XT$_t$	-0.521737	0.264087	-1.975626	0.0615
LER$_t$*MT$_t$	-0.261658	0.360667	-0.725483	0.4762
LGDP$_t$	0.650642	0.261090	2.492021	0.0211
LED$_t$	-0.572467	0.107460	-5.327242	0.0000
LFDI$_t$	-0.215833	0.127879	-1.687786	0.0963

Source: Author's Own Creation

As shown in table 7 below, the ARDL Bound test for Co-integration compares the F-statistic value to the upper I (1) and lower I (0) critical bound values to determine the existence of cointegration among the variables. From this result we found that the F-statistic value is greater than the upper critical bound value at all the significance level, and thus, concluded that there exists a unique long-run relationship among the variables. This implies that the null hypothesis of no cointegration is rejected and as such we conclude on the existence of a long run relationship between the variables. This implies that components of trade tariff do have a long-run effect on inflation in Cameroon.

Table 7: ARDL Bounds Test

Test Statistic	Value	K
F-statistic	16.49513	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.01	3.1
5%	2.45	3.63
2.5%	2.87	4.16
1%	3.42	4.84

Source: Author's Own Creation

6. Discussion of Findings

The main objective of this study was to examine the effect of trade tariffs on inflation in Cameroon using the ARDL bounds testing approach. The findings reveal that export tariffs have a positive and significant impact on inflation in Cameroon in both the short run and the long run, with coefficients of 3.2984 and 3.1801, respectively, statistically significant at the 10% level. This implies that a 1% increase in export tariffs leads to a 3.2984% rise in inflation in the short run and a 3.1801% rise in the long run. This result can be attributed to the fact that higher export tariffs reduce the international competitiveness of the country's exported goods and services, thereby lowering demand in global markets. As producers face reduced demand, they may be discouraged from increasing production, resulting in a decline in domestic output. Lower domestic productivity then contributes to rising prices of available goods and services, ultimately causing inflation. This finding aligns with the study's prior expectations and is consistent with Bornhorst and Mody (2012), who reported a negative relationship between trade tariffs and economic growth in Europe; lower growth can, in turn, generate inflationary pressures. Similarly, Amiti et al. (2019) found that trade tariffs imposed by the United States significantly raised consumer prices in several Asian economies, indicating that tariffs can contribute to inflationary outcomes.

In contrast, import tariffs exhibit a negative effect on inflation in Cameroon in both the short run and the long run, with coefficients of –1.9502 and –1.8803, respectively. Thus, a 1% increase in import tariffs reduces inflation by 1.9502% in the short run and by 1.8803% in the long run. This inverse relationship may be explained by the fact that higher import tariffs restrict the volume of goods entering the country. This can help curb imported inflation, particularly in an economy that relies on external markets for a significant portion of its consumption. This outcome also aligns with the study's expectations and corresponds with findings by Henri & Atangana (1969), who reported that increased trade openness indicating that lower tariffs is associated with higher inflation in Cameroon, suggesting that protection through import tariffs can reduce inflationary pressure. The result is also consistent with Lishan (1999), who found a negative relationship between tariffs and inflation in selected developing countries. Additionally, the findings complement those of Adeleye et al. (2019), who showed that external factors such as exchange rates, imported inflation, and openness exert significant upward pressure on inflation in Nigeria.

Regarding the moderating role of the exchange rate on the relationship between trade tariffs and inflation in Cameroon, the results indicate that the interaction term between the exchange rate and export tariffs (ERXT) has a negative and significant moderating

effect on inflation in both the short run and the long run, with coefficients of –0.5411 and –0.5217, respectively. This suggests that a 1% increase in ERXT reduces inflation by 0.5411% in the short run and by 0.5217% in the long run. The moderating effect of the exchange rate reduces the inflationary impact of export tariffs from 3.2984% to –0.541% in the short run and from 3.1801% to –0.522% in the long run. This is likely because imposing export tariffs can trigger depreciation of the domestic currency. Currency depreciation makes exports cheaper for foreign buyers, partially offsetting the inflationary effects of higher export tariffs. Consequently, the study rejects the third hypothesis, which states that the exchange rate does not have a statistically significant moderating role between trade tariffs and inflation, and concludes instead that the exchange rate significantly moderates this relationship in Cameroon. This result is also in line with the study's expectations. Furthermore, the findings show that the interaction between the exchange rate and import tariffs (ERMT) also has a negative moderating effect on inflation in both the short run and the long run, with coefficients of –0.2713 and –0.2617, respectively. This indicates that a 1% increase in ERMT reduces inflation by 0.2713% in the short run and by 0.2617% in the long run, although the results are statistically insignificant.

The moderating effect reduces the impact of import tariffs on inflation from –1.9502% to –0.27% in the short run and from –1.8803% to –0.26% in the long run. Despite the insignificant effect, the direction of influence suggests that exchange rate movements still play a role in shaping the relationship between import tariffs and inflation in Cameroon. Considering the control variables, the study incorporated the exchange rate, gross domestic product (GDP), foreign direct investment (FDI), and external debt. The results show heterogeneous relationships across these variables. Specifically, the exchange rate, external debt, and foreign direct investment all exhibit a negative effect on inflation in both the short run and the long run, with coefficients of –2.5597 and –2.4678, –0.5938 and –0.5724, and –0.2239 and –0.2158, respectively. These effects are statistically significant in both the short-run and long-run models. This indicates that increases in the exchange rate, external debt, and FDI contribute to reducing inflation in Cameroon. In contrast, GDP displays a positive and statistically significant relationship with inflation at the 10% significance level, with coefficients of 0.6749 in the short run and 0.6506 in the long run. This suggests that an increase in GDP is associated with a significant rise in inflation in Cameroon.

6. Conclusion and Policy Recommendations

The main objective of this study was to examine the effects of trade tariffs on inflation in Cameroon over the period 1990 to 2022. The study relied on time series data obtained from the World Development Indicators and the United Nations University World Institute for Development Economics Research. A causal research design was adopted and inflation was measured using the consumer price index, while trade tariffs were captured using export and import tariff rates. To achieve the stated objectives, the Bounds test was first conducted to determine the existence of a long-run relationship among the variables, followed by the estimation of an ARDL model to examine the effects of trade tariffs on inflation. The stationarity test indicated that some variables were stationary at levels, while others attained stationarity after taking the first difference. The Bounds test results confirmed the presence of a long-run relationship among the study variables.

Building on these findings, the ARDL regression results revealed that export tariffs exert a significant positive effect on inflation in both the short run and the long run. In

contrast, import tariffs displayed an insignificant negative effect on inflation across both time horizons. The exchange rate was found to have a significant negative effect on inflation in both the short run and long run. Furthermore, the interaction term between the exchange rate and export tariffs was significant and negative, indicating a moderating effect on inflation. On the other hand, the interaction term between the exchange rate and import tariffs showed a negative but statistically insignificant moderating effect. Regarding the control variables, foreign direct investment and external debt both exhibited significant negative effects on inflation in the short and long run, whereas gross domestic product showed a significant positive effect over both periods.

Taken together, these results contribute to the limited empirical literature on the effects of trade tariffs on inflation in Cameroon. Using 33 years of time series data and applying the ARDL modelling framework, the study provides clear evidence that trade tariffs influence inflationary patterns in the country. Given that inflation is a key macroeconomic indicator targeted by policymakers, the findings offer practical insights that can support the design of more effective public policies. Based on the results, several recommendations are proposed to help manage inflation more effectively.

To begin with, the government should consider increasing import tariffs, as they exhibit a negative, although statistically insignificant, effect on inflation. Raising import tariffs has the potential to reduce the volume of imported goods, lower imported inflation, and protect domestic industries. However, this should be done with caution and in consultation with industry stakeholders to avoid distortions in supply chains and unintended hardship for consumers. Additionally, since export tariffs have a positive and significant effect on inflation, policymakers should review and possibly reduce export tariffs. Lower export tariffs would help ease inflationary pressures by reducing export-related costs, improving competitiveness, and supporting export-driven growth. Moreover, because the exchange rate significantly reduces inflation and moderates the impact of export tariffs, the government should adopt measures that promote exchange rate stability. A stable exchange rate can help reduce excessive fluctuations and strengthen the overall effectiveness of tariff reforms. Furthermore, given the positive relationship between GDP and inflation, structural reforms aimed at enhancing productivity and competitiveness should be prioritized. Improving the business environment, addressing infrastructure gaps, and promoting innovation can help reduce inflationary pressures associated with economic expansion. Finally, since foreign direct investment was found to reduce inflation significantly, policies that attract more FDI, including simplified regulations and investor protection measures, should be strengthened to support price stability.

Despite these important contributions, the study has some few limitations that should be acknowledged. One key limitation relates to data availability. The analysis covers the period from 1990 to 2022 because reliable data for earlier years were unavailable, limiting the scope of the study. A longer dataset might have provided more robust results. Another limitation is that inflation in Cameroon is influenced by a wide range of factors, including monetary policy decisions, global commodity price fluctuations, exchange rate shocks, and domestic supply constraints. Due to methodological and data limitations, not all of these variables could be included in the model. As a result, the study focused on selected macroeconomic variables, meaning that some relevant determinants of inflation were not captured.

In view of these limitations, several avenues for future research are suggested to help strengthen understanding in this area. Future studies could disaggregate inflation into food and non-food components to determine whether tariff changes affect them

differently, especially given the high share of food consumption in household expenditure in Cameroon. Researchers may also examine the broader concept of trade protectionism by exploring the effects of non-tariff barriers, such as import quotas, administrative restrictions, and product quality standards, on inflation dynamics. Another useful direction would be to investigate non-trade tariffs, including excise duties, environmental taxes, and value-added taxes, to capture a wider range of fiscal instruments that influence inflation. In addition, conducting sector-specific studies could provide insights into whether the effects of tariffs vary across industries. Finally, comparative studies involving other Central African countries would help place Cameroon's experience in a regional context and determine whether the observed patterns are consistent across countries. Such studies would enrich the literature and provide more comprehensive policy guidance.

Conflict of Interest

The authors declare that there are no conflicts of interest. We confirm that the submitted manuscript is an original work and is not under consideration or review by any other publication.

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