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ENVIRONMENTAL RESPONSIBILITY AND FIRM FINANCIAL PERFORMANCE: EVIDENCE FROM INTERNATIONAL OIL COMPANIES IN NIGER DELTA

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Abstract: *This study examines the relationship between environmental responsibility and financial performance of international oil companies in Niger Delta region of Nigeria. In pursuance of this, a sample of twelve (12) international oil firms was used for the study. Secondary data were obtained from the audited annual financial reports of the selected companies and Federal Ministry of Environment covering the period of 2009 to 2018. The data were analyzed using descriptive statistics, correlation analysis, panel causality test and fixed effect, selected as the appropriate strategy after using the Hausman test. Based on the data analysis, the study reveals that there is a bi-directional relationship between environmental responsibility and firms' financial performance. The study further reveals that there is a positive relationship between environmental responsibility and firms' financial performance. When environmental responsibility interacts with corporate governance, the impact is found to have a significant positive relationship with firms' financial performance. The study also finds that growth opportunities and firm size are positively and significantly related to firms' financial performance. Based on the findings, the study recommends effective regulation, strong institutional mechanism and good corporate governance structures to enforce or engender environmental sustainability and compel firms to adopt the culture/strategy of sustainable finance. Such strategy will alleviate the curse of dependency and poverty that comes with the destruction of the environment and the means of sustenance of the people in oil producing communities.*

Keywords: Corporate Governance, Environmental Responsibility, Environmental Sustainability, Firms' Financial Performance, International Oil Companies, Niger Delta.

JEL Classification: C23, G30, N57.

1. Introduction

The beneficial and adverse consequences of the activities of business on society have generated intense political, public and academic debate. At the heart of this debate is the question of how the profit (resources) of business should be appropriated and who should benefit – shareholders or stakeholders (comprising customers, suppliers, employees,

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governments, host communities, environment and future generations). Two broad schools of thoughts have evolved over the years. First, is the philosophy that the main purpose of business is profit maximization, championed by Friedman (1970). This school argues that management of companies should focus on the Shareholders Wealth Maximization (SWM). This school is influenced by Adam Smith in the 18th century, who argued among other things that in a free market economy, the pursuit of self-interest by individual economic agents (firms and households) invariably maximizes the welfare of society. However, we have witnessed many instances of market failures and persistent negative externalities from businesses. Examples of these include perennial oil spillage, gas flaring, and the destruction of farmland in the Niger Delta region. According to the Department of Petroleum Resources (DPR), there were over 4200 oil spill incidences in Nigeria over the last 50 years, ranging from minor spills to over half a million barrels in one single incident (Isah, 2012).

The second school of thought is Corporate Social Responsibility (CSR) which originated in the 1950s, and has been gaining ascendancy following the works of Bowen (1953), Carroll (1979), Freeman (1984) and Carroll (1999). CSR is the obligation of businesses to improve the lot of society; help solve the problem of society or at the very minimum not disrupt or destroy the community and environment in which they operate. Carroll (1999) sees CSR as the economic, ethical, legal and voluntary (philanthropic) expectations that the society places on business. Choi and Meek (2008) assert that CSR refers to accountability of a firm towards its impact on employees' welfare, the community (society) and environment. These definitions take cognizance of the Environmental, Social and Governance (ESG) dimensions of CSR. We note that Environmental Responsibility (ER) is an integral component of CSR and is the focus of this study. Olusegun (2012) defines corporate environmental responsibility as the obligation of an organization to conduct its business in such a way that environmental consequences of its activities (negative externalities) are managed with a view of neutral impact on human and biodiversity through voluntary actions and regulatory compliance. According to Aggarwal (2013:14), ER refers to "firms being accountable, by investing on sustainability of the environment and also disclosing the impacts of their activities on the environment, such as land, air, water and noise pollution." Eccles and Krzus (2010) assert that the last decades brought global concern for the long-term adverse consequences of industrial activities on the environment. The environmental impacts manifest as climate change, global warming, flooding, destruction of arable lands, and aquatic habitat among others. These stem from greenhouse gas emissions, toxic ozone – layer depleting substances, oil spills and other pollutants, including solid waste generation. Public disclosure of these information helps to portray a firm's commitment to environmental responsibility and sustainability.

1.1. Statement of the Research Problem

In the last decade, a number of factors have led to an increase in the interest of researchers, investors and policy makers in environmental, social and governance (ESG) dimensions of CSR. This includes the global financial crisis, climate change, and corporate scandals around the world. Whereas these challenges have constrained the ability of companies to spend on CSR, investors and companies are now increasingly aware that most pressing needs facing society requires business involvement (OECD, 2011). Taking into account the expectations of a broad range of stakeholders, especially as demonstrated during the United Nations Climate Change Conference held in Poland in December 2018 (also known as COP24), companies the world over may now be more proactive in incorporating environmental responsibilities and sustainable finance practices into their management strategy. Theoretically, this could engender financial benefits to the firms. This is because firms benefit in terms of enhanced reputation, trust, customer loyalty, access to capital, human resource management, innovation capacity and risk management (Aggarwal, 2013).

However, in the Niger Delta region, the exploitation of oil continues to leave a tale of woe and agony on the lives and livelihood of the citizens. This is due to the destructive and devastating effects of oil exploration on the environment. For example, on December 21, 2011, Shell Nigeria announced what it describes as its worst oil spillage in a decade in the Niger Delta area. Over 40,000 barrels of crude oil spilled in one day. For over five decades, a series of similar oil spills have caused extensive damage to the ecology of the Niger Delta. Geographically, the Niger Delta is the delta of the River Niger, sitting directly on the Gulf of Guinea on the Atlantic Ocean in Nigeria. It is roughly encompassed by the South-South states in Nigeria.

The extant literature is replete with empirical evidence on the impact of oil exploration and exploitation on the environment in Nigeria (Omofonmwan and Odia, 2009; Kadafa, 2012; Uzoma and Mgbemena, 2015). However, there is paucity of empirical evidence on the relationship between environmental responsibility and the financial performance of oil companies in Nigeria. Furthermore, several studies have examined the relationship between environmental responsibility and firm financial performance over the last few decades from around the world. However, the findings provided mixed results which range from (i) positive relationship, such as Nakao et al., (2007a) in Japan, Griffin and Sun (2012) in the United State, Worea and Ngwakwe (2017) in South Africa; Elshawarby (2018) in Egypt and Etale and Otuya (2018), Sulaiman, Ahmadu, and Mijinyawa (2018), Ibrahim and Hamid (2019), and Kaoje, et al., (2020) all in Nigeria (ii) negative relationship, such as Hughes (2000); Brammer, Brooks and Pavelin (2006); Roy and Ghosh (2011) (iii) mixed relationship such as Lankoski (2000), Cormier and Magnan (2007), Orlitzky (2008) and Adewoye, Olaoye and Ogundipe (2018) (iv) no significant relationship such as Deegan (2004). Thus, in literature, the debate on the relationship between environmental responsibilities and firm financial performance remains inconclusive (Miles and Covin, 2000; Margolis and Walsh, 2003; Jo, Kim, Lee and Park, 2015). This study is therefore an attempt to contribute to the debate bordering on the relationship between environmental responsibility and firm financial performance, by focusing on International Oil Companies (IOCs) operating in Niger Delta.

Based on the foregoing, the overriding research question for the study is; what is the relationship between environmental responsibility and financial performance of international oil companies in Niger Delta? As a corollary, the study provides answer to the following specific research questions; (i) what is the direction of causation between environmental responsibility and financial performance of IOCs in Niger Delta? (ii) what is the effect of environmental responsibility on the financial performance of IOCs in Niger Delta? The motivation for this study hinges on the need to empirically provide answers to the above research questions. The choice of IOCs is due to the fact that they employ the services of reputable auditing firms which lend credence to their environmental accounting/reporting.

The rest of the study is organized as follows: section two is theoretical framework while section three describes the methodology and data employed. Section four discusses the empirical results and analysis and section five concludes the study.

2. Theoretical Framework

The theoretical framework is anchored on stakeholder theory, developed by Freeman (1984). Stakeholder theory emerged as an alternative to shareholder theory (Spence and Lozano, 2001). Stakeholder theory argues that businesses have accountability towards a broad range of stakeholders, apart from shareholders, which is, customers, employees, suppliers, government, community, environment, and future generations, among others. According to this view, it is not sufficient for managers to focus exclusively on the needs of shareholders, or the owners of the corporation. Stakeholder theory implies that it can be

beneficial for the firm to engage in certain CSR activities that non-financial stakeholders perceive to be important, because, in the absence of this, these groups might withdraw their support for the firm.

Stakeholder theory was expanded by Donaldson and Preston (1995) who stressed the moral and ethical dimensions of CSR. This however, might have contributed to the introduction of ethical theory in studies of social-environmental responsibility. The theory was later expanded and is based on the idea that there is a moral imperative for managers to 'do the right thing', without regard to how such decisions affect firm financial performance. Corporate, social, and environmental responsibility helps in strengthening the relationship between firm and society in which it operates. Ignoring the stakeholder's interests may smear firm's public image, which would unfavorably affect its financial performance.

2.1. Conceptual Model

The conceptual model depicted in Figure 1 shows the relationship between environmental responsibility and firms' financial performance. The upper arrow depicts the direction of causation between environmental responsibility and firms' financial performance while the lower arrow and loop under shows the effect of the interaction between environmental responsibility and corporate governance on firms' financial performance. Financial performance is evaluated on the basis of two accounting variables (return on assets and return on equity). Other explanatory and control variables (firm size and firms' growth rate) are integrated in order to take into account other factors that may influence the link between the environmental responsibility and financial performance of companies. These are depicted with dotted lines.

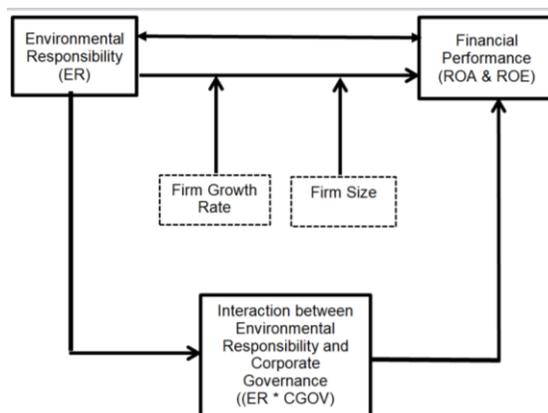


Figure 1: Conceptual Model
Source: Authors' Construction (2020).

3. Methodology and Data

Quantitative research method was employed for this study. The method is based on causal (ex-post facto) and longitudinal research design. Geographically, the study is confined to the Niger Delta region of Nigeria. This is where oil exploration and production takes place in Nigeria with serious consequences on the environment.

The period of the study is 2009 to 2018. The population of the study is made up of about 131 oil companies operating in the Niger Delta. This includes IOCs, local and national oil companies, drillers and other oil services firms. In Nigeria, the permanent sovereignty and ownership over mineral resources (oil and gas) found in its geographical location are vested in the Federal Government of Nigeria, conferred under Section 44(3) of the Constitution of

the Federal Republic of Nigeria. In terms of structure, the IOCs operate mainly under a joint venture (JV) arrangement with the Nigerian government. Under a joint venture, the Nigerian government, through the Nigerian National Petroleum Corporation (NNPC), a state-owned Federal Ministry of Petroleum Resources, acting through the Department of Petroleum of Resources, being the regulatory authority, has about 60 percent participatory interest in development and production operations of the oil fields, and therefore shares exploration, drilling and development expenditures accrued from operations. Currently, all upstream operations of major IOCs are in joint partnerships with the Nigerian government. These exploration and production companies operate predominantly in the onshore of Niger Delta in Nigeria. For the purpose of this study, however, the sample size is delimited to twelve (12) selected oil firms from among the twenty-four (24) IOCs operating in the region. The selection of the twelve (12) oil firms is based on judgmental sampling procedure. Specifically, IOCs, which employs the services of the big four auditing firms and whose data are up-to-date and readily accessible were selected. The secondary data were obtained from the audited annual financial reports of IOCs and Federal Ministry of Environment.

3.1. Model Specification and Measurement of Variables

In order to investigate the direction of causation between environmental responsibility and financial performance of IOCs in Niger Delta, the model developed by Granger (1969) is modified below and will be estimated:

$$FPM_{it} = \beta_0 + \sum_{k=1}^m \beta_k Y_{it-k} + \sum_{l=1}^n \alpha_l X_{it-l} + u_t \quad (1)$$

$$ER_{it} = \gamma_0 + \sum_{k=1}^m \delta_k X_{it-k} + \sum_{l=1}^n \varphi_l Y_{it-l} + \vartheta_t \quad (2)$$

Where: FPM_{it} is Financial Performance of IOCs to be measured by firm's Return on Asset (ROA) and Return on Equity (ROE). Suffice it to say that the use of ROA and ROE are widely used accounting measures of financial performance. ER_{it} is Environmental Responsibility. Thus, two pairs of relationships are determined from the causality test. u_t and ϑ_t = mutually uncorrelated error terms (i.e. zero mean white noise error terms). 'k' and 'j' = the number of lags.

A growing number of studies investigate the impact of ESG dimensions of CSR on firms' financial or economic performance (Aggarwal, 2013; Ferrero-Ferrero, Fernandez-Izquierdo and Munoz-Torres, 2015). In these studies, and many others, corporate governance is seen as a stand-alone explanatory variable. However, in this study, we assume that corporate governance impact is transmitted to financial performance based on its interaction with environmental responsibility. That is, good corporate governance will enhance environmental responsibility while bad corporate governance will undermine it. Thus, the functional model below is developed for this study;

$$FPM = f(ER * CGOV) \quad (3)$$

Where CGOV is corporate governance, FPM and ER are as earlier defined. Other factors which could affect firm financial performance are added to the model as control variables. These include firms' Growth Rate (GRW) and Firm Size (FSIZE), thus equation 3 is decomposed empirically as;

$$ROA_{it} = \alpha_{0i} + \beta_1 ER_{it} + \beta_2 ER * CGOV_{it} + \beta_3 GRW_{it} + \beta_4 FSIZE_{it} + \varepsilon_{it} \quad (4)$$

$$ROE_{it} = \omega_{0i} + \alpha_1 ER_{it} + \alpha_2 ER * CGOV_{it} + \alpha_3 GRW_{it} + \alpha_4 FSIZE_{it} + \varepsilon_{it} \quad (5)$$

Where α and ω are the mean, β and α are the coefficients of the explanatory variables, and ε is the error term. The *a priori* expectations of the signs of the coefficients are given as; $\beta_1 \& \alpha_1 > 0$; $\beta_2 \& \alpha_2 > 0$; $\beta_3 \& \alpha_3 > 0$; $\beta_4 \& \alpha_4 > 0$. ROA is measured as the ratio of Profit after Tax (PAT) to total assets. ROE is computed as the ratio of PAT to total equity. ER was measured by IOCs commitment to environmental sustainability as evidenced by their Environmental Impact Assessment Score (EIAS). CGOV is measured by board independence (i.e. ratio of non-executive directors to executive directors), GRW is measured by growth rate of total asset and FSIZE is measured by total asset. The models are estimated using STATA econometric software, following preliminary tests, such as descriptive statistics, correlation matrix and Hausman test for fixed effect *vis-à-vis* random effect.

4. Empirical Results and Analysis

4.1. Descriptive Statistics

Table 1: Descriptive Statistics

Variables	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis	J-B
ROA	25.16	23.05	78.26	8.28	6.25	3.25	12.16	430.20
ROE	27.12	22.25	85.60	8.40	7.91	4.80	25.45	987.24
ER	15.10	16.33	47.30	1.20	5.38	4.78	4.85	835.21
ER*CG	17.22	15.26	53.22	0.06	9.18	1.22	3.77	140.06
GRW	20.18	15.41	125.22	-0.28	16.23	10.16	32.12	1875.21
FS	40.20	42.15	95.50	3.2	8.25	13.21	20.30	48.26

Source: Researchers' computation using STATA (2020)

Table 1 presents the summary statistics on the two performance measures for the sampled IOCs. The descriptive statistics shows that the average return on asset for the oil firms is 25.2 which is relatively high. The median value of 23.1 percent is much less than the mean value, suggesting that the ROA values are not similar across the oil firms in the sample. This is further buttressed by the low (negative) minimum value compared to high (positive) maximum value. The standard deviation of 6.25 percent indicates high variability in the ROA values for the IOCs. The high positive skewness value further buttresses that more oil firms have ROA which are less than the observed average in the distribution. The mean value of environmental responsibility is 15.1 percent, but when interacted with corporate governance, the value becomes 17.2 percent. Apparently, the entrenchment of strong corporate governance mechanism induces a growth co-movement with the performance of IOCs. The high Kurtosis and J-B values are both evidence of an asymmetric distribution. For the return on assets (ROE), the mean value of 27.1, is higher than the ROA outcome. Invariably, there appears to be wide dissimilarities among the sampled oil firms in terms of individual performance characteristics. The mean value of environmental responsibility is 15.1 percent, while that of the interaction of environmental sustainability and corporate governance is 17.2 percent. Without doubt, the presence of strong and effective corporate governance structures in IOCs will make them 'environmentally responsible'. The standard deviation value of 7.91 is also high and confirms high variability in ROE for the sampled oil firms. The descriptive statistic also revealed that all the variables used in the study are normally distributed, as observed from the Jarque-Bera (J-B) statistic.

4.2. Correlation Analysis

In investigating the nature and extent of correlation among the variables, the correlation analysis is used. The result of the correlation tests is reported in table 2 below.

Table 2: Correlation Results

Variables	ROE	ROA	ER	ER*CG	GRWTH	FS
ROE	1					
ROA	0.23	1				
ER	0.19	0.022	1			
ER*CG	0.03	0.19	0.02	1		
GRW	0.35	0.43	0.28	0.21	1	
FS	0.41	-0.39	0.16	0.19	0.25	1

Source: Researchers' computation using STATA (2020)

In the correlation matrix, a positive relationship is observed between ROE and each of the other variables. In the same vein, ROA has positive relationship with the variables except for firm size. This implies that there is a co-movement between environmental sustainability and the performance of IOCs. The correlation between the independent variables show that environmental sustainability is positively correlated with the interactive of corporate governance and environmental investment; an implication that both variables reinforce each other. In the same vein, firm size is positively correlated with growth size. Invariably, higher firm size implies better growth opportunities, vice versa,

4.3. Panel Causality Test

In order to determine the direction of causation between environmental responsibility and financial performance of IOCs in the Niger Delta, the panel causality test is conducted. The results are reported in Table 3.

Table 3: Panel Causality Test

Null Hypothesis	Causality Tests	
ROA does not Granger cause ER	W-bar Z-bar Z-bar tilde	7.22*** (0.000) 6.02*** (0.000) 5.95** (0.000)
ER does not Granger cause ROA	W-bar Z-bar Z-bar tilde	4.10*** 8.32*** (0.000) 7.344*** (0.00)
ROE does not Grange cause ER	W-bar Z-bar Z-bar tilde	2.98*** 3.45*** (0.0006) 2.78*** (0.0058)
ER does not Granger cause ROE	W-bar Z-bar Z-bar tilde	2.32** 2.45*** (0.007) 2.802*** (0.0058)

Source: Researchers' computation using STATA (2020)

The results indicate that in all the cases, we reject the null hypotheses. This implies the existence of feedback or bidirectional causation between environmental responsibility and financial performance of IOCs. Invariably, environmental responsibility tends to enhance financial performance, and in the same vein, financial performance tends to induce greater level of environmental responsibility on the part of international oil firms.

4.4. Panel Multivariate Analysis

In this section, an attempt is made to empirically examine the effect of environmental responsibility and other explanatory variables on the performance of international oil companies. The analysis is based on the panel data approach. We specifically analyzed our performance measures with the pooled OLS and the fixed effect approaches. A choice is made between these two approaches using the standard F-statistics. We also estimated the model with the random effect approach, however, using the Hausman test, the fixed effect is chosen as the best model. The result is presented in table 4.

Table 4: Panel Regression Results: Dependent Variable: ROA & ROE

Variables	Pooled OLS		Fixed Effect	
	(1)	(2)	(3)	(4)
Constant	0.013 (0.75)	0.081* (1.73)	1.178* (0.964)	1.021* (1.70)
ER	0.129* (1.86)	0.114 (0.68)	0.152* (1.63)	0.294 (1.16)
ER x CG	0.263* (1.13)	0.133* (1.764)	0.062** (2.426)	0.185** (2.250)
GRW	0.052* (1.74)	0.205* (2.14)	0.244 (1.952)	0.335*** (2.71)
FS	-0.06* (-2.18)	-0.320* (-1.41)	0.411** (2.140)	0.262* (1.980)
Adjusted R ²	0.14	0.17	0.62	0.60
Durbin-Watson	0.92	1.16	1.66	1.78
F-statistics	15.20***	17.25***	32.96***	41.27***

Note: ***, ** & * indicate 1%, 5% & 10% level of significance; Standard F-test to choose between Pooled OLS & Fixed Effect Models; T-ratios are in parenthesis; Pooled OLS (Model 1 & 2); Fixed Effect (Model 3 & 4).

Source: Researchers' computation using STATA (2020)

Using the standard F-statistics test approach to chosen between the Pooled OLS and the Fixed Effect models, table 4 reveals that the fixed effect is the best estimation technique. Our analysis and policy perspective are therefore based on the fixed effect.

The adjusted R² both performance measures (ROA & ROE) for the sampled international oil firms based on the fixed effect show that over 62 percent and 60 percent of the net systematic variations in ROA and ROE are explained by the exogenous variables. The F-value for ROA is 32.96 and 41.27 for ROE are both significant at the 1 percent level respectively. Invariably, there is clear evidence of a significant linear relationship between the respective performance measures and the explanatory variables combine. The Durbin-Watson statistic for both performance measures of 1.66 and 1.78 show the absence of autocorrelation in the results, making the estimated models fit for structural and policy perspectives.

In terms of the coefficients of the explanatory variables, environmental responsibility variable for both performance measures are positively signed in line with economic expectation, but are not significant at the 5 percent level. Thus, IOCs have been involved in environmentally sustainable policies, particularly in terms of investment and environmental impact assessment score, which shows the extent of environmental involvement, engagement and responsibility of such companies, given the detrimental effect of

environmental degradation. The impact is however weak, given insignificance of the respective t-ratios. Since the t-value is greater than unity, we may infer that environmental sustainability has had some impact on the Niger-Delta region, particularly the host communities and environment, where large scale destruction of the biosphere has been evident, but the impact is weak. The finding supports the results of Nakao et al. (2007a), Griffin and Sun (2012), Worea and Ngwakwe (2017), Etale and Otuya (2018), Sulaiman, Ahmadu and Mijinwa (2018), Ibrahim and Hamid (2019), and Kaoje et al. (2020).

The coefficient of the interaction of environmental responsibility with corporate governance (measured by board independence) is positive and significant at the 5 percent level. Invariably, good corporate governance strengthens environmental responsibility. The finding is in line with the studies of Rao, Tilt and Lester (2012), and Elshawarby (2018).

The coefficient of growth opportunity for both performance measures (ROA & ROE) is appropriately positive in line with *a priori* expectation and is significant at 1 percent level. This implies that better growth opportunities tend to enhance the performance of international oil firms to disclose environmental issues. This finding corroborates the findings of Nakao *et al.* (2007a) and is at variance with the findings of Roy and Ghosh (2011). The coefficient of firm size is positive and passes the significance test at both the 5 percent and 10 percent level for ROA and ROE, respectively. Thus, large firm size tends to enhance performance in IOCs, especially, as it allows better economies of scale and efficiency in the use of resources. The finding supports the findings of Setyorini and Ishak (2012), and Sulaiman, Ahmadu and Mijinwa (2018).

4.5. Policy Implications of Findings

A number of important policy implications emanates from this study as follows:

- (i) Environmental responsibility has a positive effect on firm financial performance in Nigeria. Thus, as international oil companies (IOCs) engage more in environmental responsibility activities, their acceptance and patronage are encouraged for greater financial performance.
- (ii) Interaction of environmental responsibility with corporate governance produces more significant effect on the financial performance of international oil firms in Nigeria. Thus, without strong corporate governance structures on the activities of international oil firms, the extent of their environmental responsibility and corporate social responsibility may be diminished. By implication, strong and effective corporate governance structures are needed to make international oil companies (IOCs) environmentally responsible in Nigeria.
- (iii) Improved growth opportunities have the capacity to steer the performance of IOCs in Nigeria, as it presents them with robust performance prospect, and in turn, enable them become more socially and environmentally responsible. Therefore, policies to encourage the growth opportunity of oil firms should be encouraged.
- (iv) The larger the size of IOCs, the better and more improved financial performance they are likely to have. Invariably, firms with larger size tend to enjoy greater economies of scale that enable them realize better financial performance, and in turn, become more environmentally responsible.

5. Conclusion and Recommendations

The environmental destruction in oil producing communities in the Niger Delta region is enormous. In this respect, the continued underdevelopment of the region in the midst of the vast oil resources is a paradox. This study has examined the impact of environmental responsibility on the financial performance of oil firms in the region by employing panel causality and multivariate panel data approach. In terms of the causality results, environmental responsibility is found to have a bi-directional relationship with ROA and ROE, implying a mutually reinforcing effect between them. Nevertheless, there is a positive

relationship between environmental responsibility and firm's financial performance of IOCs. The interaction of strong and effective corporate governance mechanism is found to be significant. Other variables found to be significant to financial performance of oil companies are growth opportunities and firm size.

The clear import of these findings is that corporate governance mechanism needs to be strongly instituted in order to strengthen environmental sustainability and other corporate social responsibility of these international oil companies to their host communities and the environment. In other words, as part of their strategic planning and implementation, management of IOCs should consider investments in the environment in which they operate. Also, effective regulation, strong institutional mechanism and good corporate governance structures are required to enforce environmental sustainability and compel firms to adopt the culture/strategy of sustainable finance. Such strategy will alleviate the curse of dependency and poverty that comes with the destruction of the environment and the means of sustenance of the people in oil producing communities. In this regard, sustainability investment, transparency, accountability, youth-literacy, community participation, engagement and other forms of host communities' involvement are required on the part of IOCs. We believe that ultimately, environmental responsibility and sustainability strategies will engender ample financial benefits to shareholders and other stakeholders.

5.1. Limitation(s) of the Study and Future Research

The limitation of this study is its focus on international oil companies (IOCs), to the neglect of firms in the mining, quarrying and manufacturing sectors. The activities of firms in those sectors might also have significant environmental consequences. Future line of research should therefore include the activities of these sectors. Also, future research should explore the use of survey to gauge the perception of stakeholders on the level of environmental responsibility exhibited by oil firms.

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ECONOMIC GLOBALIZATION BETWEEN EXPANSION AND LIMITS. SOME CONCEPTUAL CONSIDERATIONS

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Abstract: *This article tries to answer to the question if the actual wave of globalization may be considered viable under the conditions of increasing inequalities, poverty, environmental degradation, behavioral rules of international markets and other important factors. The author considers that the last wave of globalization cannot be fully feasible on the long run, based upon several arguments offered by the specialized studies in the field and from important data evidence reported by some international economic organizations. By definition, the globalization of the economy reflects a reality that has various meanings. Being focused on the free movement of goods and capital, this phenomenon does not necessarily imply a political globalization, although it cannot be completely detached from this field. That is why, from the beginning, it has offered the possibility to large multinational corporations to operate everywhere in the world, thanks to the unprecedented development of transport and communications that have reduced material production costs and permitted companies to be in close and permanent contact. Moreover, the author tries to demonstrate that contemporary economic globalization, in the same respect, is less integrated and interconnected, therefore more limited, than many could realize. Those limits influence important aspects of economic life and especially the economic environments in different countries, regardless of the characteristics and level of development. Factors such as economic gaps between nations, poverty and inequality, international migration and the new protectionism could, and most probably will, have an important impact upon the shape and pace of the economic globalization phenomenon. Realities such as different economic standards for North and South, fragmentary character of protectionism, intense fluctuations of international remittances remain as essential arguments supporting this idea.*

Keywords: viable globalization, economic gaps, economic inequality, poverty, migration, new protectionism.

JEL Classification: F60, I30, F13

1. Introduction

For a long time, the literature has used in tandem, as if it had the same meaning, two terms, namely: *mundialization* and *globalization* (Ortiz, 2006). If we ignore the semantic content of these two terms, we find, however, that they cannot be put entirely on the same plane. Thus, the world economy has been talked about for a very long time. If we consider the historical

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context, it can be said that *mundialization* has its roots in the process of forming the nation states. As a result, an intense exchange of goods (not capital) has taken place worldwide over many decades (if not centuries), not being a recent human invention. In this article we prefer to use the term economic *globalization*, because it indicates more precisely a process typical of the years that marked the modern history of mankind. In our opinion, in essence, this phenomenon now called *globalization* differs from all previous forms of *mundialization*. Therefore, the difference is not only linguistic, but reaches much deeper sides.

In this regard, at least two questions hold our attention, as a conceptual approach. The first of these refers to the dynamics of globalization. Indeed, can we say that, at the moment, the process of economic globalization is over, or not? If we consider that economic globalization has gone through several phases or stages in a relatively short period of time, the answer should be no. The events that have marked the last decades show us that we are facing a process in full swing, therefore, still unfinished. What we do not know is how it will evolve in the short, medium and long term. However, we must expect radical transformations and mutations on a global scale, the nature of which is difficult to define today. For the time being, we must note that, at present, large geographical areas continue to be located, partially or almost entirely, outside the actual economic globalization, the population of these areas continuing to suffer from malnutrition, disease, ignorance, isolation and poverty. For the inhabitants of these regions, the notion of a *globalized market* is nothing more than an enigma. They helplessly witness the depletion of their natural resources and the degradation of the environment on which their very existence ultimately depends.

The second question could be summarized as follows: under these conditions, to what extent is economic globalization (as we now know it) viable in the longer run, or on the contrary, has obvious limits that it will not be able to overcome? Specifically, to what extent will certain risk factors limit in the near future its ability to cover all the states of the world, so as to flatten the huge economic gaps, which actually show the visible tendency to deepen? It is on these two aspects that we want to dwell in the present study, in the desire to form a clearer (not necessarily exhaustive) picture of the future of this controversial phenomenon called by most economic analysts as *globalization*. Before exposing our own point of view, let's take a brief look at a part of the literature dedicated to this vast subject, without being able to capture by far the contribution of all known authors. Of course, we cannot propose an exhaustive approach to the methodology of the dynamics of economic globalization, given the fact that this issue is not sufficiently clarified in the specialized literature. Instead, we aim to highlight some of the limits of economic globalization.

2. A literature review

The views expressed by some economists (Thomson & Reuveny, 2009: 79-95) converge on the fact that economic globalization has created, over time, winners and losers. As such, one of the causes proved to be precisely the asymmetry of the development of the *North* and *South* of our planet, asymmetry materialized by a huge economic gap that has deepened continuously, now gaining sharp accents by dividing the world into rich and poor. This global divergence eventually led to profound implications for human development and security. Because of this, it is obvious that economic globalization will know certain limits that will soon be impossible to cross. The so-called benefits of this phenomenon, considered inevitable, however, have been drastically diminished by the inequality of opportunities that, lately, have acquired grotesque proportions.

Another resource in the field (Rieger & Leibfried, 2003), which also has a suggestive title, puts a special emphasis on what the authors call non-economic preconditions of the phenomenon of globalization. Among them are highlighted, first of all, the cultural differences of different peoples that, despite all efforts, globalization will not be able to

annihilate too soon. Or, precisely these differences can positively or negatively influence the forms of manifestation that globalization will cover, as well as its dynamics. In turn, another specialist (Chorafas, 2009) analyzes in detail the limiting framework of protectionism and economic nationalism on the process of globalization, stating for this purpose the case of Eurozone. Global financial crises, the author considers, are indisputable proof that globalization has obvious limits, in the sense that it cannot foresee or avoid them. A similar view on this subject is expressed by other authors (Boyer & Drache [eds.], 1996), who argue that globalization threatens (slows) the role of the nation-state in the independent determination of its domestic policy, as a result of increasing dependence by the foreign market. However, they recognize that there are a significant number of options and alternatives (Boyer & Drache [eds.], 1996: 23, 30, 263) available to governments to protect themselves from the adverse effects of the global economic cycle, thus leaving room for a more optimistic view of the future of globalization.

A topic much debated in the literature is that of convergence. Indeed, the problem of economic convergence cannot be separated from the phenomenon of globalization which, in various ways, encourages this process. It is precisely on this aspect that an ambitious study (Guillen, 2010) draws our attention, which tries to accurately dissect the problem of convergence against the background of more and more pronounced globalization. According to the author, globalization has allowed the diversification of economic actions rather than their convergence, especially in the newly industrialized states (Guillen, 2010: Chapter 1). Given the diverse views expressed on the impact of globalization on economic and social life, with a particular focus on the downsides, ranging from *disaster* to the idea of *deglobalizing* the economy, many researchers have begun to look for alternatives to the limits of this phenomenon considered irreversible. In this context, we cannot ignore the contributions of two other researchers who, in an interesting study (Cavanagh & Mander, 2004) emphasize the idea of the existence of solutions to solve thorny problems generated by globalization. They believe that the pessimism of some researchers about the future of globalization stems from the "uncertainty and revolt of poor countries against rich nations" (Cavanagh & Mander, 2004: XI). In the end, it all comes down to the question: "If you're not for globalization, then what are you for?" (Cavanagh & Mander, 2004: XII).

Other researchers (Boulle, 2009) consider that opponents of globalization are in fact critical of the market economy (Boulle, 2009: 237). Or, the market economy has its objective laws that cannot be ignored by anyone. As a result, the author launches a real plea for the beneficial effects of globalization, even if some of its limitations have been visible for a long time and can no longer be challenged. In this regard, he refers to some critics who blame the World Trade Organization (WTO) which, through its policies, promotes "a transfer of risks to less developed countries", when we consider the deterioration of the environment and the depletion of natural resources (Boulle, 2009: 252). At the same time, the author wants to emphasize that there are many other factors that contribute to the deterioration of the natural environment, which are difficult to measure and which cannot necessarily be attributed to globalization (Boulle, 2009: 252).

Many other works are included in this line, which cannot be omitted from the bibliography dedicated to this subject. For example, we will mention just a few that we consider just as important. Among others, we refer to Jagdish Bhagwati (Bhagwati, 2004), John H. Dunning (Dunning, 2003), then the works of Nobel Laureate in Economics Joseph Stiglitz (Stiglitz, 2003; Stiglitz, 2006) and Robert Gilpin (Gilpin, 2000).

As for Joseph Stiglitz, he never stopped drawing attention to the fact that globalization has created its own brakes and limits in the way of its continuous expansion. One of these (perhaps the strongest) is the unacceptably high economic inequality both within societies and between nations (Stiglitz, 2015). Although the author refers to American society, the conclusions he draws are perfectly valid for the entire global economy, since, as the

researcher argues, “economic inequality has become global” (Stiglitz, 2015, 114 et seq.). Joseph Stiglitz’s work was not just a singular voice. It was preceded by another volume signed by the same author (Stiglitz, 2013). This time, Joseph Stiglitz treats economic inequality as a counterpart to the “*laissez-faire*” theory that has failed to solve some of the vital problems raised by contemporary globalization.

The well-known economist Thomas Piketty (Piketty, 2014; Piketty, 2015) speaks on the same topic in two representative volumes for the profile literature. In the first volume (Piketty, 2014), the author draws attention to the fact that the evolution of inequality, as a result of the concentration of wealth globally, endangers the very process of economic growth, turning into a brake (limit) on the path to globalization. Since “the rate of return on capital exceeds the rate of growth”, the mechanism will be blocked “generating unsustainability” (Piketty, 2014: 1). Following very closely the evolution of economic inequality over time, in the second volume (Piketty, 2015), the author concludes that globalization has failed to resolve the conflict between capital and labor, further amplifying it. An edifying example is the problem of unemployment, which the author treats as a “social fracture” (Piketty, 2015: 4).

Two other researchers are trying to meet these problems (Acemoglu & Robinson, 2012). They also come to the conclusion that certain theories of economic development no longer work under the pressure of the new wave of globalization. Not coincidentally, the authors point out that poor countries are in this situation not because of their geographical position or culture, or because their political leaders do not know which strategies to choose, but others must be the causes (Acemoglu & Robinson, 2012: 45 et seq.), alluding to the forms of manifestation of globalization.

Other authors also consider economic inequality the main negative effect of globalization. We refer, among others, to Branko Mihailovic (Mihailovic, 2016) and Anthony B. Atkinson (Atkinson, 2015). Rodrik Dani (Dani, 2012) is on the same topic. The author criticizes in a nuanced and rigorous form all those who are still enthusiastic about the benefits of globalization. It is noteworthy that opinions on the limits of economic globalization are found in other studies (Sabatini, 2009), which show that the process of globalization, even in conditions of potentially beneficial economic changes, can lead to irreversible negative phenomena, if those changes triggers too fast.

Our brief foray into the literature, with the dominant theme of the limits of economic globalization, strengthens our belief that not all researchers rushed to applaud the “positive effects” of this phenomenon. On the contrary, weighed against the negative effects, it turns out that economic globalization has indisputable limits that can call into question its future. After all, it all comes down to the potential of globalization to ensure a decent and satisfying standard of living for the world’s population.

3. Viability of globalization and the main associated risk factors

From the outset, the above title obliges us to answer seemingly simple questions, but with unsuspected consequences for the near or distant future, namely: is globalization viable in the medium and long term, given the presence of major risk factors, which have so far imprinted a discontinuous and fluctuating character on it? In other words, can we expect this phenomenon to continue indefinitely in a finite world? Here are just a few questions that fit into the architecture of the most important current issues.

In general, it is difficult to compile a complete inventory of the causes and factors that have given economic globalization a discontinuous character, marked by numerous crises accompanied by unmanageable deglobalizing effects. The scientific debates so far have focused more on how we can determine the degree (level) of globalization and less on its viability over time. Although a number of indicators such as the evolution of world trade, the distribution of foreign direct investment, the level of labor productivity, the degree (index) of

human development and others clearly showed that the process of economic globalization is not progressing smoothly without major syncopes, the current of optimistic thinking in specialized studies continued to predominate, based on the phrase “inevitability” and “irreversibility” of this phenomenon (see, for example, Fairclough, 2009). It is true that, at the same time, there have been voices questioning this globalist view that economic globalization is constantly expanding (Goldblatt et al., 1999). The mentioned authors claim that there are enough arguments to consider that there are many exaggerations in the definition of economic globalization (Goldblatt et al., 1999: 1-31). The same argument is made by other researchers (Hirst et al., 1999). Although they adopt a moderate skepticism, they emphasize that the world economy is still far from the truly global stage (Hirst et al., 1999: 28).

Based on these findings, *at least four risk factors* can be identified that are holding back the process of globalization, marking its inevitable limits and calling into question its future viability. We consider, first of all, the *economic gap* between the so-called “North and South”, then, secondly, the *poverty and inequality* in which hundreds of millions of people are struggling all over the planet, thirdly, *migratory flows* increasingly difficult to control and last but not least the “*new protectionism*” promoted by highly industrialized states.

As for the *economic gap* between North and South, this is not a novelty in the current international landscape. It was reported a long time ago, without a suitable solution. Over time, outstanding economists (Thomson & Reuveny, 2009: 35 et seq.) have referred extensively to the issue of the asymmetry of the economic development of our planet's North and South and its implications for the globalization process.

Usually, it is difficult to draw a dividing line between the so-called “Global North” and “Global South” (Thomson & Reuveny, 2009: 34) based on the level of economic development. The phrases “first world”, “second world” and even “third world” have long been used in the specialized literature. Even today they can be found in some studies (Sajed, 2020). Judging as a whole, the use of such phrases has led, not infrequently, to erroneous or even denigrating conclusions, if we consider the contribution of many states, unjustly included in the above-mentioned groups, to the enrichment of world cultural heritage. It is true that, more recently, in many profile studies this error has been corrected, stating that by “second world” we must mean developing countries, the names used before being considered somewhat outdated (Harris et al., 2009). However, geographically, the whole of Africa (except the Republic of South Africa), Latin America (again with some exceptions), Central America (excluding Mexico) and a number of other states from South-East Asia are considered to be part of the “Global South” (deducted based on Roser & OurWorldinData, 2019). As it is easy to notice, not even some of the most prestigious publications manage to make an absolutely clear delimitation between North and South, of course from an economic point of view.

The division of the economic world between North and South was first made in public by former German Chancellor Willy Brandt in a famous report (Brandt, 1980). Subsequently, for greater accuracy, specialists resorted to the use of the so-called “Brandt Line” still valid today (Codrington, 2005: 90). It should be noted, however, that this line also continues to be challenged especially by some developing countries (some of them considered emerging economies), on the grounds that it corresponds less and less to reality, the international framework being in a permanent change (Ollie, 2016). What is certain is that the industrialized North is home to all members of the G8 group and no less than four out of five permanent members of the United Nations Security Council.

In economic terms, this bipolarity hides a much deeper reality. Indeed, according to some sources (Oluwafemi, 2012: 47), 1/4 of the world's population controls 4/5 of the income earned everywhere in the world. Also, 90% of the manufacturing industry is located in the northern hemisphere. Accordingly, 3/4 of the so-called South's population has access to

only 1/5 of world GDP. If the northern part of the Earth is home to about 1.2 billion people, or 23% of the world's total population, they provide 84% of the global gross domestic product. This is the result of the fact that about 20% of the population of rich countries consume 80% of the planet's natural resources. Despite the fact that the growth rates of real gross domestic product have been higher year-by-year in all emerging and developing countries than in developed economies (World Bank^a, 2016: 4), net income per capita in poor, southern countries, has become 19 times lower than in rich countries. To this was added the effect of the terrible social polarization, so that, in recent years, the top of the richest 1% of people in the world has reached, in recent years, a rate of accumulation of wealth twice as high as 50% of the world's poorest inhabitants, over the past 40 years (Facundo et al. [eds.], 2018: 11). The same idea is signaled by the report presented by Oxfam International (Oxfam, 2016: 4), which states that instead of creating a global economy that works for the prosperity of the majority, as for future generations, we have created an economy that works for the 1%, wondering how such a thing was possible and why? Of course, this was also a veiled allusion to the inability of globalization to solve this crucial problem. So, given the intensification of the globalization process over the last two decades, the process of global redistribution has not worked. Otherwise, it would not have been possible for 2150 millionaires in dollars listed for 2019 to hold together a cumulative fortune greater than that of 4.6 billion people, many of them being among the poorest inhabitants of the planet, and the cumulative wealth of the 22 richest men on the planet to be greater than that of all women in Africa (Oxfam, 2020: 8).

The bipolarity of the economy (North-South) is not an exclusive creation of globalization. First of all, colonialism contributed to its emergence. Globalization has taken it on its way and amplified it, without succeeding in closing the economic gaps. On the contrary, as we mentioned before, they have become more and more threatening over the years. Moreover, economic inequality and poverty are the side effects of the asymmetry of the development of the rich North and the poor South. Although some specialized reports show that, over the years, extreme global poverty has been reduced recently, it is far from being eradicated, and the period of the international medical crisis in 2020 has led to the fall of new categories of people into extreme poverty (World Bank, 2020: xi). Thus, according to the report presented by the World Bank for 2020 (World Bank, 2020: 5), the medical crisis and climate effects have led to the reversal of trends in eradicating extreme poverty for the first time in recent years. At the same time, about 9.2% of the world's population is estimated to still live below the international poverty line at \$ 1.9 per person per day (World Bank, 2020: 28). Extreme poverty continues to persist, especially among the rural population, youth, people with poor education, the unemployed and especially children, the goal of completely eradicating poverty by 2030 being increasingly uncertain (World Bank, 2020: 36).

Despite the so-called progress made, based upon the background of the globalization process, *extreme poverty* is at unacceptably high levels, especially in Africa, but also in other geographical areas of Southeast Asia and Latin America (World Bank, 2020: 47 et seq.). It should be noted that even in some countries such as China, India, Indonesia, Brazil and others, where absolute poverty has decreased, relative inequality has increased in terms of polarization of internal poverty (see also World Bank, 2020: 110). Some of the causes that led to this situation are also described by the World Bank in its report for 2017 (World Bank^a, 2017), namely: the implementation of insufficiently substantiated or even wrong economic reforms, the application of redistributive policies based on clientelism (World Bank^a, 2017: 61), the inability to fight corruption and organized crime and others.

Some economists (Hickel, 2017) are surprised that there are other researchers who are quick to say that in the last 30 years poverty has been halved, and by 2030 it will be eradicated (Hickel, 2017: 2). In fact, says the author, since 1960 until today the income gap between North and South has tripled, 60% of the world's population (i.e., no less than 4.3

billion people) live on less than \$ 5 a day (Hickel, 2017: 2). We are told that poverty is a natural phenomenon when, in fact, it is a political problem, being in fact created. The author goes on to say that poor countries are in this situation because they are in fact integrated into a global economic system in conditions of inequality (Hickel, 2017: 3). Of course, when referring to the reduction of extreme poverty, Hickel considers some specialized reports issued by international economic organizations (United Nations, 2012), which stated that extreme poverty was declining in all regions (United Nations, 2012: 6), and the eradication of extreme poverty and hunger were considered as priorities.

As mentioned in the previous pages, the third risk factor for the viability of globalization is *economic migration*. According to data reported by international economic organizations (IOM, 2020: 10), in recent years the number of international economic migrants has continued to grow rapidly, reaching a total of 272 million people in 2019, compared to 150 million in 2000, reaching 3.5% of the total world population, - that is, the 30th person today is a migrant. It is also interesting that global remittances have reached a total value of \$ 689 billion (IOM, 2020: 10), which, cumulatively, can already have a significant influence on the business environment, both in the countries of origin as well as in the host ones. The destinations of most migrants were Europe, regions of Asia and North America. Overall, since 2015, no less than 2/3 (ie 67%) of total international migrants were concentrated in only 20 states, usually developed economies (United Nations, 2015: 1). As expected, most migrants came from underdeveloped countries.

What do the numbers above show? First of all, it is clear that, in the conditions of increasing interdependencies of the states determined by globalization, the migration of the population for purely economic reasons has become a reality that can no longer be overlooked. Secondly, this type of migration is a symbol and at the same time a consequence of global poverty. Third, despite the so-called benefits of labor migration (for example, the 251 million migrants in 2015, mostly from developing countries, sent home \$ 441 billion, according to international organizations (World Bank^b, 2016: VII and XI)), they remain among the most vulnerable members of society. So far, globalization has failed to solve this problem either. On the contrary, it amplified it. Because of this, cross-border migration remains a hot topic for both underdeveloped and developed countries, and is a serious obstacle to advancing the process itself. The situation is also complicated by the fact that remittance flows have fluctuated significantly in recent years (World Bank^b, 2017: 1). Even in the case of a possible stabilization of these flows, the discrepancy between the total amount of remittances leading to developing countries and the contribution of all economic migrants to the creation of the global gross domestic product is huge. Thus, according to data published in recent years by specialized institutions (McKinsey, 2016: 55), only in 2015, migrants contributed with 9.4% to the creation of global gross domestic product, which at that time, in absolute terms, represented \$ 6.7 trillion. 90% of this amount has been appropriated by developed economies (McKinsey, 2016: 56). The current period, dominated by the medical crisis, brings with it a somewhat unique situation in the international economic landscape. It is already known that remittance flows tend to increase as developing countries (destinations of these flows) go through periods when economic difficulties intensify (Takenaka et al., 2020: 2). However, the pandemic period tends to worsen, at the same time, both the situation in the countries of adoption of migrants and those of origin (Takenaka et al., 2020: 2), being likely to produce real shock waves, in economic terms, in all layers of the global economy.

Finally, another obstacle to economic globalization is the *new protectionism*. It could be said that this current is nothing more than a way to return to the growing role of the state in the economy. In reality, we consider that the new protectionism is a reaction to the effects of unrestricted globalization (see also Ghemawat, 2017). Against the background of an intensive process of globalization, centrifugal trends promoted by both developing countries

and heavily industrialized countries have begun to emerge. These trends are reflected in the implementation of alternative solutions designed to protect national interests. In the context of the succession of so many events caused by global economic crises, many states feel threatened. Globalization does not directly guarantee their security as long as great uncertainties as well as economic imbalances persist. At the same time, the trend towards protectionism is fueled by the inability of globalization to increase the resilience of national economies to the shocks caused by economic crises. Global rivalries have not disappeared, nor has unfair competition. As a result, the movement of the factors of production was largely uncontrollable, which gave protectionism a fragmentary character, manifested in different forms and intensities from one country to another. On the other hand, limitless globalization has ultimately led to the erosion of many global economic arrangements that are currently being cracked down by new protectionist measures. Some developed countries no longer want to share their very high level of science and technology with others, and developing (possibly poor) countries want to protect their natural resources that they still have.

The World Trade Organization has taken many initiatives over the years to encourage multilateral negotiations and arbitrate economic disputes. However, there are still many obstacles to free trade, some in sight, others more difficult to detect when it comes to non-tariff barriers, different quality standards, subsidies to producers, restrictive import quotas, hidden forms of dumping, consensual arrangements which usually also contain clauses or arrangements. Many of these issues have been reported by some researchers several years ago, anticipating their actual proportions (Hughes & Krueger et al., 1984: 389-484; Baldwin, 1982: 263-292; Lang & Hines, 1993).

4. Conclusions

The proliferation of the protectionist current does not mean the end of globalization. As a result, isolationism does not justify its forms of manifestation in an increasingly interdependent and economically interconnected world. However, lately, we have seen an unprecedented increase in resistance to globalization, as the risks to it become increasingly threatening. The severe criticisms leveled at it were amplified due to the fact that, in its development, this phenomenon was not accompanied by the expected positive results. Thus, globalization has gradually become a topic much debated by many researchers. The views expressed have been and continue to be extremely diverse, ranging from the exaggeration of benefits, to more radical interpretations that current globalization is nothing more than the modern version of colonialism. Viewed from a historical perspective, globalization has known several phases or stages, each with its pros and cons. The disadvantages have always been translated by certain limits, which are, in turn, the result of a field of objective forces that have slowed the trend of expansion in the territory. For example, the upper limit would be marked by the time when governments would be completely deprived of their ability to intervene in the market. Such a point has not yet been reached and will not be reached in the near future. Globalization has failed to penetrate very wide geographical areas, on the map of the world economy continuing to persist large white spots, where the degree of integration into the global market is almost insignificant. Therefore, the limits reported in this article are seen in terms of the potential of globalization to reduce the negative effects and ensure access to development for all economic actors, as defined by the United Nations (United Nations, 1987). For the time being, if the current risk factors reported by us persist and amplify, then economic globalization will not be viable in the long run, in the sense that, sooner or later, its expansion will be blocked. After all, the dynamics of this process must be seen in the light of factors favorable or unfavorable to

globalization. In our opinion, the limitations analyzed in this article tend to tip the scales in favor of the limiting factors of this phenomenon. Consequently, in the near future, we should expect a slowdown in its evolution as a whole. The result is that only a globalization that encourages, in many forms, the economic development of all states can overcome the current limits and constraints.

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PSYCHOLOGICAL FACTORS AND INVESTMENT DECISIONS IN THE NIGERIA CAPITAL MARKET

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Abstract: *This study examines Behavioral Factors and Investment Decision Making in the Nigerian Stock Exchange (NSE). Thus, the research question is what are the psychological factors affecting investment decisions in the Nigerian capital market. A structured questionnaire was used in collecting data and it was able to collect data from 75 investors with the application of a convenient sampling method. Using overconfidence bias, availability bias, conservatism, and herding effect to define the most important behavioral element affecting investment decision making by investors in the Nigerian. Multiple regression analysis was used as the key methodological method for evaluating the research hypothesis, whereas the internal consistency of the questionnaire calculated from Cronbach's alpha on all variables showed values greater than 0.7 with a sufficient level of reliability. The primary beneficiary group would be the buyers on the stock market who would be educated enough about the effect of their own behavioral influences on their stock market decision making. The knowledge would be useful in making optimal investment decisions and avoiding unfavorable decisions to increase their resources. In turn, it will be helpful to policymakers and stock market regulators to help them understand the position of behavioral influences inherited in consumer decision-making and that may be associated with the need for stock market brokers to update their customer's trading practices to a higher level. The findings of this study suggest that overconfidence, availability bias, and herding impact demonstrated a positive significant relationship with NSE investment decision-making except conservatism which showed a negative relationship with investment decision-making but at 0.01 levels statistically significant. On the basis of the results, it can be generalized that the most prevalent factors affecting investor investment decision taking in NSE are overconfidence, availability bias, and herding influence.*

Keywords: Psychological Factors, Overconfidence Bias, Availability Bias, Conservatism, Herding Effect, Investment Decision, Nigerian Stock Exchange

JEL classification: G41

1. Introduction

The goal of investors of all sorts is to optimize the actual return and minimize investment risk. Individual investors usually act rationally when making their investment decisions and pick

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their optimal portfolio weighting by assessing the risk-return tradeoff within an effective mean-variance boundary. Taking investment decisions is heavily dependent on various external and internal considerations. Some internal influences are primarily related to human behavior and external factors are linked to company performance and market information. Overconfidence, conservatism, availability bias, herding effects, market factors, anchoring, representativeness, gambler's fallacy, loss aversions, regret aversions, etc. would be some internal factors or behavioral factors which rely on the investor's mind.

Many researchers have undertaken several experiments with different approaches to explore the association between the behavioral component and investment decision taking while evaluating the empirical evidence in this regard. Several studies have said behavioral influences have a significant impact on business investment decision making. Accordingly, Bakar and Amelia (2016) reported that behavioral factors like overconfidence and conservatism have a significant impact on Malaysian stock investment decisions. Waweru (2008) reported that the herding effect and market factors in the Nairobi Stock Exchange have the greatest impact on investment decision making. Conversely, some researchers have said behavioral considerations have no significant impact or adverse effect on business investment decision making. Ngoc (2018) opines that behavioral factors like anchoring and loss aversions have no significant relationship with security market investment decision-making in the Ho Chi Minh City of Vietnam. Wamen, (2017) explained how behavioral factors will influence investment decision-making in the Kenya Stock Exchange and stressed that loss aversions has insignificant impact on investment decision in Kenya Stock Exchange

This study is carried out in relation to the behavioral variables in the Nigerian Stock Exchange regarding investment decision making. The primary beneficiary group would be the buyers on the stock market who would be educated enough about the effect of their own behavioral influences on their stock market decision making. The knowledge would be useful in making optimal investment decisions and in avoiding unfavorable decisions to increase their resources. In turn, it will be helpful to stock market regulators and policymakers to help them understand the position of behavioral influences inherited in consumer decision-making and that may be associated with the need for stock market brokers to update their customer's trading practices to a higher level.

As a result of the above inconsistencies in the research results and findings, this study found that there is a question to be answered "Is there any effect of behavioral influences in the Nigerian Stock Exchange on investment decision making?" This research is therefore aimed at exploring the effect of behavioral influences on Nigerian Stock Exchange investment decision-making. The behavioral factors include overconfidence, availability bias, conservatism and herding behavior of NSE investors. The population includes all the investors holding stock in the Nigerian Stock Exchange. Institutional investors included banks, investment companies listed on the Nigerian Stock Exchange, private listed companies, etc., while individual investors are included with entrepreneurs, undergraduate investors, company executives, physicians, bachelors, etc. based on convenience sampling approach 75 investors made up the sample spaces for collecting qualitative data on behavioral factors. As a behavioral study, this would be facilitated to identify the real picture of the mindsets of investors on their decision -making practices.

2.1 Literature Review

2.1.1 Overconfidence on Investment Decision Making

Many people overestimate their knowledge and skills to be accurate. In human minds, the concept of overestimation is implied by overconfidence which causes investors to

overestimate and believe their predictive skills. Odean (1998), opines that those investors that have a higher degree of overconfidence usually choose a more volatile portfolio compared to those with a lower degree of overconfidence. Qobri and Shabbir (2019) investigated the effect on investor decision-making at the Islamabad Stock Exchange in Pakistan of over-confidence and illusion of control biases. The main aim of the analysis was to test the effect of overconfidence and power distortion on the investment decision-making process. The data were obtained using questionnaires from Islamabad Stock Exchange investors and brokers. Results from the research showed that the overconfidence in the Islamabad Stock Exchange has had a significant impact on investor decision making. The researcher also said that people think their expertise, background, and income have a great impact on investment decisions, whereas male investors are more optimistic than female investors.

According to Bakar and Amelia (2016), the bias of overconfidence associated with the bias of self-attribution is an individual's tendency to over exaggerate their ability while blaming failure on other people. The scholars studied the connection between psychological factors in the Malaysian stock market, namely overconfidence, conservatism bias, herding impact, and availability bias and investor decision making. To approximate the impact of the chosen behavioral variables on investor decision making, multiple regression model was used. The results of regression demonstrated that the behavioral factor of overconfidence has a positive effect on investor decision making.

2.1.2 Herding Behavior on Investment Decision Making

Herding behavior is defined as the propensity of investor activities to follow the actions of others. In terms of investment, herding behavior is in the context of how the opinion of certain investors about the investment would be based on one another. Luong and Thu Ha (2011) have shown that the herding investor would focus his investment decision on the crowded activity of buying and selling, causing the trend of speculative bubbles and rendering the stock market inefficient. Ngoc (2018) investigated the impact of behavioral influences on individual investor decisions at Security market in Vietnam's Ho Chi Minh City. Independent variables of the analysis were behavioral factors like herding, market factors, prospect overconfidence-the fallacy of gamble, anchoring -ability bias whereas the contingent variable was the decision-making of investors. Research findings showed that herding influences investor's decision of individual investors at the Security market in Vietnam's Ho Chi Minh City. An empirical study by Wamen (2017) conceived the review by concentrating on investment banks in Kenya to explore the effect of behavioral influences on investment decision taking in Kenya Stock Exchange. The researcher focused primarily on defining the connection between behavioral influences that included risk aversion, prospecting, anchoring, and herding across primary data on investment decision making. The questionnaire consisted of both near and open-ended questions and the final results of this analysis showed that all behavioral influences influencing investment decisions in Kenya's stock market. Furthermore, the study revealed that the herding effect was having a significant impact on investment decisions.

2.1.3 Availability Bias on Investment Decision Making

Availability Bias relies on the actions of the buyer. The availability bias arises when the user relies on information that is easily obtained from recent times. Nofsingera and Varmab (2013) opines that investors often tend to focus their attention on a particular fact rather than the overall situation, precisely because this particular fact is more readily or more rapidly remembered in their minds. Barber and Odean (2001) opines that most investors place undue weight on the knowledge that is readily available on the market and also clarified that

most investors prefer purchasing shares from local companies rather than from international companies.

2.1.4 Conservatism on Investment Decision Making

Conservatism implies people are using traditional investment decision-making methods, and they are not using new market analysis and appropriate investing knowledge. The conservatism bias means investors are slow to react to recent evidence and progress and to change their conviction (Bakar and Amelia, 2016). Lim (2012) investigates the relationship between psychological prejudices, including overconfidence, conservatism bias, herding, and regret in Malaysian stock market decision-making. Findings from this analysis stressed that overconfidence bias; conservatism bias and remorse had significant positive impacts on Malaysian stock market decision-making by investors. Bakar and Amelia (2016) conducted an empirical study to explore the relationship between psychological factors, namely over-confidence, conservatism bias, herding effect and availability bias on Malaysian stock market investor decision-making, and found that conservatism has a positive impact on investor decision-making as a major factor.

2.1.5 Behavioral Factors on Investment Decision Making

Masomi and Ghayekhloo (2011) studied the role of behavioral finance and investor psychology in investment decision-making at the Tehran Stock Exchange on the basis of behavioral finance and investor mind, with particular reference to 23 institutional investors. The behavioral factors including representativeness, over-confidence, anchoring, gambler's fallacy, risk aversion, regret and mental accounting affected the decisions of institutional investors trading on the Tehran Stock Exchange, and these factors were also divided into four main figures, such as the heuristics simplification, market information, herding effect, and prospector theory. The data were gathered from questionnaires and research findings found that both behavioral variables, including heuristic methods, prospect theory, and market information, have the greatest impact on investment decisions in Tehran's stock exchange.

Wamen (2017) conducted his research to assess the impact of behavioral influences on Kenya Stock Exchange investment decisions with a population of 17 investment banks in Kenya. The study focused primarily on figuring out the association between behavioral influences and decision making for investment. The behavioral factors of this analysis were risk aversion, prospecting, anchoring, and herding, while the questionnaire consisted of both near and open-ended questions. The overall results of this study showed that all behavioral variables in the Kenya stock market have been impacted by investment decisions. In fact, the analysis claimed that the herding impact was more important to prospecting and anchoring of investment decisions. Eventually, the risk aversion element impacts investment decisions on Kenya's stock market at a lower level.

Hassan, Khalid and Habib (2014) performed their research from the viewpoint of demographic factors to figure out the impacts of gender and age on two of the behavioral traits, such as overconfidence and risk aversion, with respect to Pakistan. Researchers used questionnaire-based survey methods to gather sample data, including 391 Pakistani persons, while R-square and correlation analysis were used to approximate the association between independent variables and dependent variables. At the end of the study, it was reported that male and older investors tend to be more overconfident and women and older investors appear to be more averse to failure. In fact, the analysis reported that the gender and age of investors have a positive relationship with overconfidence and loss-averse

Atif (2014) examined the interrelationship in the Islamabad Stock Exchange between implicit prejudices and the impact of those biases on investment decisions. The study focused on three major bias namely self-attribution, bias overconfidence, and optimism bias. The key

purpose of this study was to establish the relationship between the biases and their impact on investor decision making at the Islamabad Stock Exchange. Study findings found that all bias was adversely affected by the decision making of Islamabad Stock Exchange's Pakistan investors except for the bias of overconfidence. Because research has shown that the overconfidence bias of the investor has a positive relationship / positive effect on the Islamabad Stock Exchange investment decision. Kumar and Goyal (2015) examined behavioral biases on investment decision making, including overconfidence, attitude influence, herding bias, and home bias/familiarity bias. They have used the approach of systematic literature review to study and evaluate articles relating to personality differences in investment decision making, including 177 chosen reports. Since this study was based on empirical observations by previous researchers, behavioral biases were hypothesized to have an effect on investment decisions.

Bakar and Amelia (2016) analyzed the interaction between psychological factors in the Malaysian Stock Market that include overconfidence, conservatism bias, herding impact and availability bias on investor decision making. Data were obtained from survey questionnaires issued to two hundred individuals, which includes finance graduates, bank employees, executives and managers active in the Malaysian Stock Market. The questionnaire composed of Likert scales and close-end questions. Multiple regression model was used to measure the impact of chosen behavioral variables on the decision-making of investors. The findings of the regression revealed that the behavioral variables of overconfidence have a positive effect on investor decision making since the approximate coefficient and availability bias have a positive impact on investor decision making in the Malaysian stock market. However herding effect and conservatism were found to have no significant impact on investor's decision making.

3. Methodology

This study aims at identifying the impact of behavioral factors on investment decision making in Nigeria. Seventy-five sample respondents were qualified, and data were collected through a structured questionnaire by interviewing selected investors in Nigeria. Self-completion method is chosen for collecting quantitative data and semi-structured interview method is used to gather qualitative data for this study. Overconfidence, conservatism, herding effect and availability bias is considered as independent variables and the investment decision of individuals in the Nigerian stock exchange would be the dependent variable

3.1 Data Collection and Sampling

The study was based mainly on the primary data, and data were collected from 75 respondents who were trading as individual investors in the Nigerian Stock Exchange. It covers all individual security market investors in Nigeria. The period of study covers investment decisions made in the past five years up to 2019. This study was carried out in 2019. A 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree) was employed in this study. The 5-point Likert scales are rating scales utilized to ask the individual investors to evaluate the degrees of their agreement with the impacts of behavioral factors on their investment decision.

They were primarily held in Nigeria and data were gathered by means of a questionnaire by interviews with selected investors as the sample space generated from the convenience sampling technique.

3.2 Data Analysis

Descriptive statistics and correlation coefficients were used to test the hypothesis while the main tool for drawing a better conclusion was the Regression analysis, including a reliability study to verify the internal consistency of the questionnaire. The related regression model is shown as follows to examine the impact of Behavioral variables on investment decisions:

$$IDM = \alpha + \beta_1 OC + \beta_2 AB + \beta_3 HE + \beta_4 CV + \varepsilon$$

IDM = Investment Decision Making, OCB = Overconfidence, AB = Availability Bias, HE = Herding Effect

CV = Conservatism, α = Constant, ε = Error Term

4. Data Analysis and Discussion

The analysis was conducted using Descriptive Statistics, Correlation Coefficients and Regression Analysis analytical tools to check whether or not the generated theory that was used to address research questions can be accepted whereas the reliability review was conducted as follows to assess the internal consistency of the established questionnaire based on the inter-item correlation average.

Table 1: Reliability Analysis

Variables	Cronbach's alpha
Investment Decision Making	0.8100
Overconfidence	0.9480
Availability bias	0.7730
Conservatism	0.7820
Herding effect	0.7760

Source: Research Data

The internal consistency measured by Cronbach's alpha value was deemed to be greater than 0.7 in each variable implying that the questionnaire's reliability was satisfactory.

Table 2: Descriptive Analysis

	Maximum	Minimum	Mean	Std. Deviation
Overconfidence	2.330	4.330	3.35330	0.529150
Availability Bias	1.500	4.170	3.55330	0.517100
Conservatism	2.670	4.500	3.64000	0.420960
Herding Effect	1.500	4.330	3.28670	0.663600
Investment Decision Making	2.620	4.250	3.39000	0.395260

Source: Research Data

Table 2 descriptive analysis shows the descriptive statistics of all factors comprising of the data set's Maximum Minimum Mean, and Standard deviation. The mean values of the variables reflect the mean values in the data set. The standard deviation values show whether the mean values are clustered around the median or far and wide spread. As stated, with their mean values respectively all the variables seemed to be dispersed widely.

Table 3: Correlations

	IDM	OC	AB	CV	HE
IDM	1				
OC	.334**	1			
AB	.405**	.120	1		
CV	-.241*	.073	.276**	1	
HE	.218*	-.241*	-.150	-.113	1

* At 0.05 Level, Correlation Is Significant (1-Tailed).

**At the 0.01 Level, Correlation Is Significant (2-Tailed).

Source: Research Data

Table 3 indicates that the correlation with overconfidence, availability and herding effect have a positive correlation and a substantial interaction whereas conservatism tends to be negatively and substantially associated with investment decision taking by suggesting that all of the variables examined in this analysis would have a significant impact on the dependent variable.

Table 4: Regression Result

	IDM =	$\beta + \beta_1 OC + \beta_2 AB + \beta_3 HE$			
		$0 + \beta_4 CV + \epsilon$			
β_0		β_1	β_2	β_3	β_4
1.629		0.286*	0.393*	-0.349*	
		0.206*			
R Square:0.801		Adjusted R-Square: 0.730		N = 75	

* Significant at 5%

Source: Research Data

Table 4 shows the results of the multiple regression analysis which consists of the values of the model with unstandardized variables, R Square, and Modified R Square for the purpose of examining the relationship between the dependent variable and independent. R shows the association between the real and anticipated values of the dependent variable and the R Square factor indicates that the behavioural variables of this study describe the investment decision variance of 80.1 per cent.

The study's regression result shows that again all independent variables such as overconfidence, availability bias and herding effect represent the positive significant relationship between investment decision making at 0.01 level significant level in NSE excepting variable of conservatism, it represents the negative relationship with investment decision making but statistically significant at 0.01 level. Based on the findings emphasized overconfidence, availability bias and herding effect are the most factors for investor's investment decision making in NSE.

5. Conclusion

This study examined the impact of behavioral factors on Nigerian stock exchange investment decision making. The variables identified for this study are overconfidence, availability bias, conservatism and herding effect. This study also identifies the most significant behavioral factor influencing investment decision-making by investors. The main objective of this study was to identify the main behavioral factors affecting investor decision making in the Nigerian Stock Exchange and the second goal is to identify the relationship between overconfidence, availability bias, conservatism and herding effect for investment

decision making in the NSE. The study population comprises all Nigerian Stock Exchange investors and used convenience sampling method for chosen stock holding investors on the Nigerian Stock Exchange and consists of seventy-five Nigerian investors. All the information and data for this study are collected from primary sources using a structured questionnaire. Descriptive Statistic and multiple regression methods are used to draw conclusions and check the conceptual correlations in the results. At first; run the reliability test and descriptive statistics are used to verify the questionnaire's reliability and all variables get more than 0.7 values and the characteristics of the variables can be acknowledged and verified. Furthermore, the Pearson correlation coefficient is used to test the causal relationship between the variables. All independent variables such as overconfidence, availability bias and herding effect represent the positive significant relationship between investment decisions in NSE except conservatism variable; it reflects negative relationship with investment decision-making. At third multiple regressions the mutual interaction is evaluated as elaborated in hypotheses and also used to attain the targets. Multiple linear regression methodology is used to accomplish the goals. The study's regression result shows that again all independent variables such as overconfidence, availability bias and herding effect represent the positive significant relationship between investment decision making at 0.01 level significant level in NSE excepting variable of conservatism, it represents the negative relationship with investment decision making but statistically significant at 0.01 level. Based on the findings emphasized overconfidence, availability bias and herding effect are the most factors for investor's investment decision making in NSE.

In view of the limitations that constrained in this study, it can be provided with suggestions for subsequent studies in future. As the current study aimed to identify impact of investor's behavioral factors on investment decision making of Western province stock holding investors it can move for another sample segments such as institutional investors, daily trading investors in NSE etc. Furthermore, it can contribute to assessment of other behavioral factors in Nigerian Stock Exchange such as anchoring, representativeness, gambler's fallacy, loss aversions, regret aversions, etc. The concepts of behavioral factors can be incorporated with equity price, market turnover in relation with equity prices will be moreover facilitated for investment decision making which may be useful for brokerage companies, stock market regulators and policymakers to make good decision about investor's mind.

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OUTWARD HABITS AND ENVIRONMENTAL QUALITY IN AN OVERLAPPING GENERATIONS MODEL

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Abstract: *Outward habit formation affects consumption decisions. Since consumption displays a negative environmental externality, outward habits has as well an (adverse) effect on the environment. This research paper centers around the theoretical linkage between the combination of both externalities (environmental deterioration and outward habits). The objective of this study is to examine the impacts of outward habits on the state of the environment in the context of an overlapping generations economy. In our study, environmental quality is a public good negatively affected by consumption activity and positively affected by maintenance investment. With outward habit formation, the build-up level of average past consumption in the economy at large influences the current utility of an individual consumer. Thus, individuals draw utility not only from their own level of current consumption, but also from its level relative to the average consumption in the economy. How does outward habit influence the state of the environment? We analyze this question using an overlapping generations model with outward habit and environmental quality in the utility function. In steady state equilibrium allocation, we show that whether outward habits are destructive to the environment depends on the degrees of outward habit formation and the size of the economy.*

Keywords: outward habits, overlapping generations, environmental quality, consumption, externalities

JEL Classification: D62, D91, E21, Q50

1. Introduction

The major issue related to environmental preservation is that agents fail to internalize the long-term consequences of their decisions on the environment. An agent's present actions generate outcomes that outlive it. The intergenerational feature characterizing the environmental problems rationalizes the use of the overlapping generations model (OLG) developed by Allais (1947) and Diamond (1965) in a dynamic setting (see, for instance, John and Pecchenino, 1994; Jouvét, 1998; Ono and Maeda, 2001).

In the present analysis, we go along this line of the literature though we bring in another intergenerational externality under the specification of outward habits. On economic growth, several researches employed the traditional approach which highlights the supply-side of the economy and supposes that agent has exogenous preferences that are not dependent

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of social interactions. The relative position of agents in society gives reason to take into consideration unconventional economic models, involving in particular those with endogenous preferences and relative utility. Psychologists have often considered that people feel happiness by doing well compared with some reference group. In economic language, this reflection is identified as the desire to keep up with the Joneses and the agent is "outward-looking" (de la Croix, 1996; de la Croix and Michel, 1999). Indeed, Clark and Oswald (1996) or Ferrer-iCarbonell (2005) among others, display that utility relies not only on current consumption but also on some reference point. Furthermore, as stated by Becker (1992), household behavior is influenced by inherited tastes that are transmitted from parents to children.

Social concern is linked to the relative position of an agent in a society and can be represented in various specifications: social recognition, self-respect, honor, esteem, social standing, and prestige. Agents seek not only for tangible incentive regarding payoffs but also for social incentives. For instance, a car might not only be purchased for its usefulness but also to get status. Traditionally, a public good fails to be provided privately because of its feature of being non-rival and non-excludable. Selfish agents have disincentive to contribute, and may free ride on its supply. Nevertheless, from a behavioral economics point of view, other-regarding preferences and self-identity may generate intentional contributions to an environmental public good. These incentives are not only crucial for just social problems but they can in general affect consumer decisions as regards purchasing and exploiting goods and services with environmental effects.

The present paper goes along with models that have incorporated social concern effects in dynamic models dealing with environmental issues. We choose to study theoretically the link between outward habits and the environment through environmentally harmful consumption affected by status seeking behaviour using a constant relative risk aversion (CRRA) utility function. We find that the relationship between outward habits and the environment may be either positive or negative depending on the degrees of status seeking and the size of the economy.

The remainder of this paper is organized as follows. Section 2 contains a theoretical background. Section 3 develops the model. Section 4 outlines the optimization problem. Section 5 characterizes the steady state. In Section 6, we illustrate the main results. Section 7 concludes.

2. Theoretical background

Numerous recent researches revealed that agents are concerned about their relative positions in society and suggest employing these models in environmental researches. Howarth (1996) analyses theoretically the link between social position, consumption levels and environmental degradation. Social position has a positive impact on consumption. To attain social optimum, consumption taxes are required along with environmental taxes. As to environmental policy, this signifies that Pigovian taxes must be regulated upwards. Brekke et al. (2002) review the Hirsch (1976) hypothesis, i.e., status concern raises consumption at the cost of environmental norms. They find that this only occurs when status and non-status goods are poor substitutes.

Wendner (2003, 2005) examine the relationship between status impacts and the design of optimal environmental policies. These papers suggest that status desire causes environmental degradation.

Howarth (2006) includes relative consumption impacts in a calibrated model of optimal carbon dioxide abatement and realizes that the optimal level of abatement is substantially larger when these impacts are taken into consideration.

Katayama and Long (2010) examine the relationship between status seeking and the exploitation of a common-property exhaustible resource. They point out that the degree of status-consciousness has significant effects on the Markov-perfect Nash equilibrium. A higher degree of status-consciousness leads to higher excessive consumption, and lower capital accumulation.

In a study of electricity framework, Ek and Söderholm (2008) consider the effect of wanting to sustain a positive self-image as a socially responsible person on the demand for "green" electricity. They realize that a choice between green and other electricity is decided not only by economic reasons but also by the existence of social concern behavior.

Rauscher (2006) analyzes theoretically the impact of forcing an emission tax on voluntary cooperative behavior. He shows that behavior stimulated by social motives and intrinsic motivation may be weakened by the implementation of a standard policy instrument formerly intended to affect self-interested agents.

In an economy with private consumption goods, positional preferences induce a welfare loss, which can be worsened if public negative externalities are considered (Long and Wang, 2009).

Aronsson and Johansson-Stenman (2014) explore the optimal provision of state variable public goods by taking global climate as example in a setting where individuals are concerned by relative consumption. They conclude that the extent to which the conventional rules for provision of state-variable public goods should be modified rely upon the strength of the relative concerns, but also on the preference elicitation format.

Bouché (2017) focuses on the analysis of the optimal allocation and its decentralization by means of an appropriate tax policy. The author indicates that a sufficiently high social discount factor is needed to prevent possible local oscillations. Furthermore, investment should either be subsidized or taxed according to the magnitude of both externalities (environmental deterioration and aspirations) while maintenance expenditure should always be subsidized.

In an OLG framework, Bouché and de Migel (2019a) study optimal fiscal policies where preferences display aspirations in consumption and environmental quality as well as habit formation. They highlight the second-best policies when the government needs to finance a particular stream of public expenditures by using distortionary taxes. They obtain necessary and sufficient conditions under which the competitive equilibrium is characterized by levels of capital and environmental quality that are too small and a level of labor supply that is too large.

Bouché and de Migel (2019b) investigate the consequences of assuming that the intensity of aspirations is endogenous. According to empirical evidence, consumption aspirations reduce with capital accumulation while environmental one's increase. They demonstrate that such a change in the intensity of aspirations engenders a U-shaped relationship between capital accumulation and environmental quality.

3. The model

We assume a perfectly competitive overlapping generations economy where economic activity is operated over infinite discrete time. Agents live two periods, youth and old age. We define by generation t the cohort of agents born at t , with $t = 1; 2; 3; \dots$. We consider that population is constant and each generation consists of a single representative individual.

Due to the presence of outward habits, individuals derive utility not only from their absolute consumption levels and from environmental quality, but also from the status attained by consuming at above-average levels. Let c_t^1 denote consumption of generation t in youth, c_{t+1}^2 consumption of generation t in old age and E_{t+1} environmental quality in period $t + 1$.

We introduce other-regarding habits in consumption following the work of Wendner (2005). The variable \tilde{c}_t^1 defines effective consumption of a single individual in the first period of life:

$$\tilde{c}_t^1 \equiv c_t^1 - \gamma C_t \quad (1)$$

The parameter γ expresses the desire of households for status and it is assumed to have a positive value $\gamma > 0$, which characterizes the consumption of non-durable goods and services. The higher γ is, the more young individuals care for status and for the consumption level of their peers. C_t is the average consumption across all individuals such that;

$$C_t \equiv \left(\sum_i (c_t^1)^i + \sum_j (c_t^2)^j \right) / (L_t + L_{t-1}) = \left(\sum_i (c_t^1)^i + \sum_j (c_t^2)^j \right) / 2L \quad (2)$$

Each young generation consists of L_t identical individuals. For the purposes of simplicity, we suppose a zero growth rate of the population. I.e., $L_t = L$ and each young and old generation consists of L individuals. The superscripts i and j represent respectively a single individual from young and old generations. In aggregate, if all individuals behave the same way,

$$C_t \equiv (L_t c_t^1 + L_{t-1} c_t^2) / (L_t + L_{t-1}) = (c_t^1 + c_t^2) / 2 \quad (3)$$

Individuals take C_t as given. Each person's status rises with his own consumption, but reduces with the average consumption of society.

Variable \tilde{c}_{t+1}^2 denotes effective consumption of an individual born in t in the second period of life:

$$\tilde{c}_{t+1}^2 \equiv c_{t+1}^2 - \gamma C_{t+1} \quad (4)$$

Substituting equation (3) into (1) gives

$$\tilde{c}_t^1 = \frac{(2 - \gamma)c_t^1 - \gamma c_t^2}{2} \quad (5)$$

Similarly, substituting equation (3) into (4) gives

$$\tilde{c}_{t+1}^2 = \frac{(2 - \gamma)c_{t+1}^2 - \gamma c_{t+1}^1}{2} \quad (6)$$

Assuming that preferences over consumption are additively separable over time and in each period; consumption is estimated by a CRRA utility function is a general current practice in macroeconomics. The isoelastic utility function is a function that presents a constant elasticity, i.e., has a constant elasticity coefficient. This utility is defined as

$$U_t = \frac{(\tilde{c}_t^1)^{1-\varepsilon} - 1}{1-\varepsilon} + \frac{(\tilde{c}_{t+1}^2)^{1-\varepsilon} - 1}{1-\varepsilon} + \frac{(E_{t+1})^{1-\varepsilon} - 1}{1-\varepsilon} \quad (7)$$

where the coefficient $\varepsilon > 0$ represents the magnitude of elasticity of marginal utility with respect to consumption or environmental quality and it is the coefficient of relative risk aversion. The individual's utility U is derived from consumption and environmental quality in first and second periods. We suppose $U(\cdot)$ is strictly increasing, strictly concave, homogeneous, and twice continuously differentiable where $U'_{\tilde{c}_t^1} > 0$; $U'_{\tilde{c}_{t+1}^2} > 0$; $U'_{E_t} > 0$; $U'_{E_{t+1}} > 0$ and $U''_{\tilde{c}_t^1} < 0$; $U''_{\tilde{c}_{t+1}^2} < 0$; $U''_{E_t} < 0$; $U''_{E_{t+1}} < 0$.

Variable E denotes environmental quality, which is an intergenerational public good. As in John and Pecchenino (1994) the index of environmental quality evolves according to the equation:

$$E_{t+1} = E_t - \beta \left(\sum_{i=1}^L (c_t^1)^i + \sum_{j=1}^L (c_t^2)^j \right) + \delta \sum_{i=1}^L (m_t)^i \quad (8)$$

E_t is the environment quality in period t , E_{t+1} is the environment quality in period $t + 1$, $\beta > 0$ stands for the degradation of the environment and $\delta > 0$ is the environmental improvement due to the actions of the young at t and m_t is the aggregate maintenance investment made for the environment in period t . The maintenance activity in period t is conducted by generation t since this generation can enjoy the improved environmental quality in its old age.

Each generation is endowed with w units of a private good in first period and with nothing in second period of life. Each generation can access a storage technology with a gross return rate of $R > 0$. If a generation invests one unit of a private good in first period, then it can gain R units in second period. Hence, the budget constraint of generation t in first period is

$$w_t = c_t^1 + s_t + m_t \quad (9)$$

and in second period is

$$c_{t+1}^2 = R s_t \quad (10)$$

where s_t is the amount of investment in a storage technology.

These constraints are summarized as the life-cycle budget constraint:

$$c_t^1 + c_{t+1}^2/R + m_t = w_t \quad (11)$$

4. The optimization problem

The agent chooses $\{c_t^1, c_{t+1}^2, s_t, m_t\}$ to maximize his utility (7) subject to (11) and (8). The first-order conditions which express the outcome of generation t are

$$(1 - 0.5\gamma/L)[(1 - 0.5\gamma)c_t^1 - 0.5\gamma c_t^2]^{-\varepsilon} = (\delta + \beta)E_{t+1}^{-\varepsilon} \quad (12)$$

$$(1 - 0.5\gamma/L)R[-0.5\gamma c_{t+1}^1 + (1 - 0.5\gamma)c_{t+1}^2]^{-\varepsilon} = \delta E_{t+1}^{-\varepsilon} \quad (13)$$

Equation (12) indicates that generation t chooses consumption when young, equating the marginal rate of substitution between consumption in youth and environmental quality in old age to the marginal rate of transformation, $(\delta + \beta)/(1 - 0.5\gamma/L)$. At the utility maximum, a decrease in utility due to falling consumption during youth is equal to an increase in utility due to the sum of an increase in maintenance effort, $\delta/(1 - 0.5\gamma/L)$, and a decrease in a consumption externality, $\beta/(1 - 0.5\gamma/L)$.

Equation (13) shows that generation t chooses savings, equating the marginal rate of substitution between the effective consumption in old age, $[-0.5\gamma c_{t+1}^1 + (1 - 0.5\gamma)c_{t+1}^2]$, and environmental quality in old age to the marginal rate of transformation, $\delta/(1 - 0.5\gamma/L)R$. At the utility maximum, a decrease in utility due to falling consumption during old age, $(1 - 0.5\gamma/L)R$, is equal to an increase in utility due to an increase in maintenance effort, δ .

5. Steady state

A steady state equilibrium is an allocation such that $\{c^1, c^2, m, E\}$ is stationary along the equilibrium path. Particularly, the steady state equilibrium levels of consumption and environmental quality $\{c^1, c^2, E\}$ are characterized by the following three equations:

$$(1 - 0.5\gamma/L)[(1 - 0.5\gamma)c^1 - 0.5\gamma c^2]^{-\varepsilon} = (\delta + \beta)E^{-\varepsilon} \quad (14)$$

$$(1 - 0.5\gamma/L)R[-0.5\gamma c^1 + (1 - 0.5\gamma)c^2]^{-\varepsilon} = \delta E^{-\varepsilon} \quad (15)$$

$$\beta L(c^1 + c^2) = \delta L\left(w - c^1 - \frac{c^2}{R}\right) \quad (16)$$

Equations (14), (15) and (16) lead to the existence and uniqueness of the steady state equilibrium. The next section depicts the analysis carried on at this steady state.

6. The impacts of outward habits on environmental quality

This section studies how outward habit influences the steady state equilibrium level of environmental quality, afterward discusses the consequences of the result for an economy under outward habit.

The differentiation of (14), (15) and (16) with respect to c^1, c^2, E and γ taking β, δ and R as given yields

$$\begin{bmatrix} -(1 - 0.5\gamma/L)(1 - 0.5\gamma)\varepsilon(\tilde{c}^1)^{-\varepsilon-1} & 0.5\gamma(1 - 0.5\gamma/L)\varepsilon(\tilde{c}^1)^{-\varepsilon-1} & (\delta + \beta)\varepsilon E^{-\varepsilon-1} \\ 0.5\gamma(1 - 0.5\gamma/L)R\varepsilon(\tilde{c}^2)^{-\varepsilon-1} & -(1 - 0.5\gamma/L)(1 - 0.5\gamma)R\varepsilon(\tilde{c}^2)^{-\varepsilon-1} & \delta\varepsilon E^{-\varepsilon-1} \\ L(\delta + \beta) & L\left(\frac{\delta}{R} + \beta\right) & 0 \end{bmatrix} \begin{bmatrix} \partial c^1 \\ \partial c^2 \\ \partial E \end{bmatrix} \\ = \begin{bmatrix} 0.5[1/L(\tilde{c}^1)^{-\varepsilon} - (1 - 0.5\gamma/L)(c^1 + c^2)\varepsilon(\tilde{c}^1)^{-\varepsilon-1}] \\ 0.5R[1/L(\tilde{c}^2)^{-\varepsilon} - (1 - 0.5\gamma/L)(c^1 + c^2)\varepsilon(\tilde{c}^2)^{-\varepsilon-1}] \\ 0 \end{bmatrix} \partial \gamma$$

It is directly shown that the determinant of the left-hand side matrix is positive. Let $|D|$ represent the determinant. The conditions of the equilibrium characterize three equations system with three unknowns. That's why; the rank of this system must be equal to 3. Thus, the determinant $|D|$ must be different of 0. The equilibrium condition system is then a Cramer's system. We proceed to the resolution of this system by Cramer's rule;

$$\frac{\partial E}{\partial \gamma} = \frac{0.5(1 - 0.5\gamma/L)R\left(2\beta + \delta + \frac{\delta}{R}\right)\varepsilon}{|D|(\tilde{c}^1)^\varepsilon(\tilde{c}^2)^{\varepsilon+1}} [-L(1 - 0.5\gamma/L)(c^1 + c^2)\varepsilon(\tilde{c}^1)^{-1} + 1]$$

Proposition: *Outward habit ameliorates (lowers) environmental quality if and only if $\varepsilon \leq \Psi(\gamma)$ where*

$$\Psi(\gamma) = \frac{\tilde{c}^1}{L(1 - 0.5\gamma/L)(c^1 + c^2)}$$

That is, $\partial E/\partial \gamma \geq 0$ if and only if $\varepsilon \leq \Psi(\gamma) \forall \gamma \geq 0$.

Figure 1 illustrates the relation between ε and $\Psi(\gamma)$. The function $\Psi(\gamma)$ is strictly decreasing and strictly convex in γ with $\lim_{\gamma \rightarrow 0} \Psi(\gamma) = c^1/L(c^1 + c^2)$ and $\lim_{\gamma \rightarrow \infty} \Psi(\gamma) = 0$. If $\varepsilon \geq c^1/L(c^1 + c^2)$, then $\partial E/\partial \gamma < 0 \forall \gamma \geq 0$; that is, outward habit is always damaging the environment. On the other hand, if $\varepsilon < c^1/L(c^1 + c^2)$, the initial value of γ is crucial in determining the effect of outward habit on the environment. Given ε , there exists a critical level of γ , $\tilde{\gamma}(\varepsilon)$, such that $\partial E/\partial \gamma \geq 0$ if and only if $\gamma \geq \tilde{\gamma}(\varepsilon)$.

When the inequality $\varepsilon \geq c^1/L(c^1 + c^2)$ holds, that is; $\varepsilon \geq c^1/2LC$, outward habit is always damaging the environment. This inequality necessitates a large cohort size L , given C and ε .

When $\varepsilon < c^1/L(c^1 + c^2)$, the initial degree of outward habit plays an important role in determining the impact. We can estimate the impact by using the condition $\varepsilon \leq \Psi(\gamma)$, which is rewritten as $\gamma \geq \tilde{\gamma}(\varepsilon)$ where $\tilde{\gamma}(\varepsilon)$ satisfies $\varepsilon = \Psi(\gamma)$. When the initial value of γ is lower than the critical level $\tilde{\gamma}(\varepsilon)$, a marginal rise in γ has an intense impact on the environment; consequently, a greater strength of outward habit results in a lower environmental quality. On the other hand, when the initial value of γ is higher than the critical level, a marginal rise in γ has an insignificant impact on the environment; consequently, a greater intensity of outward habit results in a higher environmental quality.

The result implies that when $\varepsilon < c^1/L(c^1 + c^2)$ holds, there exists another critical level of the degree of outward habit, $\bar{\gamma}(\varepsilon) (> \tilde{\gamma}(\varepsilon))$, such that $E|_{\gamma=0} \geq E|_{\gamma>0}$ holds if and only if $\gamma \leq \bar{\gamma}(\varepsilon)$ (see Figure 2). Explicitly, if the initial degree of outward habit γ is larger (less) than the critical level $\bar{\gamma}(\varepsilon)$, then the environmental quality without outward habit, $E|_{\gamma=0}$, is less (larger) than the environmental quality under the presence of outward habit, $E|_{\gamma>0}$. For a larger (smaller) degree of outward habit, the economy undergoes a greater (lesser) environmental quality relative to the economy without outward habit. Consequently, striving to improve social position via consumption is not necessarily damaging the environment. A higher strength of outward habit may be advantageous from the perspective of environmental protection.

Figure 1

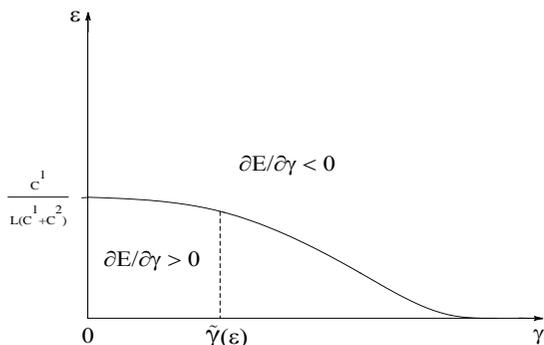
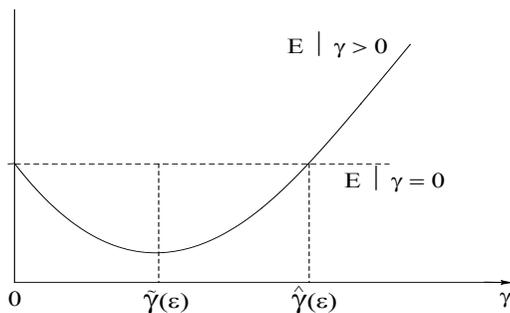


Figure 2



7. Conclusion

In this paper, we have extended the overlapping generations literature by introducing outward habits in a model with environmental quality and maintenance spending. We found that whether outward habits are damaging the environment depends on the degrees of status seeking and the size of the economy. Hence, this paper has given a simple condition for evaluating environmental consequence of outward habit. Indeed, numerous researches focused only on intergenerational externalities resulting from consumption, cutting out the free-rider problem. The impacts within a generation have been largely disregarded by the OLG literature. Several works normalize the size of each cohort as unity. Thereby, the intragenerational impacts are not taken into consideration in the framework of the model. This analysis rather takes into consideration both the intra- and the intergenerational negative impacts of consumption. At this stage of analysis, we would assert that this work is a step that may be taken further, extended and hilt upon as it lays the ground and pave the way for future research to enact the inclusion of population growth which might provide new insights on the role of population in such a framework.

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Bionote

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OIL PRICE BEHAVIOUR, EXCHANGE RATE MOVEMENT AND THE COVID-19 PANDEMIC IN NIGERIA: ANALYSIS OF THE FIRST THREE QUARTERS OF 2020

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Abstract: *This paper evaluates the response of oil price and exchange rate to the corona virus pandemic shock aside from the link between oil price and exchange rate for the first three quarters of 2020 in Nigeria. The theoretical framework emanates from the informal approach and the terms of trade channels. Using VAR cointegration approach, results show existence of long run relationship among the oil price, exchange rate movement and the corona virus indicators based on Max-Eigen and Trace test statistic. End of first quarter oil price, discharge rate and fatality rate negatively relate with current exchange rate. First quarter exchange rate and fatality rate positively relates to oil price behaviour in the third quarter while end of first quarter discharge rate increase fosters oil price decline. First quarter spread rate increase gradually reduces oil demand and the price in the third quarter. All corona virus indicators and exchange rate variable Granger Cause current oil price. Diversification is key to widen export base and increase foreign exchange and stability. Policy measures to sustain the economy in the post COVID-19 and beyond are necessary for long term development.*

Key Words: Oil price, exchange rate, COVID-19, Unit root test, VAR-cointegration

JEL Classification: E30, F00, F30, F41

1. General Introduction

Interest in the study of oil price movement is not only based on its influence on economic performance but also on its relationship with international financial variables such as exchange rate, balance of payment among others. This demonstrates the importance of Nigeria, some other African countries and developed world as major crude oil exporters. It has been noted that Canada, Mexico, Saudi Arabia, Venezuela, Angola, Iraq, Nigeria, Brazil, Kuwait and Ecuador are the top ten sources of United States crude oil imports in million barrels per day with Nigeria occupying the 7th position accounting for about 84% of all her crude oil imports while the top five only accounted for about 64%. The emergence of the novel corona virus pandemic accompanies both health and economic risks lowering trade integration among countries with shrinking demand and supply chains as evident from the global demand decline for oil and exchange rate instability. Attention has been on containing health risk (spread, death rate etc.) involved including focusing on quality medical services, social distancing, and other lockdown measures. Nigeria economy is strictly oil dependent and as such government relies heavily on the revenue generated from oil to fund

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the economy's budget. A 10.3 trillion naira was prepared as the budget for the 2020 fiscal year on a bench mark of oil price of \$57. The drop in the price of oil is a signal for future low revenue and inability to fund the initial budget; hence the economy adjusted to a new equilibrium position. The aftermath effect of this is scarcity of the US dollar which is already manifesting in the parallel forex market and determines the demand, supply and the associated prices even with the autonomous power of the Apex bank to fix the naira official exchange rates. Again, the disequilibrium condition created by the pandemic on exchange rate fluctuation following dollar shortage further engineered other economic uncertainties through series of channels. In some cases, unemployment emerges due to inability to cope with payment responsibilities particularly in the private sector thereby increasing poverty level. Nigerian in Diasporas equally faced challenges with the shortages and in reaction to this, banks placed the extent to which spending can be made using debit card. All these slowed down investment expenditures, consumption spending, aggregate demand among others and further worsened by the hike in price of goods and services. In early September, 2020, the shock of rising costs of electricity and fuel again hit Nigerians and is currently under a serious peaceful agitation. While the government comes with reasons for the fuel price increases, the citizens also are with reasons that such increments are uncalled for. In all honesty, Nigerians are depressed following frequent unbearable economic circumstances which are in most part caused by the corona virus disease. The Nigeria's gross domestic product (GDP) growth rate was 1.87% in real term during the first quarter and dropped significantly to -6.10% growth consequent upon the cumulative effects of the corona virus pandemic. In 2016, oil price decline was one of the factors responsible for the recession that took place, there was however currency control measures by the government to prevent outflow of foreign currency amidst deteriorating foreign reserves. Numerous research works have investigated the link between oil price shock and exchange rate movement at various times such as (Amano and Norden, 1998; Chen and Chen, 2007; Narayan et al., 2008; and Uddin et al., 2013) whose studies are based on oil-importing countries while Akram, 2004 and 2009 and Nikbakht, 2010 among others focus on oil-exporting countries. The motivation for this study however centers on understanding the response of the two to the corona virus pandemic and their links. So far it is unlikely that many studies concentrate on this motivation. Besides, the two key variables-oil price and exchange rate and corona virus indicators are on daily basis which adequately makes it unique from some other studies in similar area. Thus, the study is set to answer the questions: What is the link between oil price behaviour and exchange rate movement in Nigeria? Does corona virus pandemic cause oil price increase and exchange rate depreciation? Consequently, the objectives of the paper are to: create an understanding of the link between oil price shock and exchange rate movement and to establish whether the corona virus pandemic causes oil price increase and exchange rate depreciation in Nigeria. The paper is organised as follows: Section 2 contains Literature review. Section 3 discusses the trend in oil price, exchange rate movement and COVID-19 pandemic while section 4 focuses on the theory and methodology. Section 5 demonstrates the results and discussion while section 6 concludes.

2. Theoretical and Empirical Literature

Some theories such as the exhaustible resources, supply and demand framework and the informal approach have been used in the energy economics literature to analyse the oil price behaviour. The focus here is on the informal approach since it bridges the gap between oil price movement and corona virus pandemic. In the informal approach, we link the oil demand and supply and hence its price to some fundamental economic, geopolitical and incidental factors and episodes of oil market history. The incidental factors have a good link

with the present corona virus pandemic which effectively creates disequilibrium in economic conditions. The informal approach gives a clue on whether the oil market witnesses some structural changes with long lasting effects on oil price movement or whether the cause is due to temporary drivers. The change here has been linked to low spare capacity which implies price bearing most adjustments in the event of any shocks such as the COVID-19 in the system. Again, if capacity constraints are the driving forces, accelerated increase in the average level of oil prices, spikes and volatility would be the price dynamics that emerge as evident from the corona virus pandemic.

In evaluating the link between oil price and exchange rate movement, three direct transmission mechanisms are considered: the terms of trade channel, the wealth effect channel and the portfolio reallocation channel (Buetzer et al, 2016). The terms of trade channel introduced by Amano and van Norden (1998a, b) is based on the underlying fact linking the price of oil to the price which subsequently affects the real exchange rate (Bénassy-Quéré et al., 2007). Given the non-tradeable sector, a country is more energy intensive compared to the tradable one. The output price its sector rises compared to the output price of another country. By implication, currency in the country in question faces real depreciation owing to increases in inflation (Chen and Chen, 2007; Buetzer et al., 2016). If the price of the tradable is hence forth assumed not to be fixed, then its effect on the nominal exchange rate becomes highly noticeable. Therefore, inflation and nominal exchange rate changes are linked through Purchasing Power Parity (PPP).

The notion behind the portfolio and wealth channels as introduced by Krugman (1983) and Golub (1983) is linked to a threecountry framework and is given consideration by Bodenstein et al. (2011). The idea here is that oil exporting countries experience transfer of wealth given any increase in oil prices (Bénassy- Quéré et al., 2007). While the wealth channels reflect the short run impact, the portfolio describes the short and long run impacts. As oil prices rise, there is a transfer of wealth from oil-importing to oil-exporting countries (in US dollar terms) and is a reflection of a positive impact on the exports and current account balance in domestic currency. It is expected that currency of oil-exporting countries appreciate and those of the oil- importing countries depreciate (Beckmann and Czudaj, 2013b). The US dollars may again appreciate in the short run due to wealth effect if the oil-exporting countries reinvest their revenue in dollar assets of the US. The short and medium term effect on the US dollar relative to currencies of oil exporting countries is a function of dependence of the US on oil import relative to its share of exports in oil-producing countries and oil exporting countries relative to preference for US dollar assets (Bénassy-Quéré et al., 2007; Coudert et al., 2008; Buetzer et al., 2016).

Causality from exchange rate to oil prices can theoretically be observed on the notion that the oil price is denominated in US dollars. An appreciation of the US dollar increases the oil price expressed in terms of the domestic currency thereby lowering the demand outside the economy in question and consequently leading to a fall in oil price all things being equal (Bloomberg and Harris, 1995; Akram, 2009). (Coudert et al., 2008). Meanwhile, oil-exporting countries may tend to adjust oil prices or supply in response to exchange rate dynamics but again this depends on their price strategy (Yousefi and Wirjanto, 2004).

Empirically, numerous studies have embarked on the crucial relationship between oil prices and exchange rates. Al Rasasi (2017) examines the impact of oil price shocks on the Gulf Cooperation Council (GCC) exchange rates using quarterly data from 1980-2014 and linear VAR model. Depreciation of the GCC exchange rate results from an economically significant one-standard deviation shock to the price of oil. For the non-linear model, appreciation of the exchange rate results. Fowowe (2014) observes that an increase in oil price is related to reduction in the South Africa rand compared to the US dollar. Ahmad & Moran Hernandez (2013) estimated the long-run relationship in real terms between oil prices and exchange rates for twelve major oil producing and oil consuming countries. Results show cointegration

in five of the countries observed together with the Eurozone. García et al (2018) analyse the relationship between the nominal exchange rate of the Mexican peso relative to the US dollar and the spot and future prices of oil using a vector a vector autoregressive (VAR) model. They show that a decrease in the spot price of oil is linked to a depreciation of the Mexican peso relative to the US dollar and vice-versa and that future spot oil price is not statistically significant for the Mexico peso relative to the US dollar. Biswal (2019) used ARDL and bounds testing cointegration modeling frameworks with the results showing that oil prices negatively affect the exchange rate of the Mexican peso to the US dollar in the long run. The study concludes that the episodes have different effects on the returns pointing at the substantial effects of the COVID-19 pandemic on the US market returns compared to the effects of other crises. Albuiescu (2020a) using ARDL modeling, studies the influence of COVID-19 data on WTI crude oil prices. Controlling for the effect of CBOE volatility index (VIX) together with economic policy uncertainty (EPU) index of the US, the study concludes that the global new infection cases and death ratio do not show any significant impact on the EPU but are directly related to the dynamics of the EPU when setting aside data for China. Nigerian empirical literature on the link between COVID-19 and oil price shock and exchange rate is grossly inadequate but attention has been on misconceptions, prevention and transmission rate. However, Adenomon and Maijamaa (2020) examine COVID-19 effect on the Nigerian stock exchange from January to April and conclude that the pandemic has resulted in loss and high volatility in stock returns. Ozili (2020) studies the link between COVID-19 and economic crisis in Nigeria. Using descriptive statistics, he shows that most economic factors including Purchasing Managers Index (PMI), inflation, crude oil price etc; react negatively to the pandemic. Hence, this study builds on this to explore on empirical linkage between the pandemic and oil price and exchange rate behaviour in Nigeria.

3. Oil price, exchange rate movements and COVID-19: A Trend analysis

Oil and exchange rates have had a long history within the Nigeria growth history. Nigeria, a member of the Organization of Petroleum Exporting Countries (OPEC), is an exporter of high and medium grade crude oil. Various fluctuations in the oil price and exchange rate have been in most part a consequence of external shocks over time. The 1973-74 and 1979 oil price shocks led to a huge oil transfer to the economy accompanied by increasing public expenditure and access to international capital markets. This period of oil price shock facilitated the emergence of the Dutch Disease and as such agriculture the main stay and non-tradable sector declined continuously. The sudden collapse of oil in 1982 and the real interest rate increase put the economy on another phase. Nigeria then experienced inflation increase, foreign exchange tight rationing and envisaged debt rescheduling. Around the same period was the rise in parallel markets and illegal floating-rate parallel market maintained same level with official-fixed-rate market.

The shocks of the early 70s and 80s fourteen years after oil discovery brought about various dynamics in oil price, terms of trade and exchange rate among others. Being a mono-product nation, Nigeria is vulnerable to international crude oil price movement. During the period of favourable oil price shock, the rising demand for the commodity, seasonality factors and trade linkages among others, the country was placed on favorable terms of trade, and exchange rate appreciation. With unfavourable oil price shocks, foreign exchange inflow dropped significantly and consequently budget deficit and slow growth. Growth of High-Powered money was truncating between 1973 and 1977 and even during the second oil price increase episode. The fact that growth of money supply led to the rising inflation despite the nominal appreciation of the naira in these years, suggested that the flow of money demand was lower than flow of money supply.

Overtime, *GDP* growth has responded to oil price and exchange rate fluctuations. The average annual *GDP* growth reached 7% between 2000 and 2014 but following another oil price collapse between 2014 and 2016, together with negative production shocks, there was a significant decline of growth performance to 2.7% by 2015 and by 2016, the economy was already in recession, the first of its kind in 25 years with a negative *GDP* growth of 1.6%. Since the 2015 experience, Nigeria has been battling with unstable low growth but by 2018, growth on the average 1.9% and later at a stable level of 2% in the first half of 2019. Inflation stood at 11% around same period constraining domestic demand through impeding private consumption. Some notable sectors such as the telecommunication, enhanced production side in 2019 while agriculture performed below expectation due to socio-economic crisis in some parts of the country.

As Nigeria still battles with the negative multiple effects of the 2008-2009 global financial and economic crises, a global corona virus pandemic emerged from Wuhan in China by late 2019 and found its way into the economy in February, 2020. Effects on oil price and exchange rates around this period were insignificant and as such average of oil prices and exchange rates stood at \$66 and N306/\$ in January and \$58 and N306/\$ in February.

Table 1: COVID-19 related and Economic variables three quarters of 2020

Quarterly	Spread Rate	Fat. Rate	Discharge Cases	Oil price (\$)	Exchange rate(N/\$)
Q ₁ (2020)	10.397265	0.01646	1.2	33.0159	326.125
Q ₂ (2020)	5.98147554	0.02811	2479.06593	27.7987	360.5
Q ₃ (2020)	0.9358417	0.02031	31150.6364	43.6435	371.5

Source: Author's computation using NCDC data

On a quarterly basis and as described on table 2 above, average spread rate in the first quarterly was highest compared to the other subsequent quarters. Fatality rate (0.02) and discharge cases (1.2) were lowest accordingly for this quarter. This may be linked to the low cumulative number of cases around this period. For the three months, only March could be effectively captured as the pandemic effect was more pronounced compared to January and February. Oil price and exchange rates were respectively \$33.01 and 326.13/\$ on the average demonstrating a gradual impact of the pandemic demand and supply and hence on oil price and naira-dollar exchange rates. Drastic reduction of oil demand remained more pronounced in the second quarter and consequently lowering the oil price to the average level of \$27.80 with depreciation higher (360.5/\$). The ease of lock down in the third quarter gradually brought back economic activities and as predicted oil price gradually picked with corresponding 371.5/\$, a depreciation of about 3.05% from the previous level.

Nigeria relies on crude oil to sustain about 90% of its foreign exchange (FEX) earnings but the oil price slump lessened the FEX into the government purse and makes investors pull out much needed foreign capital. As a dollar outflow curtailing measure to mitigate its negative impact on the country's gross international reserves which was approximately \$34.3billion as at May 11, 2020, the APEX bank adopted the FX reforms and commercial banks limited customers' international spending engagements as FX supply tightened. The naira exchange rate at the Investors' and Exporters' window was adjusted to reflect the worsening macroeconomic fundamental and hence the rate weakened to N386.94/ \$ translating to 6%. While importers continue the search for hard currency, foreign investors opted for safe investment alternatives. As a measure to contain the spread of the virus, the APEX bank hindered the sales of FX to Bureau De change operators providing a secondary benefit of conserving the limited dollar resources amidst global risk aversion. This thus increased currency speculation with naira depreciating further N460/\$ towards end of April,

2020. The bid-offer spread in the market resulted in low FX supply amidst the domestic demand for dollar which has since been putting huge pressure on the naira.

Nigeria Naira faces huge challenges given the oil price increases. Operating with currency pegs around persistent low foreign reserves and sovereign wealth assets makes the economy more vulnerable. However, the pegged regime could be optimal as floating type is likely to result in imported inflation in the period of economic recession.

Weak macroeconomic conditions in the short term may give rooms for more naira depreciation except that concessional flows support the naira through the CBN interventionist policy in the FX market. Meanwhile, as the economy remains more open consequent upon ease of lock downs and given that the spread of COVID-19 reduces, it is expected that the rising oil demand triggers oil prices as indicated in for the months of August and September reaching averages of \$45 and \$41 while naira continues on a depreciating trend with 377\$/N and 380\$/N.

4. Theory and Methodology

On the basis of the above theories the study relies on the terms of trade channel transmission mechanism modified to suit the present COVID-19 pandemic and the informal approach. Before the advent of the pandemic, demand for oil was not on a declining trend and accompanied by relatively higher prices for which Nigeria, a mono-product economy heavily relies upon for budget preparation. The theoretical idea here mainly relies on the terms of trade channels for the exchange rate behaviour and the informal approach to the oil price behaviour earlier discussed. The terms of trade reflect the condition in which the output price in a more energy intensive non-tradeable sector rises compared to that of other sector thus leading to currency depreciation due to inflation while the informal approach links the oil demand and supply to some fundamental economic, geopolitical and incidental factors on the basis of oil market history which thus affect the oil price. The incidental factors here reflect the present corona virus pandemic which effectively created a mismatch in the demand-supply condition and hence the oil price. On the basis of these the following VAR baseline model specifications are:

$$\begin{aligned} \ln oil.p = & \alpha_0 + \alpha_1 \ln dis.rt_{-1} + \alpha_2 \ln dis.rt_{-2} + \alpha_3 \ln exc.rt_{-1} + \alpha_4 \ln exc.rt_{-2} \\ & + \alpha_5 \ln fat.rt_{-1} + \alpha_6 \ln fat.rt_{-2} + \alpha_7 \ln oil.p_{-1} + \alpha_8 \ln oil.p_{-2} \\ & + \alpha_9 \ln sprd.rt_{-1} + \alpha_{10} \ln sprd.rt_{-2} + \varepsilon_1 \end{aligned} \quad (1)$$

$$\begin{aligned} \ln exc.rt = & \beta_0 + \beta_1 \ln dis.rt_{-1} + \beta_2 \ln dis.rt_{-2} + \beta_3 \ln exc.rt_{-1} + \beta_4 \ln exc.rt_{-2} \\ & + \beta_5 \ln fat.rt_{-1} + \beta_6 \ln fat.rt_{-2} + \beta_7 \ln oil.p_{-1} + \beta_8 \ln oil.p_{-2} \\ & + \beta_9 \ln sprd.rt_{-1} + \beta_{10} \ln sprd.rt_{-2} + \varepsilon_2 \end{aligned} \quad (2)$$

Where $oil.p$ is current oil price behaviour, $Dis.rt$, the discharge rate, $exc.rt$ exchange rate, and is $fat.rt$, the fatality rate. $sprd.rt$ represents the spread rate and ε_1 and ε_2 are the error terms in each case which are independently and identically distributed. First and second lags of exchange rate and oil prices are included as explanatory variables for the VAR specification. All the variables are in natural logarithmic forms to attain normality assumption.

Methodology is rooted in the VAR-Cointegration estimation technique considering the optimal lag selection process. Regression based on VAR allows to predict the response of

the current values of dependent variable from any change in its lags and lags of other variables in the system.

Data for the corona virus indicators including the discharge rate, fatality rate, spread rate are carefully obtained from the Nigeria Centre for Disease Control (NCDC) and both oil price and exchange rate statistics on the daily bases are obtained from the National Bureau of Statistics (NBS) for the first three quarters of 2020.

5. Results and Discussion

Table 2: Descriptive Statistics

Variable	ln Dis.rt	ln exc.rt	ln fat.rt	ln oil.p	ln sprd.rt	Residuals
Mean	7.35	5.88	0.76	3.48	-0.27	0.00
Median	8.56	5.89	0.77	3.70	0.73	-0.00
Std Dev	3.46	0.06	0.34	0.45	0.10	0.01
Skewness	-1.00	-1.96	-0.97	-1.37	-9.65	4.81
Kurtosis	2.77	6.37	3.37	3.87	95.57	28.57
J-B Prob	0.00	0.00	0.00	0.00	0.00	0.00
Obs.	208	135	207	140	201	41

Source: Author's computation using E-views

Table 3: Pairwise Correlation

	ln Dis.rt	ln exc.rt	ln fat.rt	ln oil.p	ln sprd.rt
ln Dis.rt	1.00	0.79	0.43	0.54	-0.58
ln exc.rt	----	1.00	0.53	0.09	-0.28
ln fat.rt	----	-----	1.00	-0.24	0.22
ln oil.p	-----	-----	-----	1.00	-0.69
ln sprd.rt	-----	-----	-----	-----	1.00

Source: Author's computation using E-views

A table 2 displays the descriptive statistics sample mean and other descriptive statistics for the exchange rate and oil price and the corona virus indicator variables. Variables are already in natural logarithmic form to follow the normality assumption. The sample mean of exchange rate (5.88) is positive and followed that of the discharge rate (7.35). High mean value of the discharge rate is an indication of the frequent discharge of infected persons while that of exchange rate mean may be linked to the depreciating value of the naira. The mean value of oil price (3.48) also demonstrates cumulative price levels formerly and to a higher price subsequently. The spread rate (-0.27) relates to variations in spread rate overtime. The discharge rate (3.46) has the highest spread (fluctuation) in the distribution and followed by the oil price (0.45) which also fluctuates. The skewness coefficients are negative for all the variables except the residuals. This means that the variables are asymmetrically distributed. Kurtosis coefficients are positive but less than 3 for the discharge rate variable showing that it is flattened. The J-B probability indicates that all variables are not normally distributed. Correlation coefficients give an idea of the degree of association between the exchange rate and oil price and corona virus indicators as shown on table 3. The discharge rate and the spread rate (-0.58) are negatively correlated. Increasing level of discharge rate seems to narrow the margin of spread rate as experienced especially during the early stage of the pandemic. The exchange rate and spread rate are equally negatively correlated (-0.28) implying that higher spread rate depreciates naira value as experienced. Likewise, oil price and spread rate have a strong negative correlation (-0.69). As spread rate rises, demand for oil declines and oil price falls accordingly as witnessed in the second

quarter of 2020. Generally, the low correlation coefficient shows that multicollinearity is not likely to be a major problem.

Table 4: Unit root test results

	PP		Test eqn	Decision	OI
Variable	T-stat	Prob. V			
ln Dis.rt	-2.88	0.00	constant	No unit root	level
ln excr.rt	-2.90	0.07	constant	No unit root	First difference
ln fat.rt	-2.88	0.05	constant	No unit root	level
ln oil.p	-2.90	0.00	constant	No unit root	First difference
ln sprd.rt	-2.88	0.00	constant	No unit root	level

Source: Author's computation using E-views

The unit root test results as displayed on table 4 shows that the PP (Philips and Perron) test method is applied. First, the discharge rate does not show unit root at 5%. Exchange rate variable has no unit root at the 10% level. The fatality and spread rates do not show unit root at the 5% level but marginally for fatality rate. Both oil price and the spread rate do not show unit root at the first difference and level respectively.

Table 5: Unrestricted Cointegration Rank Test (Trace)

Hypothesised No of CE(s)	Eigen value	Trace stat	5% critical val.	Prob.	Max.Eigen stat	5% Critical val	Prob.
$r \leq 0$	0.73	84.13	69.82	0.00**	50.45	33.98	0.00
$r \leq 1$	0.35	33.69	47.86	0.52	16.95	27.58	0.58
$r \leq 2$	0.28	16.74	29.80	0.66	12.99	21.13	0.45
$r \leq 3$	0.09	3.75	15.49	0.92	3.60	14.26	0.90
$r \leq 4$	0.004	0.15	3.84	0.69	0.15	3.84	0.69

Source: Author's computation using E-views

The Johansen cointegration test results (table 5) reveal that there exists one cointegrating equation at the 5% level for both Trace and Max-Eigen test statistics. Generally, the results show that the corona virus indicator variables and the economic variables have a long run relationship and hence move jointly. However, given the number of cointegrating equations, the system is unlikely to be stable. The existence of long run relationship justifies estimation of cointegrating vectors.

Table 6: Lag Length selection (VAR)

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-108.25	NA	0.00	3.38	3.54	3.45
1	394.29	915.07	0.00*	-10.87	-9.89*	-10.48
2	436.91	71.24*	0.00*	-11.40*	-9.59	-10.68*

Source: Author's computation using E-views

The optimum lag length selection is carried out using the Sequential Modified Likelihood Ratio (LR) test, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) and Hanna Quin Information Criterion (HQ). Table 6 above indicates that only FPE and SC select lag 1. Lag 2 is therefore selected as majority of the test procedures select "2" as the optimum lag.

Table 7: VAR Results

	ln Dis.rt	ln exc.rt	ln fat.rt	ln oil.p	ln sprd.rt
ln Dis.rt_1	0.52*	0.002	-0.18	0.02	-0.97
ln Dis.rt_2	0.42*	-0.002	0.22	-0.0004	0.85
ln exc.rt_1	1.06*	0.95**		-0.77	0.43
ln exc.rt_2	1.53	-0.01		0.25	-0.42
ln fat.rt_1	-0.58*	0.004	0.76	-0.08	-0.16
ln fat.rt_2	0.60*	-0.01	0.04	0.05	0.52
ln oil.p_1	0.08	0.01	-0.02	0.78**	-0.13
ln oil.p_2	0.04	-0.003	-0.06	0.05	-0.15
ln sprd.rt_1	-0.02	0.0003	-0.01	0.01	0.41
ln sprd.rt_2	0.05	0.0004	0.04	-0.01	0.23
C	-15.16	-15.16	5.73	3.50	24.58
R ² bar	0.998	0.97	0.78	0.98	0.96
F-stat	23.77	3751.39	23.77	202.42	23.77
Log L	-59.51	47.13	-59.51	80.61	-59.51
AIC		-1.08	-2.10	-2.08	2.10
SSC	-0.72	-1.72	2.47	-6.67	2.47

Source: Author's computation using E-views

Results of the VAR are as indicated on table 7. Oil price and exchange rate equations are discussed being the key endogenous variables. Starting from the oil price equation, oil price increase during the first (0.05) and second quarters (0.78) triggered the oil price increase in the third quarter but significant for the second quarter. An exchange rate increase in the first quarter is positively (0.25) related to current oil price while it reversed in the second quarter. A 10% increase in the second quarter discharge rate brought about a 0.2% increase in the current oil price while the latter decreased with the increase in first quarter discharge rate. Fatality rate follows similar trend but with reversed signs during the period. Effect of the first quarter spread rate increase (-0.01) was noticeable on the current oil price. This is probably because incidence of the pandemic was gradually having a declining effect on oil demand. In the exchange rate equation, coefficient (-0.01) shows that first quarter exchange rate negatively related to the current exchange rate and by the second quarter, it demonstrated a significant positive relationship (0.95) with current exchange rate. A 10% increase in the discharge rate in the first quarter reduced current exchange rate by about 0.02% and an increase of same during the second quarter. Fatality rate has similar effect on exchange rate in both first and second quarters as the discharge rates though with different magnitudes. A 10% increase in the first quarter oil price gave about a 0.03% decline in the exchange rate in the third quarter while a 10% increase in the second quarter oil price generated about 0.1% increase in the current exchange rate. The relationship between oil price and exchange rate in the second quarter demonstrated the instability between the two amidst COVID-19 pandemic. As shown by the spread rate coefficients, the rising spread in the first and second quarters related positively with current exchange rate movement. This is not surprising because the spread has continued to create economic instability through exchange rate fluctuations. The corona virus pandemic indicators explain over 90% of the variation in both the oil price and exchange rate during the quarters.

Table 8: Short run Equilibrium

	ln Dis.rt	ln exc.rt	ln fat.rt	ln oil.p	ln sprd.rt
Error correction	-0.005	0.0005	0.004	-0.002	-0.02

Author's computation using E-views

On table 8, the error correction term coefficient for the oil price equation is negative (-0.002) as expected. By implication about 0.2% error is corrected once there is a distortion from equilibrium position for every quarter. The exchange rate equation does not follow expectation in terms of error correction coefficient.

Table 9: Var-Granger Causality/Block Exogeneity Wald Tests

	ln exc.rt		Ln oil.p	
	Chis-sq/df	Prob.	Chis-sq/df	Prob.
ln Dis.rt	1.68/1	0.19	9.19/1	0.00
ln exc. Rt	-----	-----	2.37/1	0.12
ln fat.rt	0.41/1	0.52	3.06/1	0.08
ln oil.p	0.29/1	0.59	-----	-----
Ln sprd. Rt	0.10/1	0.75	1.39/1	0.24
All	2.29/4	0.68	11.35/1	0.02

Author's computation using E-views

The VAR Granger Causality/ Block Exogeneity Wald Test results indicate that Discharge rate, and fatality rate Granger Cause oil price increase although at the 5% level for the discharge rate. In fact, all of the corona virus related variables and the exchange rate jointly Granger Cause oil price changes during the first three quarters.

6. Main Conclusion

This paper examined the relationship between oil price trend, exchange rate movement and the COVID-19 Pandemic with focus on the Nigerian economy. The trend demonstrated the rising level of the spread rate due to increase in number of confirmed cases, resulting in low demand for oil and hence low price at the first instance. By this, dollar scarcity accompanied naira depreciation. However, due to regulatory measures and ease of lock down to make the economy boom further, oil price began to rise particularly around the third quarter. The theoretical ideas adopted are based on the informal approach and terms of trade channels for oil price and exchange rate behaviours. With optimal lag selection, the Var-Cointegration methodology demonstrated a long run equilibrium relationship among the oil price, exchange rate and corona virus indicators-discharge rate, fatality rate and spread rate- Moreover, about 0.2% disequilibrium error is corrected for per quarter. First quarter exchange rate movement positively related to oil price. First quarter increases in discharge rate and fatality rates reduced and increased oil price respectively. First quarter spread rate reduced oil price as demonstrated by the VAR results. First and second quarters oil price behaviour negatively and positively affected exchange rate respectively. Discharge rates for the two quarters impacted on exchange rate in equal magnitude but opposite in signs while the first and second quarters spread rate impacted positively on exchange rate though negligible. Diversification has always been agitated for through reliable agricultural practices as a drastic cut in the oil demand due to corona virus calls for attention particularly for a mono-product economy like Nigeria. This can increase Nigeria export base and create a better avenue for increasing foreign exchange and boost exchange rate stability. COVID-19 pandemic creating a new normal can be reduced through adhering strictly further to its rules but again must be complemented by adequate palliative care. Poverty, hunger, unemployment, unsettled minds and other social menaces are highly disturbing and are further worsened by the outbreak of COVID-19. Small and medium scale enterprises should be assisted through investible funds that can help reduce unemployment in the short term.

All necessary measures needed to sustain the economy presently and in the post-COVID-19 era are a pointer toward achieving development in the long run.

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ACADEMIC CONTRIBUTIONS IN ENTREPRENEURSHIP TOURISM RESEARCH. A BIBLIOMETRIC ANALYSIS

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Abstract: *Tourism is one of the largest global industries; it generates economic and non-economic benefits for the world's nations, creates opportunities for many related industries, and has a significant contribution to local communities' prosperity. Despite the extraordinary difficulties posed by the global pandemic crisis, its prospects to remain one of the main providers of jobs, income, and regional or global development are still encouraging. However, tourism is at a crossroads, and the contribution of entrepreneurship can give a new meaning, a new direction to the efforts to recover and resume growth. That is why it is important to understand the nature, scope, challenges, and dimensions of tourism entrepreneurship, the trends that accompanied its evolution in recent decades, and to perceive its future prospects. The emergence of new types and forms of tourism, the expansion of digital technology in most tourism sectors, challenges in existing practices, competition, and the changing models have to be carefully understood and analysed. Tourism and entrepreneurship, two driving forces for economic development, have been under the scrutiny of this study, as we tried to map out the knowledge base yielded between 1994 and 2020 timeframe. Bibliometric methods were employed in the analysis of articles. After analysing the available articles chosen with the criteria set of the study, 322 articles concerning tourism and entrepreneurship were obtained. Based on the citation analysis made with HistCite software, we identified the most influential authors, articles, and journals.*

Keywords: tourism; entrepreneurship; research topics; bibliometric analysis.

JEL classification: L83; Z32; L26; C88.

1. Introduction

Tourism is one of the largest global industries; the 2019 data report over 1.5 billion international tourist arrivals (overnight visitors), revenues of approximately 2.9 trillion US dollars, and 10% of world jobs (The World Tourism Organization (UNWTO), 2019).

However, in 2020, tourism was one of the sectors most affected by the coronavirus pandemic; international tourism collapsed by about 80%, and destinations that relied heavily on international tourism, business, and events faced particular difficulties (OECD, 2020). According to the OECD, restoring tourism in the coming years is a priority, but the sector

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needs to become more sustainable and resilient in the future. Domestic tourism has restarted and has begun to mitigate the impact on jobs and businesses in certain destinations. Still, the recovery will only be real when international tourism approaches the 2017-2019 figures.

In order for tourism development strategies to be able to transform a country's natural and human resources into an economic capital so necessary for development (UNWTO, 2013), they must also take into account the extraordinary potential of entrepreneurship, the dynamism of the small and medium enterprise sector. Moreover, small and medium enterprises in this sector play an increasingly important role in growing turnover, supplying quality services, generating jobs, revitalizing related branches of the economy, promoting new destinations and forms of tourism (Hallak, et al., 2012), encouraging the local community to get involved in tourism activities, with the tourism entrepreneur being the *persona causa* of tourism development (Koh & Hatten, 2002).

Because entrepreneurship is an inherent local phenomenon (Baron & Markman, 2000), (Sternberg, 2012), we can consider that natural resources, cultural heritage, and the potential of local communities can become, through creative and sustainable use, essential components of tourism products and of the tourist experience (Badulescu & Badulescu, 2012), arguments that demonstrate the interdependence between tourism and entrepreneurship, especially in the context of sustainable development (Kuckertz & Wagner, 2010), (Crnogaj, et al., 2014), (Badulescu et al., 2014). Starting from the fact that most tourism products are based on cultural and natural heritage, tourism enterprises must find a balance between financial, environmental, and community sustainability (Badulescu, et al., 2020).

In this article, we are interested in investigating the main corpus of literature on tourism entrepreneurship, as described in selected articles published during the last decades, aiming to review entrepreneurial research in the tourism and hospitality industry and provide directions for future research. Specific objectives addressed include examining the research themes and identifying directions of research, as well as identifying the most influential authors, articles, and journals in tourism entrepreneurship research. The paper is organized as follows. In the second section, we present the literature and in the third section, the methodology employed. In the fourth section we discuss the findings, displaying the results in tabular form of the results; in the final section, we conclude and present the main implications and limitations of the study.

2. Highlights of tourism entrepreneurship literature

The importance of entrepreneurship in fostering innovation and competitiveness, increasing productivity, and generating employment, wealth, and income for public budgets is widely accepted. Implicitly, it also determines researchers' interest in discovering its forms, causes, apparition, motivators, and ability to exploit opportunities, connections to lifestyle, successes, and failures (Audretsch & Keilbach, 2004), (Carter, et al., 2003), (Santarelli & Vivarelli, 2007), (Shane & Venkataraman, 2000), yielding a literature that is expanding every year. In time, research and analysis methods extended to diverse topics such as local and regional development, cultural influences, relations with local communities and interested participants, social innovation (Audretsch & Thurik, 2001), (Fischer & Nijkamp, 2009), (Baron & Markman, 2000). However, entrepreneurial research on distinct economic sectors and activities yields somewhat contradictory results. Such dissonances between fundamental theories and individual research attempts stem from the differences and specificities of each industry.

Although there is an increasing interest in tourism entrepreneurship, there are rather few studies (meta-researches) on the progress of entrepreneurial research in the industry. We

should nonetheless mention Li (2008), (Carmichael & Morrison, 2011), Solvoll et al. (2015), Ratten (2019), Crnogaj, et al. (2014), or Fu et al. (2019). The latter concludes that tourism entrepreneurship is well-represented in practice, but its theoretical aspects are poorly developed (Fu, et al., 2019) being characterized by two main contradictory tendencies: one attempting to integrate tourism entrepreneurship within the general framework of entrepreneurship, and the second considering tourism entrepreneurship to be (intrinsically) different from other types of entrepreneurship, requiring specific theoretical approaches (Solvoll, et al., 2015). Moreover, Li (2008) analysed articles on tourism entrepreneurship published in quality journals between 1986 and 2006 and noticed a certain methodological simplicity in terms of analytical and statistical instruments employed. He also found that, in general terms, tourism entrepreneurship is rather poorly represented, despite the existence of numerous opportunities, topics, and subfields that might be of interest for future studies (Li, 2008). More than ten years after his analysis, we consider some of these gaps to have been solved, but many topics have barely been researched, if at all. Therefore, further review of published papers to build an overview of the field, recognize past trends and prospects of the coming decades, and identify areas for attention and future improvements is all the more necessary.

3. Research Methodology

3.1. General considerations

In order to chart the knowledge base on tourism and hospitality entrepreneurship for the last decades and test the above-mentioned research trends dawning in the time frame selected for research, a bibliometric analysis was employed. This quantitative, scientometric method has gained a lot of popularity, coupled with the development of specialized research databases (e.g., Web of Science) that make research information readily available (King, 1987).

Bibliometric analysis is recognized as a method for measuring, studying, and monitoring scientific publications and their impact on the scientific community (King, 1987), (De Oliveira, et al., 2019). Among the types of information revealed by such analysis, we mention scientific output data (e.g., number of publications produced by a research unit), scientific impact (e.g., number of citations received by publications), scientific collaboration (data on coauthored publications, national & international and university-industry collaborations), interdisciplinarity (degree of publications' interdisciplinarity based on the fields cited by the publication).

The research question we address is:

RQ. What authors, articles, and journals are the most influential in tourism entrepreneurship research?

De Oliveira et al. (2019) propose a process for the mapping of the knowledge base through bibliometric analysis, a process that also has been undertaken for the study herein. As presented in the Introduction, we propose to study the tourism entrepreneurship state of the art, crisscrossing the two major fields of entrepreneurship and tourism in order to see the research interest captured by this binary field.

3.2. Defining search platforms, mining, and analyzing bibliometric data

We have chosen Web of Science as the right platform for this research. WoS is credited with having the most robust databases, the oldest and most comprehensive records of citation indexes, with reasonable availability of search filters, encompassing a useful analysis tool (De Oliveira, et al., 2019), (Ellegaard & Wallin, 2015). Choosing just one platform for the search is based on two main reasons. Firstly, structural differences between platforms would render the analysis difficult; secondly, although other platforms offer a collection of

relevant and extensive publications for the research purposes here, the WoS platform represents an established corpus of publications which is more discriminatory in its selective criteria and has the capacity to focus easier on a subject in its database search. The bibliometric data offered by the WoS platform is year of publication, research areas, types of documents, keywords, language, articles, authors, journals, institutions, countries, journal JCR index.

The binary field of study assumed by this research involved the use of the two main terms - tourism and entrepreneurship - for the search of all scientific papers studying these two concepts. Thus, the following search profile was established in WoS:

("entrepreneurship" OR "entrepreneurial" OR "entrepreneur") AND "tourism"

This search profile, although not exhaustive, yielded a comprehensive number of scientific documents for further study.

The search results have been treated with a series of refinement criteria. Thus, *the time frame* criterion was completely liberalized, our interest being manifested for the whole period of platform indexation. The results spanned from the years 1995 to 2020 (21st of June, 2020 was the date of the search). The *language* criterion was limited to the English language, and the *document types* to articles, i.e., book chapters and proceedings, have been excluded. The *categories* considered for the search in WoS were hospitality, leisure, sport, tourism, management, business, and economics, the *research area* being economics.

Following the search and refinement stage, 322 list items were obtained. For each publication, the full record, including cited references, was retrieved. The data is subsequently analyzed with the help of HistCite software, a quantitative method for analyzing systematic literature reviews (Zupic & Čater, 2015). The main purpose of the software is to make it accessible for researchers and authors to perform bibliometric analysis (Bankar & Lihitkar, 2019) by identifying the most significant authors, journals, cited reference, institutions, and countries (Thelwall, 2008).

4. Findings and discussion

Retrieving the data imported into HistCite, and using the bibliometric parameters extracted from the software, we addressed RQ and pinpointed the most influential articles, authors, and journals pertaining to this study.

4.1. Yearly Output

The HistCite results reveal that between 1995 and 2006 there were published only nine research articles. As shown in Figure 1, from 2007 to 2020, 313 papers were published, with 235 of these in the last five years. This finding indicates that tourism entrepreneurship is quite a new field of research and upholds the fact that, before 2006, tourism entrepreneurship was in the evolutionary stages of the concept. The ascending number of annual publications points out that the subject began to represent an area of interest for authors.

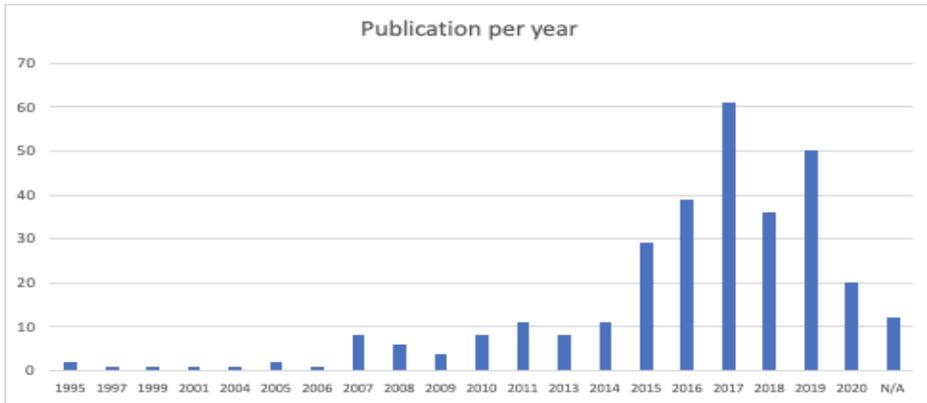


Figure 1: Number of publications on tourism entrepreneurship per year
 Source: retrieved from HistCite

4.2. The most influential authors, articles and journals

The study revealed that the 322 articles were written by 721 authors. The most productive author in tourism entrepreneurship research is Hallak, with six articles, of which four were written in recent years. The top authors in the tourism entrepreneurship field are presented in Table 1, ranked by the count of publications, and most of the top scorers will appear in all lists presented in the article.

Table 1: Most productive authors from 322 tourism entrepreneurship publications - Publications ranking

No.	Authors	Publications
1	Hallak, R.	6
2	Lee, C.	5
3	Ratten, V.	5
4	Alonso, A.D.	4
5	Aleawadieh, Z.	4
6	Bakas, F.E.	4
7	Liu, C.H.	4
8	Altinay, L.	3
9	Daniele, R.	3
10	Day, J.	3

Source: retrieved from HistCite

In order to determine the most-influential authors among our collection, we ranked the 721 authors using TLCS (Total Local Citations Score) into a top-10 authors list. The total local citations score (TLCS) indicates how many times the article was cited within the collection of the retrieved set. Here, Haber placed first, with a TLCS of 23, followed by Page, Swan, and Thomas, who had a score of 21, all from one paper entitled *Understanding small firms in tourism: A perspective on research trends and challenges* (Thomas, et al., 2011) (Table 2).

Table 2: Most influential authors from 322 tourism entrepreneurship publications - TLCS ranking

No.	Authors	Publications	TLCS	TGCS
1	Haber S	3	23	273
2	Page SJ	1	21	194
3	Shaw G	1	21	194
4	Thomas R	1	21	194
5	Hallak R	6	19	168
6	Lerner M	1	15	102
7	Li L	1	15	76
8	Komppula R	1	12	133
9	Brown G	1	10	82
10	Lindsay NJ	1	10	82

Source: retrieved from HistCite

The next step was to sort the most influential authors according to TGCS (Total Global Citation Score). This bibliometric criterion measures how many times an article was cited globally by other articles, not only in the ones inside the collection. Some top authors of the TLCS list (Haber, Page, Shaw, Thomas, Hallak) are in the TGCS list as well. Their Global Citation Score is much higher than the local ones because citations from outside the collection were taken into consideration. Here (Table 3), Haber ranked first, with a TGCS of 273 citations; Orfila-Sintes, Sorensen, and Sundbo each had 223. Orfila-Sintes and Sundbo had the score from the same publication, *The innovative behaviour of tourism firms - Comparative studies of Denmark and Spain* (Sundbo, et al., 2007). It is interesting to observe a highly cited article, Silberberg 's (Silberberg, 1995), with a TGCS of 221, has only a small TLCS (the article has a TLCS of 0). We can assume that there is little or no relatedness between this article and our collection. TGCS score can often be high when the article in question has a multidisciplinary impact (Garfield, et al., 2006).

Table 3: Most influential authors from 322 tourism entrepreneurship publications - TGCS ranking

No.	Authors	Publications	TLCS	TGCS
1	Haber, S.	3	23	273
2	Orfila-Sintes, F.	1	10	223
3	Sorensen, F.	2	10	223
4	Sundbo, J.	1	10	223
5	Silberberg, T.	1	0	221
6	Page, S.J.	1	21	194
7	Shaw, G.	1	21	194
8	Thomas, R.	1	21	194
9	Reichel, A.	2	8	171
10	Hallak, R.	6	19	168

Source: retrieved from HistCite

To assess the most influential research papers within our collections, we ranked them using TLCS/t (Total Local Citation Score/Year) and then after TGCS/t (Total Global Citation Score/Year). When studying co-authorship, it's important to see how the total number of articles produced per year evolves because two authors, when acting together, do not produce more than one article. The score per year shows the average citation score since the publication date.

Hallak attained a TLCS/t of 3.04 (Table 4), with six articles published together with Brown and Lindsay (Hallak, et al., 2012), with Lee and Sardeshmukh (Lee, et al., 2016), (Lee, et al., 2016), (Lee, et al., 2019), with Lee (Lee & Hallak, 2018), (Lee & Hallak, 2020). The citation of Hallak's paperwork attracted the attention of the academic community, therefore, it obtained exponential growth, being used as a reference in 63 articles in 2012, 142 articles in 2016, 245 articles in 2018, 284 articles in 2019, and 322 articles in 2020. Alrawadieh has the higher score, TLCS/s 3.33, even with fewer articles, indicating that the author's paperwork has the most yearly cited references score in our collection.

Table 4: Most influential authors from 322 tourism entrepreneurship publications - TLCS/t ranking

No.	Authors	Publications	TLCS/t
1	Alrawadieh, Z.	4	3.33
2	Hallak, R.	6	3.04
3	Page, S.J.	1	2.10
4	Shaw, G.	1	2.10
5	Thomas, R.	1	2.10
6	Lee, C.	5	1.93
7	Sigala, M.	3	1.80
8	Kompulla, R.	1	1.71
9	Sardeshmukh, S.R.	3	1.60
10	Cetin, G.	1	1.50

Source: retrieved from HistCite

In Table 5 we can observe that the citation of Hallak attained the highest TGCS/t (Total Global Citation Score/Year), 28.84. Lee had been cited 19.73 annually, with the authorship of five articles published between 2016-2020 together with Hallak (2 articles) and Hallak and Sardeshmukh (3 articles). Page received an average TGCS/t score of 19.40, and his score was entirely due to his co-author status with Thomas on only one publication. Similarly, Shaw is in fourth place, with a score of 19.40 TGCS/t, also as a co-author on the Thomas paper.

Table 5: Most influential authors from 322 tourism entrepreneurship publications - TGCS/t ranking

No.	Authors	Publications	TGCS/t
1	Hallak, R.	6	28.84
2	Lee, C.	5	19.73
3	Page, S.J.	1	19.40
4	Shaw, G.	1	19.40
5	Thomas, R.	1	19.40
6	Komppula, R.	1	19.00
7	Altinay, L.	3	17.50
8	Haber, S.	3	16.89
9	Sardeshmukt, S.R.	3	16.40
10	Orfila-Sintes, F.	1	15.93

Source: retrieved from HistCite

What are the top journals in the tourism entrepreneurship research domain (local and global)? The studies obtained in the field of tourism and entrepreneurship were found to be published in 141 academic journals. The most significant were indexed using a top 10

journals list according to TLCS and TGCS. Top 10 most influential journal generated by HistCite according to TLCS:

1. *Tourism Management* - 41 articles
2. *International Journals of Contemporary Hospitality Management* - 22 articles
3. *Journal of Business Venturing* - 2 articles
4. *Service Industries Journal* - 10 articles
5. *Research Policy* - 1 article
6. *Journal of Hospitality and Tourism Management* - 11 articles
7. *Entrepreneurship and Regional Development* - 6 articles
8. *Social Entrepreneurship and Tourism: Philosophy and Practice* - 15 articles
9. *Forest Policy and Economics* - 2 articles
10. *International Journal of Entrepreneurial Behavior & Research* - 8 articles

According to TGCS, top 10 influential journals are:

1. *Tourism Management* - 41 articles
2. *Journal of Business Venturing* - 2 articles
3. *Research Policy* - 1 article
4. *International Journal of Contemporary Hospitality Management* - 22 articles
5. *Service Industries Journal* - 10 articles
6. *Entrepreneurship and Regional Development* - 6 articles
7. *Journal of Destination Marketing & Management* - 5 articles
8. *International Small Business Journal* - 2 articles
9. *Tourism Management Perspectives* - 11 articles
10. *Journal of Hospitality and Tourism Management* - 11 articles

As it can be seen in the above list, the leading journal in both rankings is the same, i.e., *Tourism Management*. Forty-one articles were published in the first ranking journal *Tourism Management*, with a TLCS of 110 (the highest score). Seven of these were published before 2007, and the remainder were published in 2007-2020. Regarding the themes or subject area covered by both top-10 influential journals lists in tourism entrepreneurship, a few clearly dominant ones are tourism, business, management, economics, and sociology. After listing the most important journals, we wanted to identify the most cited references in the collection. The Publications field shows the number of papers in which the references are cited. As shown in Table 6, 3 of 10 papers were published in *Tourism Management Journal*, two of which are ranked in the first two places in the most cited references list.

Table 6: Most cited references from 322 tourism entrepreneurship publications - TGCS/t ranking

No.	Authors/Year/Title/Journal	Publications that cited the article
1	Hjalager, AM. (2010). A review of innovation research in tourism. <i>Tourism Management</i>	26
2	Getz, D., Carlsen, J. (2000). Characteristics and goals of family and owner-operated businesses in the rural tourism and hospitality sector. <i>Tourism Management</i>	24
3	Ateljevic, I. (2000). Staying within the fence: Lifestyle Entrepreneurship in Tourism. <i>Journal of Sustainable Tourism</i>	22
4	Lumpkin, G.T., Dess, G. (1996). Clarifying the entrepreneurial orientations construct and linking it to performance. <i>The Academy of Management Review</i>	22
5	Eisenhardt, K.M. (1989). Building theories from case study research. <i>The Academy of Management Review</i>	21
6	Mair, J., Marti, I. (2006). Social entrepreneurship research: A source of explanation, prediction, and delight. <i>Journal of World Business</i>	21
7	Shane, S., Venkataraman, S. (2000). The promise of Entrepreneurship as a Field of Research. <i>Academy of Management Review</i>	21
8	Thomas, R., Shaw, G., Page, S.J. (2011). Understanding small firms in tourism: A perspective on research trends and challenges. <i>Tourism Management</i>	21
9	Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. <i>Journal of Management</i>	16
10	Getz, D., Carlsen, J. (2004). Family business in tourism: State of the Art. <i>Annals of Tourism Research</i>	16

Source: retrieved from HistCite

5. Conclusions, implications, and limitations

The present study contributes to a deeper understanding of the literature on tourism entrepreneurship by painting the picture of this research field through clear segmentation and systematic grouping of the bibliometric data. Using HistCite, the data was analysed, and the most influential articles, authors, and journals were identified.

With these gaps and trends identified through the bibliometric research, we can acknowledge the points underlined in the literature review as areas either in need of more comprehensive study or as hot spots in future research - even both. The uniqueness of the times lived now, a worldwide pandemic, which has affected in a major way the tourism sector makes this research a welcome map of the tourism entrepreneurship knowledge base and a backdrop for future similar endeavours.

Although the research has particularly focused on finding all published articles in WoS having tourism and entrepreneurship keywords in the title, the keywords, and abstract, there could be other relevant studies of tourism entrepreneurship which did not meet the search criteria. The main limitations come from the selected platform (i.e., Web of Science), research type (i.e., articles), and language of publications (i.e., English). While the scope of

this research has been clearly delineated, future research can increase the amplitude of the study by adding other scientific works from Scopus and similar platforms.

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OIL PRICE AND EXCHANGE RATE VOLATILITY IN NIGERIA

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Abstract: *This study examined oil price influence on the Nigeria exchange rate volatility spanning the retro of thirty five (35) years. The Simultaneous equation modeling of Granger causality test and Vector Error Correction Model (VECM) techniques were adopted, to analyzed the data stream from 1983 – 2019. A dynamic framework analysis that includes test of unit root, descriptive statistics and co-integration preliminary test were carried out. Specifically, the empirical findings show that the coefficient of oil price and other variables (rate of interest, inflation rate and external reserve) considered has varying degree of significant relationship with volatility of exchange rate in Nigeria both in the succinct and long run during the retro under review. The study concludes that oil price has a long run positive non-significant influence on exchange rate volatility and a short run negative non-significant influence on exchange rate volatility in Nigeria during the sample retro under concern.*

Keywords: Oil Price, Exchange Rate Volatility, Co-integration, Causality, VECM, Nigeria

JEL Classification: C22, O24, F31

1. Introduction

By means of different channels oil price capriciousness influence the global economy, including wealth transfer from consumers to producers of oil. Cost of production increase of goods and services influences consumer confidence, inflation and the financial market (Omojimate and Akpokodje, 2010). The salient responsibility of oil price in determining exchange rate fluctuation path is evidenced particularly in post – Breton woods era (Adedipe, 2004 as cited in Ogundipe, Ojeaga and Ogundipe, 2014). In an economy, exchange rate is a pivotal and a veritable price variable that perform the dual responsibility of supporting global competitiveness and serves as domestic price nominal anchor. It should be relatively stable because it is imperative for external and internal growth in the economy (Mordi, 2006). Exchange Rate Volatility (herein after refers to ERV) can spur the uncertainty and the risk of foreign transactions and expose the country to the related risk of exchange rate (Englana, Omotunde, Ogunleye and Ismail, 2010). Nwogwugwu, Ijomah and Uzoehina (2016) positioned that in design and evaluation of policy the behaviour of real exchange rate occupies a cardinal role especially in emerging economies like Nigeria. However, one of the most dynamic prices is oil price which impact macroeconomic

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behaviour significantly in many developed and developing economies like Nigeria and this has been empirically established (Guo and Kliesen, 2005).

1.1. Statement of Research Problem

Just before the crisis of the global meltdown, exchange rate was stable with high oil price in the Nigeria economy, the 2008 financial crisis arrival nosedive oil price and exchange rate caved-in above 20%. Political and economic shock is sent around the world as a result of oil price decline in recent period in the international market (Ogundipe, Ojeaga and Ogundipe, 2014). Crude oil price and ERV are perceived as a core research subject in oil consuming and producing countries and both variables produced interesting influence on macroeconomic conditions holistically which have been studied mainly for causality and guidelines of interaction. Considerable sum of study have been done on oil price and ERV, however, scanty recent empirical studies like Abdulkareem and Abdulhakeem (2016), Ogundipe, Ojeaga and Ogundipe (2014), Osuji (2013), Azeez, Kolapo, and Ajayi (2012) were found in Nigeria case.

The findings of these studies were mixed with some finding positive relationship, negative relationship while others found no relationship between oil price and ERV, thus more research is needed. And the scope of these studies stopped at 2011 (except for Osuji (2013) and Abdulkareem, et'al, (2016) that stopped at 2014 respectively). And some of these studies did not used co-integration techniques in their methodology; this is a serious flaw in the estimation procedure that leads to inefficiency parameters and spurious regression result (Engle and Granger, 1987). In the light of the above, the effect of oil price on exchange rate volatility needs to be re-examined, considering the scope of major prior studies in the case of Nigeria that stopped at 2011, that is quite distant from current period and high degree ERV that bedevil the economy of Nigeria trigger more research instinct. Thus, it is pertinent for us to know the actual effect of oil price on ERV and the causality relationship between them in an unstable macroeconomic environment is the gap in knowledge this study intend to fill with more recent data stream as the broad purpose of the study. The specific objectives are to;

- i. Examine effect of oil price on exchange rate volatility in Nigeria
- ii. Determine the direction of causality between oil price and exchange rate volatility in Nigeria

1.2. Importance of the Study

The study does not duplicate efforts of previous studies on effects of oil price on Nigeria exchange rate volatility by adopting oil price, exchange rate volatility, interest rate, inflation rate and external reserve dataset. The outcome of this study will benefit the government, financial institutions and policy makers. By providing the understanding needed to diversify and promote other sectors in the economy by managing exchange rate volatility to spur economic growth and standard of living improvement in Nigeria.

2. Literature Review

Gounder and Bartleet (2007) adopted the multivariate framework to examine the short run effect of oil shocks on economic growth in New Zealand. Findings show that linear price changer, asymmetric price increase and the net oil price variables impacted significantly on the economy. Impulse responses and error variance decomposition confirms direct nexus between net oil price shock and growth and its indirect linkages through inflation and the real exchange rate. Nikbakht (2009) examined the long run nexus between oil price and real exchange rate, among OPEC countries using quarterly data from 2000 – 2007. The regression result confirms that real oil price is the dominant source of real exchange rate and

long run relationship were also confirm between both variables. Lizardo and Mollick (2010) studied the link between U.S dollar value movements against major currency. Findings revealed that movement in U.S dollar significantly influence oil price. Furthermore, currency of oil importers like China depreciates when oil prices increase. And increase in oil prices depreciates U.S dollar in net-oil exporters like Mexico, Russia and Canada. Beckmann and Czudaj (2012) examined the causalities between real oil prices and real dollar exchange rates using monthly data for different oil-exporting and oil-importing countries. On one hand, findings show that changes in nominal oil prices trigger real exchange rate effects via the nominal exchange rate and the price differential. Conversely, shocks in nominal exchange rates also influence nominal oil prices in some cases. Moshen and Nooshin (2013) examined the influence of oil price on real exchange rate fluctuations in Iran from 2000 - 2011. Adopting structural VAR estimation technique, findings reveal that oil price is a significantly and positively impact exchange rate volatility in Iran during the studied period. Liu, Zahra, Javed and Amna (2015) studied the impact of oil price fluctuations and exchange rate volatility on economic growth using annual data of 40 years in France. Using the co-integration technique, they found out that the relationship between oil price and exchange rate volatility on economic growth is significant and there exists a long run relationship between them. Yip, Tan, Habibullah and Khadijah (2019) studied oil price influence on exchange rate volatility in India from 1991Q1 to 2013Q1. The Engle and granger two stage, Johansen co-integration test and momentum threshold autoregressive consistent model were employed. Findings suggest co-integrating relationship between both variables. And evidence in favour of asymmetric co-integration was also shown by the result. Some Nigerian studies include; Ayadi (2005) whom studied the effects of oil production shocks and exchange rate movement in Nigeria as a net exporter of oil from 1975-1992. Regression methodology was adopted; Finding reveals positive response of output after a positive oil production shock in Nigeria. Olomola (2006) investigated the impact of oil price shocks on aggregate economic activity in Nigeria. The study used quarterly data from 1970 to 2003. Findings contrarily discovered that oil price shocks only significantly influence exchange rate not output and inflation in Nigeria. Umar and Abdulhakeem (2010) looked at how oil price shocks affect macroeconomic variables of GDP, money supply, unemployment, exchange rate and consumer price index using VAR techniques; Findings point out that oil price shocks strongly impact GDP and money supply, and the effect on consumer price index is not significant. Englama et al (2010) studied the impact of oil price volatility, foreign exchange demand, and external reserves on exchange rate dynamics in Nigeria using monthly data from 1999 to 2009. They utilized the co-integration technique and Vector Error Correction Model (VECM) for the long and short-run analysis respectively. The results showed that oil price and foreign exchange demand dynamic positively influence exchange rate volatility in the long run.

Jebbin and Osu (2012) examined the effect of oil price fluctuations, foreign exchange, real gross domestic product on exchange rate fluctuations; using the co-integration, VAR and GARCH techniques to examine the long-run relationship. The study found out that real exchange rate fluctuation in Nigeria is significantly influenced by oil price fluctuations. Oriakhi and Osaze (2013) examined the consequences of oil price volatility on the growth of the Nigeria economy within the period 1970 to 2010. With the use of VAR model, the study find that oil price volatility has direct impact on government expenditure, real exchange rate, and real import while real GDP and inflation are indirectly influenced by the oil price volatility. Hodo, Akpan and Offiong (2013) employed annual time series data spanning 1970-2010 and VAR techniques to examine the asymmetric effect of oil price shocks on exchange rate volatility and domestic investment in Nigeria. The study reveal that government expenditure exhibited immediate positive response to oil price shock, but public investment, private investment and industrial production exhibited negative response to oil price shock, further

confirming the evidence of a “dutch disease” in Nigeria. Ogundipe et al (2014) examined the effects of oil price, external reserves and interest rate on exchange rate volatility in Nigeria from 1970 to 2011. The Johansen Co-integration and VECM technique was employed. They observed that a proportionate change in oil price leads to a more than proportionate change in exchange rate volatility in Nigeria; which implies that exchange rate is susceptible to changes in oil price in their findings.

Osuji (2015) examined the effect of oil price movements on USD-Naira exchange rate pair using 420 observations from monthly time series data for the period 2008 to 2014 using OLS and VAR models for analysis respectively. Findings point out that that oil prices on a relative basis significantly affect exchange rate compared to imports also evidence of unidirectional causality relationship from oil prices to exchange rate and from oil prices to foreign reserves was found. Nwogwugwu et al (2016) examined the effects of oil price shocks on exchange rate volatility in Nigeria using monthly data covering the period 1986 to 2015. The models employed are GARCH, PARCH and EGARCH, based on normal, student-t and GED distribution respectively. Findings show that real exchange rate fluctuation in Nigeria is significantly influenced by oil price fluctuations and a strong positive correlation exists between exchange rate return and future oil price volatility. Abdulkareem and Abdulhakeem (2016) analytically gave insight on modelling macroeconomic and oil price volatility in Nigeria using daily, monthly and quarterly data and employed the GARCH-M, EGARCH and TGARCH model and found out that all macroeconomic variables considered (real GDP, interest rate, exchange rate and oil price) are highly volatile and that oil price is a major source of macroeconomic volatility in Nigeria. While Onoja (2015) observed in his study that oil price is not a significant determinant of Exchange Rate Volatility (ERV) in Nigeria as shown in his regression result.

Olayungbo (2019) studied the effect of global oil price on exchange rate, trade balance and reserve in Nigeria from 196Q4 to 2018Q1. The frequency domain causality approach was adopted. Findings indicate that causality relationship was not detected between oil price and exchange rate movement in Nigeria. Bhattacharya, Jha and Bhattacharya (2019) studied oil price influence on exchange rate volatility in India using the Causality, GARCH model. Findings reveal a weak and long run co-movement between oil price and exchange rate volatility. Monday and Abdulkadir (2020) looked at the influence of oil price volatility, foreign exchange demand, and external reserves on exchange rate volatility in Nigeria using monthly data and ARCH model over the period from May 1989 to April 2019.

3. Methodology

3.1. Research Design, Type and Sources of Data

The longitudinal Research Design (LRD) is used in this study. The LRD is informed because the variables under consideration were gathered over a period of time and cannot be manipulated by the researcher. Secondary data stream sourced from CBN statistical bulletin and OPEC Website is used from 1983-2019).

3.2. Preliminary Test

The preliminary test starts with data properties summary and characteristics of the variables under consideration and present them in a convenient form with descriptive statistics. Followed by unit root test which was carried out with the Augmented Dickey-Fuller (ADF) and Philip Peron (PP) test given as:

$$\Delta Y_t = \gamma + \beta t + \delta Y_{t-1} + \gamma \sum_{i=1}^m \Delta Y_{t-i} + \varepsilon_t \dots \dots \dots (1)$$

While:

γ is the drift, t is the deterministic trend, m is the lag dimension
 m = lag length significant to guarantee white noise process of ε_t

The Philip Peron test equation is given as:

$$\Delta Y_t = \beta_0 D_t + \pi Y_t - 1 + \mu t \dots \dots \dots (2)$$

Where:

Δ = the first difference operator

t = time trend indicator

πY_{t-1} = Endogenous factors

μt = Residual term (Engle and Granger, 1987)

Furthermore, volatility of exchange rate figures is conditional variances generated using the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) as introduced by Engle (1982) and generalized by Bollersslev (1986) is given as;

$$\partial_t^2 = \alpha_0 + \alpha_1 \mu_{t-1}^2 + \beta \partial_{t-1}^2 \dots \dots \dots (3)$$

Where

∂_t^2 = Measure of exchange rate volatility

α_0 = Mean

α_1 and β = The coefficient

μ_{t-1}^2 = The ARCH term, the lag of squared residual and assesses news about changes from the lag period

∂_{t-1}^2 = The GARCH term, the lag of volatility measure itself.

Thereafter, the Johansen co-integration technique is estimated to establish the long run convergence of the variables under concern (Engle and Granger, 1987).

3.3. Theoretical Framework and Model Specification

This study is based on the macroeconomic theory of exchange rate of Balassa-Samuelson (1964). Most times “Penn Effect” (i.e strong direct association between price levels and GDP per capita) is noticed. The estimated concise specification of the model is stated as;

$$\ln A_t = \Theta + y \ln J A_t + Z_t + u \dots \dots \dots (5)$$

Where:

A = The price of US dollars per one unit of domestic currency

JA = Labour productivity differentials

Z = other determinant of exchange rate movement

t = at current time

u = random term (Chowdhury, 2011)

Ogundipe et al (2014) model is adapted. Adjusted version of equation (5), with exchange rate volatility infused as a salient factor inputs, and Inflation rate, external reserve, exchange rate, as ancillary variables. Putting these variables into equation (5) gives the functional form of the model given as:

$$Z_t = f[\text{EXRV}, \text{OP}, \text{INFR}, \text{INTR}, \text{LERV}] \dots \dots \dots (6)$$

Where:

Z_t = K vector of endogenous and exogenous variables

EXRV = Exchange rate volatility (Generate with equation 4 and used in equation 7)

OP = Oil price (Price per barrel in international market)

INFR = Inflation rate (annual inflation rate)

LERV = Log of External reserve (percentage of unused foreign currency from international trade)

INTR = Interest rate (annual sum of charges on capital borrowed)

The VECM is a restricted type of Vector Autoregressive Model (VAR) in which the variables have been differenced and one period lagged value of the error correction mechanism included. Thus, the above model can be re-written in its compact econometric form as;

$$\Delta Z_t = \alpha_{i0} + \sum_{i=j}^k A_i \Delta Z_{t-1} + \sum_{i=j}^k \theta ECM_{t-1} + \varepsilon_{it} \dots \dots \dots (7)$$

Where, Δ is the first difference operator, α_{i0} is the factor of autonomous variables, A_i is the matrices of exogenous variables, ECM is the error correction mechanism, θ is the coefficient of ECM, ε_{it} is the vector of innovations and Z_t is as earlier defined. *A priori* expectation as derived from theories $\beta_0 > 0$, $\beta_1, \beta_2, \beta_4, \beta_5 > 0$ while $\beta_3 < 0$

Finally, the stationary variables were used to perform the granger causality test as follows:

$$\Delta Y_t = \beta_0 + \sum_{t=1}^n \beta_1(1-Z)\Delta Y_{t-1} + \sum_{t=1}^n \beta_2(1-Z)\Delta K_{t-1} + \phi 1Ecm(-1) + \varepsilon \dots \dots \dots (8)$$

While, Z = selected positive coefficient; β_1 and β_2 , are parameters and β_0 is the intercept, ε is the disturbance terms. ΔY_t = first difference at time t of the variables.

3.4. Data Analysis Method

The Vector Error Correction Model (VECM) is used to analyze our data in this study. It is effective in capturing the rich dynamics between macroeconomic variables in the system equation framework and this was demonstrated by Ogundipe, et'al, (2014). Since the variables under investigation are co-integrated, we use the VECM. This is because the error correction mechanism helps to incorporate the long run property of the variables lost in the process of differencing, back into the model. It becomes imperative to note here that all the preliminary test and model specified in this study were implemented using Econometric Views software (E-view) vision 8.0.

4. Data Presentation and Analysis of Results

4.1. Descriptive Statistics

Table 1: Summary Statistics

	EXRV	OP	INFR	INTR	LERV
Mean	71.15600	40.31571	20.42514	12.58086	3.880286
Median	21.35000	27.60000	12.00000	12.82000	3.870000
Jarque-Bera	4.144906	8.159732	15.45273	3.772232	1.093297
Probability	0.125877	0.610910	0.440400	0.151660	0.578887

Source: Researcher's Computation Using E-view (2019)

Table 1 shows that the proportion of mean to median is almost one. The Jarque-Berra statistic reveals that the variable considered in this study is normally distributed with their non-significant probability value at 5% level of confidence.

4.2. Unit Root Estimation

Table 2: Stationarity Test

ADF Test				P-P Test			
Variable	ADF Indicator	Order	Remark	Var.	P-P Indicator	Order	Remark
EXRV	-2.1431	1(0)	NS	EXR V	-2.1431	1(0)	NS
	-5.2348*	1(1)	S		-5.2310*	1(1)	S
OP	-2.0631	1(0)	NS	OP	-2.1078	1(0)	NS
	-4.0595*	1(1)	S		-4.0604*	1(1)	S
INFR	-2.5632	1(0)	NS	INFR	3.1653***	1(0)	S
	-4.6371*	1(1)	S		-11.7952*	1(1)	S
INTR	-3.3612***	1(0)	S	INTR	-3.3552***	1(0)	S
	-3.5217**	1(1)	S		-7.9002*	1(1)	S
LERV	-3.9197*-7.0	1(0)	S	LER V	-3.9794*	1(0)	S
	068*	1(1)	S		-6.9040*	1(1)	S
Critical Values				Critical Values			
1%	-4.2528	1(0)	Level	1%	-4.2529	1(0)	Level
	-4.2627	1(1)	1 st Diff		-4.2627	1(1)	1 st Diff
5%	-3.5484	1(0)	Level	5%	-3.5485	1(0)	Level
	-3.5529	1(1)	1 st Diff		-3.5529	1(1)	1 st Diff
10%	-3.2071	1(0)	Level	10%	-3.2070	1(0)	Level
	-3.2096	1(1)	1 st Diff		-3.2096	1(1)	1 st Diff

S = Stationary NS = Not Stationary

NB: * = 1%, ** = 5% and *** =10% significant level individually.

Source: Researcher's Computation Using E-view (2019)

Table 2 shows that both the ADF and PP estimation unanimously agree the stationarity of all variables selected at order one and uniform order of integration at 5% confidence level respectively. Thus, co-integration test is carried out.

4.3. Johansen Co-integration Result

Table 3: Co-integration Estimation

Trace Statistic				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Coefficient	Sig.**
None *	0.686494	73.28294	69.81889	0.0258
Max 1	0.459136	35.00508	47.85613	0.4477
Max 2	0.235049	14.72369	29.79707	0.7977
Max 3	0.156143	5.881562	15.49471	0.7095
Max 4	0.008421	0.279083	3.841466	0.5973
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
Maximum Eigen Statistic				
Hypothesized No. of CE(s)	Eigenvalue	Max- Eigen Statistic	5% Critical Coefficient	Sig.**
None *	0.686494	38.27787	33.87687	0.0140
Max 1	0.459136	20.28139	27.58434	0.3220
Max 2	0.235049	8.842126	21.13162	0.8450
Max 3	0.156143	5.602479	14.26460	0.6646
Max 4	0.008421	0.279083	3.841466	0.5973
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level				
Max = Maximum or at most				

Source: Researcher's Computation Using E-view (2019)

Both Trace and Maximum Eigen statistic confirm long run association between variables. That is both results indicate one (1) co-integrating relationship at 5% confidence level.

4.4. Akaike Information Criteria

Table 4: Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	Lag	LogL
0	-522.9426	NA	4.27e+08	34.06081	0	34.29210
1	-429.6731	150.4346	5345006.	29.65633	1	31.04406
2	-405.8331	30.76129*	6603332.*	29.73117*	2	32.27534*
3	-387.5975	17.64737	15057611	30.16758	3	33.86819

* indicates lag order selected by the criterion; at 5% level for each test.

Source: Researcher's Computation Using E-view (2019)

The importance of lag structures in Causality test cannot be under estimated, because causality test is highly sensitive to lag structures. To reduce this menace, the Akaike Information Criterion (AIC) was employed in deriving the optimum lag length and this was two (2).

4.5. Pair-Wise Granger Causality Tests

Table 5: Causality Result

Ho Hypothesis	Input	F-Stat	Sig.	Decision	Remark
DOP → DEXRV	34	0.00968	0.99	Accept	Partial Feedback
DEXRV ← DOP		4.67982*	0.01	Reject	
DINFR → DEXRV	34	0.93695	0.40	Accept	None
DEXRV ← INFR		1.93146	0.16	Accept	
DINTR → DEXRV	34	0.73113	0.49	Accept	None
DEXRV ← DINTR		0.30411	0.74	Accept	
DLERV → DEXRV	34	1.17036	0.32	Accept	Partial Feedback
DEXRV ← DLERV		3.63496**	0.04	Reject	

*** and ** indicates 1% and 5% level of significance respectively**

Source: Researcher's Computation Using E-view (2019)

The F-value for hypothesis decision in this study is 2.6 approximately. From table 5 it is clear that oil price (OP) granger causes exchange rate volatility (DEXRV) unidirectional way, external reserve (DLERV) stimulate exchange rate fluctuation (DEXRV) in unidirectional manner (Partial feedback). However, causality relationship was not detected between interest, inflation rate and exchange rate fluctuation during the sample studied.

4.6. Vector Error Correction Model Estimation

Table 6: Vector Error Correction Estimates

EC:	$\Delta(\text{DEXRV})$	$\Delta(\text{DOP})$	$\Delta(\text{DINFR})$	$\Delta(\text{DINTR})$	D(DLERV)
CointEq1	-0.617419	0.044130	-0.262384	-0.050493	0.001247
S.E	(0.09248)	(0.07125)	(0.09246)	(0.01709)	(0.00169)
t-statistic	[-6.67625]	[0.61934]	[-2.83777]	[-2.95496]	[0.73805]
Vector Error Correction Results					
	D(DEXRV)	D(DOP)	D(DINFR)	D(DINTR)	D(DLERV)
$\Delta(\text{DEXRV}(-1))$	0.511975	0.240884	0.224799	0.001213	-0.001263
	(0.23380)	(0.18013)	(0.23374)	(0.04320)	(0.00427)
	[2.18979]	[1.33729]	[0.96174]	[0.02807]	[-0.29548]
$\Delta(\text{DEXRV}(-2))$	0.099929	0.049302	0.051443	0.051800	0.000430
	(0.23658)	(0.18227)	(0.23653)	(0.04371)	(0.00432)
	[0.42239]	[0.27048]	[0.21750]	[1.18503]	[0.09939]
$\Delta(\text{DOP}(-1))$	-0.096344	-0.163743	0.194722	0.042336	-0.000770
	(0.29390)	(0.22644)	(0.29384)	(0.05430)	(0.00537)
	[-0.32781]	[-0.72312]	[0.66269]	[0.77961]	[-0.14335]
$\Delta(\text{DOP}(-2))$	-0.185503	-0.118903	-0.114691	0.008827	-0.004180
	(0.30128)	(0.23212)	(0.30121)	(0.05567)	(0.00551)
	[-0.61572]	[-0.51225]	[-0.38077]	[0.15856]	[-0.75904]
$\Delta(\text{DINFR}(-1))$	0.682223	-0.089927	0.421578	0.156966	-0.005244
	(0.23399)	(0.18028)	(0.23394)	(0.04323)	(0.00428)
	[2.91561]	[-0.49881]	[1.80208]	[3.63061]	[-1.22609]
$\Delta(\text{DINFR}(-2))$	-0.518083	-0.045171	0.136396	0.101572	-0.004388
	(0.25687)	(0.19791)	(0.25681)	(0.04746)	(0.00469)
	[-2.01691]	[-0.22825]	[0.53112]	[2.14013]	[-0.93466]
$\Delta(\text{DINTR}(-1))$	0.270995	-0.651812	-0.901425	-0.857891	0.035964
	(0.08332)	(1.21988)	(1.58297)	(0.29255)	(0.02894)
	[3.25246]	[-0.53432]	[-0.56945]	[-2.93250]	[1.24280]
$\Delta(\text{DINTR}(-2))$	-0.861988	-0.784109	0.957968	-0.428901	-0.006263
	(1.08352)	(0.83481)	(1.08328)	(0.20020)	(0.01980)
	[-0.79554]	[-0.93927]	[0.88432]	[-2.14237]	[-0.31626]
$\Delta(\text{DLERV}(-1))$	0.333066	-1.345205	-2.936549	-2.265352	-0.234918
	(10.0975)	(7.77967)	(10.0952)	(1.86569)	(0.18455)
	[0.03299]	[-0.17291]	[-0.29089]	[-1.21422]	[-1.27293]
$\Delta(\text{DLERV}(-2))$	5.940742	-2.537349	4.228905	2.142499	-0.276215
	(9.94962)	(7.66574)	(9.94737)	(1.83836)	(0.18185)
	[0.59708]	[-0.33100]	[0.42513]	[1.16544]	[-1.51895]
C	5.299140	1.716457	-2.155440	0.084942	0.111251
	(3.50329)	(2.69913)	(3.50249)	(0.64729)	(0.06403)
	[1.51262]	[0.63593]	[-0.61540]	[0.13123]	[1.73753]
R²	0.91087	0.262330	0.567499	0.609169	0.363766
Adjusted R²	0.89108	-0.164742	0.317104	0.382899	-0.004581
F-Statistic0	57.35070	0.614253	2.266416	2.692220	0.987564

EC = Error Correction

Source: Researcher's Computation Using E-view (2019)

Generally, exchange rate volatility (DEXRV), inflation rate (DINFR) and interest rate (DINTR) the variables were correctly signed while oil price (DOP) and external reserve (DLERV) were not correctly signed. This also showed that government policies in oil price

and external reserve have not impacted well on EXRV. The coefficient of determination R^2 and its Adjusted version for exchange rate volatility has a very good-fit of the regression line of 91% and 89% respectively. This means that all the variables considered in the exchange rate volatility model account for approximately 89% of total systematic variation in exchange rate volatility in Nigeria. The F-statistic coefficient of 57.35 is significant at 1% confidence. This demonstrated a significant association between all the endogenous variables taken together in the model. Thus, the overall goodness-of-fit of the model was on the affirmative.

4.6.1. Discussion of Findings and Policy Insinuations

The VECM result in Table 6 reveals that three of the co-integrating variables [D(DEXRV), D(DINFR) and D(DINTR)] are adjusting. This is embedded in the negative values of their respective coefficients when compared to their corresponding t-values in CointEq1. This means that the error correction has the proper sign and speed of adjustment in the three variables converges in the long run. Based on the rule of criteria, and three of the converging variable [D(DEXRV)], D(DINFR) and [D(DINTR)] were statistically significant. This is seen from their corresponding t-value of 6.68, 2.84 and 2.95 respectively that is greater than two. [D(DOP)] and [D(DLERV)] are the non-adjusting variables and they are not statistically significant. This means that oil price (OP) and log of external reserve (DLERV) in the long run has a non-significant direct effect on exchange rate volatility. This means that all the converging variables are mutually causal as shown by Vector Error Correction Model (VECM).

From Table 6, the exchange rate volatility D(DEXRV) model which is the model of major concern reveals that only one period lag value of exchange rate volatility D(DEXRV(-1)) considered in the model has a significant direct effects on present year EXRV at 5% level of confidence. This spurs high level of exchange rate volatility that is prevalence in the Nigeria economy. The one and two period lag value of oil price (D(DOP)-1) and (D(DOP)-2) also impacted negatively on current year exchange rate volatility. This was not statistically significant 5% level respectively. This means that government attention to oil price in Nigeria economy has not yielded the desired result in mitigating EXRV in Nigeria. The one and two period lag considered for inflation rate (DINFR-1) and (DINFR-2) revealed a significant mixed influence on current year EXRV, the effect of the second period is negative while the first period was positive. In the same vein, the one and two period lag considered for interest rate (DINTR-1) and (DINTR-2) revealed a significant mixed influence on current year EXRV. Similarly, the one and two period lag considered for external reserve (DLERV-1) and (DLERV-2) revealed a non-significant inverse effect on current year EXRV in both period, This indicates that government management of external reserve have not yielded the desired results in exchange rate volatility reduction during the period under review. Olomola (2006), Habib and Kalamova (2007), Nikbakht (2009) and Englama et al (2010), Beckmann and Czudaj (2012) confirm similar findings in their study. However, contrary to the findings of Korhonen and Juurikkala (2007), Jebbin and Osu (2012) in the literature.

5. Conclusion and Recommendations

This study x-rays empirically the effect of oil price on exchange rate dynamics in Nigeria spanning the period of thirty five (35) years. Result shows that the coefficient of oil price and other variables (interest rate, inflation rate and external reserve) considered has varying degree of significant relationship with exchange rate fluctuation in Nigeria both in the short and long run retro under review. Specifically, oil price does not significantly impact exchange rate in Nigeria both in the short and long run. Other auxiliary variables of (interest rate, inflation rate) significantly influence exchange rate volatility only in the long run. This shows that interest and inflation rate exact significant pressure on exchange rate volatility in

Nigeria. Furthermore, it was found that unidirectional causality relationship runs from exchange rate volatility to oil price in Nigeria and not the other way. Also, partial causality relationship runs from exchange rate volatility to external reserve not the other way. Thus, this study concludes that Oil price has no causality relationship and significant influence on exchange rate dynamics in Nigeria during the sample period. From the findings this study recommends that appropriate government policies on these different variables especially interest rate and inflation rate that influences exchange rate volatility will help to tackle the menace of exchange rate volatility in Nigeria if properly managed.

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THE INFLUENCE OF THE COVID 19 ON THE BET AND WIG20 INDICES. COMPARATIVE ASPECTS

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Abstract: *The aim of the paper is to assess the effects of the coronavirus pandemic (COVID – 19) on two stock market indices: BET index for Bucharest Stock Exchange and WIG20 index for Warsaw Stock Exchange. The negative effects of the pandemic have had an influence on the performance of the stock markets since its debut. Many companies as well as sectors have ceased their activity during the outbreak, causing devastating financial losses worldwide. By comparing indices evolution during 2020 using the data available on the stock markets' websites, as well as analyzing in part the companies that make up the indices portfolio, we will try to present the sectors most affected by the pandemic as well as their evolution during the analysis period. The results of this research can be a starting point for future empirical analysis on the long-term effects of the pandemic on stock markets' performance for Romania and Poland. The results could be a source of information for state institutions, companies, investors, analysts but also representatives of the medical sector (responsible for crisis management) - in order to observe the severity and magnitude of the negative effects of the coronavirus pandemic on the financial markets and also help develop and ensue their long-term sustainable growth.*

Keywords: COVID 19, Bucharest Stock Exchange, Warsaw Stock Exchange, financial market, WIG20, BET.

JEL classification: D53; I15.

1. Introduction

The uncertainty and insecurity caused by the global spread of the coronavirus has had an immeasurable impact upon financial markets, affecting all sectors of the economy. A notable problem raised in March 2020 was the "war" between Russia and Saudi Arabia on oil prices, the two states failing to reach an agreement with OPEC+ (Organization of the Petroleum Exporting Countries) - a situation that led to the collapse of oil prices, furthermore, the decrease of the stock markets. (Jacobs, 2020).

The OECD (Organization for Economic Co-operation and Development) has highlighted the fact that companies in many countries have become indebted in recent years, due to the low cost of borrowing. Another factor is the monetary policy which has led to a large corporate debt in many states. The OECD has concluded that businesses will suffer because they have few financial support options, resorting to the reduction of operating costs and redundant of staff in order to cope with the risk of insolvency.

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The leader of the Austrian financial market authority, H. Ettl, stated at the beginning of the pandemic in the European space that “there is no empirical data that can help to assess the future negative effects of the crisis on the economic sector because such a situation has not existed in the past”. He also believes that companies with a difficult financial situation before the crisis will now become more unstable.

With the outbreak of the crisis outside China, major global stock indices (NASDAQ-100, Dow Jones, etc.) have seen the steepest declines since 2008 to date. By analogy to the “black Monday of 2008”, we can also consider February 27 as a “black Thursday” being marked by the largest decline stocks and indexes (notable is the decline of the Dow Jones index with more than 2.000 points).

Stock markets worldwide declined by over 30%, being described as volatile and risky for investors.

2. Literature review

The current economic and social context marked by the epidemiological crisis is unprecedented for the current generation. At an economic level, operators had to respect strict regulations regarding their activity. This imposed the reorganization of strategies and modification of work environment within the company, the sole purpose being the protection of both employees and clients. Managers had all these tasks, being forced to shift their focus towards the protection of the community. Reality showed that those who responded promptly to changes in the economic and social environment, had a more positive evolution on the market. “The quality of governance is influenced by several factors, at both microeconomic and macroeconomic level. Economic crises have a direct link between governance and economic growth, which leads to the need for long-term strategies to have good governance.” (Noja et. al., 2019)

Although globalization has an important role to play in creating links between the world's economies, it has also led to an increase in interdependence between financial markets in recent decades. Despite its benefits, globalization plays a crucial role in the context of a pandemic. The International Monetary Fund (IMF) said that the COVID-19 pandemic generated an unprecedented crisis, being characterized by the following: it is versatile (because it affects the links between the economy and the health system), it is uncertain (because at its beginning there was no real treatment and the measures taken regarding isolation were chaotic) and it has a global character. Pak and Adegboye (2020) drew the following conclusions: supply decreases due to the closure of companies and decreased productivity, while demand decreases due to deliberately low consumption among the population.

The WHO (World Health Organization) supported by health representatives, acted as intermediaries in shaping investors' perceptions of the pandemic as well as their understanding of current financial risks. (Smith, 2006: 3113-3123)

When there is an upward trend and a low risk on the financial market, investors are optimistic, but when the market registers a downward trend and presents a high risk, investors become more cautious, waiting for the market to recover. (Lu, & Lai, 2012:621-629)

Other studies have concluded that the media also has a significant effect upon financial markets because a high number of articles regarding an unexpected situation leads to increased panic among investors. (Engelberg &Parsons, 2011: 67-97). In the case of the coronavirus pandemic, the media was oriented only towards the gravity of the situation feeding the fears of the population. Also, on this topic, Cepoi (2020) investigated the correlation between COVID-19 related news and stock market returns across the top six most affected countries by the pandemic (USA, UK, Germany, France, Spain and Italy). The

results showed that stock markets developed an asymmetric dependency with information related to COVID-19, thus making it necessary to use appropriate communication channels, to attenuate the volatilities generated by the pandemic on financial markets.

Contessi and De Pace (2020) presented statistical evidence of instability using 18 market indices during November 1, 2019 to May 31, 2020, materialized in the collapse of the stock markets at the beginning of March.

An important conclusion was formulated by Ramelli and Wagner (2020) who studied the cross-section of stock price reaction to COVID-19 concluding that the most affected were the companies with low cash and a high degree of indebtedness.

3. Data and methodology

The current, unprecedented context caused by the pandemic offers us the opportunity to assess the impact it has on stock markets. In this study we will describe the negative effects of the pandemic across two stock markets - Bucharest Stock Exchange and Warsaw Stock Exchange. By analyzing the evolution of the two main indices of the markets – BET index for BSE (which includes the 17 most traded companies) and WIG20 index for WSE (which includes shares of 20 major and most liquid companies in the Main List) we will describe the evolution of the companies that make up the indices portfolio in order to assess the magnitude of the effects and to show the most affected sectors by taking into account the stock price evolution. The data regarding the markets will be collected from the stocks' websites.

4. Indices presentation and evolution

After the first cases were registered in both countries and with the rapid growth in the following weeks, country officials showed great interest towards the financial sector by ensuring continuous access to liquidity, extending reports deadlines and also tax payment deadlines, enabling focus on customer service, providing necessary medical materials and services in order to fight against the ongoing pandemic.



Figure 1. BET index and WIG20 index evolution between January and October 2020 (WIG20 left axis, BET right axis)

Source: Authors' elaboration based on data from ceicdata.com

The Romanian Capital Market started the year 2020 with a growth of the BET index, reaching its' highest value in the last 12 years in January (over 10,000 points). The optimism of the Romanian stock market started to diminish once the pandemic ceased activity in many sectors of the economy.

The Polish stock market started 2020 with a lower value of WIG20 (approximately 5%). Financial analysts forecasted for 2020 an increase of the main indices as well as the easier obtaining of profit on the small and medium companies' segment. Also, analysts forecasted an 8% increase of the WIG20 index.

In order to describe the way in which the coronavirus pandemic affected the financial markets in Romania and Poland, the evolution of the indices was compiled and compared for the year 2020.

According to Figure no. 1, we can see the steep decline registered by both indices starting from mid-March. The BET index took a drop of almost 30% from 1st of January to 23rd of March, while WIG20 index decreased with almost 40% during the same period. The current context of COVID-19 has had a direct impact on the evolution of the capital market, presented through the massive depreciation of shares due to investors' fears regarding the pandemic.

4.1. The evolution of the BET index

Companies listed on BSE had registered a positive evolution in April, the first full month of voluntary blockage of the economic system due to the establishment of the state of emergency by the Romanian government. The total trading value on all types of financial instruments approached 1 billion euros in April (an increase of 34%), while the average daily trading value was almost 11 million euros in January- April (up with 30%).

Private pension funds have taken full advantage of the revaluations of listed companies, becoming among the most active investors of the Romanian stock market during the health crisis.

At the end of June, the BET index reached the level of 8,659 points (-13.21%), and Romania ranked ninth in the EU according to the evolution the main indices of the capital markets during the first semester of 2020.

At the end of August, the BET index ranked 19th out of a total of 34 countries analyzed (with a difference of 16% compared to the beginning of the year). Out of the total of 17 issuers, 9 companies closed the first seven months of 2020 with a profit. Teraplast was the leader with an increase of over 50% due to the announcement of the sale of business lines, while Nuclearelectrica registered an increase through the generous dividend offered. On the downside, BRD SocGen had the weakest evolution in the index, due to the banking sector being strongly affected by the pandemic. Another company with a significant decrease was Sphera Franchise Group, due to the restaurant industry being severely affected by the current situation. OMV Petrom, the largest oil producer in Central and Eastern Europe, registered the third weakest evolution with a depreciation of 23.71%. This evolution was also influenced by the sharp drop in the price of oil, which traded at historic lows. A report published by BSE specifies that it ended the first eight months of 2020 with listings of over 500 million euros, eight issuers managing to attract financing.

September was marked by a great historical event in the evolution of the Bucharest Stock Exchange. Quoting the CEO of the Romanian Stock Exchange "as of September 21, 2020, there has been a visible effect on BSE in terms of investor activity. The two companies that have met the criteria for inclusion in All-Cap indices dedicated to emerging markets are Banca Transilvania - the most traded company on the stock market - and Nuclearelectrica. Due to the promotion, the Bucharest Stock Exchange expects more foreign capital inflow.

Despite the positive situation recorded at the end of August, October came with big depreciations (almost 6% for BET). The banking sector has been hit hard by the deteriorating outlook for economic recovery. BRD SocGen shares fell 12.46%, while Banca Transilvania shares depreciated by 12.09%. After the banking sector, the shares of Purcari Wineries are in the top of the decreases, the titles of the wine producer from the Republic of Moldova registering a decline of 9.91%. The food industry, to which the company's activity is strongly linked, is being affected by the measures imposed by the authorities to limit the spread of the virus. Shares of Sphera Franchise Group, the other issuer in the index whose operations are dependent on the same industry, depreciated by 7.69% in October, hitting a record low.

In addition to those mentioned, energy producing companies had registered decreases overall at the end of October; Romgaz shares a depreciated with 5.16% (recording the lowest price since January 2017 - with a decrease of 23.8% of natural gas production in the 3rd quarter of the year 2020 compared to the previous year). Nuclearelectrica shares fell 5.15% and OMV Petrom shares fell 5.01%. On the other hand, except for Conpet, the utility companies (Transelectrica, Electrica and Transgaz) from the BET index had registered an increase.

The BET index ended 2020 with a value of 9,805 points, a decrease of 1.72% compared to its value at the beginning of the year (9,997 points). The capitalization of the main segment, compared to the value for 2019, was lower by 14.64%. On the other hand, the total value of transactions increased by 55.79% compared to the previous year, a particularly important aspect (almost 3 million Euros).

4.2. The evolution of the WIG20 index

In the case of the WIG20 index, the evolution was similar to that of the BET index.

In the half-yearly report published on the stock exchange's website, the CEO of WSE noted that: "the dynamic recovery of indices led to the record-high turnover that continued into Q2. The sharp fall of stock prices followed by a strong recovery brought new investors to the capital market. Brokers opened more than 70 thousand new accounts for clients in H1 2020. We expect that most of those new investors will stay on the capital market for good. The coronavirus pandemic triggered high volatility of stocks and other financial instruments traded on exchanges all around the world including Poland. The value of turnover in shares on the GPW Main Market was record-high at more than PLN 131 billion in H1 2020 and investor activity peaked in June." (Szaniewski and Dudkowska, 2020)

The WIG20 index ended August with a value of approximately 1,800 points. Analysts suggested that the index was one of the weakest indices in Europe. Its decline might be related to the reduction of about 2.5% in MSCI EM, which is an indirect benchmark for it. The performance of the WSE was clearly affected by the energy sector, due to the lack of investors in London – the last session of August being marked by a decrease in turnover overall.

At the end of September, WIG20 closed with a value of approximately 1,700 points, depreciating by 4.9%. Out of the index portfolio, the biggest share was primarily held by CD Projekt, which lost over 8.5% during the month, registering a turnover of PLN 459 million - which represents more than half of the turnover for the entire blue-chip index. This shows the weakness of the Polish stock market, where a large company influences the entire market.

Still weak in the WIG20 index, oil companies registered depreciations, both PKN Orlen (decrease of 3.4%) and Lotos ended the month in the red, joined by the mining sector (JSW with a depreciation of 2.53%). Apart from those mentioned, KGHM (major producer of copper and silver) decreased the most in WIG20 at the end of September (-2.53%). On the energy sector, the largest depreciations were recorded by the following companies: PGE

which decreased the most (-6.1%) and Tauron – with a decrease of 3.5%. In the oil and gas sector, the company that stood out with a significant loss was PGNiG, with a decrease of 3.3%.

On the opposite pole, CCC company stood out, publishing good results for Q3 - the company also boasts about customers who return to shopping due to the excellent products acquired. The energy sector registered a positive evolution as well.

After the October 14 session of trading on the WSE, Allegro - a Polish online e-commerce platform - replaced mBank in the WIG20 index. After just a few days after entering the index, Allegro managed to hold the largest share in the portfolio of the WIG20 index, thus, it finally dethroned CD PROJEKT - computer game manufacturer - as the largest company listed on the exchange.

On October 19, Allegro entered the FTSE indices, and from October 26, the company was included in the MSCI indices. With this classification, analysts and investors hoped that this will lead to the faster recovery of the Polish stock market.

Despite the high hopes, the end of October was characterized by a significant decrease of the WIG20 index compared to the previous months (WIG20 fell by around 11.5%, reaching approximately 1.550 points). In terms of trends, as of September 30, 9 companies were on a downward trend, while 10 companies were on an upward trend. The affected sectors are:

- the banking sector (Alior, mBank, Pekao, Santander),
- oil-petroleum (Lotos, PKN-Orlen),
- telecommunications (Orange, Play-Comm.)
- insurance (PZU) - reaching the lowest value in history, at 22.93 PLN.

The banking sector performed particularly poorly, PKO BP shares being traded at historical lows. Analyst responded that “we should only be glad that the banking sector weighs less and less in WIG20, because it would only reduce the performance registered by the index” (Beck, 2020).

Investors have once again become concerned about the quality of bank loan portfolios. The decline in banking companies is reinforced by weaker overall sentiment in the stock markets. Santander registered the lowest values since 2009, at 132 PLN, followed by Orlen, which reached its lowest values in the last 6 years.

Given that market pessimism is primarily due to concerns about the rising number of cases and the possible lockdowns that might take place in many countries around the world, there is little evidence that the situation will change drastically in the near future. In Europe, severe restrictions have been imposed on all major economies. There are also restrictions in almost every other country on our continent, which is very likely to have a negative impact on all economic activities. In Poland, the media is flooding the population with information about a possible complete blockade.

The current situation of the WIG20 is optimistic. After the first wave of growth in early November, the evolution of the index has been relatively stabilized. Currently, the index is heading towards 1,850 points, which is the peak of consolidation in June-August. This is now an important resistance for the WIG20, being saved by Allegro and CD Projekt from stagnation.

WIG20 ended 2020 with a value of 1,984 points, exceeding 2,000 points in 2021. For 2020, the decrease was 8.74% compared to the value at the beginning of the year. Increases were recorded by CCC and LPP, but the index's yield was declining due to companies in the banking sector that continued to show a downward trend. CD Projekt registered a 30% drop in share prices in December with the launch of the long-awaited video game Cyberpunk 2077 - a game that was ultimately a big disappointment for many. Orange also ended 2020 with a decrease of 1.44%.

5. In conclusion

Indices of major stock markets in Europe and the United States marked significant depreciation in the recent months, amid rising numbers of coronavirus cases, the presidential elections and talks for a new US economic stimulus package or new restrictions on some European countries to limit the spread of the COVID-19 virus. These factors were also present in the evolution of the analyzed BET and WIG20 indices.

For investors, we can conclude that in the end it is not only the company's business factors that matter but also the existing risks regarding investments in the current epidemiological context. The results of this study show that:

- The COVID-19 outbreak has severely affected stock markets worldwide – the most affected being the banking sector, oil-petroleum, food industry, tourism and so on.
- The pandemic affected companies' activity and had an impact on the employment which will take much longer to recover, destabilizing the market overall (from mid-March, many companies had ceased their activity causing unemployment rates to rise)

As we have seen, almost the entire year of 2020 has been marked by a rapid growth in coronavirus cases worldwide. It is important to find solutions to avoid the current problems in the health sector and the financial sector.

For investors, the economic crisis caused by the pandemic leads to a decrease in economic activities, implicitly they are worried about their future income. Intuitively, some of them resorted to selling shares as the virus spread globally.

The economic recovery requires a policy response in the short, medium, and long term. The short-term goal of support is not to stimulate the economy but rather to avoid mass layoffs and bankruptcies. (Loayza, 2020). The medium-term macroeconomic policy should focus on recovery measures. Central banks could respond by reducing interest rates. However, as the shock is a multi-faced crisis, monetary, fiscal, and health policy responses are expected. The articles' results contribute to the literature regarding the impact of the coronavirus on the economic sector and can also be a source of information for state institutions, companies, investors, analysts but also representatives of the medical sector (responsible for crisis management) - in order to observe the severity and magnitude of the negative effects of the coronavirus pandemic on the financial markets and also help develop and ensue their long-term sustainable growth.

A limit of the research can be the descriptive analysis performed, done by comparing the results obtained by the companies. This offers only a general image of the markets' health and the effects of the pandemic upon them. Future directions of research can be oriented towards an empirical analysis in order to establish the causal relationship between the effect and the results. Another limitation is that the study was focused on only two financial markets.

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6. Bio-note

Cătălin Florin Bărnăuț is a PhD student at the *Doctoral School of Economic Sciences, Faculty of Economic Sciences, University of Oradea, Romania*. In his doctoral research he focuses on stock markets performance, mainly companies listed on the Bucharest Stock Exchange and Warsaw Stock Exchange.

Scientific events at the Doctoral School of Economics, University of Oradea

On 20th of November 2020, the Doctoral School of Economics organized the 11th edition of the International Conference of Doctoral Students and Young Researchers "Emerging Markets Economics and Business". This scientific event was conducted in partnership with Faculty of Economics, University of Miskolc, Hungary, and with the support of International Business School from Botevgrad, Bulgaria and the association The Cluster for Scientific Research, Innovation and European Studies from Oradea. During the conference, 105 papers were presented by doctoral and post-doctoral students and other young researchers from Romania and abroad. The papers were grouped in eleven panels, addressing a range of topics in the broad fields of Economics, Business Administration and Finance. All submitted contributions were double-blind reviewed and 99 of them were accepted for publication in the Proceedings of the 11th International Conference of Doctoral Students and Young Researchers, which is also available online at <http://steconomiceuoradea.ro/wp/wp-content/uploads/2020/12/Volum-Doctoral-Conference-Oradea-2020-final.pdf>. The doctoral School of Economics from University of Oradea highly values such events and international participation in scientific events of its doctoral students. Congratulations to all participants in the Conference, and hope to see them and other PhD students as well, i at the 12th edition of the Conference, in November 2021.

Another important activity within the Doctoral School of Economics, which is traditionally highlighted in our Journal, is the presentation of the doctoral theses recently defended by our PhD students. During 2020, the following theses were publicly defended at the Doctoral School of Economics:

1. SMES AND START-UPS IN THE CONTEMPORARY ECONOMY. SUPPORT POLICIES AND THEIR EFFECTS

PhD student: Anamaria-Diana RAD (HERTE)

Scientific advisor: Prof. Dr. habil. Daniel BĂDULESCU

The major objective of the thesis is the complex analysis of the dynamics of SMEs and start-ups in the European Union and Romania, of the support measures taken and their effects on the economy and society. The literature on companies and growth stages, start-up stages or territorial dynamics is rich and diverse, and there are many and various approaches to the complexity of the phenomenon of establishment, existence and behavior of a company. The growth in the number and pace of sustained growth-oriented firms gives an optimistic signal for the future, although the EU is still lagging behind dynamic partner regions and countries, such as the United States. Also, we cannot expect that the very favorable economic conditions in the EU that have fueled the recent growth of companies with sustained growth will be maintained for a long time to come. Through the scope and specificity of the approach presented in this thesis, and the investigation of an important issue in the European Union, in particular in the case of Romania, the thesis contributes to the enrichment of the literature from both theoretical and practical perspective.

2. FOREIGN BANKS AND MACROECONOMIC STABILITY IN THE NEW EU MEMBER STATES

PhD student: Radu-Alin MORUȚAN

Scientific advisor: Prof. Dr. habil. Daniel BĂDULESCU

The main objective of the thesis is the investigation from different perspectives of the impact of the inflow and consolidation of foreign bank capital on the macroeconomic stability and economic and financial performance of the Central and Eastern European countries, members of the EU. Related to the impact and importance of foreign banks' entry, the literature discusses two important closely related topics, namely the mode of entry (de novo, respectively, the acquisition or merger with an internal bank), and the form of organization and operation in that market (subsidiary or representative of the parent bank). Therefore, the structural relations, the mutual influences and the perspectives of the evolution of the analyzed major indicators were investigated, by approaching in detail the transformations and challenges associated with some moments and periods that accompanied this expansion. In conclusion, the impact of the foreign banks in the economies of the Central and Eastern European states which have recently joined the EU is far from being reduced to net assertions, displaying both favorable and harmful effects on economies and financial systems of host countries.

3. CORPORATE SUSTAINABILITY - REQUIREMENT OF THE CONTEMPORARY ECONOMY. IMPLICATIONS, PARTICULARITIES, TRENDS

PhD student: Paula-Carmen ROȘCA

Scientific advisor: Prof. Dr. habil. Alina BĂDULESCU

The main purpose of this doctoral thesis is the study of the evolution, implications and features of corporate sustainability, as well as how to measure and evaluate it. To present long-term beneficial effects, there should be enforced international treaties by which sustainability be respected regardless of the country, area or place where companies operate. In this way, companies will not seek to exploit places, countries, people and resources in search of less harsh laws on environmental protection or employees. Corporate sustainability is not possible without cooperation with other stakeholders, such as state / government institutions, international bodies or academia, as there is an interdependence between these stakeholders. Our current research highlights the progress made in sustainability reporting, a process considered as essential for the current business environment, but which requires more transparency and reliability for all actors involved. In the general note of sustainability, companies and, in particular, large corporations are considered to be essential factors, whose actions have a great impact on the environment, on economic development and on the well-being of the community.

Details regarding the content of these Ph.D. theses can be accessed at:

<https://doctorat.uoradea.ro/ro/sustineri-teze/sustineri-teze-doctorat>

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