The Impact of Tariffs on Economic Growth in Angola: Evidence from Domestic Investment (2002–2023)

O Impacto das Tarifas no Crescimento Económico em Angola: Evidências a Partir do Investimento Doméstico (2002–2023)

Belizário João Abílio[1]

[1]belizariojoaoabilio@hotmail.com

[1]https://orcid.org/0009-0007-4510-8786

[1]Catholic University of Angola, Luanda, Angola

https://doi.org/10.51867/ajernet.6.2.14

ABSTRACT

This research focuses on the intersection of macroeconomics and international trade, particularly within the context of protectionism. The analysis covers the period from 2002 to 2023 and adopts a correlational design to explore the association between tariffs and economic growth, in terms of domestic investment. The theoretical association between these variables can be explained through the Classical Perspectives of International Trade, Endogenous Growth Theory, and Infant Industry Argument. The empirical literature reviewed revealed that there is a gap in the literature in terms of empirical studies on the impact of tariffs on economic growth in Angola, with a particular focus on domestic investment. The present research fills this gap employing Vector Error Correction Model (VECM) analysis. The data were sourced from national and international institutions such as The National Bank of Angola (BNA), The World Bank, and The International Monetary Fund (IMF), thereby eliminated the need for traditional sampling techniques. The combined pre- and post-estimation tests revealed that the data are non-stationary at level but become stationary after first differencing. The results show a significant short-run negative effect (β = -1.45, p = 0.00) in contrast, there is a strong positive long-run effect (β = 2.04, p = 0.00). Diagnostic tests confirm model stability, no autocorrelation (p > 0.24), presence of homoskedasticity (p = 0.25), and normality (p = 0.86), supporting its robustness for policy analysis. Consequently, the findings derived from this model provide a credible basis for policy recommendations. In summary, the results obtained revealed that tariffs in the short run had served to protect local industries in Angola, however their immediate effects deterred domestic investment. In the long run, tariffs emerge as a crucial determinant of domestic investment in Angola, exerting a significant and positive influence. These findings contribute to the broader discourse on the role of tariff policies in developing economies, in general, and Angola in particular, as it presents both short- and long-term challenges and opportunities. This duality underlines the importance for policymakers to adopt a balanced, context-specific approach to tariff policy—one that maximizes long-term benefits without jeopardizing short-term economic stability. Additionally, microeconomic studies are crucial to gain a deeper understanding of the effects of tariff imposition. To comprehensively analyse the microeconomic impact of tariffs or protectionism in Angola, further research should explore how tariffs influence investment in specific sectors.

Keywords: Angola, Domestic Investment, Economic Growth, Tariffs, VEC Model

RESUMO

A presente pesquisa situa-se na intersecção entre a macroeconomia e os estudos de comércio internacional, com especial enfoque no domínio do protecionismo. A análise incide sobre o período compreendido entre 2002 e 2023, adoptando um delineamento correlacional com o intuito de examinar a relação entre as tarifas aduaneiras e o crescimento económico, centrando-se particularmente no investimento doméstico. A associação teórica entre estas variáveis encontra fundamentação nas teorias clássicas do comércio internacional, na teoria do crescimento endógeno e no argumento da indústria nascente. A revisão da literatura empírica revelou um hiato significativo nos estudos sobre o impacto das tarifas no crescimento económico em Angola, sobretudo no que diz respeito ao investimento interno. Esta investigação procura colmatar essa lacuna através da aplicação do Modelo de Correcção de Erros Vectoriais (VECM). Os dados utilizados foram obtidos junto de instituições nacionais e internacionais, como o Banco Nacional de Angola (BNA), Banco Mundial e o Fundo Monetário Internacional (FMI), tornando desnecessário o recurso a técnicas tradicionais de amostragem. A combinação de testes de pré e pós-estimação revelou que as séries não eram estacionárias, mas tornaram-se estacionárias após a primeira diferenciação, sugerindo a existência de relações de longo prazo entre as variáveis em análise. Os resultados empíricos indicam um efeito negativo estatisticamente significativo no curto prazo (β = -1,45; p = 0.00) enquanto no longo prazo um efeito positivo (β = 2,04; p = 0.00). Os testes de diagnóstico confirmam a estabilidade do modelo, bem como a ausência de autocorrelação (p > 0,24), presença de homocedasticidade (p = 0,25) e normalidade (p = 0,86), confirmando a sua utilidade na definição de políticas públicas. Neste sentido, os resultados obtidos oferecem uma base empírica sólida para a elaboração de recomendações de política económica. Em síntese, no curto

prazo, as tarifas desempenharam um papel de protecção das indústrias nacionais, embora tenham desincentivado o investimento interno. Em contrapartida, no longo prazo, as tarifas emergem como um factor propulsor do investimento doméstico, exercendo uma influência positiva e significativa. Estas conclusões contribuem para o debate mais alargado sobre o papel das políticas tarifárias nas economias em desenvolvimento, evidenciando quer os desafios quer as oportunidades que estas medidas representam em diferentes horizontes temporais. A dualidade observada reforça a necessidade de uma abordagem equilibrada e contextualmente sensível por parte dos decisores políticos — uma abordagem que maximize os benefícios de longo prazo e não comprometa a estabilidade económica no curto prazo. Adicionalmente, reconhece-se que análises de natureza microeconómica são essenciais para uma compreensão mais aprofundada dos impactos das tarifas. Assim, recomenda-se que futuras investigações explorem os efeitos da imposição tarifária sobre o investimento em sectores específicos da economia angolana, promovendo uma visão mais detalhada e estratégica das políticas de protecionismo.

Palavras-chave: Angola, Crescimento Económico, Investimento Doméstico, Modelo VEC, Tarifas

I. INTRODUCTION

Angola, a resource-rich emerging economy, has experienced a dynamic and often volatile economic trajectory marked by post-war recovery, structural reforms, and a persistent dependence on oil exports. In recent years, the government's efforts to diversify the economy have included key revisions to the National Customs Tariff Schedule[1], placing trade policy at the forefront of discussions on economic performance and investment promotion. The economic implications of tariff policy remain widely debated. Proponents argue that higher tariffs can protect domestic industries, create jobs, and stimulate local production. Critics contend that such measures raise the cost of imports, limit consumer choice, and hinder investment by increasing operational costs and reducing competitiveness. Within this context, the present study seeks to evaluate the historical relationship between tariffs and domestic investment in Angola from 2002 to 2023. The analysis is guided by the hypothesis that tariff policies significantly influence investment patterns in the short and long term. By employing a Vector Error Correction Model (VECM) and leveraging reliable macroeconomic data, this research addresses a notable gap in the empirical literature on Angola's trade policy and investment dynamics.

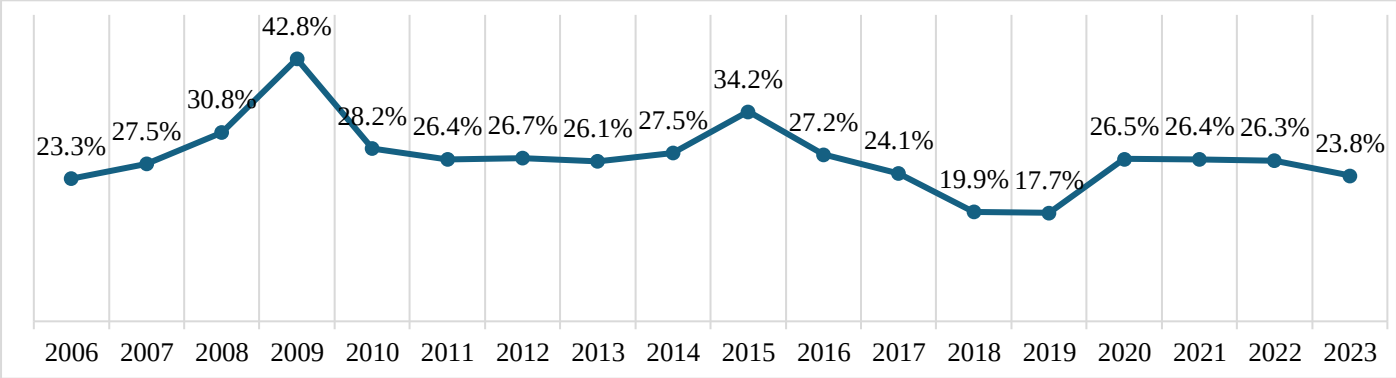

Figure 1
Share of Gross Domestic Investment in GDP, Angola, 2006-2023
Source: Author's own elaboration based on data from The World Bank (2024)

Figure 1 presents the percentage of Angolan Domestic Investment within its Gross Domestic Product (GDP) over the years 2006 to 2023. The observed trend throughout this period splits into five distinct periods.

[1] Angola's Customs Tariff Regime was updated in August 2018 and subsequently modified in December 2019 and April 2024. In 2018, the new Customs Tariff was approved by Presidential Legislative Decree No. 3/18 on May 9, 2018, and came into effect on August 7, 2018. This update introduced several changes, including adjustments to customs duties and consumption tax rates, aiming to protect and promote the Angolan productive sector. A subsequent revision was made with Presidential Legislative Decree No. 10/19, dated November 29, 2019. This update aimed to modernize the customs system, align it with the Harmonized System nomenclature, and adjust duties to promote national production and investment. The revised tariff entered into force on December 29, 2019. The most recent update was enacted through Presidential Legislative Decree No. 1/24, issued on January 3, 2024, and came into force on April 2, 2024. This new tariff schedule aligns Angola's customs tariffs with the 2022 version of the Harmonized System nomenclature. It includes measures to protect domestic production, such as higher rates on certain food products and exemptions for imports of industrial machinery.

Initial Growth Period (2006–2009): Between 2006 and 2009 the Domestic Investment share expanded from 23.3% to reach its highest point at 42.8%. The timeline of high global oil prices resulted in increased revenue and investment with emphasis in infrastructure and energy sectors.

Sharp Decline Period (2009–2010): The percentage of domestic investment decreased from 42.8% in 2009 to 28.2% in 2010. The global financial crisis of 2008-2009 led to reductions in foreign direct investment inflows (inFDI) and government spending which occurred because of falling oil revenues.

Stabilization and Recovery (2009-2015): Investment remained stable at approximately 26% and 27% until 2014 but experienced a significant increase to 34.2% in 2015. The growth rate points toward a recovery period which could benefit from state-led infrastructure initiatives or the involvement of modern investors.

Declining (2015-2019): Investment rates dropped from 34.2 percent in 2015 to 17.7 percent in 2019. The economic downturn in Angola happened alongside the decline in crude oil prices which caused depreciation and both public and private investment to decline.

Recovery and Stabilization Period (2019-2023): The percentage rose from 17.7% in 2019 and then maintained a steady level of approximately 26% up to 2023. During the investment period this recovery coincided with the return of state incentives along with political reforms and positive global economic changes.

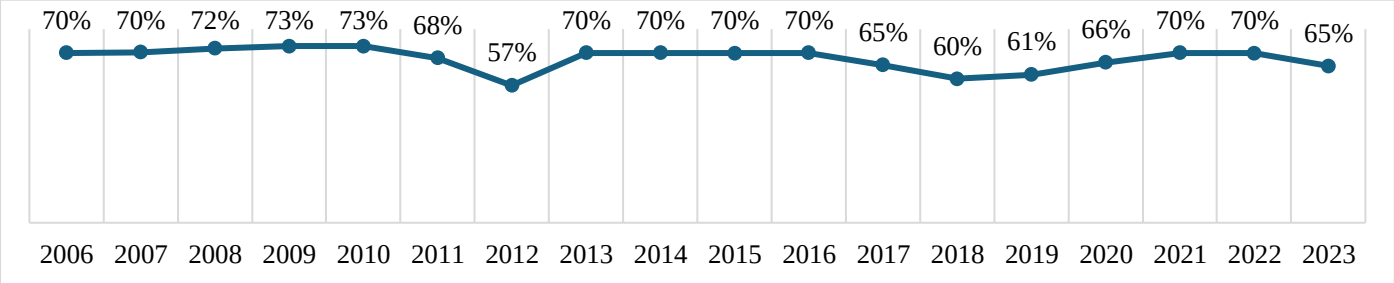

Figure 2
Tariffs and Non-Tariffs Barriers Reductions, Angola 2006 to 2023
Source: Author's own elaboration based on data from The Heritage Foundation (2024)

The tariffs policy adopted by the government of Angola has been a significant factor in the economy, particularly in managing the balance between protectionism and liberalization, as shown in figure 2. The trend in tariffs and non-tariff barriers (NTBs) in Angola from 2006 to 2023 is depicted in the figure above. The keys trend can be grouped into 5:

In the *Early Years of Stability (2006–2010)*: Tariff and NTBs reductions were constant between 2006 and 2010 and were approximately 70 per cent, which shows that there was a consistent policy on trade liberalization. This period is most likely related to Angola's engagement with international trade agreements or structural changes in a bid to enhance market access.

Decline in Reductions (2011–2012): A significant decrease was observed in 2012, when the reductions were made almost 55%, the lowest level in the sample. Possible explanations: Shift in policy towards protectionism in order to shield domestic industries. An economic crisis or external shock that results in the imposition of more stringent trade barriers. Variations in the arrangements or negotiations of the regional trade agreements on tariffs.

Stability and Recovery (2013–2016): Reductions were again around 70% between 2013 and 2016, showing that trade liberalization was on the rise again. This time can be linked to economic changes or commitments to regional trade partnerships.

Slow Reduction (2017-2019): The trend of reduction in tariff and NTB continues up to 2019 but at a slower rate with the values coming down to 60%. Reasons: Responses to economic downturns particularly oil price downturns. Government measures to safeguard local industries through imposing tariffs on imports. Change of policy in foreign trade, can be due to more emphasis on the development of the internal market.

Recovery and Fluctuations (2020–2023): A partial recovery occurs in 2020 and peaks in 2021–2022, returning to 70% reductions. This suggests a renewed push for trade liberalization, likely in response to post-pandemic economic recovery strategies. However, in 2023, reductions declined again, suggesting possible policy adjustments or external pressures affecting trade liberalization.

1.1 Statement of the Problem

Historical data on domestic investment and tariff trends reveal potential relationships between these indicators. Investment peaked in 2008 and 2015—both periods of strong tariff reductions—then declined sharply after 2015, coinciding with reduced liberalization from 2017 onwards. A partial recovery aligned with renewed trade liberalization between 2020 and 2022.

The relationship between tariffs and economic growth has been widely discussed in the international economy, as trade policy plays a crucial role in shaping national economies (Krugman et al., 2015). As known tariffs are taxes, usually imposed on imported goods, used by governments for many reasons such as protecting domestic industries, generating revenue, and influencing the trade balance. However, their broader economic implications remain a challenge for decision-maker in world, in general, and in Angola, in particular. A correlation analysis should offer insights into the economic implications of the relationship between tariffs and investment and guide decisions in trade policies for Angolan economy.

1.2 Research Objectives

The specific objectives of this study are:

i. To analyse the short-run impact of tariffs on economic growth, with a particular focus on domestic investment.
ii. To evaluate the long-run effect of tariffs on economic growth, with a particular focus on domestic investment.

II. LITERATURE REVIEW

2.1 Theoretical Review

The effects of tariffs on economic growth have been a focus of discussion in the field of economics. The theoretical link between the two variables can be explained by the Classical and Neoclassical Theories, Endogenous Growth Theory, and the Infant Industry Argument.

2.1.1 Classical and Neoclassical Theories

Economists such as Adam Smith and David Ricardo advocated for free trade, arguing that tariffs distort market prices and lead to inefficient resource allocation (Smith, 1776; Ricardo, 1817; Bhagwati, 2002). In other words, tariffs prevent countries from taking advantage of comparative advantage, a theory developed by Ricardo (1817), which leads to welfare losses and slower economic growth (Dornbusch et al., 1977). Neoclassical models also highlight that tariffs generate unnecessary costs by increasing consumer prices and reducing trade volumes (Krugman et al. 2015; Mankiw, 2018). These models identify capital accumulation, technological innovation, and effective factor mobility as the main engines of economic growth, which protectionist policies may retard (Solow, 1956; Barro, 1990). In this regard, many empirical studies have shown that higher tariff barriers slow down economic growth through inefficient use of resources and low competition (Edwards, 1998; Sachs and Warner, 1995).

2.1.2 Endogenous Growth Theory and Infant Industry Argument

Represented by economists like Paul Romer, the Endogenous Growth Theory provides a more subtle perspective in consideration of the potential positive results of tariffs (Romer, 1986; Aghion and Howitt, 1992). This theory emphasizes that tariffs can protect the initial industry to develop and achieve economies of scale. As a result, this can contribute to the accumulation of innovation, human capital and technological achievement, an important factor of long -term economic growth (Lucas, 1988; Grossman and Helpman, 1991). The claims of early infant industries related to economists such as Alexander Hamilton and Friedrich supports the introduction of temporary tariffs to protect new internal industries from international competitors (Hamilton, 1791; List, 1841; Chang, 2000). Some studies show that the historical case of successful economic development, such as Korea and Taiwan, was achieved by the combination of protectionist policy and industrialization led by the state (Amsden, 1989; Rodrik, 2001). Nevertheless, critics warned that long-term protectionism may lead to inefficiency and rent-seeking, ultimately harming economic growth (Krueger, 1974). These theoretical frameworks reflect a spectrum of views, ranging from classical free trade advocacy to modern support for strategic protectionism to the more modern theories that recognize the potential advantage of strategic protectionism. This study is based on these theoretical bases for studying the impact of tariffs on economic growth in terms of internal investment.

2.2 Empirical Review

There have been many studies on the relationship between tariffs and economic growth. Researchers have used different techniques to analyse the empirical impact of tariffs on macroeconomic variables, and their results can be divided into four categories:

2.2.1 Negative Effects of Tariffs

Several empirical studies have highlighted the adverse consequences of tariffs on macroeconomic performance.

Furceri et al. (2019) investigated the macroeconomic impact of tariffs using impulse response functions of local forecasts on a set of annual data for 151 countries[2] from 1963 to 2014. The results suggest that a significant tariff increase would have a negative impact on production, productivity, unemployment, inequality, and consumption, further exacerbating the deadweight loss caused by tariffs.

The Austrian School of Economics has found that aside from tariffs, their contribution to government revenues brings little economic benefit. Therefore, economic prosperity and growth depend on the reduction or complete elimination of tariffs that act as barriers to global trade (Mises, 1949 and Rothbard, 1962). According to Fong and Mohs (2020), historical and contemporary economic data suggest that countries such as the United States, Hong Kong, and the European Union that chose to impose no or low tariffs have prospered and gained significantly. In contrast, countries with high tariffs, such as the Bahamas and many African countries, have experienced economic stagnation (Ackah and Morrissey, 2007; Kwon, 2013; Liebman and Reynolds, 2015).

However, a study conducted by DeJong and Ripoll (2006) contradicts that of Fong and Mohs (2020), which suggests that the relationship between tariffs and economic growth is negative and significant in the world's rich countries, while it is positive in the world's poor countries. This perspective suggests that maintaining high tariffs may not necessarily be the main cause of economic stagnation in poor countries and the claim that high tariffs promote economic growth and development is difficult to substantiate. For example, although tariffs in the United States in the late 19th century were associated with rapid economic growth, this does not imply a causal relationship (O'Rourke, 2000; Irwin, 2001; Clemens and Williamson, 2004, Kim, 2018). Shi (1997) integrated labour search into an intertemporal equilibrium model to analyse the dynamic macroeconomic effects of tariffs. The model summarized the argument that raising tariffs improves a country's terms of trade. However, it was also shown that while raising tariffs improves the terms of trade and stimulates labour demand, it also increases the prices of consumer goods (Amiti et al., 2019; Khatibi and Vergote, 2011), reduces the marginal utility of wealth (measured by imports), and reduces employment rates in both the short and long run. These findings support the classical and neoclassical arguments against protectionist trade policies.

2.2.2 Positive Effects of Tariffs

Conversely, a body of literature argues that tariffs, when used strategically, can yield positive economic outcomes. Tariffs can hinder trade in goods and services, but as several empirical studies over the past three decades have demonstrated, they are *sine qua non* in some economies. The basic logic deducted from Onyinye (2014), Okechukwu et al. (2023), Imoleayo and Omobolanle (2024), and Giang (2020) suggest that policymakers should pursue trade policies that consider trade barriers such as export and import tariffs, given their observed positive impact on economic growth during the period under analysis (Moseykin and Levchenko, 2014; Nunn and Trefler, 2010; Lehmann and O'Rourke, 2011). This perspective is further supported by recent analyses focusing on developing countries such as Nigeria and Pakistan.

Based on empirical evidence, Arinze et al. (2023) recommend that economic policies that support some degree of import substitution appear more favourable in Nigeria and should be encouraged. This aligns with the main findings of Asif et al. (2022), who examined the impact of tariffs, import substitution, and investment efficiency on economic growth in Pakistan. Furthermore, a coordinated interaction between monetary and fiscal policies is necessary to minimize distortions created by trade restrictions. Olusholaoladele et al. used Autoregressive Distributed Lag (ARDL) techniques to avoid parameter bias due to model misspecification. (2020) re-examined the impact of trade tariffs on economic development in Nigeria from 1980 to 2018. In their study, it was found that some variables had a positive and significant impact on the dependent variable, while others did not. They recommended that government authorities use customs duties, Valor Ad Tariff, and fuel taxes in a targeted manner to achieve intended objectives, rather than indiscriminately and without justification for their manipulation. Such findings reinforce the argument that the impact of tariffs is context-dependent and may vary by country and development stage.

2.2.3 Conditional Effects of Tariffs

Beyond the binary positive or negative effects, some studies underscore the conditional nature of tariff outcomes. Several studies have shown that the relationship between tariffs and economic growth is more complex than a simple direct effect. Countries with high tariffs do not always rank last. Global economic conditions and political reactions to major world events also play a role (Clemens and Williamson, 2004; Johdo, 2024; Zhang, 2017).

While some economies benefit from trade barriers, others may experience stagnation, depending on institutional and external factors. Recently, Martin and Otto (2024) suggested that gains from upstream trade liberalization are not uniformly realized and may vary across firms and industries. Transfer programs to redistribute the surplus from trade liberalization therefore need to take such heterogeneity into account. Furceri et al. (2020) found that tariff increases are associated with a statistically and economically significant decline in output growth. Their

[2] Including Angola.

results reinforce concerns that a prolonged trade war could lead to losses in the global economy, primarily through reduced output growth. Chen et al. (2007) investigated the long-run relationship between tariffs and economic growth in a two-country growth model. Their findings indicate that sufficiently high tariffs can either accelerate or slow economic growth depending on the productivity levels of both countries. Institutional quality also plays an important role in shaping the relationship between tariffs and economic growth. Chaudhry (2011) showed that in economies with weak institutions, rising tariffs can stifle innovation and reduce long-term growth prospects. In contrast, strong institutions can mitigate the negative impact of tariffs by enabling effective implementation of trade policies that promote sustainable growth.

These mixed results point to the importance of policy coherence, institutional quality, and global context in shaping tariff outcomes.

2.2.4 No Correlation

Lastly, a subset of empirical research suggests that there may be no significant correlation between tariffs and economic growth. While some studies have found positive or negative effects depending on the context, others suggest that there may not be a significant correlation between tariffs and economic growth. Potrafke et al. (2020); Schularick and Solomou (2011) find that protectionist policies, including higher tariffs, increased government revenues but found no evidence that they affected economic growth in the first period of globalization. In contrast to both supportive and critical perspectives on tariffs, this view implies that other structural factors may play a more decisive role.

The reviewed literature highlights the complexity of the association between tariffs and economic growth indicators. The impact of tariffs is substantially dependent and influenced by factors such as a country's level of development, domestic investment potential, trade patterns, and institutional quality. However, there remains a significant gap in the empirical research on the relationship of tariffs on economic growth in Angola geography. Most of the country's case studies focus on other countries, and there is a lack of research on Angola's specific economic structure and trade policies. This study aims to fill this gap in the literature by providing empirical evidence on the impact of tariffs on economic growth in Angola, with a particular focus on domestic investment.

Taken together, these empirical perspectives underline the complexity of assessing the role of tariffs in economic growth—especially in contexts like Angola, where empirical studies remain scarce.

III. METHODOLOGY

3.1 Study Area

The present research is centred on the intersection of macroeconomics and international trade studies, particularly within the context of protectionist trade policies. The analysis covers the period from 2002 to 2023, a period of post-war economic recovery in Angola marked by increasing political stability, fluctuations in oil revenues and evolving trade policies. By analysing this period, the study seeks to assess the role of tariffs in shaping the investment climate in Angola.

3.2 Research Design

This study adopts a correlational design to quantify the association between tariffs and economic growth, in terms of domestic investment. The study uses secondary data and applies regression analysis using Stata to ensure empirical precision in quantifying the impact of tariffs on investment trends over time.

3.3 Data Collection and Sampling Procedure

The study is based on annual macroeconomic data from 2002 to 2023, covering economic indicators such as exchange rate, inflation, gross capital formation and foreign direct investment inflows (inFDI) for Angola. Since the data were obtained from reliable national and international sources, including The World Bank, The International Monetary Fund (IMF), and The National Bank of Angola (BNA), traditional sampling techniques are not necessary - instead, all available annual observations within this period are included, providing a comprehensive dataset for analysis.

3.4 Model Specification and Data Sources

The functional relationship guiding this research posits that domestic investment is a function of tariffs, *ceteris paribus*. This can be expressed as:

Domestic Investment = f (Tariffs, Control Variables)

The study employs econometrics techniques, specially, a log-linear model to estimate the percentage variation in domestic investment in response to changes in tariffs, expressed as:

$$\log(\textbf{\textit{Gross Capital Formation}}) = \beta_1 log(\textbf{\textit{Trade Freedom}}) + \sum_n \beta_n \log(\textbf{\textit{Control Variables}})$$

Where:

To empirically estimate this relationship, the study adopts a log-linear model, allowing for interpretation of the coefficients as elasticities. This approach measures the percentage change in the dependent variable (domestic investment) in response to a percentage change in each independent variable. All variables—dependent and independent—were log-transformed. This transformation enhances the model by stabilising variance, improving linearity, and facilitating interpretation in terms of proportional changes. In the log-linear specification, each coefficient (β) represents the elasticity of the dependent variable with respect to the corresponding explanatory variable. For example, a coefficient of 0.1605 implies that a 1% increase in the independent variable results in a 0.1605% increase in the dependent variable.

Gross Capital Formation (grocafo) serves as a proxy for *domestic investment* and is the dependent variable. It is an economic indicator that quantifies the total investment in physical assets within an economy over a given period. It reflects the allocation of resources to expand or maintain productive capacity, which is fundamental for economic growth and development. The data, expressed in current US dollars, were sourced from The World Bank[3].

Trade Freedom, used as a proxy for *tariffs* in this study, is one of the 12 components of the Economic Freedom Index developed by The Heritage Foundation. It assesses the extent to which tariff and non-tariff barriers impact the free exchange of goods and services across borders. This indicator reflects Market Openness and is measured on a 0(zero) to 100 scale, where: 0 (zero), represents the highest level of trade restrictions, with prohibitive tariffs and severe non-tariff barriers and 100 indicates complete trade freedom, with zero or minimal tariffs and no significant non-tariff barriers. The data were obtained from The Heritage Foundation[4].

It is important to note that this indicator is inversely related to tariff levels, a higher Trade Freedom score implies lower tariffs (i.e., greater liberalization), and a lower score reflects higher trade protection through tariffs or other restrictions. As such, interpretations of this variable throughout the study should consider that an increase in Trade Freedom reflects a decrease in tariff levels, and vice versa. This inverse relationship is critical when assessing the direction and magnitude of the impact on domestic investment in both the short and long term. To isolate the effect of tariffs on domestic investment, the following control variables were included:

Foreign Direct Investment (inFDI) represents external capital inflows into an economy, typically through ownership, control, or significant influence over domestic businesses or assets. It plays a crucial role in economic development by providing financial resources, technology, and expertise. It can either complement or substitute domestic investment. Measured in current USD, the data were obtained from The World Bank[5].

Inflation measures the general increase in prices of goods and services over time, reflecting macroeconomic stability within an economy. Excessive inflation can create uncertainty, reduce purchasing power, and negatively impact investment decisions by increasing costs and eroding returns. Measured in percentage, data is obtained from The National Bank of Angola (BNA)[6], ensuring accuracy in the national context.

Government Investment (govinvest) is a subcomponent under the broader category of Size of Government in the Fraser Institute's Economic Freedom Index. It measures the extent to which the government allocates resources to public investments in infrastructure, equipment, and other productive assets. The idea is that larger government investment can indicate more direct state involvement in the economy, potentially crowding out private sector activity, while smaller government investment is typically associated with greater economic freedom. It is measured on a 0 to 10 scale, where lower government investment share results in a higher score, reflecting a smaller role of government in economic activity and higher share of government investment indicates greater government involvement, leading to a lower score on the index. Data are available in Fraser Institute[7].

Exchange Rate (excharate) reflects the value of the Kwanza[8] against the US Dollar. Currency fluctuations influence the cost of imports and capital goods, thus affecting investment. Exchange rate data were also sourced from the BNA[9].

By integrating these control variables, the study aims to isolate the specific effect of trade policy—as proxied by trade freedom—on domestic investment, while accounting for relevant macroeconomic conditions.

[3] https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.CD&country
[4] https://www.heritage.org/index/pages/all-country-scores
[5] https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.CD&country
[6] https://bna.ao/#/pt/estatisticas/consultar-dados/estatisticas-preco-contas-nacionais/evolucao-mensal-tx-inflacao/nacional
[7] https://efotw.org/economic-freedom/dataset?geozone=world&year=2022&page=dataset&min-year=2&max-year=0&filter=0
[8] Angolan National Currency.
[9] https://bna.ao/#/pt/mercados/mercado-cambial/taxas-cambio

Finally, to ensure model robustness and reliability, a combination of pre-estimation and post-estimation diagnostic tests (including tests for stationarity, cointegration, and model stability) was applied. These procedures are critical for validating the empirical model and supporting sound, evidence-based policy recommendations.

IV. FINDINGS AND DISCUSSION

4.1 Pre-Estimation Tests

4.1.1 Descriptive Statistics

From the statistical indicator on the respective economic indicator (mean, standard deviation, minimum, and maximum) reported in table 1, we can observe:

i. fluctuations in Mean and Standard Deviation: the mean values of variables such as gross capital formation, FDI, inflation, and exchange rate suggest that these measures change over time. The standard deviations (std. dev.) indicate the degree of variation. Higher values (e.g., exchange rate = 197.68) show greater volatility, meaning that the data fluctuates significantly rather than remaining constant.

ii. Variability between the minimum and maximum values: the difference between the minimum and maximum values varies is significantly high across variables. For example, the exchange rate ranges from 7.97 to 679.55 kwanzas.

Table 1

Summary Statistics

Variables	Mean	Std. Dev.	Min	Max
Gross Capital Formation (billion USD)	20.4	9.7	4.7	37.4
Tariffs	61.50	12.56	25.00	73.00
inFDI (million)	-922	4.1	-7.4	10.0
Inflation (%)	0.19	0.04	0.12	0.27
Govinvest (score)	6.99	2.84	1.15	10.00
Excharate (kwanzas)	188.10	197.68	7.97	679.55

Source: Author's calculations using Stata 14 output.

4.1.2 Stationarity Test

Before model estimation this study applies stationarity tests, optimal lag selection criteria, and cointegration tests, to ensure that the econometric model used for empirical analysis is appropriate in term of dataset, this study applies stationarity tests, optimal lag selection criteria, and cointegration tests.

A key assumption in time series analysis is that the data must be stationary, in other words, statistical indicators such as mean, variance, and autocorrelation, remain constant over time (Enders, 2014 and Hamilton, 1994). If a series is non-stationary, regression results may be spurious, leading to unreliable conclusions, consequently the model might not be realistic and useful for prediction (Gujarati, 2009; Dickey and Fuller, 1979). In this case there is a need to apply differencing techniques to address non-stationary issues. One of the most common tests for stationarity is the Dickey-Fuller test. The results on the Dickey-Fuller test, presented in table 1, shows outcome for stationary test on both zero level and first difference.

We can observe, in the table 2, that without differencing both log(grocafo) and log(excharate) exhibit the test statistic higher than all critical values, and the p-value is above 5%., what indicate that the series are non-stationary. Similarly, both log(inFDI) and log(inflation) series are stationary as the respective test statistic are lower than all critical values, and the p-value are very small. Log(govinvest) presents the test statistic slightly above the 1% critical value but below the 5% level, leading to conclude that the series is stationary at the 5% significance level. Finally, log(tariffs) is stationary at the 10% level significance level but not at 5%, as the test statistic is slightly above the 5% critical value but below the 10% level and the p-value is close to 5%. With differencing all the variables become stationary at 1% significance (p-value = 0.0), suggesting that the variables are integrated of order one.

Table 2

Summary of Dickey-Fuller Test Results

Variables	Zero Level					First Difference				
	Test Statistic (Z(t))	1% Critical Value	5% Critical Value	10% Critical Value	p-value	Test Statistic (Z(t))	1% Critical Value	5% Critical Value	10% Critical Value	p-value
log(grocafo)	-1.7	-3.8	-3	-2.6	0.4	-4.2	-3.8	-3	-2.6	.0
logtariffs	-2.9	-3.8	-3	-2.6	.0	-7	-3.8	-3	-2.6	.0
logfdi	-4.3	-3.8	-3	-2.6	.0	-7.6	-3.8	-3	-2.6	.0
loginflation	-6.1	-3.8	-3	-2.6	.0	-9.9	-3.8	-3	-2.6	.0
log(govinvest)	-3.1	-3.8	-3	-2.6	.0	-5.2	-3.8	-3	-2.6	.0
log(excharate)	-2.6	-3.8	-3	-2.6	0.1	-5.7	-3.8	-3	-2.6	.0

Source: Author's calculations using Stata 14 output.

4.1.3 Cointegration Test

Given the variables are now stationary, the Johansen cointegration test is conducted to determine whether a long-term equilibrium relationship exists among the variables. To meet this purpose the Johansen Cointegration test was performed. Results on this test are reported in table 3. We observe that at rank 0 (zero) and 1, the value of trace statistic is greater than the respective critical value. At rank 2, the trace statistic is less than its critical value, accepting the null hypothesis at this point. Here is evidence that there are two cointegrating equations, meaning two long-run equilibrium exists among the variables. The Eigenvalues confirm that the strongest relationships are within these first two ranks. Beyond that, the Eigenvalues are much smaller, meaning the remaining ranks do not show strong evidence of additional cointegration. These results support the application of Vector Error Correction Model (VECM).

Table 3

Summary of Johansen Cointegration Test results

Rank (r)	Log Likelihood	Eigenvalue	Trace Statistic	5% Critical Value
0	-1758.48	-	157.22	124.24
1	-1727.09	0.94	94.44	94.15
2	-1702.70	0.89	45.67	68.52
3	-1690.11	0.68	20.49	47.21
4	-1684.46	0.40	9.19	29.68
5	-1680.17	0.32	0.60	15.41
6	-1679.88	0.03	0.02	3.76

Source: Author's calculations using Stata 14 output.

4.1.4 Optimal Lag Length Selection Criteria

It is important to choose an appropriate lag length to model the time series. This is essential to avoid overfitting and capture the desirable dynamic relationship between variables (Lütkepohl, 2005; Johansen, 1995). According to the statistical indicators AIC[10], HQIC[11], and SBIC[12], reported in table 4, for the optimal lag length selection criteria, four is the optimal lag four, but however there is a risk of overfitting. So, a model with two lags offers a balance between complexity and interpretability, as this conservative approach provides a balance between capturing dynamic relationships and avoiding overparameterization, according to results on the LR[13] test. Therefore, a lag length of two was selected.

Table 4

Summary of Optimal Lag Length Selection Criteria

Lag	LR Test	p-value	AIC	HQIC	SBIC
0	-	-	8.05858	8.11689	8.35730
1	166.91	0.000	3.31296	3.72116	5.40400
2	116.48	0.000	1.08918	1.84725	4.97253
3	-	-	-	-	-
4	-	-	-365.446	-364.280	-359.472

Source: Author's calculations using Stata 14 output.

[10] Akaike Information Criterion.
[11] Hannan-Quinn Criterion
[12] Schwarz-Bayesian Criterion
[13] Likelihood Ratio

4.1.5 Short-Run Results

In short run analysis within the VECM output is placed on the coefficients of differenced variables, which quantify both the magnitude and direction of the short run impact exerted by each independent variable on the dependent variable, accordingly. The overall results are shown in Appendix, so a summary for short run output is reported in Table 5. The coefficient on D_log(trade_freedom) is -1.45, indicating that an increase in tariffs in the previous period leads to a decline in domestic investment in the current period by 1.45%. This effect is statistically significant at the 1% level (p = 0.00), confirming the robustness of this relationship. The significance of this coefficient confirms that the observed effect is not due to random fluctuations but reflects a systematic pattern in the data. This result is consistent with the theoretical and empirical literature studies reviewed in this research. Classic and neoclassical literature emphasizes that tariffs cause losses and violate resource distribution (Smith, 1776; Ricardo, 1817; Krugman et al., 2015). This short -term negative impact coincides with empirical research, which has been found that protectionist policies are harmful to immediate economic activities. High tariffs increase costs and limit the presence of imported capital products (Furceri et al., 2019; Dejong and Ripoll, 2006).

Table 5

Short-Run Results

Dependent variable: Log(Grocafo)			
Independent Variables	**Coefficient**	**Std. Error**	**Probability**
D_log(trade_freedom)	-1.45	.27	.00
Controlled Variables			
D_Log(inFDI)	-.23	.04	.00
D_Log(Inflation)	-.19	.13	.14
D_Log(Govinvest)	.08	.07	.23
D_(Excharate)	-.64	.14	.00
Error Correction Term	-.79	.11	.00

Source: Author's calculations using Stata 14 output.

Results for control variables suggests that like tariffs domestic investment, FDI inflows and the exchange rate exert a negative and statistically significant effect on domestic investment. The results suggest that the past level of investment is a strong predictor of domestic investment in the current period. While inflation also has a negative effect, neither inflation nor government investment exerts a statistically significant impact on domestic investment in the short run. Additionally, the findings suggest that FDI inflows and exchange rate fluctuations may, significantly, served as deterrents to domestic investment.

The adjustment coefficient of -0.79 represents the speed at which the system returns to long-run equilibrium following a short-run deviation. Although this coefficient is a component of the long-run correction mechanism, its effects are observable in the short run as the system adjusts toward equilibrium. This coefficient implies that approximately 79% of the deviation from long-run equilibrium is corrected within one period, indicating a strong adjustment towards equilibrium. The negative sign further suggests a stabilizing effect, with the system converging back to its equilibrium state. The error-correction term is highly significant (p = 0.00) for domestic investment but not significant for other variables, indicating that these variables do not adjust significantly to restore equilibrium.

The negative short-run effect indicates that tariff increases can hinder domestic investment, thereby jeopardizing Angola's industrialization and economic diversification objectives. Historically, Angola's economy has been heavily dependent on oil exports and the importation of manufactured goods and capital equipment. Tariff increases may have disrupted access to essential imports necessary for investment, particularly in non-oil sectors seeking to diversify the economy. Angola's structural constraints—such as a heavy reliance on imports, an underdeveloped domestic industrial base, and limited capital capacity—may have amplified the adverse effects of higher tariffs on investment. During the study period, Angola implemented tariffs to protect nascent industries; however, the absence of complementary policies, such as incentives for local production or technology transfer, may have limited the intended positive effects on investment (Pierce and Schott, 2018).

4.1.6 Long-Run Results

The long run analysis in VECM is derived from the cointegrating equation. This equation specifies the equilibrium relationship among variables, normalized on dependent variable. A summary on the cointegrating equation output is reported in table 6, as full results are provided in Appendix.

Table 6
Long-Run Output

Variables	Coefficient	Std. Error	Probability
Log(Grocafo)	1	.	.00
Log(trade_freedom)	-2.04	0.19	0.00
Controlled Variables			
Log (inFDI)	-0.18	0.04	0.00
Log(Inflation)	-1.31	0.31	0.00
Log(Govinvest)	0.65	0.06	0.00
Log(Excharate)	0.12	0.062	0.06

Source: Author's calculations using Stata 14 output.

The coefficient for log(trade_freedom) (-2.04%)[14] is statistically significant (p = 0.000), indicating a strong and reliable long-run relationship between tariffs and domestic investment in Angola. Specifically, a 1% increase in tariffs is associated with a 2.04% increase in domestic investment, suggesting a substantial impact relative to other explanatory variables. Among all variables, log(trade_freedom) has the most substantial long-run impact, underscoring its critical role in shaping domestic investment dynamics in Angola. This finding echoes the arguments put forth by proponents of endogenous growth theory and the infant industry hypothesis, who suggest that temporary protective measures can help shield nascent industries and foster long-term industrial development (Romer, 1986; Aghion and Howitt, 1992; Hamilton, 1791; List, 1841; Chang, 2002). We found that, a 1% increase in tariffs is linked to a 2.04% rise in domestic investment in the long run, supporting the idea that, once local industries have matured, protectionism may help promote further investment and industrial diversification. In contrast to the short-run results, the long-run estimates indicate that tariffs exert a positive and significant influence on domestic investment, while FDI and exchange rate exhibit negative and significant effects. The findings suggest that past levels of domestic investment are strong significant predictors of current domestic investment. Neither inflation nor government investment significantly influences domestic investment in the short run. This suggests that FDI inflows and exchange rate fluctuations may discourage domestic investment in the long term.

Policymakers must weigh the trade-offs between using tariffs as a revenue-generating tool and their potential negative implications for investment. The long-run results highlight the protective function of tariffs. Higher tariffs may encourage domestic production by shielding local industries from foreign competition, thereby fostering investment in import-substituting sectors. In Angola, tariff revenues may have been allocated to public investment projects, such as infrastructure development, which further stimulates domestic investment. Given Angola's ongoing Economic Diversification Strategy, tariffs could serve as an instrument to promote emerging industries that require sustained capital investment.

4.2 Post-Estimation Tests

Post-estimation tests are employed to assess the validity, fit, and robustness of the estimated model. These include checks for serial correlation, heteroskedasticity, normality, and model stability. Each of these diagnostics ensures that the model's results are reliable and suitable for policy analysis.

4.2.1 Serial Correlation Test

The Lagrange Multiplier (LM) test was used to detect autocorrelation in the residuals. The results are summarised in Table 7. The LM test results indicate no evidence of serial correlation, as the p-values exceed the 5% significance threshold for all lag orders tested. This confirms that the model is correctly specified in terms of lag structure.

Table 7
Summary of Lagrange-Multiplier (LM) Test

Lag Order	Chi-square (χ^2)	p-value
1	26.07	0.8884
2	41.37	0.2479

Source: Author's calculations using Stata 14 output.

[14] Although this coefficient is reported with a negative sign, due to normalization conventions, it indicates a positive relationship between tariffs and domestic investment when interpreted correctly. Rule of Thumb: For the cointegrating equation, reverse the sign of the coefficient when interpreting its relationship to the dependent variable. For short-term dynamics (lagged differences), interpret the sign as presented in the output, as it directly reflects the short-run effects (Johansen, 1995; Lütkepohl, 2005; Greene, 2018 and Asteriou, 2021).

4.2.2 Heteroskedasticity Test

To test for heteroskedasticity, the White Test was applied. The results are shown in Table 8. With a p-value greater than 5%, there is no statistical evidence of heteroskedasticity in the residuals. This suggests that the variance of the errors is constant (homoskedastic), and no correction is needed.

Table 8

Summary of White Test

Test	Chi-square (χ^2)	p-value
White Test	23.70	0.2559

Source: Author's calculations using Stata 14 output.

4.2.3 Normality Test

The Jarque-Bera test was performed to evaluate whether the residuals follow a normal distribution. Results are presented in Table 9. All variables, as well as the joint model residuals, have p-values above 5%, indicating that the null hypothesis of normality cannot be rejected. Thus, the residuals are considered normally distributed, satisfying a key assumption of the VECM.

Table 9

Summary of Jarque-Bera Test

Equation	Chi-square (χ^2)	p-value
D_log(grocafo)	1.035	0.59614
D_log(tariffs)	3.320	0.19013
D_log(fdi)	0.651	0.72212
D_log(inflation)	0.161	0.92287
D_log(goinvest)	1.162	0.55945
D_log(excharate)	0.614	0.73563
All	**6.942**	**0.86142**

Source: Author's calculations using Stata 14 output.

4.2.4 Stability Test

For a VECM model to be considered stable, all eigenvalues must have absolute values less than or equal to 1. The results reported in table 10, on the Eigenvalue Stability Condition test reveal that the estimated model meets the stability criterion, indicating the presence of long-run relationships among the variables.

Table 10

Summary of Eigenvalues of Companion Matrix

Eigenvalue	Modulus	Stability Condition
1	1.000	Unit root (expected)
1	1.000	Unit root (expected)
1	1.000	Unit root (expected)
1	1.000	Unit root (expected)
1	1.000	Unit root (expected)
-0.0229 + 0.7233i	0.7237	Stable
-0.0229 - 0.7233i	0.7237	Stable
-0.5536 + 0.1631i	0.5771	Stable
-0.5536 - 0.1631i	0.5771	Stable
-0.2827	0.2827	Stable
0.0119 + 0.0929i	0.0937	Stable
0.0119 - 0.0929i	0.0937	Stable

Source: Author's calculations using Stata 14 output.

In addition, the CUSUM of Squares test was also conducted to evaluate parameter stability over time. The results in figure 3, demonstrate that test statistic remains within the confidence bands throughout the study period. This provides further evidence that the model does not suffer from structural breaks or parameter instability, reinforcing its reliability for inference and forecasting.

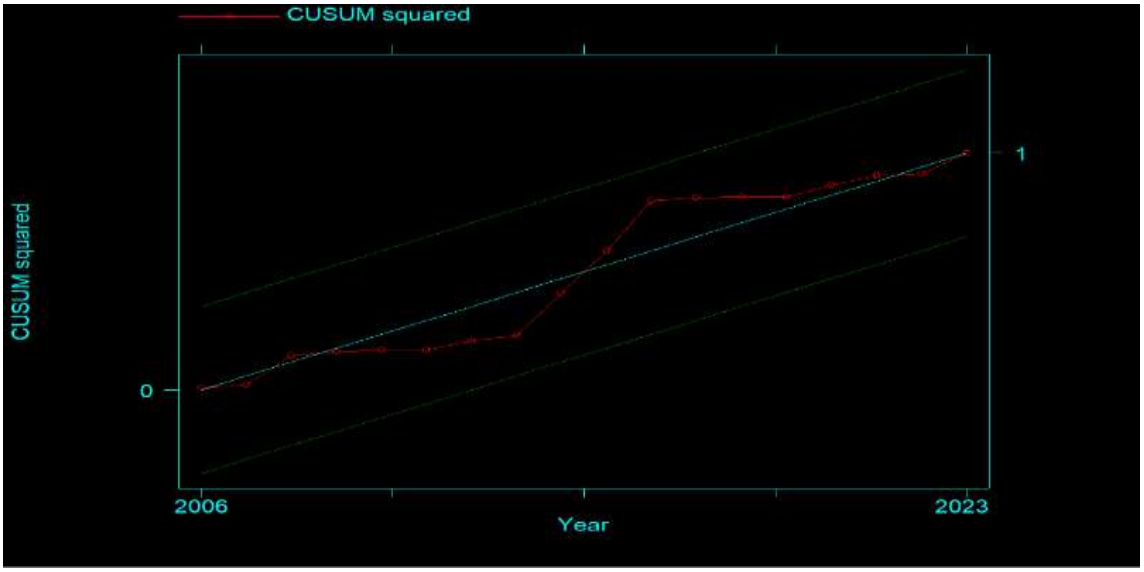

Figure 3
CUSUM of Squares Plot
Source: Author's calculations using Stata 14 output.

The combination of pre- and post-estimation test revealed that data are non-stationary at the level but become stationary after first differencing, there is long run relationships between the variables, VECM is the appropriate model, it was properly specified, stable, and statistically robust. Consequently, the findings derived from this model provide a credible basis for policy recommendations.

V. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This study has examined the empirical relationship between tariffs and domestic investment in Angola from 2002 to 2023, using a Vector Error Correction Model (VECM). The results confirm a dual effect: in the short run, higher tariffs are associated with reduced domestic investment, while in the long run, they appear to support investment growth by protecting emerging industries. These findings highlight the complexity of tariff policy in a developing context. In the short term, tariffs may hinder investment by increasing the cost of imported capital goods and inputs. However, in the long term, they can play a strategic role in fostering industrial development and economic diversification.

This suggests that Angola's current industrial policy may benefit from complementary measures, such as technology transfer, targeted subsidies, and improved infrastructure, to mitigate the adverse short-run effects of protectionism. Moreover, ensuring access to critical imports and integrating tariff policy with broader development strategies could help maximize long-term benefits without compromising short-term economic stability. By addressing both the constraints and opportunities associated with tariffs, this study contributes to a more nuanced understanding of trade policy in Angola and supports evidence-based policymaking tailored to the country's development stage and structural needs.

5.2 Recommendations

Given the significant long-run positive relationship between tariffs and domestic investment, Angola's trade policy should strategically target sectors with high growth and employment potential—particularly agriculture, agro-processing, and light manufacturing. These sectors can benefit from temporary tariff protection while developing productive capacity and competitiveness. To ensure that tariff policies yield long-term benefits without exacerbating short-term distortions, the following policy recommendations are proposed:

i. Make tariff protection time-bound and performance-based, linked to measurable progress in productivity or value addition within protected sectors.
ii. Promote access to credit and investment incentives for domestic firms, particularly Small and Medium-sized Enterprises (SMEs), to expand productive activities in response to market gaps created by tariffs.
iii. Ensure continued access to essential imported inputs, especially capital goods, and intermediate products, to avoid production bottlenecks.
iv. Encourage FDI inflows into strategic value chains, ensuring that foreign capital complements domestic investment and fosters technology transfer.

v. Strengthen institutional capacity to monitor, evaluate, and adjust tariff policies in alignment with Angola's broader economic diversification goals.

Lastly, since this study provides macro-level insights, future research should explore the sector-specific effects of tariff policies through microeconomic case studies. This would offer a more granular understanding of how tariffs influence investment behaviour across different industries, informing more targeted and effective trade strategies.

REFERENCES

Abílio, B. J. (2024). The effects of oil and non-oil export revenue on income inequality in Angola. *African Journal of Empirical Research*, *5*(4), 1027–1042. https://doi.org/10.51867/ajernet.5.4.85

Ackah, C., and Morrissey, O. (2007). Trade liberalisation is good for you if you are rich. *CREDIT Research Paper No. 07/01*, Centre for Research in Economic Development and International Trade, University of Nottingham.

Aghion, P., and Howitt, P. (1992). A model of growth through creative destruction. *Econometrica*, *60*(2), 323–351.

Amin, S. I., and Fatima, A. (2019). Impact of tariff on income: Cross country analysis. *JISR Management and Social Sciences and Economics*, *17*(1), 215–228. https://doi.org/10.31384/jisrmsse/2019.17.1.13

Amiti, M., Redding, S., and Weinstein, D. (2019). The impact of the 2018 tariffs on prices and welfare. *Journal of Economic Perspectives*, *33*(4), 187–210. https://doi.org/10.1257/jep.33.4.187

Amsden, A. H. (1989). *Asia's next giant: South Korea and late industrialization*. Oxford University Press.

Arinze, S., Onakoya, A., and Iwayemi, A. (2023). Structural model for the analysis of the impacts of import tariff changes on domestic industrial production in Nigeria. *International Journal of Developing and Emerging Economies*, *11*(2), 92–118. https://doi.org/10.37745/ijdee.13/vol11n292118

Asif, M., Amin, A., Nazir, N., Saeed, K., and Jan, S. (2022). Role of tariffs, import substitution and investment efficiency in economic growth of Pakistan. *Quality and Quantity*, *56*(2), 2215–2232. https://doi.org/10.1007/s11135-021-01211-w

Asteriou, D., and Hall, S. G. (2021). *Applied econometrics* (4th ed.). Red Globe Press.

Barro, R. J. (1990). Government spending in a simple model of endogenous growth. *Journal of Political Economy*, *98*(5), S103–S125.

Bhagwati, J. (2000). *Free trade today*. Princeton University Press.

Chang, H.-J. (2000). *Kicking away the ladder: Development strategy in historical perspective*. Anthem Press.

Chaudhry, A. (2011). Tariffs, trade and economic growth in a context of institutional quality. *The Lahore Journal of Economics*, *16*(2), 31–54. https://doi.org/10.35536/lje.2011.v16.i2.a2

Chen, B.-L., Lee, S.-F., and Shimomura, K. (2007). Import tariffs and growth in a model with habits. In T. Kamihigashi and L. Zhao (Eds.), *International trade and economic dynamics* (pp. 299–322). Springer. https://doi.org/10.1007/978-3-540-78676-4_22

Clemens, M. A., and Williamson, J. G. (2004). Why did the tariff-growth correlation change after 1950? *Journal of Economic Growth*, *9*(1), 5–46. https://www.jstor.org/stable/40215892

DeJong, D. N., and Ripoll, M. (2006). Tariffs and growth: An empirical exploration of contingent relationships. *The Review of Economics and Statistics*, *88*(4), 625–640.

Dickey, D. A., and Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, *74*(366a), 427–431.

Dornbusch, R., Fischer, S., and Samuelson, P. A. (1977). Comparative advantage, trade, and payments in a Ricardian model with a continuum of goods. *American Economic Review*, *67*(5), 823–839.

Edwards, S. (1998). Openness, productivity, and growth: What do we really know? *Economic Journal*, *108*(447), 383–398.

Enders, W. (2014). *Applied econometric time series* (4th ed.). Wiley.

Fong, V., and Mohs, D. N. (2020). Exploring the impact of tariffs on foreign direct investment and economic prosperity. *International Journal of Accounting and Taxation*, *8*(2), 1–5. https://doi.org/10.15640/ijat.v8n2a1

Furceri, D., Hannan, S. A., Ostry, J. D., and Rose, A. K. (2020). Are tariffs bad for growth? Yes, say five decades of data from 150 countries. *Journal of Policy Modeling*, *42*(4), 850–859. https://doi.org/10.1016/j.jpolmod.2020.03.009

Furceri, D., Ostry, M. D., Hannan, M. A., and Rose, M. K. (2019). *Macroeconomic consequences of tariffs*. *IMF Working Papers*, *2019*(009), 1–57. https://doi.org/10.5089/9781484390061.001

Giang, N. T. (2020). The role of tariff in promoting economic growth: A case study of Vietnam. *Journal of Finance and Economics*, *8*(2), 86–92. https://doi.org/10.12691/jfe-8-2-6

Greene, W. H. (2018). *Econometric analysis* (8th ed.). Pearson.

Grossman, G. M., and Helpman, E. (1991). *Innovation and growth in the global economy*. MIT Press.

Gujarati, D. N. (2009). *Basic econometrics* (5th ed.). McGraw-Hill.

Hamilton, A. (1791). *Report on manufactures*. U.S. Government Printing Office.

Hamilton, J. D. (1994). *Time series analysis*. Princeton University Press.

Imoleayo, O. O., and Omobolanle, R. Y. (2024). Tariff policy and economic growth in Nigeria. *International Journal of Innovative Research and Development, 13*(4), 95–110. https://doi.org/10.24940/ijird/2024/v13/i4/APR24036

Irwin, D. A. (2001). Tariffs and growth in late nineteenth century America. *World Economy, 24*(1), 15–30. https://doi.org/10.1111/1467-9701.00341

Johansen, S. (1995). *Likelihood-based inference in cointegrated vector autoregressive models*. Oxford University Press.

Johdo, W. (2024). Tariffs, growth and non-tariff transport costs. *Journal of International Commerce, Economics and Policy, 15*(3). https://doi.org/10.1142/S1793993324500236

Kee, H. L., Nicita, A., and Olarreaga, M. (2008). Import demand elasticities and trade distortions. *The Review of Economics and Statistics, 90*(4), 666–682.

Khatibi, A., and Vergote, W. (2011). Trade policy in the face of price and non-price strategies. *Portuguese Economic Journal, 10*(1), 3–21.

Kim, H. M. (2018). Economic growth and tariff levels in the United States: A Granger causality analysis. *Journal of International Studies, 11*(4), 79–92. https://doi.org/10.14254/2071-8330.2018/11-4/6

Krueger, A. O. (1974). The political economy of the rent-seeking society. *American Economic Review, 64*(3), 291–303.

Krugman, P. R., Obstfeld, M., and Melitz, M. J. (2015). *Economia internacional* (10th ed.). Pearson.

Kwon, R. (2013). Is tariff reduction a viable strategy for economic growth in the periphery? An examination of tariff interaction effects in 69 less developed countries. *Journal of World-Systems Research, 19*(2), 241–262. https://doi.org/10.5195/jwsr.2013.506

Lehmann, S. H., and O'Rourke, K. H. (2011). The structure of protection and growth in the late nineteenth century. *The Review of Economics and Statistics, 93*(2), 606–616. https://www.jstor.org/stable/23015957

Liebman, B., and Reynolds, K. (2015). Trade liberalisation and capital spending by US manufacturers. *The World Economy, 38*(11), 1763–1780.

List, F. (1841). *The national system of political economy*. Longmans, Green and Co.

Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics, 22*(1), 3–42.

Lütkepohl, H. (2005). *New introduction to multiple time series analysis*. Springer.

Mankiw, N. G. (2018). *Macroeconomics* (10th ed.). Worth Publishers.

Martin, T., and Otto, C. (2024). The downstream impact of upstream tariffs: Evidence from investment decisions in supply chains. *Journal of Financial and Quantitative Analysis, 59*(6), 2695–2732.

Mises, L. von. (1949). *Human action: A treatise on economics*. Yale University Press.

Moseykin, Y. N., and Levchenko, I. V. (2014). The impact of agricultural import tariff on economic growth: Evidence from Mercosur countries. *Chinese Business Review, 13*(3), 137–153.

Nunn, N., and Trefler, D. (2010). The structure of tariffs and long-term growth. *American Economic Journal: Macroeconomics, 2*(4), 158–194.

Okechukwu, M. N., Okoye, I. M., Nkechi, I. O., and Chika, E. J. (2023). The impact of tariffs on Nigerian economy (2000–2020). *South Asian Journal of Social Studies and Economics, 20*(3), 180–194.

Olusholaoladele, A., Makwe, E. U., and Tubolayefa, E. (2020). Trade tariffs and selected macroeconomic indicators of performance in Nigeria, 1980–2018. *World Journal of Innovative Research, 8*(1), 26–37. https://doi.org/10.31871/WJIR.8.1.23

Onyinye, D.-W. (2014). Empirical analysis of trade barriers and economic growth in Nigeria. *Innovare Journal of Social Sciences, 2*(4), 1–6.

O'Rourke, K. H. (2000). Tariffs and growth in the late 19th century. *The Economic Journal, 110*(463), 456–483. https://www.jstor.org/stable/2566243

Ostry, J. D., and Rose, A. K. (1989). Tariffs and the macroeconomy: Some empirical evidence. *IMF Working Paper No. 89/70*, International Monetary Fund.

Pierce, J., and Schott, P. (2018). Investment responses to trade liberalization: Evidence from U.S. industries and establishments. *Journal of International Economics, 115*, 203–222. https://doi.org/10.1016/j.jinteco.2018.09.005

Potrafke, N., Ruthardt, F., and Wuthrich, K. (2020). Protectionism and economic growth: Causal evidence from the first era of globalization. *CESifo Working Paper No. 8759*, Center for Economic Studies and Ifo Institute. https://doi.org/10.48550/arXiv.2010.02378

Ricardo, D. (1817). *On the principles of political economy and taxation*. John Murray.

Rodrik, D. (2001). The global governance of trade: As if development really mattered. *United Nations Development Programme (UNDP)*.

Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy, 94*(5), 1002–1037.

Rothbard, M. N. (1962). *Man, economy, and state with power and market*. Ludwig von Mises Institute.

Sachs, J. D., and Warner, A. M. (1995). Economic reform and the process of global integration. *Brookings Papers on Economic Activity, 1995*(1), 1–118.

Schularick, M., and Solomou, S. (2011). Tariffs and economic growth in the first era of globalization. *Journal of Economic Growth, 16*(1), 33–70.

Shi, S. (1997). Tariffs, unemployment, and the current account: An intertemporal equilibrium model. *Queen's Economics Department Working Paper No. 967*, Queen's University. https://doi.org/10.22004/ag.econ.273401

Smith, A. (1776). *An inquiry into the nature and causes of the wealth of nations*. W. Strahan and T. Cadell.

Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics, 70*(1), 65–94.

The Heritage Foundation (2024). *Index of Economic Freedom: All Country Scores. The Heritage Foundation*. Index of Economic Freedom. https://www.heritage.org/index/pages/all-country-scores

World Bank. (2024). *World Development Indicators/DataBank*. The World Bank. https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.CD&country

Zhang, W.-B. (2017). Tariff and public good in a small open growth economy with externalities and congestion. *Economia Internazionale/International Economics, 64*(2), 293–315.

APPENDIX

Vector error-correction model output

Vector error-correction model

Sample: 2002 - 2023		Number of obs	= 22
		AIC	= 4.634463
Log likelihood = 2.020907		HQIC	= 5.25364
Det(Sigma_ml) = 3.35e-08		SBIC	= 7.262883

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_loggrosscapi~n	8	.193792	0.8668	91.10928	0.0000
D_logtariffs	8	.259667	0.3919	9.023412	0.3403
D_logfdi	8	1.41383	0.5470	16.90846	0.0311
D_loginflation	8	.263691	0.7004	32.72348	0.0001
D_loggoverment~t	8	.697053	0.3815	8.635495	0.3740
D_logexchanger~e	8	.19254	0.6282	23.65445	0.0026

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
D_loggrosscapitalformation						
_ce1 L1.	-.7878043	.1138072	-6.92	0.000	-1.010862	-.5647464
loggrosscapitalformation LD.	.3249574	.1250135	2.60	0.009	.0799354	.5699795
logtariffs LD.	-1.450657	.2675519	-5.42	0.000	-1.975049	-.9262648
logfdi LD.	-.2308249	.0398853	-5.79	0.000	-.3089987	-.1526512
loginflation LD.	-.1933641	.1303101	-1.48	0.138	-.4487672	.062039
loggovermentinvestment LD.	.0798034	.0657718	1.21	0.225	-.049107	.2087139
logexchangerate LD.	-.6443305	.142731	-4.51	0.000	-.9240781	-.3645828
_cons	.1706738	.0496265	3.44	0.001	.0734077	.26794
D_logtariffs						
_ce1 L1.	.1344857	.1524932	0.88	0.378	-.1643954	.4333668
loggrosscapitalformation LD.	.0388345	.1675089	0.23	0.817	-.2894768	.3671458
logtariffs LD.	-.4212091	.3584997	-1.17	0.240	-1.123856	.2814374
logfdi LD.	-.0174132	.0534433	-0.33	0.745	-.1221602	.0873338
loginflation LD.	.2394988	.1746058	1.37	0.170	-.1027224	.5817199
loggovermentinvestment LD.	-.1281379	.0881294	-1.45	0.146	-.3008683	.0445925
logexchangerate LD.	-.0455748	.191249	-0.24	0.812	-.4204159	.3292662
_cons	.0371895	.0664958	0.56	0.576	-.0931399	.167519
D_logfdi						
_ce1 L1.	-1.034973	.8302913	-1.25	0.213	-2.662314	.5923684
loggrosscapitalformation LD.	-.1429554	.9120484	-0.16	0.875	-1.930538	1.644627
logtariffs LD.	1.127807	1.951951	0.58	0.563	-2.697947	4.95356
logfdi LD.	-.4083801	.290987	-1.40	0.160	-.9787042	.1619439
loginflation LD.	-1.268668	.9506899	-1.33	0.182	-3.131986	.5946495
loggovermentinvestment LD.	-.3728155	.4798449	-0.78	0.437	-1.313294	.5676632
logexchangerate LD.	.3591015	1.041308	0.34	0.730	-1.681825	2.400028
_cons	-.0692596	.3620551	-0.19	0.848	-.7788745	.6403553

D_loginflation						
_ce1 L1.	.0906546	.1548567	0.59	0.558	-.2128589	.394168
loggrosscapitalformation LD.	-.0909939	.1701051	-0.53	0.593	-.4243938	.2424059
logtariffs LD.	-.4211609	.3640561	-1.16	0.247	-1.134698	.292376
logfdi LD.	-.0412754	.0542716	-0.76	0.447	-.1476458	.0650951
loginflation LD.	-.476303	.1773121	-2.69	0.007	-.8238282	-.1287777
loggovermentinvestment LD.	-.1963134	.0894953	-2.19	0.028	-.371721	-.0209058
logexchangerate LD.	.0709752	.1942132	0.37	0.715	-.3096756	.4516259
_cons	-.0030268	.0675265	-0.04	0.964	-.1353762	.1293227

D_loggovermentinvestment						
_ce1 L1.	-.7347942	.4093551	-1.80	0.073	-1.537115	.067527
loggrosscapitalformation LD.	.1140396	.4496634	0.25	0.800	-.7672846	.9953637
logtariffs LD.	-.3870526	.9623623	-0.40	0.688	-2.273248	1.499143
logfdi LD.	.0569496	.1434641	0.40	0.691	-.2242349	.3381341
loginflation LD.	-.4231209	.4687147	-0.90	0.367	-1.341785	.495543
loggovermentinvestment LD.	-.0707795	.2365759	-0.30	0.765	-.5344598	.3929008
logexchangerate LD.	.1885794	.5133918	0.37	0.713	-.81765	1.194809
_cons	-.0552629	.1785025	-0.31	0.757	-.4051213	.2945956

D_logexchangerate						
_ce1 L1.	.155845	.1130718	1.38	0.168	-.0657717	.3774617
loggrosscapitalformation LD.	-.3284493	.1242058	-2.64	0.008	-.5718882	-.0850104
logtariffs LD.	.3691807	.2658232	1.39	0.165	-.1518232	.8901846
logfdi LD.	.0936829	.0396276	2.36	0.018	.0160142	.1713515
loginflation LD.	-.0859837	.1294681	-0.66	0.507	-.3397365	.1677692
loggovermentinvestment LD.	-.0305773	.0653469	-0.47	0.640	-.1586549	.0975002
logexchangerate LD.	.0980526	.1418088	0.69	0.489	-.1798875	.3759928
_cons	.1119188	.0493059	2.27	0.023	.0152811	.2085566