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MINIMIZING ILLICIT FINANCIAL FLOWS TO MITIGATE BARRIERS TO AFCFTA IMPLEMENTATION IN NIGERIA

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ABSTRACT

To benefit fully from the implementation of the African Continental Free Trade Area (AfCFTA), Nigeria must address barriers such as illicit financial flows (IFFs). Trade facilitation has been identified as an effective strategy for reducing IFFs. This study examined the effects of trade facilitation on IFFs between Nigeria and its African trading partners from 1981 to 2022. Data on trade facilitation indicators—internet usage, regulatory quality, border efficiency, and port infrastructure quality—were obtained from the World Development Indicators (WDI, 2025), while IFFs, comprising illicit financial outflows (IFOs) and illicit financial inflows (IFIs), were estimated using discrepancies in bilateral trade data from the International Monetary Fund (IMF, 2025). Descriptive statistics, panel Poisson regression, and time-series Poisson regression were employed to assess the effects of trade facilitation on IFOs and IFIs between Nigeria and its trading partners across four major African trade blocs: EAC, ECOWAS, AMU, and SADC. Panel regression results showed that internet usage and regulatory quality significantly reduced both IFOs and IFIs, while improved port infrastructure reduced IFIs. Time-series results revealed that internet usage reduced IFIs across all trade blocs and IFOs with EAC and SADC. Port infrastructure reduced both IFOs and IFIs in AMU and SADC, border efficiency lowered IFOs and IFIs with EAC and ECOWAS, and regulatory quality reduced IFOs across all blocs and IFIs from ECOWAS, AMU, and SADC. The study recommends establishing a cross-border team of information technology professionals, customs officials, and trade policy analysts to strengthen internet-enabled trade systems, reduce smuggling, simplify border procedures, and harmonize regulations for monitoring cross-border transactions.

Keywords: Trade facilitation, Illicit Financial Flows, Trade Blocs, Quality Port Infrastructure, Internet.

JEL Classification: F13, F15, F36, K42

1. Introduction

As Africa's champion of trade-led regional integration saddled with the huge responsibility of facilitating intra-African trade, it is sacrosanct that Nigeria maintains a strong link with neighbours and top economies in Africa (Olutayo, 2019). This is essential for Nigeria to join efforts with her African trade partners to eliminate barriers to realizing the benefits from the African Continental Free Trade Agreement (AfCFTA). The AfCFTA was launched on January 1, 2021, with the major aim of uniting Africa within a continental trade bloc solely for trading duty-free products originating from or transformed within the continent (PWC, 2021). The AfCFTA seeks to create a single market for goods and services with local content by facilitating free movement of goods, services, and investment within the African continent. In simplified terms, it is a single and unified African market devoid of any form of trade barriers for the flow of goods and services (Mustapha & Adetoye, 2020).

To benefit from the AfCFTA implementation, Nigeria must understand the attendant and associated challenges and pull efforts towards minimizing them. These challenges generally include production and productivity issues, infrastructure constraints, funding constraints, insecurity, predatory trade practices, and regulatory constraints (Olutayo, 2019). Out of these challenges, predatory trade practices, which include smuggling through manned and unmanned borders, unchecked dumping and illegal subsidies, illegal transshipments, abuse of rules of origin, non-enforcement of AfCFTA rules by regional partners, and intellectual property infringement, clearly draw one's attention to the menace of illicit financial flows (IFFs). According to PWC (2021), IFFs are a major hindrance to benefiting from AfCFTA in Africa, as it was estimated to reduce the continent's revenues by at least \$80 billion per annum.

IFFs originated from the illicit aspect of capital flight (CF), which refers to the outflow of scarce resources that could be useful for the financing of domestic investment that could yield taxable income, expand employment, and increase domestic production (Aderibigbe *et al.*, 2019). IFFs damage the financial integrity of a country, weaken the investment confidence of both foreign and domestic investors, and reproduces itself. Hence, the concern for IFFs which are deliberately unrecorded flows leading to the movements of money and assets across borders that are illegitimate and illegal in source, transfer, or use (UNCTAD, 2020). They categorically comprise transfer mispricing, trade mis-invoicing, money laundering and corruption, and financing of organised crimes such as terrorism, among others. The sources include commercial activities, criminal activities, corruption, and foreign direct investment (Ogunkola *et al.*, 2008; Akinfala, 2018; Chinnah, 2018; Forstater, 2018; Odo, 2019; Onogwu, 2019; and GFI, 2020).

The World Bank (2017) has been assisting governments in capacity building for curbing IFFs in critical areas such as trade facilitation. Trade facilitation is based on the notion of trade transaction costs. However, the term has been extended to include the removal of government corruption, reduction of customs tariffs, removal of inverted tariffs, and resolution of non-tariff trade barriers that may facilitate IFFs between trading countries. Trade facilitation includes thirty-five (35) technical measures (WTO, 2017) which can be further classified into the five indicators of trade facilitation used in UNECA (2013), Hoekman and Shepherd (2013), Seck (2014), and Seck (2018), that is, physical infrastructure, border efficiency, regulatory efficiency, e-business, and logistics performance index. Successful implementation of trade facilitation generates significant trade benefits, which include better participation of informal businesses in foreign trade (United Nations, 2016), export diversification (Shepherd, 2009), increased competitiveness, and survival of exporting

firms (Seck, 2018). According to Kireeva & Buyonge (2008) and Finintell (2013), trade benefits are impeded by trade facilitation weaknesses in the form of practices such as corruption, illicit trade, and bribery, all leading to IFFs. Regarding the World Bank (2017) consideration for trade facilitation as a solution to IFFs and submissions by Kireeva & Buyonge (2008) and Finintell (2013) on IFFs as a trade facilitation weakness, it is necessary to investigate the degree of correlation between trade facilitation and IFFs.

Trade facilitation, if fully implemented, can help to tackle illegal trade by increasing the visibility of exported goods. Studies such as Seck (2014), Hoekman & Shepherd (2013), Peterson (2017), Seck (2018), Odebiyi & Alege (2019), Sakyi & Afesorgbor (2019), Safaeimanesh & Jenkins (2020), and Aderibigbe (2022), have only examined the impact of trade facilitation on trade flows, export diversification, manufacturing exports, intra-Africa trade, but not IFFs, except Aderibigbe (2023) which only examined the correlations between trade facilitation indicators and sub-components of aggregated IFOs and IFIs for Nigeria. More so, studies such as Kireeva & Buyong (2008), Finintell (2013), World Bank (2017) have only examined the conceptual link between trade facilitation and IFFs but not the empirical link. IFFs impede trade flows and can erode trade benefits if not tackled. It is, therefore, expedient to go beyond correlation and empirically investigate the effects of trade facilitation on IFFs to establish its potency in minimizing IFFs between trading partners.

The extant studies on illicit financial flows (IFFs) have largely focused on quantifying the scale of IFFs, sources of IFFs, and their macroeconomic determinants, while neglecting the role of trade facilitation. For example, studies by Dawit (2013), Dev (2014) and Bhusal (2016) barely emphasise the measurement of capital flight and illicit outflows across economies, but not the institutional drivers of IFFs that can be addressed. Likewise, Ashman *et al.* (2011) and Gumede & Fadiran (2018) document the magnitude and sectoral effects of IFFs in African countries but do not examine policy measures such as trade facilitation that can reduce IFFs. Even country-specific research like Adeleke (2019) and Macamo & Jalloh (2022) focus on governance and macroeconomic factors such as exchange rates and fiscal balances without considering trade-related institutional factors. Moreover, global estimates like the GFI (2020) report on the scale of trade-related IFFs but provide insufficient partner country-level information for Nigeria to inform policy. Such evidence suggests that while there is plenty of measurement and causation, there is limited attention to operational trade policy instruments for IFFs reduction.

Furthermore, research on trade facilitation has so far focused more on its impact on trade, transaction costs and welfare, than on its potential to reduce illicit financial flows. Research such as UNECA (2013), Seck (2014, 2018), and Sakyi & Afesorgbor (2019) consistently demonstrates that trade facilitation reforms have positive impacts on export performance and costs. Likewise, Shepherd (2009), Hoekman & Shepherd (2013), and Yurendra & Isabella (2015) highlight the importance of infrastructure, regulatory performance, and customs reforms in facilitating trade growth and diversification. But they do not consider the impact of such reforms on trade mis-invoicing or illicit capital outflows. Even in Africa, the results are mixed, as Njuguna (2013) finds that trade facilitation has no significant impact on intra-regional trade and Odebiyi & Alege (2019) find that trade procedures have no significant impact on bilateral trade. This mixed evidence, alongside the limited analysis of the impact of trade facilitation on IFF, points to the need to establish a connection between trade facilitation and illicit financial flows.

Hence, the research question of this study is how to undertake a holistic, country-specific assessment of trade facilitation's impact on illicit financial flows (IFFs) in Nigeria and its African partners. While Nigeria is known to be one of the largest sources of IFFs in Africa (Landry *et al.*, 2020), previous research has not adequately addressed how enhancing trade processes, quality of institutions, and efficiency at borders can

reduce such flows in the context of the African Continental Free Trade Area (AfCFTA). Additionally, previous studies either employ cross-country approaches or do not consider illicit aspects related to trade, thereby constraining their policy relevance for Nigeria. This research, therefore, aims to address this shortcoming by empirically examining the role of trade facilitation in reducing IFFs, thereby providing evidence to support the quest to improve transparency, encourage intra-African trade flows, and achieve sustainable development goals.

Research Questions

From the foregoing, the following questions are addressed.

- a) What is the extent of IFFs prevalence between Nigeria and her African trading partners?
- b) What effect would trade facilitation have on IFFs between Nigeria and her African trading partners?

Objectives of the Study

This research broadly aims to empirically examine the role of trade facilitation in minimizing IFFs, thereby providing evidence to support transparency in intra-African trade. Specifically, this study seeks to:

- a) Analyse the prevalence of IFFs between Nigeria and her African trading partners
- b) Assess the effects of trade facilitation measures on IFFs between Nigeria and her African trading partners

2. Literature Review

2.1 Conceptual Literature Review

Components of Illicit Financial Flows

IFFs refer to the cross-border flows of resources illegally sourced, transferred, or used. They comprise transfer mispricing, trade mispricing and mis-invoicing, money laundering and corruption, financing of organized crime, commodity smuggling, trafficking and illicit trade (Cooper *et al*, 2018). Transfer mispricing occurs when related entities from the same Multinational Corporation (MNC) do business and trade with one another at prices below or above market prices. Trade mis-invoicing is a form of customs and/or tax fraud involving exporters and importers deliberately misreporting the value of goods or services in a commercial transaction. There are four major types of trade mis-invoicing activities (GFI, 2020), which are import over-invoicing, export under-invoicing, import under-invoicing, and export over-invoicing. Money laundering and corruption are interrelated in the sense that the proceeds from corruption are laundered by funneling them (proceeds) into legitimate commercial ventures or other forms of businesses acceptable within the law to enable their movement anywhere from financial institutions without raising any red flags (Akinfala, 2018). Organized Crimes are financed from the proceeds of corruption, money laundering, and their facilitation through international transfer results in crimes such as terrorism, conflict, military coup, and banditry; financing of illicit trade in cultural property, wildlife, logging, fishing, and extractive resources; and funding of trafficking activities in human, waste, people, drugs, arms, and organs.

Elements of Trade Facilitation

Trade facilitation refers to the simplification, harmonization, standardization, and modernization of trade procedures. It is the full set of policy measures used to reduce the costs of international trade (Shepherd, 2009), and it encompasses streamlining trade procedures and reducing the cost and uncertainties of international trade transactions (Seck, 2014). Seck (2014) identified five trade facilitation indicators, including physical infrastructure, border efficiency, regulatory environment, e-business, and logistics performance index. Physical infrastructure has to do with the quality of ports, roads, and rail infrastructure. Border efficiency measures the efficiency of the customs formalities through which importers and exporters have to go. It relates to the number of required documents, the time it takes to clear customs, and eventually the dollar costs. The regulatory environment relates to the transparency and predictability of public policies, in particular trade policies, in providing clear information regarding trade procedures and reducing the level of uncertainty and risk. E-business indicates the extent to which the use of information and communication technology (ICT) improves paperless trade and efficiency on one hand, and reduces trade transaction costs on the other hand. Lastly, the Logistics Performance Index measures on-the-ground efficiency of trade supply chains, or logistics performance. It encompasses various elements ranging from customs, infrastructure, international shipment, logistics quality and competence, tracking and tracing, as well as timeliness.

2.2 Theoretical Literature Review

Link between Elements of Trade Facilitation and Components of Illicit Financial Flows

Components of Illicit Financial Flows Elements of Trade Facilitation	Transfer Mispricing	Trade Mis-invoicing	Corruption and Money Laundering	Financing of Organized Crimes	Smuggling/Illicit Trade/Trafficking
Publication and Availability of Information		Easy access to published trade information online will discourage the deliberate falsification of the value of exported and imported goods and transit fees.	Use of electronic invoices will prevent corrupt customs officials from conniving with traders to manipulate trade invoices.		
Involvement of the Trade Community					
Border-related rules and procedures and enquiry points		Effective monitoring of trade activities with respect to adherence to rules and procedures will encourage transparency and compliance.	Simplified procedures and rules would discourage corrupt (bribery and facilitative payments) practices to dodge bureaucracies.		Strong monitoring of adherence to border rules and procedures will discourage smuggling.
Advance rulings		Informing customs ahead on the tariff classification and valuation method of goods to be exported,	Informing customs ahead on the tariff classification and valuation method of		

		imported or in transit will prevent falsification of goods on the part of traders.	goods to be exported, imported or in transit, will prevent deliberate extortion of traders.		
Appeal Procedures		An uncompromising legal system will see to it that the right punishment be meted out to the perpetrators of trade misinvoicing	Quality institutions with respect to the potency of the rule of law and the effectiveness of government will prevent exploitation of traders by customs officials.		
Charges (Ad valorem and Transit)	Reduction in transit, export and import fees, duties, tariffs, and charges will discourage transfer mispricing.	Reduction in transit, export and import fees, duties, tariffs, and charges will discourage transfer mispricing.	Low Tariff differentials, low customs duties, and trade (transit, export and import) costs will lead to a lower level of corruption.		
Formalities and documents		Simplification (reduction in number) of documents required for registration of trade transactions and information	Ease in providing required documents for market entry correlates with a lower level of corruption.		
Formalities and automation		Automation of customs-to-business and business-to-business transactions will prevent paperwork, which gives room to falsification of trade information.	Automation of customs procedures reduces physical interactions between customs officials and traders, which aids bribery and facilitative payments.		

Formalities and procedures			Speedy and electronic inspections of goods and administrative authorizations will reduce customs delays, which stimulate traders to bribe customs officials for quick release of merchandise.		
Border agency cooperation (Internal)		Cooperation amongst relevant trade regulating officials will discourage false declaration of export and import invoices.			
Border agency cooperation (External)		Cooperation between customs officials in terms of information sharing will eradicate falsification of trade information and use of shell companies to hide the actual beneficiary of funds illicitly derived from misinvoicing			
Governance and impartiality			Regulatory quality with respect to the perception of government's ability to implement sound policies affecting traders		

Source: Author's Compilation, 2026

2.3 Empirical Literature Review

Studies on IFFs have dwelled largely on estimating their magnitude, identifying significant destinations and origins as well as causal factors. Dawit (2013) assessed the concept of capital flight and its overall implications for Ethiopia economy using the GFI report of 2009. The study can be used as a discussion point for intensive study on the problem of IFFs in Nigeria, an oil-rich developing country, and other developing nations. Bhusal (2016), using the GFI estimates from 2004 to 2013, explored the current situation of IFOs from the developing countries with special reference to South Asia and Nepal. The study revealed that IFOs from developing countries during the period were in an increasing trend. The study focused on GFI estimates of overall IFOs excluding IFIs. The time frame 2004 to 2013 of this study does not include data from the periods 1990 to 2003 and 2014 to 2022. Dev (2014) used a full-scale structural equations model to analyse the link between broad capital flight and illicit flows from Brazil on the one hand and macroeconomic and governance-related drivers on the other. Like Bhusal (2016), Dev (2014) only considered gross outflows of illicit capital and ignored IFIs. Conversely, Nitsch (2016) reviewed the empirical methodology that underlies the various estimates of IFFs from developing countries. The study concluded that the quantitative results reported by GFI have no substantive meaning. In like manner, Stausholm *et al.* (2022) reckoned with the analyses of IFIs on a country-by-partner basis, which is lacking in the GFI estimates. This is because a country-by-country comparison may overstate a country's IFOs when only errors in mirror trade statistics indicating capital outflows are considered.

Ashman *et al.* (2011) employed the World Bank residual method to measure illegal capital outflows. It was discovered that at its peak, capital flight from South Africa was more than double the sorely inadequate levels of domestic investment. Capital flight showed a positive trend throughout the period 1986–2009. Gumede & Fadiran (2018) used the industry and commodity level approach to estimate IFFs for four Southern African countries and analysed the impact on their domestic economy. The study observed a positive correlation of IFFs in all four different measures with better mining sector employment outcomes. The study generalized based on two out of the four selected African/Southern African countries. More so, Nigeria's extractive industry and economy are not mining-driven but oil-driven. Adeleke (2019) explored the state of extractive governance in Zimbabwe, particularly the strengths and weaknesses of the regulatory frameworks in place to prevent IFFs. The study revealed that tackling IFFs requires government regulations and effective oversight over corporations. Macamo & Jalloh (2022) used quarterly time series data from the IMF and a combination of capital flight theories to identify macroeconomic factors influencing IFFs from Mozambique's natural resource sector. The study established that real exchange rate and government budget deficit were the only macroeconomic factor that exerts a significant effect on IFFs from the natural resource sector in Mozambique in the long run.

Lallerstedt (2019) analysed illicit trade in three legal goods, namely medicines, agrochemicals, and consumer goods in Ghana by interviewing registered outlets and consumers of the goods. Findings affirm the awareness of fake medicines, which are easier to obtain. However, it is limited to three products and not all traded goods. GFI (2020) estimated the magnitude of trade-related IFFs between 135 developing countries and 36 developed trading partners. The GFI used partner-country analysis to estimate the differences between any set of two countries to identify the value gap. Findings revealed that the top five developing countries with the largest annual average value gaps in their bilateral trade that include China, Mexico, Russia, Poland, and Malaysia. The top five developing countries with the largest value gaps as a percent of their total bilateral trade with the advanced economies over the ten years were Gambia, Togo, The Maldives, Malawi, and Bahamas. This study points out the need for a country-specific high-level

breakdown of the spread of these IFFs to reveal trading partners with the highest IFFs, with a focus on developing countries, of which Africa is part. Using calculations for trade mis-invoicing and balance of payments discrepancies to generate estimates for illicit financial flows, Landry *et al.* (2020) found that larger economies have higher levels of illicit financial flows. Among the top 10 emitters of IFOs, nine countries, including Nigeria (oil and gas), attribute a significant portion of total exports to natural resources.

The following empirical works provide some support for the effectiveness of trade facilitation. Seck (2014) used the gravity framework and principal component analysis to assess the impact of trade facilitation on trade flows in Africa. Results indicate that the trade cost landscape determines the extent to which a given country exports to another one. Institutional quality and regulatory environment positively impact bilateral trade flows, reduce uncertainty and transaction costs, and increase public trust. This study is not country specific that allows for an in-depth analysis of the impact of trade facilitation, and more importantly, this impact is not examined on IFFs. Odebiyi & Alege (2019) discovered that export country GDP, import country GDP, as well as the distance between partner countries have a significant influence on bilateral trade. Exporter's administrative procedures as well as the importer's administrative machinery do not significantly influence bilateral trade in ECOWAS. On the contrary, Njuguna (2013) reveals that trade facilitation is yet to have a significant effect on intra-regional trade patterns. Multiple membership in regional trade agreements (RTAs) has a negative influence on trade patterns, which suggests the need for country-specific analysis.

Hoekman & Shepherd (2013) reveal that firms of all sizes export more in response to improved trade facilitation. United Nations (2016) discover that in low-income countries, the harmonization and simplification of documents have the strongest impact on increasing trade flows. According to Peterson (2017), the World Bank's Trading Across Borders database indicates that import costs and time delays are more acute among developing and low-income countries than they are among high-income countries. Shepherd (2016) reveals that a clear infrastructure gap exists between high- and lower-income countries and that performance is strongest in information and communication technologies. Shepherd (2009) discovered that geographical export diversification appears to be more responsive to trade facilitation than product diversification. Yurendra & Isabella (2015) show that interventions to improve infrastructure are the most effective in increasing trade volumes and reducing trade costs, followed by reforms to improve customs efficiency and then reforms to improve the regulatory and business environment. Aside from trade flows, Safaeimanesh & Jenkins (2020) showed that the reduction of excessive trade compliance costs for the ECOWAS would lead to annual economic welfare gains.

Seck (2018) found that an increase in trade facilitation efforts leads to positive change in Sub-Saharan Africa's exports. It can improve border efficiency in terms of a reduction in the number of documents required when exporting (and transit time), which is associated with a greater expansion of exports. This aligns with Sakyi & Afesorgbor (2019) that trade facilitation improves trade flows in Africa. UNECA (2013) found that exporters' port efficiency positively impacts regional-intra export trade; the use of e-business in both importing and exporting countries from the Southern African Development Community will cause intra-regional export trade to increase. These studies have only examined the impact of trade facilitation on trade flows, and not IFFs, which undermines trade.

3. Methodology

Theoretical Framework

The study is anchored to the framework developed from a cross-matching analysis of the elements of trade facilitation and the components of IFFs. The framework holds that trade barriers heighten trade costs, which fuel the magnitude and spread of IFFs in the form of trade mis-invoicing, and policy actions by way of full implementation of trade facilitation will help minimize the magnitude and spread of IFFs. IFFs from trade mis-reporting are affirmatively a serious constraint to the maximisation of trade flows. Studies such as Seck (2018), UNECA (2013), and Shepherd (2016) have modelled trade flows as a positive function of trade facilitation using the gravity trade model. The role of trade facilitation is to eliminate or minimize all hindrances to trade flows. Hence, the gravity trade model is adapted to reflect IFFs as a negative function of trade facilitation indicators.

Model Specification

The gravity trade model relates trade flows (TF) (force of attraction) as a positive function of the gross domestic product (GDP) of a country 'i' and of her trade partners 'j', and inversely related to the square of the distance (D_{ij})² between them (Seck, 2018; UNECA, 2013; and Shepherd, 2016). That is:

$$TF_i = \frac{GDP_i GDP_j}{d_{ij}^2} \quad 1$$

Taking the natural log of both sides, we have:

$$\ln TF_i = \partial_0 + \partial_1 \ln GDP_{it} + \partial_2 \ln GDP_{jt} - \partial_3 \ln d_{ijt}^2 + W_{it} \quad 2$$

From Equation (2), W_{it} is the error term for the log-linearized gravity trade model. Distance $-\ln d_{ijt}^2$ can be expanded to include all non-tariff measures, which are proxies for trade facilitation, and according to Seck (2018), they include the quality of physical infrastructure (QPI - consisting of roads, ports, airports, and railways), border efficiency (BE), regulatory quality (RQ), and e-business (number of individuals using the internet (IUI)). By replacing the dependent variable with IFFs and the independent variables with trade facilitation measures, illicit financial flows (IFFs), disaggregated into illicit outflows (IFOs) and illicit inflows (IFIs), are expressed as a negative function of trade facilitation measures. By incorporating the above statements, Equation 2 becomes:

$$\ln IFFS_{it} = \partial_0 - \partial_1 \ln QPI_{it} - \partial_2 \ln BE_{it} - \partial_3 \ln RQ_{it} - \partial_4 \ln IUI_{it} + \varepsilon_{it} \quad 3$$

$\partial_{(0-4)}$ are parameters of the IFFs function in 3

ε_{it} is the error term capturing other variables influencing IFFs.

Estimation Techniques

The study used the Panel and time series Poisson regression to examine the effects of trade facilitation on IFFs between Nigeria and her trading partners classified into four prominent trade blocs covering the Northern, Southern, Western, and Eastern parts of Africa. The Poisson regression is used because it is suitable for multiplicative models like the gravity trade model and also suitable for models with dependent variables having periods of zero (0) data, such as the IFFs, which have periods of unrecorded trade flows.

The principal component analysis (PCA) is used to derive pooled efforts for each trade facilitation indicator, considering the top 5 destinations of IFOs and top 5 origins of IFIs from RECs and continents with the most significant IFFs (IFOs and IFIs). This is used as the independent variables for assessing the effects of effort pooling in trade facilitation on the IFFs into and from Nigeria.

Data Requirements and Sources

The study obtained data from the International Monetary Fund (IMF, 2025) and the World Bank (2025). The scope of this study spans the period from 1981 to 2022. The choice of the period is largely informed by the availability of uniform time series data on the variables of interest described below.

1. Illicit Financial Flows: this refers to the cross-border flow of funds that results from the mismatch between a country's recorded exports and the recorded value in the destination country (trading partner) based on the IMF DOTs (2022). It has two dimensions, namely illicit financial outflows IFOs and illicit financial inflows IFIs. IFOs is the summation of the two components under-invoiced exports and over-invoiced imports, while IFIs is the summation of over-invoiced exports and under-invoiced imports.

2. Trade Facilitation Indicators: According to the WDI (2022), these include the quality of physical infrastructure (*QPI*) - consist of roads, ports, airports, and railways, border efficiency (*BE*), regulatory quality (*RQ*), and e-business (number of individuals using the internet (*IUI*)), which measures digital exchange of trade information.

4. Results and Discussion of Findings

4.1 Presentation of Results

Prevalence of IFFs between Nigeria and her African Trading Partners

The AfCFTA consists of 54 trading participating countries which can be grouped into Northern, Southern, Western, and Eastern African countries. Each of these groups has trade blocs, that is, the Arab Maghreb Union (AMU), the Southern African Development Community (SADC), the Economic Community of West African States (ECOWAS), and the Eastern African Community (EAC), pivoting the goal of the AfCFTA in the form of intra-regional trade and under a regional free trade agreement. It is salient to note that each of these countries has a trade relationship with Nigeria. Hence, the regional classification of Nigeria's African trading partners into the trade blocs and onward analyses of IFFs between Nigeria and countries under each region.

From the trends in Table 2 below, Cote d'Ivoire, Ghana, and Niger emerge as significant destinations for IFOs from Nigeria and origins of IFIs into Nigeria, except Senegal and Sierra Leone, which feature only as origins of IFIs into Nigeria. South Africa and Congo, Dem. Rep. jointly emerged as significant destinations for IFOs from Nigeria and origins of IFIs into Nigeria, except Namibia, Angola, Zimbabwe, and Tanzania, which emerged separately as significant destinations of IFOs from Nigeria into SADC on one hand and Eswatini, which emerged separately as a significant origin of IFIs into Nigeria from SADC on the other hand. Morocco and Mauritania emerged as significant destinations for IFOs from Nigeria and origins of IFIs into Nigeria. Kenya, Congo, Dem. Rep., and Tanzania emerged as significant destinations for IFOs from Nigeria and origins of IFIs into Nigeria.

Table 2: Trends of IFFs Prevalence between Nigeria and Trade Partners in Africa

ECOWAS				SADC			
Destination	Proportion of IFOs into the Region	Origin	Proportion of IFIs from the Region	Destination	Proportion of IFOs into the Region	Origin	Proportion of IFIs from the Region
Côte d'Ivoire	28.6	Côte d'Ivoire	29.41	Congo, Dem. Rep. of the	19.41	South Africa	51.84
Niger	18.16	Ghana	21.01	South Africa	17.19	Congo, Dem. Rep.	23.19
Togo	16.35	Niger	16.23	Namibia	16.38	Eswatini	8.84
Ghana	13.59	Senegal	12.09	Angola	14.68	Zimbabwe	3.58
Senegal	6.37	Sierra Leone	8.31	Zimbabwe	10.69	Tanzania	3.54
Benin	4.89	Togo	3.78	Tanzania	6.82	Malawi	2.42
Guinea	4.16	Mali	3.14	Madagascar	4.22	Madagascar	2.27
Sierra Leone	3.11	Benin	2.59	Eswatini	4.11	Lesotho	1.74
Burkina Faso	2.7	Liberia	1.92	Zambia	2.75	Zambia	1.35
Liberia	1.12	Burkina Faso	0.89	Lesotho	1.52	Namibia	0.49
Mali	0.78	Guinea	0.53	Botswana	0.96	Angola	0.31
Gambia	0.09	Gambia	0.04	Malawi	0.83	Mozambique	0.25
Cabo Verde	0.04	Cabo Verde	0.03	Seychelles	0.19	Botswana	0.13
Guinea-Bissau	0.014	Guinea-Bissau	0.002	Mozambique	0.14	Seychelles	0.03
				Comoros	0.13	Comoros	0
AMU				EAC			
Destination	Proportion of IFOs into the Region	Origin	Proportion of IFIs from the Region	Destination	Proportion of IFOs into the Region	Origin	Proportion of IFIs from the Region
Morocco	53.39	Morocco	49.61	Congo, Dem. Rep.	33.85	Kenya	40.36
Mauritania	23.01	Mauritania	24.55	Kenya	29.87	Congo, Dem. Rep.	31.77
Tunisia	12.37	Algeria	11.42	Tanzania	24.59	Tanzania	17.07
Libya	6.16	Tunisia	3.48	Rwanda	8.49	Rwanda	3.7
Algeria	5.06	Libya	1.41	Uganda	2.48	Burundi	2.49
				Burundi	0.71	Uganda	2.22

Source: Researcher's Computation (2026)

Table 3: Descriptive Statistics of Research Data

Variable		Obs.	Minimum	Maximum	Mean	Std. Deviation	Variance
RIFO	overall	N=504	0	106	76.38	23.41	548.02
	between	n=12	48.29	96.78		14.73	216.97
	within	T=42	-8.14	120.67		18.68	348.94
RIFI	overall	N=504	0	100	79.22	28.89	834.63
	between	n=12	66.71	88.93		7.30	53.29
	within	T=42	-9.71	110.51		28.04	785.68
RIUI	overall	N=504	-3.27	7.95	0	2.24	5.01
	between	n=12	-2.28	0.02		0.07	0
	within	T=42	-3.27	7.95		2.24	5.01
RQPI	overall	N=504	-1.41	7.24	0	2.27	5.15
	between	n=12	-1.05	3.86		0.03	0
	within	T=42	-1.42	7.22		2.27	5.15
RBE	overall	N=504	-1.41	8.19	0	2.26	5.10
	between	n=12	-0.10	1.69		0.03	0
	within	T=42	-1.42	8.19		2.26	5.10
RRQ	overall	N=504	-3.60	4.43	0	2.23	4.97
	between	n=12	-0.01	2.26		0	0
	within	T=42	-3.60	4.43		2.23	4.97

Source: Researcher's Computation (2026)

The summary statistics show that the proportion of illicit financial outflows (RIFO) and inflows (RIFI) in Nigeria and joint efforts in the use of the internet (RIUI), quality of port infrastructure (RQPI), border efficiency (RBE), and regulatory quality (RRQ) with respect to all the countries that emerged significant in the trend analyses in each trade bloc are over-dispersed, given that their variances are greater than the respective means. Given over-dispersion, the study proceeds to examine the random effects of trade facilitation on RIFO and RIFI between Nigeria and trading partners with a significant proportion of IFFs in each bloc.

Table 4: Panel Poisson Regression Results for the Effect of Trade Facilitation on IFOs

Variable	Coef.	$(1 - e^{\text{coef.}})*100$	Std. Err.	P-value
RIUI	0.002	-0.2	0.003	0.480
RQPI	0.011	-1.1	0.006	0.036
RBE	-0.014	1.39	0.006	0.016
RRQ	0.015	-1.51	0.003	0.000

Source: Researcher's Computation (2026)

Table 4 shows that RIUI, RQPI, and RRQ have negative effects on RIFO, but only RQPI and RRQ are significant, while only RBE has a significant positive effect on RIFO. With respect to the coefficients of significant predictors, an extra effort towards joint initiative between Nigeria and trading partners having significant IFOs from Nigeria, in building quality port infrastructure (RQPI), harmonized regulatory quality

(RRQ), and joint initiative for border efficiency (RBE), is associated with 1.1% decrease, 1.51% decrease, and 1.39% increase in IFOs from Nigeria into significant destinations (countries) in each bloc.

Table 5: Panel Poisson Regression Results for the Effect of Trade Facilitation on IFIs

Variable	Coef.	$(1 - e^{\text{coef.}})*100$	Std. Err.	P-value
RIUI	0.025	-2.53	0.003	0.000
RQPI	0.068	-7.04	0.051	0.179
RBE	-0.063	6.1	0.051	0.219
RRQ	0.017	-1.71	0.003	0.000

Source: Researcher's Computation (2026)

For the effect of trade facilitation indicators on illicit financial inflows, Table 5 shows that RIUI, RQPI, and RRQ have negative effects on RIFI, but only RIUI and RRQ are significant, while only RBE has a positive effect on RIFI but is not significant. With respect to the coefficients of significant predictors, an extra effort towards improvement in the use of the internet in trade and regulatory quality between Nigeria and trading partners having significant IFIs into Nigeria is associated with 2.53% and 1.71% decreases in IFIs into Nigeria from significant destinations (countries) in each bloc.

Table 6: Time Series Regression Results for Effects of Trade Facilitation on IFOs

Variable	Coef.	$(1 - e^{\text{coef.}})*100$	Std. Err.	P-value	Pseudo R ²	Log likelihood
EAC RIUI	0.023	-2.33	0.009	0.020	0.0334	-187.68
RQPI	-0.036	3.54	0.127	0.778		
RBE	0.042	-4.29	0.127	0.744		
RRQ	0.009	-0.9	0.011	0.378		
ECOWAS RIUI	-0.0056	0.56	0.009	0.556	0.0102	-166.47
RQPI	-0.027	2.66	0.162	0.869		
RBE	0.021	-2.12	0.162	0.898		
RRQ	0.019	-1.92	0.01	0.068		
AMU RIUI	-0.03	2.96	0.012	0.011	0.0457	-305.45
RQPI	0.187	-20.56	0.131	0.152		
RBE	-0.208	18.78	0.131	0.111		
RRQ	0.061	-6.29	0.012	0.000		
SADC RIUI	0.039	-3.98	0.0066	0.000	0.0455	-666.89
RQPI	0.0171	-1.72	0.014	0.221		
RBE	-0.009	0.89	0.014	0.487		
RRQ	0.003	-0.3	0.007	0.697		

Source: Researcher's Computation (2026)

With reference to each trade bloc, RIUI has significant negative effects on IFOs into EAC and SADC. Regarding significant coefficients, additional efforts towards trade facilitation between Nigeria and trading partners having significant IFOs are associated with 2.33% and 3.98% reductions in IFOs from Nigeria into

significant destinations (countries) in the EAC and SADC. RIUI has significant positive effects on IFOs in ECOWAS and AMU. This implies that additional efforts between Nigeria and her trading partners in ECOWAS and AMU are associated with 0.56% and 2.96% increases in IFOs from Nigeria into significant destinations (countries) in each trade bloc, respectively.

RQPI have insignificant positive effects on IFOs into EAC and ECOWAS and insignificant negative effects on IFOs into AMU and SADC. This implies that additional efforts between Nigeria and trading partners having significant IFOs from Nigeria towards building quality port infrastructure are associated with 3.54% and 2.66% increases in IFOs from Nigeria into significant destinations (countries) in EAC and ECOWAS, respectively, and 20.56% and 1.72% reductions in IFOs from Nigeria into significant destinations in AMU and SADC, respectively.

RBE has insignificant positive effects on IFOs into AMU and SADC and insignificant negative effects on EAC and ECOWAS. This shows that additional efforts between Nigeria and trading countries having significant IFOs from Nigeria, towards joint initiative for border efficiency (RBE), are associated with 18.78% and 0.89% increases in IFOs from Nigeria into significant destinations (countries) in AMU and SADC, respectively, and 4.29% and 2.12% reductions in IFOs from Nigeria into significant destinations in EAC and ECOWAS, respectively.

RRQ has negative effects on IFOs into EAC, ECOWAS, AMU, and SADC, but only significant for AMU. The coefficients show that additional efforts between Nigeria and trading countries having significant IFOs from Nigeria, towards improved regulatory quality, are associated with 0.9%, 1.92%, 6.29%, and 0.3% reductions in IFOs from Nigeria into significant destinations (countries) in EAC, ECOWAS, AMU, and SADC, respectively.

Table 7: Effects of Trade Facilitation on IFIs

Variable	Coef.	(1 - e ^{coef.})*100	Std. Err.	P-value	Pseudo R ²	Log likelihood
EAC RIUI	0.02	-2.02	0.01	0.042	0.0274	-406.67
RQPI	-0.459	36.8	0.139	0.001		
RBE	0.448	-56.52	0.138	0.001		
RRQ	-0.035	3.44	0.011	0.002		
ECOWAS RIUI	0.016	-1.61	0.008	0.043	0.0769	-221.05
RQPI	-0.11	10.42	0.16	0.491		
RBE	0.116	-12.3	0.161	0.471		
RRQ	0.03	-3.04	0.009	0.001		
AMU RIUI	0.077	-8	0.011	0.000	0.0604	-678.07
RQPI	0.243	-27.51	0.121	0.045		
RBE	-0.241	21.42	0.121	0.047		
RRQ	0.025	-2.53	0.013	0.054		
SADC RIUI	0.017	-1.71	0.009	0.064	0.0676	-536.24
RQPI	0.015	-1.51	0.265	0.954		
RBE	-0.006	0.59	0.266	0.982		
RRQ	0.065	-6.72	0.011	0.000		

Source: Researcher's Computation (2026)

With reference to the model for IFI, RIUI has significant negative effects on IFIs into EAC, ECOWAS, AMU, and SADC. Regarding the coefficients for each trade bloc, additional effort towards electronic storage and sharing of trade data between Nigeria and trading partners having significant IFIs into Nigeria is associated with 2.02%, 1.61%, 8%, and 1.71% reductions in IFIs into Nigeria.

RQPI has positive effects on IFIs in EAC and ECOWAS, but only significant for EAC. Regarding the coefficients, it shows that additional effort towards improved quality of port infrastructure between Nigeria and trading partners having significant IFIs into Nigeria is associated with 36.8% and 10.42% increases in IFIs into Nigeria from significant origins (countries) in EAC and ECOWAS. RQPI has negative effects on IFIs into AMU and SADC, but only significant for AMU. Regarding the coefficients, it shows that additional efforts towards building quality port infrastructure between Nigeria and trading partners having significant IFIs into Nigeria are associated with 27.51% and 1.51% decreases in IFIs into Nigeria from significant origins (countries) in AMU and SADC, respectively.

RBE has negative effects on IFIs into AMU and SADC, but only significant for AMU. Regarding the coefficients for RBE, additional effort towards joint initiatives for border efficiency between Nigeria and trading partners having significant IFIs into Nigeria is associated with 21.42% and 0.59% reductions in IFIs into Nigeria from significant origins (countries) in AMU and SADC, respectively. RBE has positive effects on IFIs into EAC and ECOWAS but is only significant for EAC. Regarding the coefficients for RBE, additional efforts towards border efficiency between Nigeria and trading partners having significant IFIs into Nigeria are associated with 56.52% and 12.3% increases in IFIs into Nigeria from significant origins (countries) in EAC and ECOWAS, respectively.

RRQ has significant positive effects on IFIs into EAC. Regarding the coefficient, additional effort towards improved regulatory quality between Nigeria and trading partners having significant IFIs into Nigeria is associated with a 3.44% increase in IFIs into Nigeria from significant origins (countries) in EAC. RRQ has significant negative effects on IFIs into ECOWAS, AMU, and SADC. Regarding the coefficients, additional efforts towards improved regulatory quality between Nigeria and trading partners having significant IFIs into Nigeria are associated with 3.04%, 2.53%, and 6.72% reductions in IFIs into Nigeria, respectively.

4.2 Discussion of Findings

The result that South Africa emerged as the leading significant destination for IFOs from Nigeria and origins of IFIs into Nigeria from SADC supports the findings from Ashman *et al* (2011) on the rising trends of illegal capital outflows from South Africa. On trade facilitation through the internet (RIUI), Shepherd (2016) aligns with the result that performance in information and communication technologies is strongest in developing countries such as Nigeria and her African trade partners is strongest as RIUI has significant negative effects on IFOs from Nigeria into EAC and SADC and on IFIs into Nigeria from EAC, ECOWAS, AMU, and SADC. Indirectly, UNECA (2013) revealed that the use of the internet in SADC will cause intra-regional export trade to increase, possibly by way of reduction in trade barriers such as IFFs. The result that quality of port infrastructure has negative effects on IFIs into AMU and SADC supports Yurendra & Isabella (2015) that interventions to improve infrastructure are the most effective in reducing trade costs, paving the way for IFFs.

With the understanding that border efficiency (RBE) encompasses customs administrative procedures, the finding that RBE has no significant negative effects on ECOWAS supports findings from Odebiyi & Alege (2019) that both exporters' and importers' administrative procedures do not significantly influence bilateral

trade in ECOWAS. Regardless of the status of significance, the result of this study that RRQ has negative effects on IFOs and IFIs between Nigeria and SADC affirms the conclusion from Adeleke (2019) that minimizing IFFs requires government regulations. The finding from Macamo & Jalloh (2022) that government budget deficit exerts a significant effect on IFFs indirectly implies that regulatory quality is key to minimizing IFFs. The finding from Seck (2014) that the regulatory environment positively impacts bilateral trade flows in Africa suggests that trade facilitation through regulatory quality is potent for eliminating hindrances such as IFFs to trade flows.

5. Conclusion and Recommendation

5.1 Conclusion

The research investigated the effect of trade facilitation on IFFs between Nigeria and all her trading partners spanning from 1981 to 2022. Based on the panel Poisson regression results, the study concludes that joint efforts towards internet usage and regulatory quality have the potency to minimize IFOs from and IFIs into Nigeria from the trade blocs. Border efficiency has the potency to fuel IFOs from and IFIs into Nigeria. Internet usage and regulatory quality are effective in curbing IFIs. Quality of port infrastructure effectively minimizes IFIs into Nigeria only. Border efficiency has the potency to fuel both IFOs and IFIs.

With respect to the time series Poisson regression results, the study concludes that from the perspective of IFFs between Nigeria and individual trade blocs, joint efforts in internet usage minimize IFIs into Nigeria from each trade bloc and IFOs from Nigeria into EAC and SADC. Joint efforts in improving the quality of port infrastructure minimize IFOs and IFIs between Nigeria and trade partners in AMU and SADC. Joint efforts in improving border efficiency minimize IFOs from and IFIs into Nigeria with EAC and ECOWAS. Joint efforts in improved regulatory quality minimize IFOs from Nigeria into each trade bloc and IFIs into Nigeria from ECOWAS, AMU, and SADC.

5.2 Recommendation

Based on the results of the studies, there is a need for Nigeria to team up with the governments of her trading partners in each of the blocs to constitute a cross-border team of information technology professionals to address the barriers to the use of the internet in entering and sharing trade information. With respect to individual trade blocs, Nigeria should join forces with trading partners in EAC and SADC regarding quality of port infrastructure, to prevent smuggling of tradables such as crude oil through manned and unmanned channels. Regarding border efficiency, Nigeria should team up with the governments of her trading partners in EAC and ECOWAS to lessen burdensome border procedures through automation of border documentation and processes. Regarding regulatory quality, Nigeria should team up with the governments of her trading partners in each trade bloc to develop a cross-border team of trade policy analysts responsible for designing uniform regulations and standards for evaluating trade items and monitoring transactions.

This study significantly contributes to the existing body of knowledge by carrying out a two-sided approach to the minimization of IFFs to include IFIs plus the usually analysed IFOs, with a more narrow focus on a single country, Nigeria, away from the GFI's 135 developing countries, and grouping destinations of IFOs from Nigeria and origins of IFIs into Nigeria into five continents and twelve RECs/trade blocs. The study adds to existing studies on trade facilitation by establishing the applicability of its measures across four

trade blocs containing IFOs from and IFIs into Nigeria. Additionally, the study contributes to knowledge by conducting panel and time series Poisson regressions, thus providing a comprehensive understanding of the dynamics of the effects of trade facilitation on IFOs and IFIs.

Despite the contributions to knowledge, the study focused solely on curbing IFOs from and IFIs into Nigeria, with trading partners having a significant magnitude of IFFs with Nigeria. This suggests the need for a more comprehensive examination of destinations with insignificant IFOs from and origins with insignificant IFIs into Nigeria. This is because significant IFFs may cause little damage, while insignificant ones may cause fatal damage; \$50 billion may be stolen without bloodshed, and \$1000 may be stolen with serious bloodshed.

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