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Impact of Maritime Security Threats on Nigeria Economic Growth

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ABSTRACT

Purpose – To determine how Nigeria's economic growth is impacted by Maritime Piracy; and the influence of Maritime Kidnap Ransom on Nigeria's economic growth.
Design/methodology/approach – The methodology adopted the use of secondary data obtained from the ICC-IMB Piracy and Armed Robbery against Ships Report and the Nigeria Maritime and Safety Administration [NIMASA], and employed econometric tools of stationarity, the ordinary least square tests at the 0.05 significance level, and error correction term.
Findings – The result of the findings indicate that both Maritime Piracy and kidnap/ransom had significant impact on the economic growth of Nigeria, in addition, had a negatively significant impact on gross registered tonnage. The error correction term [ECT] result indicates that there exists a negative statistically significant long-run impact of piracy on economic growth proxy by RGDP with a convergence of 123.30% from the short-run to the long-run. Similarly, the ECT indicates the existence of negative statistically significant impact of the kidnap ransom on RGDP with a convergence factor of 124.41% .
Research limitations/implications – the study covered limited number of years, (1998 -2020). However, the forecast based on the chosen period will prove relevant.
Practical implications – 1% rise in piracy activities in Nigerian waterways, will lead to a 0.02775% change in Nigeria's economic output in the short-term, and 2.9654% decline in grt. Similarly, 1% rise in Kidnap-ransom, will result to 0.0315 change in RGDP and 4.1328% decline in grt. The speed of adjustment of 123.30% indicates that shocks emanating from the explanatory variable [PIRA] are adjusted to by the dependent variable [RGDP] at the rate of 123.30% over a year period. While for Kidnap/Ransom, the shocks emanating from this threat [KIRA], are adjusted to by the dependent variable [RGDP] at the rate of 124.41% over a year period.
Social implications – Some of the immediate consequences of these include fall in maritime trade and economic growth, loss revenue to the government, negative national publicity. Nigerian government should ensure the effective implementation and enforcement of relevant international conventions in her National and Domestic laws such as UNCLOS and SUA, 1988, as well as develop more international collaborations to combat Piracy such as Nigeria/Benin joint border patrol.
Originality/value – This study, apart from adding to current literature, utilized econometric analysis to profer practical solutions needed to minimize or eradicate maritime sea threats.

1. Introduction.

Globally, securing port and maritime operations and its associated facilities and infrastructure is a significant unsolved challenge to nation-state security and the global economy today. The primary reason that ports and shipping operations are so difficult to secure is due to their technological limitations. Ports are often huge, asymmetrical activities spread out over hundreds of acres of land and sea to support ship, truck, and

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rail traffic, petroleum product/liquid offloading, pipeline operations and container storage all at the same time.

Nigerian Maritime and Safety Agency (NIMASA) was created on 1 August 2006 by merging National Maritime Authority (NMA) and Joint Maritime Labour Industrial Council. In May 2011 NIMASA was involved in a debate to create a Maritime Security Agency (MASECA). The aim was to provide greater protection for merchant vessel against rising levels of piracy. The Maritime Safety and Seafarers Standard Department (MSSSD) regulates the Nigeria shipping activities through relevant IMO Convention applications. NIMASA launched the Integrated National Security and Waterway Protection Infrastructure known as "Deep Blue Project". This project is the first security measure put in place to ensure that the Nigerian waters are safe. This is expected to give mastery to enable the nation harness the vast resources of her maritime environment and forge ahead towards economic advancement. The project to tackle maritime security at sea includes two special mission vessels, seventeen fast interceptor boats and fourteen war ships to enhance security in wider maritime domain.

The factor of safety and security in Nigerians waterways, terminating at the Gulf of Guinea is one that will always be on the limelight and receive precedence from the Federal government as long as it's under the IMO. It is the only way the country can hope to profit exquisitely from being a member of the shipping market whose activities amount to a mass of world trade.

Nigeria has developed a variety of tactics over the years to combat piracy and other types of criminal activity in our waterways, denying them the right to rule the Gulf of Guinea, where they account for more than 70% of marine trade. Piracy and other maritime crime in Nigeria were 77 percent eradicated within the initial nine months of the Deep Blue Project, a national security and waterways protection infrastructure that has received recognition from the International Maritime Bureau (IMB), but it is still a long way from the target.

1.1. Statement of Problem.

Undoubtedly, maritime security is a difficult issue (Uadiale and Yonmo, 2010). The division of central government authority has led to a significant issue with marine security. Thus, the Gulf of Guinea, and Horn of Africa serve as symbols of "the few instances in Africa where land-based security has severely influenced maritime security." Piracy was encouraged by the lack of marine security in the area, together with the incapacity to enforce the law and keep the peace at sea, which constituted a threat to maritime communication and sovereignty. While the breakdown of government and law and order in Somalia is mostly to blame for the piracy off the country's coast, in the Gulf of Guinea, the situation is very different. Politics is more directly involved in the high seas piracy in the Gulf of Guinea. Niger Delta's region core of insecurity seeps into the Gulf of Guinea, encouraging disorder at sea, as a direct result of politics on land in Nigeria. Nigeria's maritime environment is second only to Somalia's in terms of hazard, based on the International Maritime Bureau (IMB), a maritime monitor. The majority of the $253 billion in trade in the Gulf, especially in petroleum products, passes through here. Similarly, the Gulf of Guinea recently surpassed the Gulf of Aden as a hotbed of pirate. Only 11 instances occurred in the present in 2014, compared to 41 in the Gulf of Guinea. Pirates brazenly plunder oil and cargo from numerous unarmed and isolated vessels cruising the Gulf. In the recent past, the increase in kidnapping for ransom cases is a reflection of the higher return on investment. For instance, the three crew members of the VLCC Kalamos who were abducted in February 2015 reportedly paid a $400,000 ransom a few weeks later. About 40% of the fish caught in West Africa are the result of illegal, unreported, and uncontrolled fishing. Additionally, Gulf of Guinea continues to be a crucial hub for the transshipment of drugs from Latin America to Europe. Cocaine trafficking across West Africa was estimated by the UN to have cost $1.5 billion in 2013.

The territorial waters of Nigeria, the largest oil producer in the area, are where piracy and maritime crimes are most prevalent. Between 40,000 and 100,000 barrels of oil are stolen from Nigeria each day. Awwal Zubairu Gambo, Chief of Naval Staff of Nigeria, claims that just oil theft costs the Nigerian government 433 billion naira (approximately $2 billion) annually. According to the Ministry of Finance, this figure is considerably greater.

1.2. Objectives of the Study.

This study is compelling in view of its aim at improving maritime industry's business operation and utilizing Nigeria's economic growth through sufficient security structure. The primary objective of this study is to determine the effect of Maritime Security Threats on the economic growth of Nigeria. The specific objectives of this study include;

(a). To investigate the effect of Maritime piracy on Nigeria's economic growth.
(b). To evaluate the influence of Maritime Kidnap and ransom on the economic growth of Nigeria.

1.3. Research Questions.

(a). What is the impact of Maritime piracy on Nigeria's economic growth?
(b). Does Maritime Kidnap and Ransom have any influence on the economic growth of Nigeria?

1.4. Research Hypothesis.

The following hypotheses in their null forms have been formulated to guide this study:

H_{O1}: Maritime Piracy has no significant impact on Nigeria economic growth.

H_{O2}: Maritime Kidnap and ransom have no significant outcome on Nigeria economic growth

1.5. Significant of study.

This study is significant because it intends to enhance the business operations of the maritime industry and harness Nigeria's economic growth through an appropriate security framework. This study is an illustration of a joint effort to pinpoint

and effectively address the various factors that sustain the expansion of Nigeria's waterways, which represents a threat to national security. This research has created a strategic mechanism that could improve the synergy of security personnel and address problems with non-security personnel interfering with security (government officials and others). This study will add to the expanding body of knowledge on sea piracy and the security issues affecting Nigerian maritime industry operations.

2. Literature Review

2.1. Concept of Maritime Security.

Coastal states have long been concerned about the security of the marine realm. Threats to maritime security have manifested themselves in it's use of force (by non-state actors) against a state's territorial integrity. Terrorist attacks on shipping operations, offshore installations, piracy, and sea robbery are among the security challenges. Others include migrant smuggling, narcotics and arms trafficking, illegal fishing, marine pollution (AMSA; Bueger 2014), and cyber-attacks on shipping and maritime infrastructure. Regime theory has served as the foundation for policy measures put in place by national governments and international regulatory entities to combat marine security risks. The Regime Theory promotes the use of both official and informal norms to guide government operations in executing its societal responsibilities, as well as the impact of these rules on society (Ebaye 2009, and Levy et al 1994.). Regime theory has also aided the attainment of long-term collaboration among sovereign states in tackling environmental, economic, and financial challenges (Neumayer). Security regimes in the maritime sector refer to a set of rules developed and agreed upon by the parties concerned in order to establish security mechanisms that will improve the security of maritime operations and regulate the operations of users of the seas within and beyond a coastal state's territorial boundary. It is important to note that, except from the ISPS code, which was developed by the -International Maritime Organization (IMO), the most important maritime security regimes were developed by the US government. Container Security Initiative (CSI), Customs-Trade Partnership Against Terrorism (C-TPAT), 24-hour regulation, and Proliferation Security Initiative (PSI) are only a few of them (UNCTAD).

2.1.1. The Overview of Piracy at Sea.

There is no agreed-upon definition of what constitutes sea piracy. There are several definitions in the literature (Neethling, 2010; Onuoha, 2009; UN, 1982; IMB, 2009; Gilpin, 2007). The United Nations Convention on the Law of the Sea (UNCLOS, 1982; Part vii, article 101) defines piracy as any of the following activities in an attempt to reach a global understanding of the term:

i. Any illegal acts of violence or detention, or any act of deprivation, committed for private gain by the crew or passengers of a private ship or a private aircraft and directed on the high seas against another ship or aircraft, or against persons or property on board persons or property in a place outside the jurisdiction of any states;
ii. Any act of voluntarily participating in the operation of a ship or aircraft with knowledge of information indicating that the ship or aircraft is a private ship or aircraft;
iii. Any act of instigating or knowingly enabling an act listed in subparagraph (i) (ii).

The UNCLOS (1982) definition confines sea piracy to crimes against ships at sea, which, according to Vogt (1983), must occur beyond a maritime state's territorial waters' twelve (**??**) mile limit. As a result, the piracy context of Bayelsa from the UNCLOS (1982) claim is seen as raiding in territorial seas because it takes place a few miles from the coast (Pugh & Gregory, 1994).

Piracy, according to (Onuoha, 2010), is a phrase that is used to describe acts of theft. In international waterways, armed robbery, hijacking, and other malicious crimes are common. Acts committed with the goal of taking items from the ship or extorting money from ship owners or other third parties by keeping the ship or crew hostage. The above definition is further buttressed by the 2009 annual report of the International Maritime Bureau (IMB) that described Piracy as an intent to steal, or in short – theft on the sea.

2.1.2. Piracy at Sea and Maritime Transportation.

According to Ezem (2012), the growing incidents of sea piracy, robbery, illegal bunkering, and unlawful midstream discharges, among other crimes, are a major cause of concern for the maritime administration in the Gulf of Guinea (GoG), including Nigeria. These actions pose a security risk to maritime transportation. Maritime transport, often known as waterborne transport, is among the means of transportation for products and people, according to Igbokwe (2001). This is necessary for any country's economy to function properly, as well as a critical component of its transportation infrastructure.

Igbokwe (2012) expressed concern about the rising threat of piracy and violent robbery in Nigerian territorial seas, notably in Bayelsa. Piracy and robbery in Nigeria's maritime realm, he claims, were a deterrent to the critical infusion of capital to expand the economy, foreign investment (including local enterprises) is required.

According to IMB statistics (2012), 56 piracy cases were documented on Nigerian territorial waters near the Gulf of Guinea in 2010 and 119 in 2011. In September 2012, 37 attacks were reported, which is around four every month on average. From 2003 to 2008, the number of members' vessels in Nigerian seas attacked by pirates and armed robbers was 4, 11, 34, 57, 107, and 60, according to NITOA's fact finding. The reports above demonstrate the seriousness of the threat to maritime transportation. Looking attentively at the data, according to Igbokwe (2012) and Ezem (2012) has far-reaching repercussions on maritime transportation and navigation enterprise which is crucial to the economy of a country . Igbokwe (2001) summarized the importance of sea transportation as including trade and commerce facilitation, revenue generation and financial availability, tourism promotion, development of related economic

activities, employment and job opportunities, industrial growth and development, institutional development, international relations, and peaceful coexistence. As a result, pirates should not be denied these benefits.

2.1.3. Maritime Operations and Security Challenges.

The security challenges in Nigeria's waterways have been examined in depth (Zabadi and Onuoha, 2009; Onuoha, 2009, Ochai, 2013). Security has been discovered to have a significant impact on corporate operations in this area of the Nigerian economy (Zabadi & Onuoha, 2009; Ochai, 2013). Since May 2013, there have been an increase in reports of pirate assaults in the Gulf of Guinea, encompassing the bodies of water of Nigeria and Bayelsa State, according to Ochai (2013). Furthermore, International Maritime Bureau (IMB) has designated the coastal areas surrounding Lagos and the Bonny waterways to be one of the world's most piracy-prone zones. According to the IMB (2013) report, pirate events in Nigeria and Benin Republic totaled more than 22 in 2013, the highest ever recorded on the West African Coast.

These attacks have targeted cargo vessels, oil tankers, fishing trawlers, and speed boats transporting passengers from one location to another on several occasions (Onuoha & Hassan, 2009). In addition, speed boats with passengers on board were attacked not too far from the Nembe waterways in Bayelsa State, according to (Ochaia, 2013). In a similar vein, pirates targeted four passenger speed boats transporting traders to Yenagoa, the capital of Bayelsa State, according to the report. After being robbed of their cash and other possessions, the hoodlums ordered several of the passengers to jump into the ocean. These situations provide an ominous picture of maritime business operations and illustrate the security situation on Nigeria's waterways.

Pirate attacks against passengers, traders, fishermen, and residents of the waterways surrounding Brass, Nembe, South Ijaw, Ekeremor, and other hotspots have made marine business operations more difficult than ever before.

2.1.4. ISPS Code and other initiatives.

The International Maritime Organization (IMO) addressed security threats to the system of maritime transportation in 2002 by dividing the 1974 SOLAS Chapter XI into two parts, Chapter XI-1 for Special Measures to Enhance Maritime Safety and a newfound Chapter XI-2 for other Measures to Enhance Maritime Safety by creating a new International Ship Registry to support the security regulations established in the Port Facility Security (ISPS) Code.

2.1.5. Economic impacts of piracy and armed robbery on the Commercial Shipping Industry.

The majority of international trade, both in terms of value and weight, is transported by water, and millions of people use marine transportation for leisure and recreation. The presence of pirates in major environs of the world has an impact on marine transportation. The threat of piracy and the effects of actual attacks determine the economic impact of sea piracy on commercial ships. The threat of attacks has prompted changes in vessel management, such as changes in routing, speed, and scheduling; prompted the implementation of various security measures, such as the use of armed guards and the installation of citadels and razor wire, among other things; and prompted the deployment of various security measures, such as the use of armed guards and the installation of citadels and razor wire, among other things, It increased the cost of insurance, including premiums for 'war risk' and 'kidnap and ransom' coverage. Actual attacks have resulted in ransom payments for kidnappings and hijackings that were not covered by insurance, as well as losses owing to damage to or theft of the crew's goods, cargo, and the vessel.

2.1.6. Piracy's Impact on Nigeria's Trade.

Piracy's most evident and direct consequence is economic. Piracy in Nigeria's coastal seas costs the country $25.5 billion each year. Much of this loss is due to crude oil theft, which is now estimated to be at 300,000 barrels per day, or 12% of total production. Illegal marine activities cost Nigeria $92 billion between 2003 and 2008. Piracy is a stellar source of anxiety for ship owners and those who hire ships. Ship owners lose a lot of money when their ships are hijacked and demobilized for a lengthy time. The threat to the crew adds to the situation. These reasons are causing more and more sailors to avoid routes that travel through Nigerian seas, and vessels are finding it difficult to find crews. Piracy has an indirect impact on Nigeria's economy as well.

Nigeria's commercial fishing industry has been thrown into disarray. According to a 2007 research by the United States Department of Agriculture, the local fish market accounts for only 20% of all fish consumed in Nigeria, but that number has gradually declined over the last five years due to the surge in piracy. This has resulted in a significant decrease in fish consumption, which is now estimated to be 7.5 kg per year, much below the FAO's recommended 13 kg. To make up for the gap, Nigeria currently imports around 700,000 to 900,000 metric tons of fish at a cost of over N50 billion per year — an astronomical expense that is tearing the country's finances apart. As a result, we can see that piracy's influence reaches well beyond marine security to economics, as evidenced by the loss of jobs in the commercial fishing industry, and even nutrition, as evidenced by its impact on the local supply of fish proteins for our children.

2.1.7. Piracy's Direct Economic Cost.

The cost of - ransoms, piracy insurance premiums, deferred equipment, re-routing vessels away from piracy risk zones, naval deployments in piracy hot zones, piracy prosecutions, and organization budgets devoted to preventing piracy are the main direct costs of piracy.

Ransoms and Their Costs.

The escalating amount of ransoms paid to release kidnapped ships has been of late one of the most notable increases in the cost of piracy. Somalis pirates frequently demand ransoms. Rather than ransoming the value of the mariners' life and their ship, pirates in some locations have seized the vessels or cargo.

The greatest ransom ever paid to Somali pirates, $ 9.5 million, was paid in November 2010 to free the (Samho Dream) South Korean oil ship. Indeed, 2010 marked a new high for ransom payments, with a $ 7 million ransom paid in January to free the Greek super tanker (MV Moran Centaurs), which had been transporting $162 million in crude oil from Saudi Arabia to the United States.

The ransoms showed how the price of ransoms has risen exponentially in recent years. In 2005, the average ransom was roughly $150.000. (Payne, 2010).) By 2009, the average ransom was around $ 3.4 million. In 2010, ransoms are predicted to average around $5.4 million.

2.2. Theoretical Framework.

2.2.1. Routine Activity Theory.

Routine activity theory, developed by Marcus Felson after being first proposed by Lawrence E. Cohen and Marcus Felson in 1979, is to the highest degree among the most often cited and significant theoretical constructions in the area of criminology and crime research in general. Unlike theories of criminality, which focus on the criminal and the psychological, biological, or social causes that drove the criminal act, regular activity emphasizes the study of crime as an event, emphasizing its link to space and time, as well as its ecological character and repercussions.

While indicators of well-being and socioeconomic conditions that had previously been considered to be causes of violent crime – such as impoverishment, lack of education, and unemployment – had generally improved in the 1960s, reports of crime rates indicated that there was a significant increase in crime during these years, according to Cohen and Felson (1979). They focused on changes in structural patterns of people's daily activity to explain this contradiction, focusing on how the new configuration provided more criminal opportunities and, as a result, could influence trends in rates of definite types of crime, particularly crimes against persons or property (Felson & Cohen, 1980).

The notion of Routine Activity Theory serves as the foundation for assessing the substantive concerns under investigation (RAT). Lawrence Cohen and Marcus Felson advanced the Routine Activity Theory (RAT), which is an extension of the socio-structural theory. However, in the 1970s crime discourses, it was a new paradigm and a Meta-theory (Igbo, 2008).

The Routine Activity Theory describes crime as the outcome of the interaction of three key elements:

i. Criminals on the verge of committing a crime or those who are inspired to do so
ii. Appropriate targets, that is, the presence of items of some economic value that are also conveniently transportable;
iii. A lack of capable guards or those who can prevent a crime from occurring.

2.3. Empirical Framework.

Danwu, Chizoba, & Margaret (2016), studied the Evaluation of Nigerian Legal Framework for Effective Prosecution of Maritime Crimes and Proposals for Reform. This study examines other methods of resolving and limiting maritime issues, as opposed to criminal prosecution, that would be more cost efficient and feasible. The work reviewed the problems to maritime crime prosecution, and then propose long-term solutions and a path ahead.

Pristrom et al., (2013), A study of maritime security and piracy. This article investigates the elements that contribute to maritime piracy by examining previous cases according to the International Maritime Organization (IMO). Filtering those ship types mostly prone to piracy attacks is an element of the analysis. The article also discusses the rules issued by the International Maritime Organization (IMO) and the shipping industry to reduce the likelihood of pirate assaults on ships. It also details the steps taken to create a long-term mechanism in the high-risk region (HRA) 1 to combat piracy and other marine crimes. In the 40-year history of Maritime Policy & Management, the relevance of maritime security and piracy issues has become increasingly recognized.

Donatus et al., (2021), Maritime Security Regimes and Impacts on Nigerian Seaports. The goal of this study was to see how port security regimes affected security events and port performance in Nigeria. For this investigation, duplicates of a structured Likert scaled questionnaire were created. These were given to a random sample of port operators and port consumers working at the Tincan Island port and the Apapa port complex. The instrument was used to obtain their thoughts on security issues that had occurred at the ports. The findings revealed that enforcing suitable security measures can result in significant decreases in port security incidents as well as enhanced port performance. The findings of the study were reviewed in terms of their policy implications.

Toakodi (2014), Sea piracy and security challenges of maritime business operations in Bayelsa State. This study examines sea piracy and security challenges of maritime business in Bayelsa State, Nigeria. To reach the objectives of this study, three research hypotheses were formulated. The study found amongst others, that sea piracy affects sea faring and fishing business significantly in Bayelsa State. It therefore recommends that combined efforts aimed at increasing and equipping security agencies responsible for policing Bayelsa State territorial waters should be of utmost concern to the government and other stakeholders in the maritime sector.

Lawrence et al., (2014), this research has developed a strategic mechanism that could improve security operative synergy and handle issues of security interference by non-security operatives (government officials and others). This research has also contributed to the growing body of literature on maritime piracy and national security in Nigeria. Finally, this research has supported local/geographical studies on marine piracy (particularly in the Gulf of Guinea), which can work together to solve insecurity in respective waterways.

Yang, and Qu (2016), Quantitative Maritime Security Assessment. Following a revaluation of maritime security risk assessment, this paper develops a basic quantitative security assessment technique. Novel mathematical models for security risk analysis and management are described and integrated

to show how they can be used in the framework that has been built. In circumstances where traditional quantitative risk analysis techniques are ineffective, such approaches can be utilized to help with security risk modeling and decision-making. Finally, ideas for maximizing the use of developments in risk and uncertainty modeling technologies in the context of maritime security risk assessment and management are offered.

Rytis (2011), Piracy at sea and the limits of international law. This article aims to identify the flaws in existing piracy provisions in international documents, discuss their relevance in combating piracy (specifically, their ability to ensure the required jurisdiction over maritime crimes), and offer a thought on possible ways to address impunity at sea, using both national and international legal instruments.

Ratisukpimol (2011), A Theory and Some Empirics on Modern Maritime Piracy. We discovered that economic considerations and the law do matter: higher per capita incomes, as well as more effective legal and political institutions, reduce both physical violence and material harm caused by modern-day piracy. But we also see significant learning by doing and skill accumulation among the pirates: a local continuum of successful piracy attempts increases the probability of success, making it more probable that pirates will inflict greater brutality on the crew and seize control of the entire vessel. Even after adjusting for our proxies for capital use and labor input, the learning-by-doing effects may be seen.

Eidnes,, Batalden & Sydnes. (2019), Maritime Security and Threat Assessments. The analysis reveals that the DNK and maritime enterprises largely have a consistent evaluation of threat levels. Though communication between DNK and its member companies has challenges, the members largely consider DNK threat assessments to be tried and true. Different parties, economic vs security considerations, and multiple sources of security intelligence information are all common factors in maritime security decisions.

Kennedy et al., (2011), Economic Impact of Maritime Piracy. The transportation of food supplies to Somalia is being hampered by increased maritime piracy off the coast of the country. It also poses a threat to maritime commerce and other maritime economic prospects.

Increased insurance costs are passed on to consumers, making African products inferior.

Rerouting oil tankers from the Gulf of Aden to the Cape of Good Hope costs approximately $3.5 billion in annual fuel expenditures.

Piracy on the high seas has an impact on tourism and fishing. According to reports, the cost of piracy alone accounted for 4% of Seychelles' GDP in 2009.

3. Materials and Method.

3.1. Research Design.

This research used ex post facto research design to investigate maritime security and its impact on Nigerian's economy. This is a quasi-experimental study that examines how a self-reliant variable affects a dependent variable. This research design is the framework that describes the categories of data to be collected, the data sources, and the data collecting technique. A good design ensures that the data acquired is aligned with the study objectives and that the data is collected in the most precise manner possible. Anyawu (1994). The research used a descriptive research design.

3.2. Population of the Study.

The population of this study covers past and present securities threats that occur in the territorial waters of Nigeria as stipulated by the standard of IMO as an international body. While the example may not be applicable since we are considering the entire territorial waters of Nigeria.

3.3. Method of Data Collections.

The data for this study was sourced through the secondary means of data collection, information relating to the topic under study was gathered form already documented records (e.g. NIMASA, IMB and data were collected from the Central Bank of Nigeria statistical bulletin.

3.4. Operational Measures of Variables.

Gross Domestic Product (GDP): is used as proxy for the Nigeria economy and this refers to the total dollar value of all goods (both tangible and intangible) and services produced in a country in a given period. And in the context of use of this study GDP is used as the dependent variable. The applicable growth rate will be adopted.

Piracy: this is an act of theft or criminal violence by ship or boat-borne attackers upon another ship or a coastal area, typically with the intent of stealing cargo and other valuable goods. Those who display acts of piracy are called pirates, while the dedicated ships that pirates use are called pirate ships.

Kidnap and Ransom: This is the forceful abduction of person(s) and demand of payments in order to secure their release.

3.5. Model Specification.

This work is patterned after the research work of Donatus et al (2021), Toakodi (2014), Zabadi & Onuoha (2009); Igbokwe (2012), Ochai, (2013) as well as Omoke et al (2018), with some modifications, which reviewed and adopted variables such as GDP, Cargo throughput, Gross registered Tonnage etc (Omoke et al, 2018):

$$GDP = \beta_0 + \beta_1(GRT) + \beta_2(THROUGHPUT) + \beta_3(NOV) + \beta_4(NOE) + e_n \quad (1)$$

Where;

GDP = The Gross Domestic Product for the period of Study.

GRT= Gross Registered Tonnage of the Port (in tonnes).

THROUGHPUT=Cargo Throughput (in tonnes).

NOV=Number of Vessels.

R^2 = Coefficient of Determination

β_0 – is the intercept;

β_1 - β_4 are the slope coefficients for the independent variables;

e_n is the error term.

Our modified model will become:

$$RGDP = \beta_0 + \beta_1(PIRA) + \beta_2(KIRA) + \beta_3(GRTR) + \beta_4(CTPR) + \beta_5(PIRAR) + \beta_6(KIRAR) + \beta_4(Exch) + \beta_5(INFR) + U_n \quad (2)$$

Where: RGDP = Real Gross Domestic Product.

PIRA = Piracy.

KIRA = Kidnap Ransom.

PIRAR = Ratio of Piracy to Real Gross Domestic Product.

KIRAR = Ratio of Kidnap ransom to Real Gross Domestic Product.

GRTR = Gross Registered Tonnage as a percentage of Gross Domestic Product (GDP).

CTPR = Cargo Throughput as a percentage of Gross Domestic Product (GDP).

Exch = Exchange rate [Naira/US Dollar].

INFR = Inflation rate.

Representing the specific objectives in the model, we have;

$$RGDP = \beta_0 + \beta_1(PIRAR) + \beta_2(GRTR) + \beta_3(CTPR) + \beta_4(Exch) + \beta_5(INFR) + U_t \ [Objetive\ One] \quad (3)$$

$$RGDP = \beta_0 + \beta_1(KIRAR) + \beta_2(GRTR) + \beta_3(CTPR) + \beta_4(Exch) + \beta_5(INFR) + U_t \ [Objetive\ Two] \quad (4)$$

4. Results and Discussion.

4.1. Data Presentation.

Table 1: Data for the Study.

YEAR	PIRA	KIRA	GRT	CTP	RGDP	PIRAR	KIRAR	ExcH	INFR
1998	3	22	1.79289731	0.35395088	2.58	1.162790698	8.527131783	21.89	10
1999	12	36	1.59580076	0.374480983	0.58	20.68965517	62.06896552	92.34	6.6
2000	9	0	1.69008117	0.416600144	5.02	1.792828685	0	101.7	6.9
2001	19	2	1.78590091	0.493690824	5.92	3.209459459	0.337837838	111.23	18.9
2002	14	4	1.239293639	0.387764565	15.33	0.913242009	0.260926288	120.58	12.9
2003	39	24	1.261897876	0.379046958	7.35	5.306122449	3.265306122	129.22	14.0
2004	28	11	1.179780549	0.299275197	9.25	3.027027027	1.189189189	132.89	15.0
2005	16	48	0.826052097	0.255215223	6.44	2.48447205	7.453416149	131.27	17.9
2006	12	49	0.599124884	0.208269762	6.06	1.98019802	8.085808581	128.65	8.2
2007	42	76	0.307687925	0.208519334	6.59	6.373292868	11.53262519	125.81	5.4
2008	40	52	0.263659186	0.18962442	6.76	5.917159763	7.692307692	118.57	11.6
2009	29	68	0.307121515	0.222961025	8.04	3.606965174	8.457711443	148.88	12.6
2010	19	43	0.313933288	0.22582074	8.01	2.372034956	5.368289638	150.30	13.7
2011	10	45	0.032776	0.02231006	2.942	3.398586188	15.29363785	165.1	10.84
2012	45	34	0.03194223	0.0190175	0.455	98.87936717	74.7088552	161.5	12.22
2013	50	42	0.02692842	0.01520132	2.297	21.76562772	18.28312729	162.9	8.48
2014	35	32	0.027455324	0.0149432	-0.930	-37.62227239	-34.39750618	170	8.06
2015	26	20	0.03006141	0.0160867	-0.576	-45.13105364	-34.71619511	199	9.01
2016	36	57	0.03445113	0.01750132	1.654	21.76673318	34.4639942	305	15.68
2017	33	60	0.0365887	0.01913619	2.796	11.80088685	21.45615792	360	16.52
2018	48	99	0.0323145	0.01837712	2.968	16.17468662	33.36029114	361	12.09
2019	35	121	0.0295375	0.01672809	-2.490	-14.057354	-48.59828099	360	11.4
2020	35	112	0.0274215	0.01542103	-1.794	-19.50947603	-62.4303233	420	13.25
2021	6	0	0.2838414	0.18128502	3.6	1.666666667	0	439	15.92
2022	0	0	0.148932	0.09151146	3.1	0	0	448.9	22.09

Source: ICC - IMB Piracy and Armed Robbery against Ships Report.

4.2. Data Analysis.

4.2.1. Diagnostics Test.

Table 2: Descriptive Statistics.

	CTP	EXCH	GRT	INFR	KIRAR	PIRAR	RGDP
Mean	0.178510	202.6292	0.556219	12.37040	5.666531	4.718706	4.078096
Median	0.189624	150.3000	0.283841	12.22000	7.453416	3.027027	3.100000
Maximum	0.493691	448.9000	1.792897	22.09000	74.70886	98.87937	15.33000
Minimum	0.014943	21.89000	0.026928	5.400000	-62.43032	-45.13105	-2.489800
Std. Dev.	0.158477	123.1757	0.648822	4.106428	29.65539	25.16540	4.025311
Skewness	0.373723	0.878220	0.880778	0.357154	-0.074867	1.680408	0.620864
Kurtosis	1.795000	2.385041	2.175180	2.704548	3.907615	9.601482	3.640551
Jarque-Bera	2.094480	3.607555	3.941048	0.622423	0.881442	57.16110	2.033533
Probability	0.350905	0.164676	0.139384	0.732559	0.643572	0.000000	0.361763
Sum	4.462739	5065.730	13.90548	309.2600	141.6633	117.9676	101.9524
Sum Sq. Dev.	0.602760	364134.0	10.10329	404.7061	21106.61	15199.14	388.8752
Observations	25	25	25	25	25	25	25

Source: Author's E-views 12 computation.

The table 2 indicates that most of the parameters – mean, median and standard deviation are not widely dispersed, but rather close together. Virtually, all the variables of interest show an average kurtosis of between 3 and 9.6, thus displaying a platykurtic character. The Jarque-Bera statistics in table 2, lies between 0.6224 and 57.16110 while at 5% level of significance, the probabilities are strongly insignificant at p = 0.3509, 0.1647, 0.1394, 0.7326, 0.6436, 0.3618, except for ratio of piracy to economic growth rate [PIRAR] with p-value of 0.0000.

Table 3: Unit Root (Stationarity) Tests.

Variable	ADF @5%	Critical Value	P-value	Integ.
CTP	-5.18472	-3.62203	0.0019	I(1)
GRT	-3.00097	-1.95568	0.0044	I(0)
KIRAR	-4.65048	-1.95641	0.0001	I(0)
PIRAR	-4.61082	-1.95641	0.0001	I(0)
EXCH	-3.35639	-1.95641	0.0018	I(1)
INFR	-5.24719	-1.95641	0.0000	I(1)
RGDP	-6.42150	-1.95641	0.0000	I(1)

Source: Author's E-views 12 computation.

The probabilities of the selected series using Augmented Dickey fuller statistic are significant and integrated at various level of integrations [GRTR, CTPR, PIRAR, KIRA, KIRAR, PIRA and RGDP] at the 5% confidence level [p – values = 0.0019, 0.0044, 0.0001, 0.0001, 0.0018, 0.0000, and 0.0000 respectively].

Table 4: Breusch-Godfrey Serial Correlation Tests.

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.708474	Prob. F(2,12)	0.5119
Obs*R-squared	2.112175	Prob. Chi-Square(2)	0.3478

Source: Author's E-views 12 computation.

The tests result shows no auto correlation in the series and in the model under consideration with p-values greater that the 5% chosen level of significance. The null hypothesis states that when p-value is insignificant and greater than the 5% level of significance, the null hypothesis is accepted and there is no presence of auto correlation in the series.

Table 5: Heteroskedasticity Test.

Heteroskedasticity Test: ARCH			
F-statistic	0.020250	Prob. F(1,17)	0.8885
Obs*R-squared	0.022606	Prob. Chi-Square(1)	0.8805

Source: Author's E-views 12 computation.

Table 5 indicates no heteroskedasticity in the model as the F and Chi-Square probabilities values are greater than the 0.05 level of significance and insignificant.

4.2.2. Hypothesis Testing 1.

H_0: There is no significant impact of Maritime Piracy on the Nigeria economy.

H_1: There is significant impact of Maritime Piracy on on the Nigeria economy.

Table 6: Ordinary Least Square Regression Tests: Result 1.

Dependent Variable: RGDP				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.042958	1.344080	0.775964	0.4507
CTP	31.17046	4.938780	6.311369	0.0000
GRT(-2)	-2.965354	1.309530	-2.264442	0.0400
PIRAR(-5)	0.027751	0.012411	2.235981	0.0422
EXCH	-0.011040	0.003867	-2.854799	0.0127
INFR(-1)	0.195643	0.122795	1.593253	0.1334

Source: Author's E-views 12 computation [See appendix 1].

The result from table 6 shows that the OLS at a lag level of 5, piracy variable [PIRAR] is significant with a p – value of 0.0422, significantly impacts the economic output growth represented by RGDP. . The cargo throughput and gross registered tonnage showing a significant but negative impact on gross national output growth [p-0.0400 (for grt)], thus, a 1% rise in piracy level, will cause a 2.9654% decline in gross registered tonnage. The R^2 and the adjusted R^2 at 89.07% and 85.16% respectively shows that the variables in the series perfectly fits the model with a Durbin Watson statistics of 2.3425 indicating absence of auto correlation in the model.

Table 7: Error Correction Model for Objective 1.

Dependent Variable: D(RGDP)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.176281	0.491113	0.358943	0.7243
D(CTP)	36.05106	7.970201	4.523231	0.0003
D(GRT)	-10.98417	3.388508	-3.241594	0.0051
D(EXCH)	-0.000419	0.015891	-0.026374	0.9793
D(INFR)	-0.001026	0.093339	-0.010996	0.9914
D(PIRAR)	0.002710	0.011563	0.234322	0.8177
ECT02(-1)	-1.232960	0.160994	-7.658400	0.0000

Source: Author's E-views 12 computation [See appendix 3].

The Error Correction Term tests carried out to determine whether there is a long-run impact and if a convergence from the short-run to the long-run do exists, showed the existence of a negatively signed [-1.2330] significant long-run impact of the explanatory variable of interest - Piracy [PIRAR] on economic growth with p-value of 0.0000, showing a convergence factor of 123.3%, indicating that shocks emanating from the explanatory variables are adjusted to by the dependent variable at a speed of 123.3% within a year. The table 8, also confirms the existence of 3 co-integrating vectors in the trace and maximum eigenvalue tests.

4.2.3. Hypothesis Testing 2.

H_0: There is no significant impact of Maritime Kidnap and ransom on the Nigeria economy.

Table 8: Co-integration Results [Trace test].

Sample (adjusted): 2000 2022				
Included observations: 23 after adjustments				
Series: CTP EXCH GRT INFR KIRAR PIRAR RGDP				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.984354	229.6776	125.6154	0.0000
At most 1 *	0.872292	134.0537	95.75366	0.0000
At most 2 *	0.852103	86.71942	69.81889	0.0013
At most 3	0.503577	42.76095	47.85613	0.1385
At most 4	0.468537	26.65344	29.79707	0.1104
At most 5	0.303510	12.11464	15.49471	0.1515
At most 6	0.152125	3.795503	3.841465	0.0514
Trace test indicates 3 cointegrating eqn(s) at the 0.05 level				
* Denotes rejection of the hypothesis at the 0.05 level				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.984354	95.62396	46.23142	0.0000
At most 1 *	0.872292	47.33425	40.07757	0.0064
At most 2 *	0.852103	43.95847	33.87687	0.0023
At most 3	0.503577	16.10751	27.58434	0.6566
At most 4	0.468537	14.53880	21.13162	0.3225
At most 5	0.303510	8.319134	14.26460	0.3472
At most 6	0.152125	3.795503	3.841465	0.0514
Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level				
* Denotes rejection of the hypothesis at the 0.05 level				

Source: Author's E-views 12 computation.

H_1: There is significant impact of Maritime Kidnap and ransom on the on the Nigeria economy.

Table 9: Ordinary Least Square Regression Tests: Result 2.

Dependent Variable: RGDP				
Method: Least Squares				
Included observations: 19 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.573859	1.502905	1.047212	0.3141
CTP	29.34700	5.135983	5.713999	0.0001
GRT(1)	-4.132821	1.795286	-2.302041	0.0385
KIRAR(-5)	0.031488	0.012957	2.430130	0.0303
EXCH(1)	-0.007597	0.003201	-2.373283	0.0337
INFR(-1)	0.075776	0.106267	0.713071	0.4884

Source: Author's E-views 12 computation [See appendix 2].

The result from table 9 shows that the OLS indicates that at a lag level of 5, Kidnap and Ransom variable [KIRAR] is significant with a p – value of 0.0303, impact the economic output growth represented by RGDP, significantly. The cargo throughput and gross registered tonnage showing a significant but negative impact on gross national output [p-0.0001 and p-0.0385, respectively], thus, a 1% rise in kidnap and ransom level in the Nigerian water ways, will orchestrate a 4.13282% fall in gross registered tonnage, with negative contribution to gross national output. The R^2 and the adjusted R^2 at %90.08 and 86.26% respectively shows that the variables in the series perfectly fits the model with a Durbin Watson statistics of 2.2533 indicating absence of auto-correlation in the model.

The Error Correction Term tests carried out to determine whether there is a long-run impact showed the existence of a negatively signed [-1.2441] significant long-run impact of the explanatory variable of interest - Kidnap-ransom [KIRAR] on economic growth with p-value of 0.0000, showing a convergence factor of 124.41%, indicating that shocks emanating from the explanatory variables are adjusted to by the dependent variable at a speed of 124.41% within a year.

Table 10: Error Correction Model for Objective 2.

Dependent Variable: D(RGDP)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.228793	0.470280	0.486503	0.6332
D(EXCH)	-0.000377	0.015068	-0.025016	0.9804
D(INFR)	-0.007195	0.087413	-0.082306	0.9354
D(CTP)	35.98577	7.596570	4.737108	0.0002
D(GRT)	-10.98700	3.232927	-3.398469	0.0037
D(KIRAR)	0.011458	0.010253	1.117581	0.2802
ECT01(-1)	-1.244063	0.150771	-8.251323	0.0000

Source: Author's E-views 12 computation [See appendix 4].

4.3. Discussion of Findings.

This research work studied maritime security threat and its impact on Nigeria Economy covering the period 1998 to 2022 and employed secondary data such as piracy, kidnap-ransom, cargo throughput, gross registered tonnage and real gross domestic product, inflation rate, and exchange rate, sourced from the International Maritime Bureau and Nigeria maritime administration and safety agency [NIMASA] and tested at the 5% chosen level of significance. Two objectives were studied, firstly to ascertain the impact of maritime piracy activities on Nigeria economic growth, and we discovered that piracy activities had a negative but significant impact on national economic growth, in the long-run using the ordinary least square and the error correction term econometric techniques, as well as negatively significant impact on the gross registered tonnage with p-value of 0.0385, it is interesting to note that the speed of adjustment from the significant short-run position of the piracy impact on economic growth within a year is 123.30% with the error correction model. This result agrees with the findings of Zabadi & Onuoha (2009); Igbokwe (2012), Ochai, (2013), as well as with the outcome of literature studies. The social and economic implication of this outcomes is that if the threat of piracy is not quickly addressed by the government, it will erode economic growth in the long-run, trade businesses will fall because countries will reduce transportation of goods to Nigeria through the gulf of Guinea, leading to lost trade, lost revenues of custom duties, lost of jobs and eventually negative country image.

Similarly, the second objective, studied the impact of Maritime Kidnap-ransom along the gulf of Guinea waterways on the Nigerian economy, and discovered that kidnap-ransom activities had a significant (p-value = 0.0303) impact on the dependent variable in the short-run, and a statistically significant negative impact in the long-run on Nigeria's economic growth with a speed of adjustment of 124.41%. Again, this outcome

resonates with the findings of Zabadi & Onuoha (2009); Igbokwe (2012), Ochai, (2013) of a significant and negative impact in the long-run of these maritime threats on economic growth. Most often, these threats as captured, have lead to loss of lives, foreign exchange and national outputs, thus requiring immediate and urgent attentions of the responsible arms of government.

Conclusions and Recommendations.

The findings from this study reveals that both maritime piracy and maritime kidnap and ransom, which are regarded as maritime threats have negative and significant impacts on the economic growth of Nigeria, proxy in this study by the real gross domestic product. Based on the foregoing, we conclude that Maritime threats as captured, have negative and significant impact on the Nigeria economy.

From the outcome of our study, we recommend as follows;

1. The Nigerian government should ensure the effective implementation and enforcement of relevant international conventions in their National and Domestic laws such as UNCLOS (1982) and SUA (1988), as well as develop more international collaborations to combat Piracy such as Nigeria/Benin joint border patrol.
2. The Nigerian government should fund and equip the relevant security agencies including the Nigeria Coastal guards and the Nigeria Navy for effectiveness in policing, intercepting, interdicting and deterring maritime piracy/kidnap and ransom on the national waterways.

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Appendix.

Table 11: Ordinary Least Square Regression Result 1.

Dependent Variable: RGDP				
Method: Least Squares				
Date: 03/09/23 Time: 18:54				
Sample (adjusted): 2003 2022				
Included observations: 20 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.042958	1.344080	0.775964	0.4507
CTP	31.17046	4.938780	6.311369	0.0000
GRT(-2)	-2.965354	1.309530	-2.264442	0.0400
PIRAR(-5)	0.027751	0.012411	2.235981	0.0422
EXCH	-0.011040	0.003867	-2.854799	0.0127
INFR(-1)	0.195643	0.122795	1.593253	0.1334
R-squared	0.890651	Mean dependent var		3.626120
Adjusted R-squared	0.851598	S.D. dependent var		3.549821
S.E. of regression	1.367496	Akaike info criterion		3.707164
Sum squared resid	26.18062	Schwarz criterion		4.005884
Log likelihood	-31.07164	Hannan-Quinn criter.		3.765477
F-statistic	22.80618	Durbin-Watson stat		2.342496
Prob(F-statistic)	0.000003			

Source: Author's E-views 12 computation.

Table 12: Ordinary Least Square Regression Result 2.

Dependent Variable: RGDP				
Method: Least Squares				
Date: 03/09/23 Time: 18:36				
Sample (adjusted): 2003 2021				
Included observations: 19 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.573859	1.502905	1.047212	0.3141
CTP	29.34700	5.135983	5.713999	0.0001
GRT(1)	-4.132821	1.795286	-2.302041	0.0385
KIRAR(-5)	0.031488	0.012957	2.430130	0.0303
EXCH(1)	-0.007597	0.003201	-2.373283	0.0337
INFR(-1)	0.075776	0.106267	0.713071	0.4884
R-squared	0.900789	Mean dependent var		3.653811
Adjusted R-squared	0.862631	S.D. dependent var		3.644875
S.E. of regression	1.350914	Akaike info criterion		3.691529
Sum squared resid	23.72458	Schwarz criterion		3.989773
Log likelihood	-29.06952	Hannan-Quinn criter.		3.742003
F-statistic	23.60672	Durbin-Watson stat		2.253335
Prob(F-statistic)	0.000004			

Source: Author's E-views 12 computation.

Table 13: Error Correction Term Result 1.

Dependent Variable: D(RGDP)				
Method: Least Squares				
Date: 03/10/23 Time: 06:08				
Sample (adjusted): 2000 2022				
Included observations: 23 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.176281	0.491113	0.358943	0.7243
D(CTP)	36.05106	7.970201	4.523231	0.0003
D(GRT)	-10.98417	3.388508	-3.241594	0.0051
D(EXCH)	-0.000419	0.015891	-0.026374	0.9793
D(INFR)	-0.001026	0.093339	-0.010996	0.9914
D(PIRAR)	0.002710	0.011563	0.234322	0.8177
ECT02(-1)	-1.232960	0.160994	-7.658400	0.0000
R-squared	0.847957	Mean dependent var		0.109565
Adjusted R-squared	0.790941	S.D. dependent var		3.679170
S.E. of regression	1.682225	Akaike info criterion		4.123902
Sum squared resid	45.27809	Schwarz criterion		4.469487
Log likelihood	-40.42487	Hannan-Quinn criter.		4.210815
F-statistic	14.87226	Durbin-Watson stat		1.548889
Prob(F-statistic)	0.000010			

Source: Author's E-views 12 computation.

Table 14: 1. Ordinary Least Square Regression Result 2.

Dependent Variable: D(RGDP)				
Method: Least Squares				
Date: 03/10/23 Time: 05:56				
Sample (adjusted): 2000 2022				
Included observations: 23 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.228793	0.470280	0.486503	0.6332
D(EXCH)	-0.000377	0.015068	-0.025016	0.9804
D(INFR)	-0.007195	0.087413	-0.082306	0.9354
D(CTP)	35.98577	7.596570	4.737108	0.0002
D(GRT)	-10.98700	3.232927	-3.398469	0.0037
D(KIRAR)	0.011458	0.010253	1.117581	0.2802
ECT01(-1)	-1.244063	0.150771	-8.251323	0.0000
R-squared	0.864595	Mean dependent var		0.109565
Adjusted R-squared	0.813818	S.D. dependent var		3.679170
S.E. of regression	1.587517	Akaike info criterion		4.008010
Sum squared resid	40.32336	Schwarz criterion		4.353595
Log likelihood	-39.09211	Hannan-Quinn criter.		4.094923
F-statistic	17.02736	Durbin-Watson stat		1.407120
Prob(F-statistic)	0.000004			

Source: Author's E-views 12 computation.

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