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The Impact of Non-Oil Exports on Balance of Payment Disequilibrium in Nigeria

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Abstract

The over-reliance on oil export revenue with little attention to non-oil export has subjected the Nigerian economy to recurring adverse external shocks which further aggravate the problem of balance of payment deficit in Nigeria. Therefore, study set out to examine the impact of non-oil exports on balance of payment disequilibrium in Nigeria. The data used for this study is secondary in nature and it spans from 1970 to 2018. The study employed econometric tools of ARDL Cointegration analysis and ARDL Error Correction Model to explore the long run relationship and the impact of non-oil exports on balance of payment disequilibrium respectively. The result of Wald bound test revealed that there is existence of co-movement between non-oil exports and balance of payment while long run ARDL Error Correction Model results showed that non-oil export has significant negative impact on balance of payment disequilibrium. In the same vein, inflation and interest rate also have negative impact on balance of payment disequilibrium but interest rate is insignificant. Findings from the study also exhibited positive relationship between exchange rate, trade openness and balance of payment. However, the positive impact of exchange rate on balance of payment is significant while that of trade openness is not significant. The study, thus concluded based on the findings that the non-oil export has not been contributing positively to improve the balance of payment position in Nigeria. In line with these findings, the study recommended that government should devise plans and strategies of boost the non-oil export sectors such as agricultural, manufacturing, solid minerals and service sectors in order to build virile and strong non-oil export sectors that can achieve favourable balance of payment. Moreover, the citizens of Nigeria should be motivated by one way or the others to have a taste for locally produced goods.

Keywords: Non-Oil Exports, Balance of payment (BOP), Deficit and ARDL Model

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1. Introduction

Foreign trade is seen as an engine of growth in any economy across the globe. There is a great deal of empirical evidence to suggest that it is impossible to understand the economic performance of a country without reference to their trading sector, that is, the performance of exports relative to the propensity to import. Consequently, the role of balance of payment (BOP) cannot be over emphasized in the growth and development of a nation. Balance of payment of a country is a systematic record of all its economic transaction with the outside world in a given year. It involves the receipts (exports) and payments (imports) in the international transactions of a country. Balance of payment statistics is useful for a number of policies. At a national level, they provide a variable input for the conduct of monetary, financial, fiscal and structural policies. At international level, they are valuable sources of information for designs of mechanism to prevent and resolve crisis (African Review, 2004). Among the developing countries in which Nigeria is involved, there is prevalence of persistence balance of payment deficit which is the major cause of concern to these economies. Balance of payment weakness in Nigeria is caused by low level of agricultural production, low level of technological development, inadequacies of import substitution and export promotion strategies, low inflow of foreign direct investment, large fiscal deficit, external debt amortization, etc (Obioma 2008)

Balance of payment disequilibrium may be either a deficit or a surplus. The disequilibrium in deficit or unfavourable when the autonomous (debit) payments exceed autonomous (credit) receipts and vice versa (Jhingan 2013). It has been acknowledged that every government regime desires a right balance of payment position; this has raised a pertinent question concerning the policies to achieve favourable balance of payment (Odularo 2009). The importance of export to a nation's economic program and development has remained paramount. Export serves as a catalytic necessity for the overall development of an economy (Abon-Stait, 2005). There are two major components of export in Nigeria. Oil export and non-oil export. The non-oil export which is the focus this study are those commodities excluding crude oil (petroleum product) which are sold in the international market for the purpose of revenue generation. Nigeria's non-oil export is structured into broad four constituents which are agricultural exports, manufacturing exports, solid mineral export and service exports, manufacturing exports, solid mineral export and service export (Akeem 2011). Nigeria export promotion Council (NEPC) which was set up in 1976 to increase non-oil export as means of diversifying Nigeria's source of foreign exchange earning outlined the importance of non-oil export as a source of income to the economy which can be used to finance other economic sector of the nation; it creates employment opportunity for the populace and improve the well- being of the people. The evolution of export sector in Nigeria right from independence day staged that in the decades of 1960's and 1970's, the bed rock of Nigeria economy was agricultural export such products like cocoa, palm produce, groundnut and rubber and cotton (CBN 2011). On the basis of the importance of export sector to the economy, this study finds its imperative to delve into the impact of non-oil export on the balance of payment disequilibrium in Nigeria.

1.1 Motivation

The over -reliance on oil export in Nigeria as a means of generating revenue for the country's survival has been a concern and a source of worry. Oil sector accounts for over 90% of

Nigeria's total export while non-oil export accounts for less than 10%. The non-oil export falls from 40% in 1979 to 50% in 2010 (John and Ogege, 2010). The volatility in oil price in the world market has been creating economic crisis since 1982 till date. There was a slump in oil price in 1982, the beginning of dwindling of oil prices in Nigeria, also in 1986 followed the sudden collapse of international oil price in 2014 and the consequent fall in foreign exchange have created serious challenges such as high level of unemployment, poverty of the highest order, inequalities of income and opportunity and chronic balance of payment deficit. These crises were emanated from excessive dependence on oil export and as a single dominance export commodity. This extreme reliance on oil export revenue has subjected the Nigerian economy to recurring adverse external shock which further intensifies the problem of balance of payment deficit in Nigeria. It is a goal of every government to place her economy on the right path of balance of payment equilibrium, therefore, government of Nigeria embarked on various policies, programmes and institutions to boost the rate of export from non-oil sector to ensure favourable balance of payment in the Nigerian economy. Government introduced SAP in 1986 to restructure and diversify the productive base of the economy by curtailing Nigeria's over reliance on the oil sector and also to promote export of non-oil commodity as a source foreign exchange. NEPC was also set up in 1979 to promote export structure and to advance credit to non-oil export sector. The National Economic and Empowerment Development strategy (NEEDs) in 2004 was designed to boost non-oil export and so on. Despite all the government efforts and various policy instruments put in place by the successive governments, balance disequilibrium in Nigeria still remained persuasive. The growth of economic performance also remained slow and unimpressive.

1.2 Main Contribution to Knowledge

This paper has pushed the frontier of knowledge in insightful ways, there were several studies carried out on the relationship between non-oil export and economic growth but research works on the study between non-oil export and balance of payment disequilibrium is very rare in the literature. Most of the studies done on the relationship between non-oil export and balance of payment disequilibrium applied Ordinarily Least Square (OLS) method. The beauty of this study is that this study used recent econometrics tools of ARDL cointegration and Error Correction Model to explore the impact of non-oil export on balance of payment disequilibrium.

The rest of the paper is organized in five sections. Section two is devoted to the review of related literature, while section three deals with research methods. Section four presents the results and discussions, while conclusion and recommendations are presented in the last section.

2. Literature Review

Aremu (2016) investigated the role of oil and non-oil exports on the Nigerian economy over the period of 1981 to 2015. The ADF and PP unit root test, Johansen cointegration test, Granger causality test, impulse response functions (IRF) and variance decomposition (VD) were used in the analysis of the study. The cointegration test indicates that GDP, Oil and Non-oil exports were co integrated. The Granger causality test indicates short run unidirectional causality running from oil export to GDP. There are also bidirectional long runs causality relationship between oil export and GDP, and unidirectional long run causality running from

non-oil export to GDP. The study result indicates that oil exports have inverse relationship with economic growth while non-oil exports have positive relationship with economic growth.

Samson and Abdulwahab (2014) examined determinants of non-oil export and economic growth in Nigeria. The bound test approach was explored to examine the long run and short run effects of the non-oil export and its ensuing determinants. The result reveals significant effects of non-oil export on economic growth in the long and short run.

Azubike (2016) analysed the balance of payments and policies that affect its positioning in Nigerian economy. The tariff, non-tariff and exchange rate policies were used as policies that affect the balance of payments. The study employed the Ordinary Least Square (OLS) methods of estimation and the heteroscedasticity and autocorrelation covariance (HAC) in order to avoid spurious regression results. The result showed that the indirect tax, export and exchange rate satisfy the a priori expectation.

Kaur (2011) employed Panel data analysis to examine the non-oil sector contributions to balance of payment equilibrium in USA with Asian partner. The variables used to assess the study were openness and corruption index. Random effects estimated revealed that openness was not significant in the balance of payment equilibrium.

Bahmani-Oskooee (2011) examined the long-run response of Middle Eastern Countries balance of payment to the development of the non-oil sector. He used Johansen Cointegration analysis as econometric technique to explore the relationship between non-oil export and balance of payment. The result showed that there is existence of favourable long-run effect of non-oil sector on balance of payment across the seven countries involved.

Ogunsanwo, Obisesan and Olowo (2016) examined the short run and the long run effects of non-oil trade export in economic growth in Nigeria. The study utilized descriptive and inferential statistics (unit root, Johansen cointegration and error correction model) to explore the study. The study showed that non-oil total trade export, balance of trade and exchange rate have positive and significant effects on economic growth while inflation rate has no significant effect on economic growth in Nigeria.

Kawai (2017) used cointegration analysis to investigate the impact of the non-oil exports on Nigerian economy using annual data between 1980 and 2016. The study showed that there is a strong evidence of co-integration relationship between non-oil exports and economic growth in Nigeria.

Okeke (2018) employed multiple regressions and correlation analysis to investigate the effect of imports and exports on balance of foreign trade in Nigeria between the period 2007 and 2016. The study used Gross Domestic Product (GDP) as dependent variable while imports, exports and openness are the independent variables. The findings from the study revealed that import has positive and significant impact on balance of foreign trade in Nigeria (GDP) while exports and openness have insignificant positive effect on balance of foreign trade in Nigeria (GDP).

Iwuoha and Chigozrian (2019) examined the impact of non-oil export on economic growth in Nigeria. The study employed ARDL model to estimate the short and long run relationship between the two variables. The ARDL result revealed that all the variables tend to move

together in the long run. The study also showed that the impact of non-oil export is not significant on the economic growth in Nigeria.

Familusi (2020) employed simple random sampling technique through the use of structured questionnaire to analyse the challenges undermining the promotion of non-oil export in Nigeria. The finding of the study showed that poor access to finance is a major impediment to the promotion of non-oil export in Nigeria. The result of the study also revealed that lack of continuity in export policies discourage the promotion of non-oil export, thereby undermining the performance of non-oil sector export in Nigeria..

Esiaka, Uwaleke and Amane (2021) examined the impact of non-oil foreign trade on economic growth in Nigeria. The study adopted ex-post facto research design. The study employed vector error correction model (VECM) to investigate and analyze the long run and short run impact on non-oil export on economic growth. The results showed that in the short run, increase in non-oil import leads to increase in the GDP while increase in non-oil export leads to decrease in GDP. The results indicate that there is positive impact of non-oil import on GDP and negative impact of non-oil export on GDP.

3. Research Methods

3.1 Model Specification

Based on theoretical review and empirical consideration, this study followed the absorptive theory of balanced of payment and also adopted the model of Ogunsanwo et.al (2020) with modifications. The model for this study is thus specified as follows:

$$BOP = f(NOEX, EXCR, OPEN, INF, RINT)$$

Explicitly, it is re-stated as below:

$$BOP = \alpha_0 + \alpha_1 NOEX + \alpha_2 EXCR + \alpha_3 OPEN + \alpha_4 INF + \alpha_5 INT + u_t$$

Where

BOP=Balance of payment

NOEX= Non- Oil Exports

EXCR= Exchange Rate

OPEN= Trade Openness

INF=Inflation Rate

RINT= Real Interest Rate

α_0 =intercept

$\alpha_1 - \alpha_4$ = parameters to be estimated

u_t = error term

3.2. Estimation Techniques

This study employed ARDL Error Correction Model to examine the impact of Non Oil Exports on Balance of payment disequilibrium in Nigeria. ARDL Cointegration was used to analyze the existence co-movement between Non Oil Exports and Balance of payment disequilibrium in Nigeria. In line with Gujarati (2009), the Augmented Dickey Fuller (ADF) test was employed to test for the unit root and to determine the stationarity.

3.3. Sources of Data

The data used for this study was secondary in nature. The data like Non Oil Exports, Exchange Rate, Trade Openness, inflation Rate, Real Interest rate were sourced from the CBN publications, Central Bank of Nigeria statistical bulletins and National Bureau of Statistics between 1986 and 2018.

4. Data Analysis Discussion

Table 1. ADF Unit Root Test

Variable	Deterministic term	@Level	@Diff.	Remark
Balance of payment	Constant	-1.95	-5.35***	I(1)
	Constant and Trend	-1.54	-5.50***	I(1)
Non-Oil export	Constant	-0.50	-7.01***	I(1)
	Constant and Trend	-2.87	-6.96***	I(1)
Exchange rate	Constant	-2.09	-5.21***	I(1)
	Constant and Trend	-1.25	-5.61***	I(1)
Trade openness	Constant	-2.31	-7.48***	I(1)
	Constant and Trend	-2.37	-4.66***	I(1)
Inflation rate	Constant	-2.92*	-5.67***	I(0)
	Constant and Trend	-4.02**	-5.61***	I(0)
Real interest rate	Constant	-7.27***	-9.82***	I(0)
	Constant and Trend	-7.48***	-9.59***	I(0)

Source: Author's computation, 2021

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

The result of the Augmented Dickey Fuller (ADF test) revealed that balance of payment, Non-oil export, exchange rate and trade openness were stationary at first difference while all other variables attained stationarity at level. The order of integration at which stationarity is attained determines the estimation of technique suitable for each model. Based on above scenario, the study employed ARDL model towards achieving the aim of this paper.

Table 2. ARDL Bound Test
Pesaran, Shin, and Smith (2001) bounds test; ARDL (1, 0, 0, 0, 0, 0)

Test	Statistics							
F-stat	3.983							
t-stat	-2.103							
Kripfganz and Schneider (2018) critical values and approximate p-values								
	10%		5%		1%		Probability value	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F	2.032	3.262	2.484	3.874	3.571	5.325	0.006***	0.044**
T	-1.615	-3.488	-1.975	-3.905	-2.695	-4.744	0.038**	0.501

Source: Authors' computation.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Table 2 above shows the ARDL bound test for our specified ARDL model. The calculated bound test F-statistics are significant at 5% and 10% conventional levels; hence, we may conclude that the long run relationship exists between non-export, exchange rate, trade openness, inflation, interest rate and balance of payment. Hence, the study proceeds to the long-run and short-run-error correction models (ECM).

Table 3. Long run and Short ARDL Estimates
Estimated ARDL Parameters

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$noex_{t-1}$	-2.404	1.316	-1.830	0.077*
exr_{t-1}	1.881	1.099	1.710	0.097*
to_{t-1}	0.013	0.451	0.030	0.978
inf_{t-1}	-0.861	0.679	-1.270	0.214
$rint_{t-1}$	-1.752	1.229	-1.430	0.164
$\Delta noex_t$	-0.570	0.153	-3.720	0.001***
Δexr_t	0.446	0.167	2.670	0.012**
Δto_t	0.003	0.107	0.030	0.978
Δinf_t	-0.204	0.146	-1.400	0.172
$\Delta rint_t$	-0.415	0.212	-1.960	0.059*
ecm_{t-1}	-0.237	0.113	-2.100	0.044**
R^2	= 0.44			
S.E	= 0.9			
<u>Regression diagnostic test results</u>				
LM-test	= 0.63[0.433]			
White-test	= 31.0[0.270]			
Stability	= 0.95[0.531]			

Source: Authors' computation.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$

Table 3 showed both the long run and the short run ARDL estimates. The results revealed that in the long run and short run, non-oil export has significant negative impact on balance of payment disequilibrium. In the same vein, inflation and interest rate also have negative impact on balance of payment disequilibrium but interest rate is not significant in the short run. The

study also exhibited positive relationship between exchange rate, trade openness and balance of payment. However, the positive impact of exchange rate on balance of payment is significant while that of trade openness is insignificant. The diagnostic test revealed that the results are insignificant which implies that there is no autocorrelation, no heteroscedacity and that the parameters are stable.

5. Conclusion

This study examined the impact of non-export on balance of payment disequilibrium in Nigeria. It used aggregate time series data sourced from CBN statistical bulletin and National Bureau of Statistics covering the period 1986 to 2018. Data collected were analyzed using the ARDL technique. The result of ARDL bound test revealed that there is existence of co-movement between non-oil exports and balance of payment while long run ARDL Error Correction Model results showed that non-oil export has significant negative impact on balance of payment disequilibrium. Likewise, inflation and interest rate also have negative impact on balance of payment disequilibrium but interest rate is not significant. Findings from the study also exhibited positive relationship between exchange rate, trade openness and balance of payment. However, the positive impact of exchange rate on balance of payment is significant, after all, that of trade openness is not significant. The study, thus concluded based on the findings that the non-oil export has not been contributing positively to improve the balance of payment position in Nigeria.

In line with the findings, the study recommended that government should devise plans and strategies of boost the non-oil export sectors such as agricultural, manufacturing, solid minerals and service sectors in order to build virile and strong non-oil export sectors that can achieve favourable balance of payment. Moreover, the citizens of Nigeria should be motivated by one way or the others to have a taste for locally produced goods.

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An Analysis of Bilateral Trade between India & China Since 2001

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Abstract

This research analyzes the existing bi-lateral trade patterns between India and China with a view to locate in the development context. It was essential to analyze the data since 2000 after implementing economic reforms in both countries. This research attempts to analyze the bilateral trade relation between these two countries, and also, focus on strategic frameworks. For determining the export performance, Revealed Symmetric Comparative Advantage (RSCA) method is applied. This study also recommends that trade balance is possible between India and China through making the right policies.

Keywords: Bilateral Trade, Comparative Advantage and Disadvantage, Revealed Symmetric Comparative Advantage (RSCA), Net-export

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1. Introduction

India and China are not only the vast populated countries but also the emerging economies in the world. Economic and political systems are not even similar in both countries. India is a capitalist country, while China is a socialist. Indian economy is more open and deregulated, but Chinese economy is highly regulated and state controlled. The economic, political and diplomatic relationships between India and China are based on 'competition and cooperation'.

Bilateral trade between these two countries have been started since 1954. China is one of the 3rd largest trading partners of India. Bi-lateral trade between India and China has reached at USD95.54 billion in 2018-19, and it is expected to be crossed more than USD100 billion by the end of 2019.

This research identified that, among top ten commodities that traded between these two countries, India has 'Comparative Advantages in Ores, slag and ash, Cotton, Copper and articles thereof, Plastics and articles thereof, Salt; Sulphur; earths and stone; plastering

materials, lime and cement, and China has ‘Comparative Advantages in Organic chemicals, Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral, Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof, Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television. The final results of this research found that India supplied raw materials and China supplied manufactured items. And, because of price fluctuations in primary products, India faces trade imbalance, and China gains from bilateral trade.

The integration of the domestic economy through the twin channels of trade and capital flows has accelerated in the past two decades which, in turn, led to the India’s GDP reaching \$2.47 trillion in 2017-2018 and \$2.76 trillion in 2018-2019. Total exports from India (merchandise and services) have increased by 8.73% by \$483.92 billion in 2018-2019, while total imports have increased by 9.42% to \$577.31 billion. In 2019, end exports are expected to reach \$540 billion (Government of India, n.d.).

India-China bilateral *trade* reached \$84.44 billion with 40% increase Indian exports to China in 2017. India’s exports to China include antibiotics, diesel engines and granite amid, textile manufacturers, aluminum, copper, etc. India urges to cut the bilateral trade deficit with China by \$10 billion down to \$53 billion. The surge in exports was mainly due to greater demand for marine products, grapes, raw cotton, and plastic raw materials.

India’s imports from China decreased down to \$5.9 billion in February 2018 from \$6.1 billion in January 2018. In 2014-2018, India’s imports from China reached an all-time high of \$6.5 billion in December 2017 and a record low of \$2.3 billion in February 2014.

2. Literature Review

India is the fastest growing economy of the world currently in spite of China competing with it on all grounds. India’s economy changes from state led growth model to pro-market model (Chatterji et al, 2014) that these factors; trade openness, wholesale/retail trade, banking and retail services have the positive relation with growth and potential to sustain the growth of Indian economy (Chatterji et al, 2014; Das. A et all, 2011; Marelli. E. & Signorelli. M, 2011). Whenever time passes, the role of India, China and ASEAN are increasing in the world and they are playing a significant role in bringing the whole Asian region together (Hong. Z, 2007). As mentioned before, trade is one of the factors that have positive impact on growth of an economy. Geographic size and isolation could affect the total and composition of trade of a country and distance between the countries also have a positive impact on bilateral trade between the countries (Leamer. E & Levinsohn. J, 1994). Countries like India and China are opened up their boarders for trades on mid-1980s and late 1970s respectively, (Economic Survey of India, 2007; Ye. M, 2009). After independence, India's pattern of trade began to change and liberalization caused the trade expansion towards IIT (intra-industry trade) (Veeramani, 2002). India and China have signed bilateral trade agreement with each other on 1954s (Ministry of External Affairs, Government of India), and these two countries become their most important partners that India has emerged as one of the top ten trading partners of China whereas China has become one of the top three trading partners of India in the recent years (Sahu. D, 2018). The trend of India’s trade with China’s market followed an in depth study of increasing regionalism between India and China to focus on sustainable trade potential of India and China (Mohanty S.K, 2014). Bilateral trade between these two countries have been studied to check the Comparative Advantage, and found that Indi has CA

in traditional sector and in some manufacture sector, but China has CA in electronic goods and industrial sectors (Beretta. S & Lenti. R, 2012; Wu. Y & Zhou. Z, 2006). Some other analysis shows broad similarities in the structure of comparative advantage for India and China that enjoy comparative advantage for labor and resource intensive sectors in the global market respectively (Batra. A, Khan. Z; 2005) and both countries had improvement in comparative advantage in technology and human capital intensive goods (Veeramani, 2008). Trade intensity between these two countries are not at as high as it has to be, India's exports to China could account for 14% of India's GDP growth while imports from China could only contribute 11.5% to India's GDP growth, so there is the potential for growth in bilateral trade between the two economies (Wu. Y & Zhou. Z, 2006, Sahu. D, 2018). Chinese and Indian policymakers are now working to improve trade and economic cooperation (Wu. Y & Zhou. Z, 2006). India as compared to China needed to do away with the bottlenecks on infrastructures and policy rigidity of the factor markets if they want to have an efficient resource allocation process and export activities in India (Veeramani, 2008).

This study is used to analyze the trends and patterns of commodities trade in India, identifying the top ten exports and imports commodities of India and study the bilateral trade between India and China for the top ten commodities.

3. Research Method

We have collected the data from relevant websites (International Trade Center and Directorate General of Commercial Intelligence and Statistics (DGCI&S), which is under the Ministry of Commerce, Government of India) over a certain period of time 2001s to 2018s. We reviewed the trade patterns in terms of both volumes and values of goods and commodities, and identified the factors and variables which are determining the performance of trade. We also observed the degree of openness of the economies of India and China. Commodities are sorted from the hundred 2-digit code (Harmonized System) of grouped commodities from 2001s to 2018s and thereafter, top 10 traded exports and imports from each year are also analyzed which are based on the absolute value from the hundred commodities. From the top ten export and import commodities of each year, we added for the total absolute value of each year and sort the highest and find the top ten traded commodities out of the total added.

Thus the purpose of this study is to distinguish the behavior of trade through revealed comparative analysis (RCA), which is the most widely used measured index from Balassa's (1965) RCA. RCA can be defined as the measurement of relative export performance of a country. In other words, RCA is the relative country's share of world exports of a product or commodity divided by its share of total world export. It shows the export performance of the country which can be useful in indicating trade potential of the country. Countries with identical RCA figures are likely to have low bilateral trade intensities unless there is involvement of intra-industry trade. Specifically, The RCA index for country (i) and commodity (j) is calculated as follows:

$$RCA_{ij} = \frac{\frac{x_{ij}}{x_{it}}}{\frac{x_{wj}}{x_{wt}}}$$

Where, x_{ij} = the values of export of product j by country i

x_{it} = total export of country i

x_{wj} = the values of world exports of product j

x_{wt} = world total exports

The interpretation of RCA is relatively simple. The index value is ranged from 0 to ∞ with 1 as the breakeven point. That is, a value less than one means the country has no comparative advantage; on the other hand, a value above one implies the product has a revealed comparative advantage in the product.

However, for this paper, since the world consist of two countries that are into trading, this index will be using the modified version of Nath, Lui and Tochkov (2015) which is expressed as below:

$$RCA_{ij} = \frac{\frac{X_{ij}}{\sum_{j=1}^n X_{ij}}}{\frac{X_{ij} + M_{ij}}{\sum_{j=1}^n X_{ij} + \sum_{j=1}^n M_{ij}}}$$

Here X_{ij} denotes the values of India's exports of commodities j ($j=1, \dots, n$) to country i (i = China). M_{ij} is the value of country i 's exports of commodities j to India (i.e. India's import of commodities j from China). In other words, the bilateral RCA index is the share of a given commodities in total India's exports to China relative to the share of India's trade (exports as well as imports) in this commodities with China in total India's commodity trade with China. In this also the value takes the range from 0 to where values exceeding 1 indicates that India has comparative advantage (CA) in j and values between 0 and 1 indicates that India has comparative disadvantage (CDA) in a given commodities vis-a-vis China.

RCA index however suffers from the problem of asymmetry and has a tendency net trade flows and intra-industry trade. It is asymmetric for the reason that, values on one side of unity are not comparable with those on the other side. To address this problem, Dalum, Laursen and Villumsen (1998) suggest transforming the RCA into;

$$RSCA_{ij} = \frac{RCA_{ij} - 1}{RCA_{ij} + 1}$$

where, RSCA is the revealed symmetric comparative advantage (RSCA). The interpretation of RSCA is slight different from the interpretation of RCA in such a way that the index value ranges between -1 to +1. Positive values indicate that India has a CA with China while negative values indicate that the India has CDA vis-à-vis China in commodities j . That being said, this would not be a serious issue because we are not examining distributional dynamics and evolution of CA; we are simply trying to know which commodities has CA over China.

4. Result and Discussion

4.1. Trends and patterns of India's Trade with the Rest of the World

India has opened its borders for international countries from 1991 after economic reforms have been made. From that time India started to grow in international arena. Nowadays, India is the third largest economy in nominal GDP, and its export has been increased by 662.4 percent since 2000s, (Author's findings based on Directorate General of Commercial Intelligence and Statistics, 2017). The available data is showing that since 2001s, total

exports of India to the rest of the world were 3564.54 billion dollars and imports were 5325.28 billion dollars. The following table shows that in 2013s and 2018 India attached the highest points of exports and imports by 336.61 billion dollars and 507.58 billion dollars respectively. On the other hand, the lowest point of exports and imports of India were in 2001s by 43.88 and 50.67 billion dollars respectively. These data also show that in last eighteen years India has grown very fast than other countries.

Table 1: Trend and Patterns of India's Trade with the Rest of the World

Year	Total Export		Total Import		Trade Balance in (Billion US \$)
	Amount in Billion \$	Growth Rate (%)	Amount in Billion \$	Growth Rate (%)	
2001	43.88	3.56	50.67	-1.65	-6.79
2002	50.10	14.17	57.45	13.39	-7.36
2003	59.36	18.49	72.43	26.07	-13.07
2004	75.90	27.87	98.98	36.66	-23.08
2005	100.35	32.21	140.86	42.31	-40.51
2006	121.20	20.77	178.21	26.52	-57.01
2007	145.90	20.38	218.65	22.69	-72.75
2008	181.86	24.65	315.71	44.39	-133.85
2009	176.77	-2.80	266.40	-15.62	-89.64
2010	220.41	24.69	350.03	31.39	-129.62
2011	301.48	36.78	462.40	32.10	-160.92
2012	289.56	-3.95	488.98	5.75	-199.41
2013	336.61	16.25	466.05	-4.69	-129.43
2014	317.54	-5.66	459.37	-1.43	-141.82
2015	264.38	-16.74	390.74	-14.94	-126.36
2016	260.33	-1.53	356.70	-8.71	-96.38
2017	295.85	13.64	444.05	24.49	-148.21
2018	323.06	9.20	507.58	14.31	-184.52

Source: International Trade Center (Trade Map)

The above data also show that in eighteen years India had trade deficit that among these years in 2012s it was at the highest point by -199.4 billion dollars and in 2001s it was at lowest point by -6.7 billion dollars. On the other hand, the above data show the trade annual growth rate of India since 2001s. Generally, India has experienced positive annual growth rate in its trade with other countries. The highest exports and imports annual growth rate were in 2011s and 2008s by 36.7 percent and 44.3 percent respectively. In 2015s and 2009s, India has experienced the lowest growth rate by -16.7 percent and -15.62 percent in exports and imports respectively.

4.2. Commodities-Wise trade of India with the Rest of the World Since 2001s

Top ten commodities are found from hundred 2-digit code (Harmonized System) of grouped commodities from 2001s to 2018s. The following table shows top ten commodities that India was exported to different countries and imported from different countries. The top three

commodities are those commodities that India has exported and imported much more than the other commodities and a trade deficit is remarkable too.

Table 2: Top Ten Export and Import Commodities of India to the Rest of the World in Selected years and Total since 2001s

Cod e	Product Label	Exports (Billion \$)				Cod e	Product Label	Imports (Billion \$)			
		200 1	2010	2018	Total			2001	2010	2018	Total
'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	2.15	37.98	48.29	547.38	'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	15.77	110.8	168.59	1766.80
'71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	7.02	32.46	40.10	516.89	'71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad ...	9.69	68.63	65.03	818.35
'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	1.58	8.15	20.40	159.37	'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	4.23	27.77	43.23	435.59
'29	Organic chemicals	1.62	8.59	17.74	152.60	'85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	2.97	32.26	52.40	433.86
'87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	0.87	9.29	18.24	152.00	'29	Organic chemicals	1.77	12.12	22.58	194.08
'30	Pharmaceutical products	1.05	6.10	14.28	125.08	'72	Iron and steel	1.06	10.70	11.97	146.10
'85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television.	1.32	8.71	11.79	122.40	'39	Plastics and articles thereof	0.72	7.33	15.19	120.16

'62	Articles of apparel and clothing accessories, not knitted or crocheted	3.24	6.04	8.13	116.1 1	'15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal ...	1.50	6.44	10.16	113.71
'72	Iron and steel	0.92	7.00	9.98	112.7 2	'99	Commodities not elsewhere specified	0.82 3	8.78	2.38	100.71
'52	Cotton	2.13	6.89	8.13	99.39	'90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	1.14	5.29	9.46	88.83

Source: Author's Findings from International Trade Center (Trade Map)

The above table also shows that the export and import of the commodities are increased in eighteen years. The export amount of (Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...) in 2001s was 2.15 billion dollars that it increased to 48.29 billion dollars in 2018s. In that time, the amount of imported of this commodity has been increased from 15.77 billion dollars to 168.59 billion dollars. So may we can analyze, those commodities that their exports are much more than their imports, India has comparative disadvantage on it.

4.3. Bilateral Trade Between India and China

China is one of the most important partner of India in trade. Since 2001, the total trade (Export + Import) of India with china was 835.45 billion dollars, more than the other countries in the world. India imports more from China, and export more to USA, United Arab Emirates and China respectively. From 2001s to 2018s the total export of India to China is increased from 0.9 billion dollars to 16.4 billion dollars that shows an increase of 1678.12 percent. On the other hand, in that period of time, the total import from China is increased from 1.8 billion dollars to 73.7 billion dollars that shows 3934.82 percent increase.

Table 3: India's bilateral Trade with China, Trade Growth Rate and Share of Trade Since 2001s

Year	Exports			Imports		
	Amount in (Billion \$)	Share in (%)	Growth Rate (%)	Amount in (Billion \$)	Share in (%)	Growth Rate (%)
2001	0.92	2.1	-	1.83	3.6	-
2002	1.53	3.1	66	2.62	4.6	43
2003	2.57	4.3	68	3.62	5	38
2004	4.10	5.4	60	6.05	6.1	67
2005	7.18	7.2	75	10.17	7.2	68
2006	7.83	6.5	9	15.64	8.8	54
2007	9.49	6.5	21	24.58	11.2	57
2008	10.09	5.6	6	31.59	10	29

2009	10.37	5.9	3	30.61	11.5	-3
2010	17.44	7.9	68	41.25	11.8	35
2011	16.72	5.5	-4	55.48	12	35
2012	14.73	5.1	-12	54.14	11.1	-2
2013	16.42	4.9	11	51.64	11.1	-5
2014	13.43	4.2	-18	58.23	12.7	13
2015	9.58	3.6	-29	61.60	15.8	6
2016	8.92	3.4	-7	60.48	17	-2
2017	12.49	4.2	40	71.97	16.2	19
2018	16.40	5.1	31	73.74	14.5	2

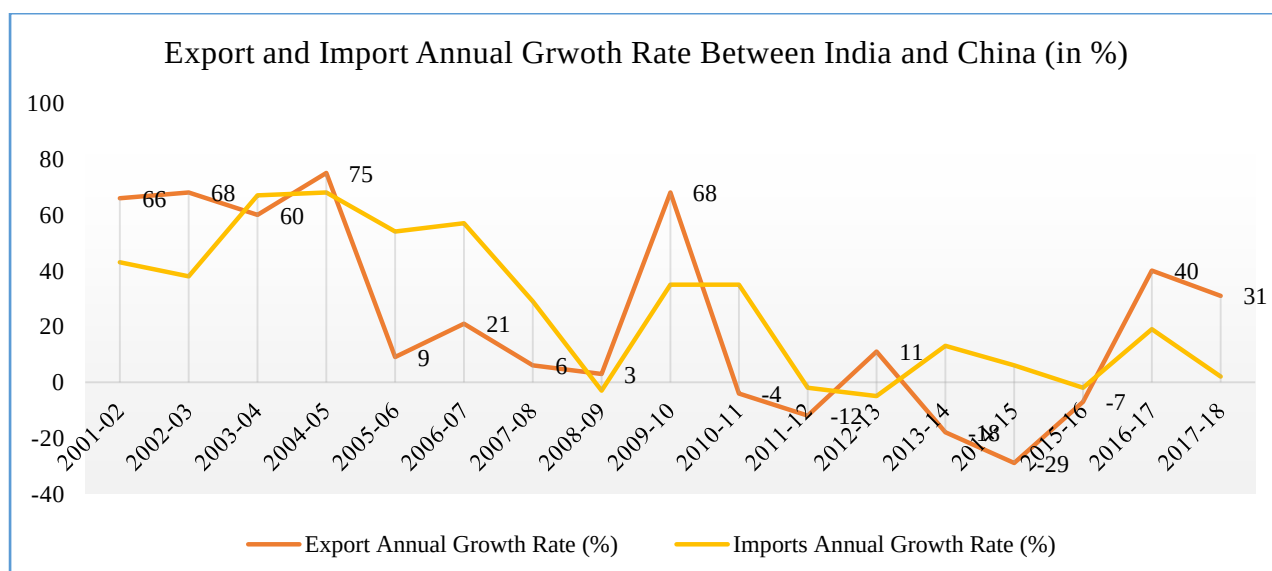
Source: International Trade Center (Trade Map)

The above table is showing the trends of trade between India and China with growth rate and share of this trade in total trade of India since 2001s in billion dollars and percentage respectively. In 2010s, India has exported 10.3 billion dollars to China more than the other years and in that time the total share of China in total exports of India was 7.9 percent. The lowest amount that India has exported to China was 0.9 billion in 2001s and in that time the total share of China in India's total exports was 2.1 percent, the lowest percentage share. On the other hand, in 2018s and 2001s India has imported the highest and lowest amount from China about 73.7 billion dollars and 1.8 billion dollars respectively. But in 2017s and 2001s the total share of China in India's total imports was 16.2 percent (the highest) and 3.6 percent (the lowest) respectively. The above table also shows that the highest exports annual growth rate of India to China was in 2005s by 75 percent increase than 2004s. The lowest annual growth rate of exports of India to China was in 2016 by -29 percent. On the other hand, the highest and lowest annual growth rate of imports of India from China were 68 percent and -5 percent in FY 2005s and FY 2013s respectively



Source: International Trade Center (Trade Map)

Figure 1: Share of Bilateral Trade Between India and China



Source: International Trade Center (Trade Map)

Figure 2: Growth Rate of Bilateral Trade Between India and China

4.3.1. Commodities-wise trade between India and China since 2001s

The below table shows the total exports and import values to China and from China respectively obtained from computation of highest total given by the sorting of all top ten traded commodities of each year i.e. from 2001s to 2018s. Among the top ten commodities, these commodities Ores, slag and ash, with US \$ 46.08 billion, Cotton with US\$ 25.64 billion and Copper and articles thereof with US\$ 17.37 billion were exported more to China respectively.

Table 5: Top Ten Commodities Exported to China and Imported from China in Selected Years and Total Trade since 2001s

Code	Product Label	Exports (Billion \$)				Code	Product Label	Imports (Billion \$)			
		2001	2010	2018	Total			2001	2010	2018	Total
'26	Ores, slag and ash	2.15	37.98	48.29	46.08	'85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...	15.77	110.8	168.59	194.87
'52	Cotton	7.02	32.46	40.10	25.64	'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	9.69	68.63	65.03	117.32
'74	Copper and articles	1.58	8.15	20.40	17.37	'29	Organic chemicals	4.23	27.77	43.23	63.54

	thereof										
'29	Organic chemicals	1.62	8.59	17.74	14.29	'99	Commodities not elsewhere specified	2.97	32.26	52.40	23
'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	0.87	9.29	18.24	10.57	'31	Fertilizers	1.77	12.12	22.58	22.15
'39	Plastics and articles thereof	1.05	6.10	14.28	6.98	'72	Iron and steel	1.06	10.70	11.97	20.96
'72	Iron and steel	1.32	8.71	11.79	6.85	'39	Plastics and articles thereof	0.72	7.33	15.19	16.81
'25	Salt; Sulphur; earths and stone; plastering materials, lime and cement	3.24	6.04	8.13	6.58	'73	Articles of iron or steel	1.50	6.44	10.16	16.42
'84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	0.92	7.00	9.98	5.73	'27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	0.823	8.78	2.38	13.92
'52	Cotton	2.13	6.89	8.13	3.66	'90	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical ...	1.14	5.29	9.46	12.48

Source: Author's Findings from International Trade Center (Trade Map)

On the other hand, among the top ten commodities these three commodities had the most values in importing from China; electrical machinery and equipment and parts thereof; sound recorders and reproducers, television with 194.87 billion dollars, machinery, mechanical

appliances, nuclear reactors, boilers; parts thereof with 117.32 billion dollars and organic chemicals with 63.54 billion dollars respectively. The above data are showing that India majorly import the technological goods from China and export more cotton and organic chemical goods.

4.4. Measure of Revealed Symmetric Comparative Advantage (RSCA)

Before joining the RSCA, we need to examine the RCA to determine the relative advantage or disadvantage of a particular country in a particular class of goods or services. Here for this study, RCA is calculated by considering the top ten export commodities as shown in Table 3. The RCA indicates that the indices must be in the range 0 to ∞ , representing values greater than 1 Comparative Advantages, and values between 0 and 1 indicating CDA. In contrast, the RSCA indicates that the value index should be from -1 to 1 and positive values indicate that the country has a CA (comparative advantage) while the negative value indicates a country has a CDA (comparative disadvantage). The measures of the Revealed Symmetrical Comparative Advantage for bilateral trade between India and China are presented in Table 5.

Table 5: RCA of India's Trade with China

Year s	Ores , slag and ash	Cotto n	Coppe r and article s thereof	Organic chemical s	Mineral fuels, mineral oils and products of their distillation ; bituminou s substances ; mineral ...	Plastic s and article s thereof	Iro n and steel	Salt; Sulphur; earths and stone; plasterin g materials , lime and cement	Machinery , mechanica l appliances , nuclear reactors, boilers; parts thereof	Electrical machinery and equipment and parts thereof; sound recorders and reproducers , television ...
2001	2.81	2.50	1.00	0.76	0.02	2.62	1.96	1.23	0.12	0.12
2002	2.57	2.06	2.01	0.71	0.06	2.30	2.61	1.77	0.24	0.05
2003	2.36	1.52	1.89	0.59	0.60	1.92	2.36	1.65	0.27	0.06
2004	2.33	1.59	1.90	0.71	0.06	2.04	2.17	1.73	0.25	0.05
2005	2.37	1.60	1.81	0.64	0.07	1.59	1.78	1.76	0.13	0.05
2006	2.93	2.49	2.55	0.73	0.15	1.68	1.34	2.31	0.16	0.05
2007	3.53	3.06	3.01	0.78	0.27	1.16	0.68	2.81	0.17	0.04
2008	4.08	3.50	2.57	0.57	0.39	0.93	0.44	2.82	0.14	0.05
2009	3.94	3.34	3.30	0.56	0.65	1.18	1.49	2.95	0.22	0.09
2010	3.35	3.11	3.21	0.57	1.24	1.08	0.86	2.66	0.13	0.06
2011	4.25	4.08	3.81	0.75	2.28	1.46	1.06	3.17	0.16	0.10

2012	4.59	4.44	4.23	0.85	1.37	1.51	0.76	3.92	0.18	0.09
2013	4.06	3.94	3.76	0.69	2.37	1.47	1.09	3.76	0.20	0.09
2014	5.00	5.06	4.87	0.71	3.52	1.02	0.36	4.71	0.27	0.10
2015	7.05	6.96	6.54	0.92	3.40	1.23	0.46	6.56	0.32	0.09
2016	7.61	7.10	6.23	0.96	4.13	0.99	0.92	6.83	0.32	0.14
2017	6.63	6.08	5.86	1.39	3.76	1.12	1.32	5.90	0.33	0.11
2018	5.33	5.07	4.04	1.45	4.01	1.54	1.00	4.51	0.32	0.12

Source: Author's Calculation from International Trade Center (Trade Map)

The above table shows the Revealed Comparative Advantage of India with China since 2001s. As mentioned before, the numbers above (1) means India has Comparative Advantage and less than (1) means India has Comparative Disadvantage in trade with China. We found that India had CA on these goods; (Ores, slag and ash, Cotton, Copper and articles thereof, Plastics and articles thereof, Salt; Sulphur; earths and stone; plastering materials, lime and cement) in trade with China. On the other hand, India had CDA in trade with China in these goods; (Organic chemicals, Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral, Iron and steel, Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof, Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...).

However, Because the RCA index suffers from the problem of asymmetry and has a tendency net trade flows and intra-industry trade. It is asymmetric for the reason that, values on one side of unity are not comparable with those on the other side. For this reason, we are going to check the Revealed Symmetric Comparative Advantage (RSCA) too.

Table 6: Revealed Symmetric Comparative Advantage (RSCA) of India with China

Years	Ores, slag and ash	Cotton	Copper and articles thereof	Organic chemicals	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral ...	Plastics and articles thereof	Iron and steel	Salt; Sulphur; earths and stone; plastering materials, lime and cement	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...
2001	0.47	0.43	0.00	-0.14	-0.97	0.45	0.32	0.10	-0.79	-0.79
2002	0.44	0.35	0.33	-0.17	-0.88	0.39	0.45	0.28	-0.61	-0.90
2003	0.40	0.21	0.31	-0.26	-0.25	0.31	0.40	0.24	-0.57	-0.89
2004	0.40	0.23	0.31	-0.17	-0.89	0.34	0.37	0.27	-0.60	-0.90
2005	0.41	0.23	0.29	-0.22	-0.87	0.23	0.28	0.28	-0.77	-0.91
2006	0.49	0.43	0.44	-0.16	-0.74	0.25	0.15	0.40	-0.72	-0.90

2007	0.56	0.51	0.50	-0.12	-0.58	0.08	-0.19	0.47	-0.72	-0.91
2008	0.61	0.56	0.44	-0.28	-0.44	-0.04	-0.39	0.48	-0.76	-0.91
2009	0.59	0.54	0.53	-0.28	-0.21	0.08	0.20	0.49	-0.64	-0.83
2010	0.54	0.51	0.53	-0.28	0.11	0.04	-0.07	0.45	-0.78	-0.89
2011	0.62	0.61	0.58	-0.14	0.39	0.19	0.03	0.52	-0.73	-0.81
2012	0.64	0.63	0.62	-0.08	0.15	0.20	-0.14	0.59	-0.70	-0.84
2013	0.60	0.60	0.58	-0.18	0.41	0.19	0.04	0.58	-0.66	-0.84
2014	0.67	0.67	0.66	-0.17	0.56	0.01	-0.47	0.65	-0.57	-0.81
2015	0.75	0.75	0.73	-0.04	0.55	0.10	-0.37	0.74	-0.52	-0.83
2016	0.77	0.75	0.72	-0.02	0.61	-0.01	-0.04	0.74	-0.51	-0.75
2017	0.74	0.72	0.71	0.16	0.58	0.06	0.14	0.71	-0.50	-0.80
2018	0.68	0.67	0.60	0.18	0.60	0.21	0.00	0.64	-0.52	-0.78

Source: Author's Calculation from International Trade Center (Trade Map)

The above table shows the Revealed Symmetric Comparative Advantage (RSCA) of India's trade with China since 2001s. As we mentioned before, the range of RSCA is between -1 and +1. The positive values show the CA of the India and the negative values show the CA of China in trade with India. All the above data show that India had CA on (Ores, slag and ash, Cotton, Copper and articles thereof, Plastics and articles thereof, Salt; Sulphur; earths and stone; plastering materials, lime and cement) in trade with China. On the other hand, China had Comparative Advantage in trade with India in these goods; (Organic chemicals, Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral, Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof, Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...). Iron and Plastic commodities are those commodities that sometimes India had CA on it and sometimes China. In 2018s, India had CA in Iron and Plastic commodities. The data also show that in 2018s, India had Comparative Advantage in eight top commodities and China had CA just in two types of commodities. The Comparative Advantage of China just was in these commodities: (Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof, Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television ...) in 2018s.

Generally, we can analyze that India has CA on labor intensive commodities and China has Comparative Advantages on capital intensive goods in trade with each other. At the end we can say that India has to focus more on exporting more labor intensive goods and its government has to support the producers of these commodities.

4.5. Bilateral Trade Intensity Between India and China

Features of trade between two countries can be evaluated by different statistical indices. One of those indices is Intensity of trade index that has given by (Kojima in 1964). In this index, exports and imports intensities of both countries are analyzed. The formula is as the following that (i) is related to India and (j) is refer to China.

$$XIII_i = \frac{\frac{x_{ij}}{X_{iw}}}{\frac{M_{jw}}{M_w - M_{iw}}} \quad MIII_i = \frac{\frac{m_{ij}}{M_{iw}}}{\frac{X_{jw}}{X_w - X_{iw}}}$$

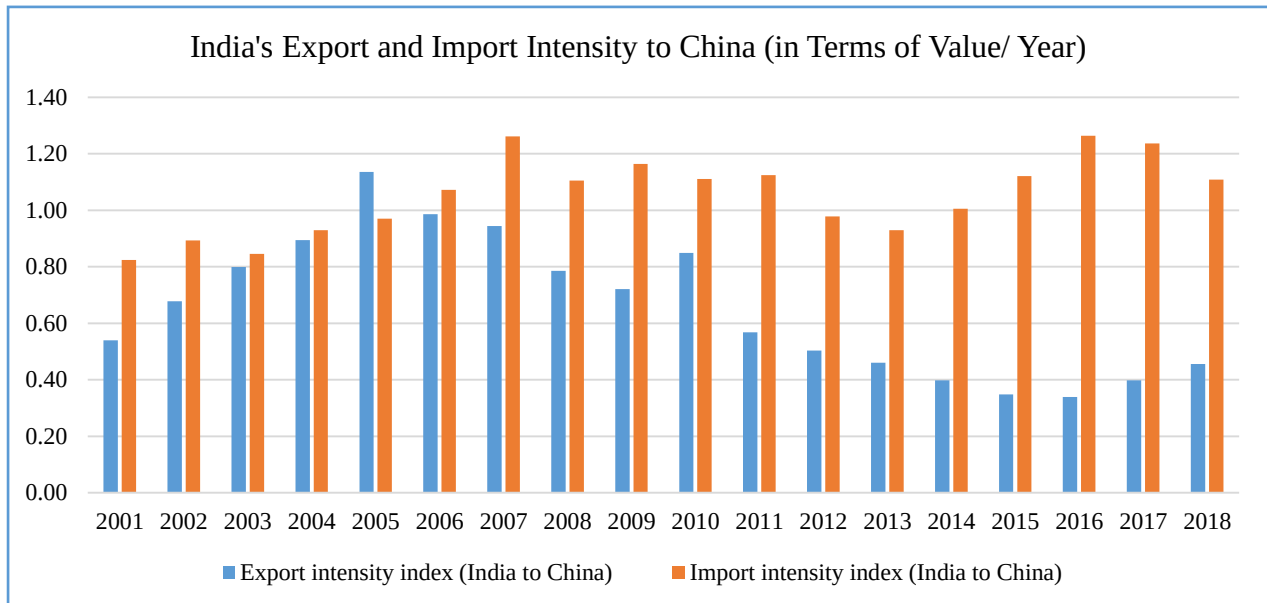
Where; $XIII_i$ is the export intensity index of country (i), x_{ij} is referring to export of country (i) to country (j), X_{iw} is referring to the total export of country (i) to the rest of the world, M_{jw} is referring to the total imports of country (j) from the rest of the world, M_w is referring to the total import of the world, M_{iw} is related to the import of country (i) to the rest of the world and X_w is refer to the total world export.

These indices reflect the ratio of the share of country (i)'s trade on country (j); compared to the share of world trade on country (j). If the number is greater than (1) we can interpret that the flow of trade is going to more and less than (1) means that the intensity of the trade between two countries are less.

Table 4: Bilateral Trade Intensity Between India and China

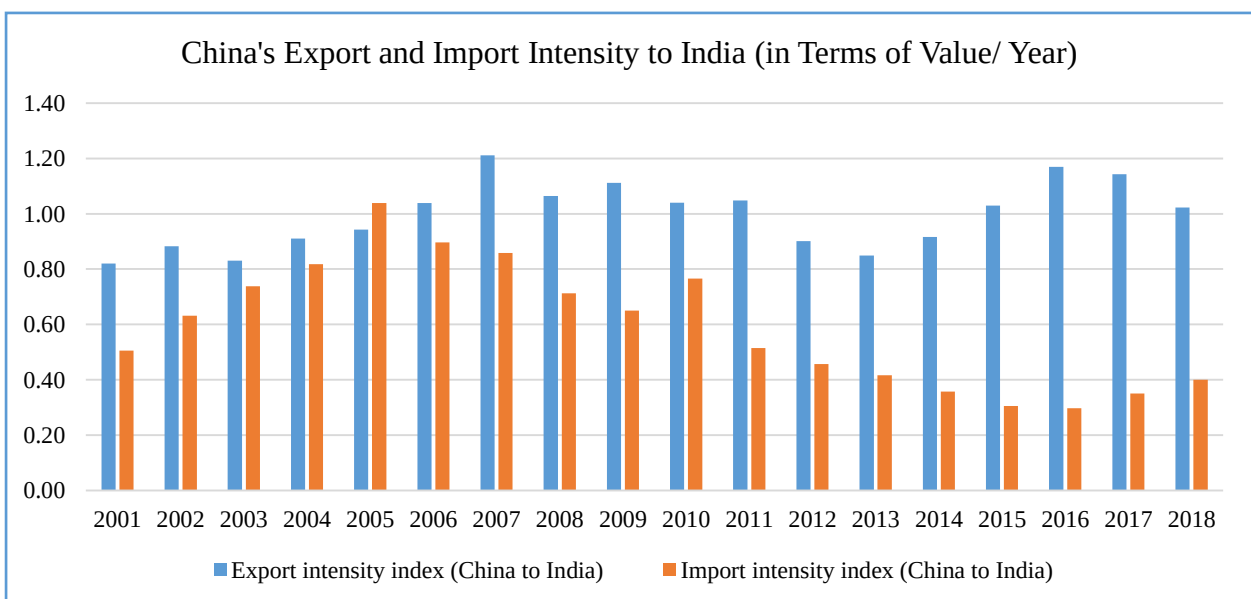
Year	Exports Intensity Index		Imports Intensity Index	
	India to China	China to India	India From China	China From India
2001	0.54	0.82	0.82	0.51
2002	0.68	0.88	0.89	0.63
2003	0.80	0.83	0.85	0.74
2004	0.89	0.91	0.93	0.82
2005	1.14	0.94	0.97	1.04
2006	0.99	1.04	1.07	0.90
2007	0.94	1.21	1.26	0.86
2008	0.79	1.06	1.10	0.71
2009	0.72	1.11	1.16	0.65
2010	0.85	1.04	1.11	0.77
2011	0.57	1.05	1.12	0.52
2012	0.50	0.90	0.98	0.46
2013	0.46	0.85	0.93	0.42
2014	0.40	0.92	1.01	0.36
2015	0.35	1.03	1.12	0.31
2016	0.34	1.17	1.26	0.30
2017	0.40	1.14	1.24	0.35
2018	0.46	1.02	1.11	0.40

Source: Author's Findings



Source: Author's Findings

Figure 3: India's Export and Import Intensity to China (in Terms of Value/ Year) Since 2001



Source: Author's Findings

Figure 4: China's Export and Import Intensity to India (in Terms of Value/ Year) Since 2001

The above table shows the bilateral trade intensity between India and China since 2001s. In eighteen years, the exports intensity index of India was less than one except 2005. On the other hand, in most of the time China had exports intensity index more than one. But in imports, India had more intensity index than China. From the above data we can analyze that China exports more to India because it has exports intensity than India and India imports more from China because it has imports intensity than China in this bilateral trade.

5. Conclusion

Trends of bi-lateral trade between India and China clearly show that it is in favor of China. Because China exports diversified manufactured items: chemicals, electrical machinery and equipment, cement, nuclear reactors, miner fuels and oils, and other technological products, while India exports primary raw materials: ores, slag and ash, organics, cottons and plastics, and iron and steel.

By applying Revealed Symmetric Comparative Advantage (RSCA) method, we found that, among top ten commodities that traded between these two countries, India has Comparative Advantages in Ores, slag and ash, Cotton, Copper and articles thereof, Plastics and articles thereof, Salt; Sulphur; earths and stone; plastering materials, lime and cement, and China has Comparative Advantages in Organic chemicals, Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral, Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof, Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television. We also identified that, China has more intensity to export than India and India has more intensity to imports than China in this bilateral trade.

Based on findings of the present study, India and China can achieve the goals through economic integration, and people to people contacts at all levels. Through investment promotion, joint establishment of ventures, and technological transfer, trade can be promoted. Moreover, the policy makers of these countries need to formulate appropriate and effective policy in order to encourage FDI and expand trade volume in order to further stimulate economic growth. There is a need to remove all obstacles including tariffs and non-tariffs barriers which are responsible factors for poor performance of trade and growth in India and China.

For future research it is suggested that cross-country analysis, long period data, and more sophisticated econometric techniques, if use covering the main determinants of trade including FDI in the context of development will certainly give more robust results and largely help policy makers.

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Dividend Policy Determinants and Stock Price Volatility in Selected African Stock Markets

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Abstract

The study examined the impact of dividend policy determinants on stock price volatility in Sub Sahara Africa. Three (3) economies (Nigeria, Kenya and South Africa) were selected from among the 51 economies in the region, and data spanning 9 years (2011-2019) were obtained and subjected to econometric analyses. The Generalized Autoregressive Conditional Heteroskedacity (GARCH) was used to ascertain and generate the volatility properties of the stock prices, while the panel Autoregressive Distributed Lag (ARDL) technique was used to capture the relationship between dividend policy determinants and stock price volatility. The independent variables analyzed in this study are leverage (LEV), firm size (FSIZE), dividend yield (DY), earnings per share (EPS) and dividend payout (DPO) while the dependent variable was the volatility in stock price (SPV). Findings show that all of the variables considered have varying degree of relationships with stock price volatility both in the long run and short run in the three countries. The pooled result indicated that DPO, LEV, FSIZE, DY and EPS had a significant relationship with stock price volatility within the study period in the long run but no short run relationship could be confirmed for the combined samples. The study concluded that dividend payout, dividend yield and earnings per share are significant factors that can be used for predicting the volatile movement in stock price in the African stock markets. The study recommended that dividend payment should be consistent and smoothed to disrupt volatility of stock prices since dividend payment is found to be significant determinant of stock price volatility.

Keywords: Dividends, Stock price, Volatility, ARDL, GARCH

JEL Classification: G12, G14, G35

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1. Introduction

Aside financing and investment decision, the other essential function of a financial manager is decision on dividend payment. Dividend is seen as the reward for financing or investing in a project by the owners of the going concern. Whereas interest payment satisfies the interest of the creditors (both short term and long term), dividend payments is meant to satisfy the owners of the firms. Nishat & Irfan (2003), Echabi & Azouzi, (2016) posit that despite years of empirical investigations into the concepts of dividend decision, dividend policy still remains a source of controversy in corporate finance. The controversies are however upholding the dividend puzzle of Black (1976) where he argued that, “the harder we look at the dividend picture; it seems like a puzzle with pieces that do not fit together”.

Dividend policy has been examined by many scholars with divided opinions; whereas one group resolve that dividend payout is relevant to the firm well-being and thus reflects in its' stock price, the other group opined that dividend payment is irrelevant to the firm's value. Leading the pack of dividend irrelevances is the Miller and Modigliani (M & M) (1961) Dividend Irrelevance Theory. The M & M (1961) states that dividend payout of a firm has no impact neither on the investor's decision nor on the firm's value. That is, news of dividend payment and the aftermath of dividend payment do not reflect in the stock price of a firm.

To the dividend relevance team, dividend payment is important to the firm as well as to the investors. It is considered as a signal to the public, both to the investors and non-investors, that the firm is doing well and has a great prospect. Therefore, several firms allow a stable dividend payout while a decrease in dividend is termed as a weakness signal for investors. Therefore, an increase in dividend would be announced only if the firm can maintain it. With Dividend payments, stock prices of firms are being stabilized. That is, a consistent dividend paying firms tends to have growing value overtime devoid of high market oscillations. Investors seem to hold on to the stock of high paying dividend and this ensures that the market price is not that volatile. These attending benefits of dividend help a firm to have good public image in the long run especially where it is regular. Also, dividend payout is deemed relevant because it helps to resolve the principal-agent issues in the organization. Where there are less free cash flows in the organization, the agents (managers) tend to maximize the available resources, more so where debt is increasing in the firm's capital structure.

Much study has examined the impact of dividend announcement on firms' performance (Ikechukwu & Madubako, 2016; Kajola, Adewumi & Oworu, 2015; Simon & Ologunwa, 2016) and empirical results have established a link between these two. The perceived relationship between dividend payment and share price is dependent on the researcher's school of thought. For example, the perceived impact of dividend payment on share price was challenged in the study of Miller and Modigliani (1961) theory commonly known as the MM theory of dividend irrelevance. The implication of this theory is that investors are not moved by dividend payment and would be indifferent if faced with the options to either accept a dividend now or sell the securities later to earn capital gain. This is so because under a perfect market condition, investors can create an “homemade” policy to suit their cash needs. Much study has empirically tested for

the validity of the MM theory of dividend irrelevance and has had conflicting results (Adesola & Okwong, 2009; Udobi & Iyiegbuniwe, 2018). Inconsistency in empirical findings has been attributed to flaws in dividend measurement (Amadasu, 2011; Toby, 2014). Contrary to the MM theory of dividend irrelevance, the dividend relevance theory as propounded by Lintner (1956) was first to establish a positive relationship between dividend payment and share price. Since then, other studies have tried to link dividend payment to share price movement in their various economies. For example, the studies of Musa (2009), Khan (2012) and Abubakhar (2012) have found a positive relationship between dividend payment and share price.

The relationship between dividend payment and share price fluctuations has rocked the center stage of empirical research. The study of Gordon (1963) suggested an inverse relationship between dividend payment and stock price volatility. This would imply that firms paying consistent and high dividends should face lesser volatility in stock prices. Recent empirical works like that conducted by Nguyen, Bui and Do (2019) has found a negative relationship between dividend yield, dividend payment and stock price volatility, hence affirming the earlier study of Gordon (1963). Nevertheless, the study of Jahfer and Mulafara (2016) has found a positive relationship between dividend yield, payout ratio and Stock Price Volatility (SPV).

Previous empirical studies conducted to examine the link between dividend payment and SPV have majorly been country specific (Ilaboya & Omoje, 2012; Lashgari & Ahmadi, 2014; Phan & Tran, 2019; Nguyen, Bui & Do, 2019; Cristea & Cristea, 2018). While country specific studies are important to identify common country specific effects, study outcomes cannot be used to make a generalization of economic policies for other economies. The stock market in Sub Sahara region is especially worth the research attention as movements in its stock price have been found to respond too rapidly to market or firm specific fundamentals (Uyaebo, Atoi & Usman, 2015). Hence, this study moves to consider whether dividend payment (firm specific) contributes to the volatility of stock price in Sub Sahara Markets between 2011 and 2019. The African market is selected because of the high volatility in the market. The study period (2011-2019) is suitable to examine the effect of dividend policy on stock price volatility bearing in mind the global value melt down as suffered in 2011.

The remainder of this study is organized as follows. Section two reviews the relevant literature and previous studies related to this study. Section three describes the methodologies adopted for the studies including the model formulation and data analysis techniques. In section four, the main empirical test results were presented and interpreted with summaries of the empirical findings and conclusion the study.

2. Literature Review

2.1 Stock Price Volatility (SPV)

One of the essential features of a stock price of firm is it consistent movements, either appreciating or depreciating. Zainudin, Mahdzan and Yet (2018) posit that SPV explains the risk of a common stock, in which the risk increases with the common stock price volatility. That is the higher the volatility of prices of stock, the greater the attending risk of such stocks. Phan and Tran (2019) see SPV as a change in stock prices over time as a result of instability,

unpredictability, and risks. The understanding of SPV is essential for investors, the affected company and portfolio managers alike. Since investors are known to be rational and risk averse, they tend not to be appeased with return premium for high level of risk undertaking but rather prefer a low risk with certain level of returns.

There exist various methods of examining volatility. The most common methods include Variance and Standard Deviation. All other volatility measurements and methods rely mainly on these two standard methods. Various SPV measurements which have been severally used by scholars based on the research objectives includes close-to-close, exponentially weighed, Parkinson, German-Klass, Rogers-Satchell as identified by Bennett and Gil (2012) and the Auto-Regressive Conditional Heteroskedasticity (ARCH) with its family. The Autoregressive Conditional Heteroskedasticity (ARCH) models are specifically designed to model and forecast conditional variances. The variance of the dependent variable is modeled as a function of past values of the dependent variable and independent or exogenous variables. The ARCH models were introduced by Engle (1982) and generalized as GARCH (Generalized ARCH) by Bollerslev (1986). These models are widely used in various branches of econometrics, especially in financial time series analysis. The ARCH model as specified by Engle (1982) is given as

$$\hat{\varepsilon}_t^2 = \hat{\alpha}_0 + \sum_{i=1}^q \hat{\alpha}_i \hat{\varepsilon}_{t-i}^2 \quad \text{ARCH Model}$$

Eq one was later generalized by Bollerslev (1986) into GARCH i.e., Generalized ARCH. The basic difference here is that the GARCH allows past conditional variances to be included in Eq one. The aim of the GARCH is that it can parsimoniously represent a higher-order ARCH process. The GARCH (p, q) model can be represented in Eq two below

$$\hat{\varepsilon}_t^2 = \omega + \sum_{i=1}^q \alpha_i \varepsilon_{t-i}^2 + \sum_{i=1}^p \beta_i \sigma_{t-i}^2 \quad \text{GARCH Model}$$

2.2 Dividend, Relevance and Irrelevance

According to Tariq (2015) dividend policy of a firm is the decision of firm managers about the payment of dividends to shareholders out of cash surplus. Lumapow and Tumiwa (2017) see it as the determination of the portion of the profit to be given to the shareholders. The determinants of dividend policy are the firm's specific factors. One major factor is the net earnings of profit of a going concern. Where a firm makes consistent profits, it is expected of such firm to give back to its financiers in form of dividend payment. The converse is also true.

Every dividend paid has its origin from the company's earnings. Earnings are used for different purposes within an organization. These purposes as given by Rehman and Takumi (2012) include retirement of the firm's debt, buying back its shares or distributing the earnings to shareholders in the form of dividend. Dividend payment is important to the firm as well as to the investors. It is considered as a signal to the public, both investors and non-investors, that the firm is doing well and has a great prospect. Therefore, many companies follow a consistent dividend payout policy and their management considers reduction in dividend as a weakness signal for investors and thus a higher dividend would only be announced if the company can sustain it in

future. Dividend payment also helps in stabilizing the market price of the firm. These attending benefits of dividend help a firm to have good public image in the long run especially where it is consistence.

Miller and Modigliani (1961) argued that under a perfect market a firm's dividend policy is irrelevant. They opined that investment decision as well as financing decision as well as optimal capital structure are the sole determinants of a firm's value not its' dividend decision. The underlining assumptions of this theory are: No tax differential (i.e on either dividend or capital gain), no market friction when securities are traded, free and same interpretation of information, no conflicts between interests of manager and shareholders and all participants in the market are price taker. According to Al-Shawawreh (2014), M&M theory has many supporters; for instance, Black and Sholes (1974) confirmed from their investigation of 25 portfolios of common stock in New York Stock Exchange from 1936 to 1966 that there is no significant impact of dividend yield (DY) on expected return. In the same vein, they argued that there is no evidence in support of diversity in dividend policies leading to change in stock prices. Their findings support dividend irrelevance hypothesis.

2.2.1 Dividend Payout and Stock Price Volatility

Dividend payout ratio is the ratio of dividend per share to earnings per share. Cozorici (2015) argue that the image of company viability is presented by its act of dividends payment and that a regular dividend payment increases public confidence which result to a rise in the market value of the firm. On the other hand, retention of investment profits can only lead to a rise in self-financing ability and improve the financial structure of the company. With this, the firm has strong capacity in financing other project and or stand better chance of obtaining loan where necessary.

2.2.2 Dividend Yield and Stock Price Volatility

However according to Zainudin, Mahdzan and Yet (2018) several investigations have inferred that DY is negatively associated with SPV especially in the developed economy while it has a mixed (positive and negative) influence on SPV in emerging markets. This view was obtained from the works of Baskin (1989), Nazir, Nawaz, Anwar and Ahmed (2010).

2.2.3 Firm Size and Stock Price Volatility

Lumapow and Tumiwa (2017) posit that "firm size is a measure that describes the size of the company that can be accessed from the total value of the company's assets. The size of a large company shows that the company is experiencing good growth. Firms with large growth will find it easy to enter the capital market as investors capture positive signals for companies that have large growth so that a positive response reflects the increasing firm value".

2.2.4 Leverage and Stock Price Volatility

Financial leverage of a firm can be arrived at by expressing the total amount of debt as a percentage of total assets at certain time. He argued that external debt adds economic value to a company especially where the return on investment is higher than the cost of debt. Although M & M (1961) claimed that financial leverage has no effect on the firms' value in the absence of corporate income taxes and distress costs. A highly levered firm with attending higher returns on

investments will always be the choice of portfolio investors knowing that the particular firm has future prospects. Where investors see the viability of projects of the levered firm, it is expected that the demand for such stocks will rise while the converse is also true. However, it is often reported that financial leverage has a negative relationship with dividend payout, since there will be need for the firm to meet maturing obligations of interest payments and principal repayment as they fall due. Hence the higher levered a firm is the lower the tendency of dividend payout.

2.2.5 Earnings Per Share and Stock Price Volatility

EPS which is define as profit after tax divide by number of ordinary shares represent the income of every share bought by investor overtime (Oyedeko & Adeneye, 2017). It can be refers to as the real gain of the investment activities. EPS is of regarded as the profitability ratio of a firm. That is, it showcases how profitable a company is in a particular period. EPS is arrived at by dividing net income by average outstanding common shares. Where there is stability or consistent rise in EPS, a firm is seen as a viable one and hence its share price becomes more liquid in the market and hence fluctuates with regards to demand and supply.

2.3 Empirical Review

Several studies in developed economies investigates the relationship between dividend policy and stock price volatility. Nishat and Irfan (2003) examined the effect of dividend policy on stock price volatility in the Karachi Stock Market of the Pakistan between 1981 and 2000 using the Panel Data method of analysis. They examined 160 listed firms stock price volatility in conjunction with Dividend Payout (DP) and Dividend Yield (DY) as the explanatory variables having size and leverage as control factors. It was observed that DY and DP have significant influence on Stock Price Volatility (SPV) in the Pakistan. Also, Nadeem, Arfan and Hazoor (2014) investigates the impact of DP on SPV in Pakistan. Using data of 17 banks on the KSE from 2007 to 2012, the variables considered were SPV, EPS, LEV and DPR. The findings from the panel analysis reveal that DPR EPS are seen to be positively significant in influencing SPV.

Dewasiri and Weerakoon (2014) investigated the effect of dividend policy on stock price volatility between 2003 and 2012 using Panel data and Granger Causality Test to arrive at their conclusions. Their variables of interest are the Dividend Payout (DP) and Dividend Yield (DY) as the explanatory variables while Stock Price (SP) of 40 firms serve as the response variable. The result of the analysis shows that while DY has no effect on SPV, DP exerts a significant positive effect on SPV of the 40 firms considered. However, the result from the Granger Causality Test shows that DY has a unidirectional influence from DY to SPV.

Syed and Umara (2016) examined the role of DP on SPV in the Pakistan between 2005 and 2012 using the multiple regression method of analyses to arrive at their conclusions. 50 firms listed on the Karachi Stock Market were used as the sample size with variables such as SPV, DY, DPR, EPS, FS and Asset Growth (AG). DP was seen to have significant negative relationship with SPV in the Pakistan while the control variables exert positive and significant effect on SPV.

Phan and Tran (2019) examined the relationship between DP and SPV in the Ho Chi Minh Stock Exchange and Hanoi Stock Exchange in the Vietnam between 2008 and 2015. With panel data analysis and the observation of non-financial firms' dataset, it was discovered from the findings

that DY has a negative effect on SPV in the Vietnam. This shows that DP is influential on the SPV in Vietnam.

Zainudin, Mahdzan and Yet (2018) investigates the effect of dividend policy on stock price volatility of industrial firms in Malaysia between 2003 and 2012. With the sample of 166 industrial listed firms in Malaysia and with Panel Data analysis it was observed that dividend policy is a strong predictor of SPV of industrial products firms in Malaysia, particularly during the post-crisis period. Of the dividend policy observed, DPR predominantly influences volatility.

Sewelen (2017) examined the determinants of stock price volatility in Sweden between 2004 and 2016. The sample size contains Large, Mid and Small Cap firms listed on the Swedish stock market. The variables considered are SPV, PR, Earnings Volatility (EV), FS and Debt Ratio. Using the panel data analysis, it was observed that PR, FS and EV have significant negative influence on SPV while Debt Ratio shows a positive effect.

Sugathadasa (2018) observed the data of 30 companies listed on the Colombo Stock Exchange in Sri Lanka in order to determine the impact of DP on SPV. Variables such as SPV, DY, DPR, FS, Debt were examined between 2014 and 2017 with the aid of Panel data analysis. It was observed from the findings that DY and DPR have negative effect on SPV in the Sri Lanka. While DY and DPR are the main independent variables, FS, Debt and Growth of Assets are control variables.

Prachaya and Mansur (2018) examined the influence of dividend policy on SPV in the USA using two data sets which include all the stocks listed on one hand and stocks of Islamic firms. With the advance GMM method of analysis and observing variables such as SPV, DY, DPR and some control variables, it was discovered that DP have low impact on SPV and it is becoming irrelevant in the aggregate economy. However, DY has positive impact on Islamic stocks signaling the clientele effect in the USA.

Nguyen, Bui and Do (2019) investigated the impact of Dividend Policy (DP) on Share Price Volatility (SPV) in the Ho Chi Minh Stock Market between 2011 and 2016 using the Panel data analysis. The sample consists of 141 listed non-finance companies. The variables considered are SPV, DY, DPS and control variable. It was observed that DY is the most essential determinant of SPV. It was however established that both DY and DPR have significant negative effect on SPV.

In Africa, Njeru (2015) examined the impact of Dividend Payout on Stock Prices of firms in Kenya. Using the 64 listed firms on the Nairobi Stock Exchange data from 2010 to 2014, the study established the negative impact of dividend payout on stock price of the firms. This was arrived at from the graphs of the Annual Average Returns and Cumulative Average Returns. Ofori – Sasu, Abor and Osei (2017) in Ghana examined the impact of dividend policy on shareholders' value in Ghana stock exchange. Time series data spanning 2009-2014 were subjected to empirical testing under the ordinary least square framework. Empirical findings revealed that dividend policy was better explained by ROE, firm age, tax, tangibility, GDP growth and interest rate. A significant positive relationship was found between dividend per share and shareholders' value. Higher dividend yield was found to inhibit shareholder's value.

Araoye, Aruwaji, and Ajayi (2019) in Nigeria examined firms' data on the Nigerian Stock Exchange between 2005 and 2014 to establish the effect of DP on SPV in Nigeria. With the random-effect panel analysis and variables such as SPV, DPR, DPS, Earnings after Tax (EAT),

Dividend Declared (DD), it was observed that DPS is the main factor that impact SPV and it impact it positively whereas, DPR and EPS negatively impact SPV.

Agbatogun, Kajola and Akinbola (2019) investigated the impact of DP on SPV in the non-financial sector of the Nigerian economy. Using the Panel Auto Regressive Distribution Lag and variables such SPV, DY, DPR, Earnings Volatility (EV) and control variable of FS, the result of the findings reveals that in the long run DY and DPR have significant positive effect on SPV while FS has a negative effect on SPV.

From the empirical literature reviewed, it can be deduced that there is paucity in empirical study as to the link between dividend payout determinants and stock price volatility with particular reference to the African Stock market. Previous studies on dividend payout and stock volatility have been either sector or country specific. Selecting some markets in Africa is intended to widen the geographical scope of the subject matter so as to make robust economic and financial interpretations. This study conducted a panel based study to link dividend payment determinants and stock price volatility in the Africa markets.

3. Research Method

The nature of the study entails a cause-effect investigation. Therefore, the researcher employs a causal research design, where the independent variables are examined in other to determine the relative impact on the dependent variable. The population of the study is the total number of listed firms on the three selected stock exchange markets. Where 168 are listed on the Nigeria Stock Exchange, 64 on the Nairobi Stock Exchange while 379 on the Johannesburg Stock Exchange as at 2019 (All African Market, 2020). The judgmental sampling technique is used to select five (5) dividend paying firms listed in the exchanges of the different sampled economies. Listed firms that has paid dividend from 2011-2019 is selected for the study. This study employs secondary data which were sourced from the mandatory annual financial report of the firms selected which are available on the Exchanges websites.

The study employed a panel Autoregressive Distributed Lag (ARDL) technique to capture and provide empirical evidence on the effects of dividend policy determinants and stock price volatility in selected Africa countries. On the other hand, the Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model would be used to determine the volatility of stock prices and its response to dividend policy. The functional form of our study is given as;

$$SP = f(DPR, DY, FS, LEV, EPS) \quad (I)$$

Where Equation I is adapted from the studies of Nguyen, et al (2019), Sugathadasa (2018). Both studies modeled dividend payout and stock price volatility to be;

$$SPV = f(DPR, DY, FSZ, EV, LTD, GAS) \quad (II)$$

Where SPV which is the response variable in Stock Price Volatility being explained by Dividend Payout Ratio (DPR), Dividend Yield (DY), Firm Size (FSZ), Earnings Volatility (EV), Long Term Debt (LTD) and Growth in Assets (GAS).

The aim of the study is to determine the role dividend policy determinants plays not just on stock prices but in instabilities or volatility of stock price. On this note, the GARCH model better captures the essence of this purported relationship. Thus, The GARCH technique would first be

used to generate the variance in stock prices (volatility) before subjecting it to further empirical tests. Premise on the above, our new functional and empirical models would take the form;

$$SPV = f(DPR, DY, FSZ, LEV, EPS) \quad (III)$$

In developing an ARCH model, two distinct specifications are considered - one for the conditional mean and one for the conditional variance. Moreover, a model with a first-order GARCH term and a first-order ARCH term (i.e. GARCH [1, 1]) is specified in this study because of its simplicity.

$$SP_t = X_t\gamma + \varepsilon_t \quad (IV)$$

$$\sigma_t^2 = \omega + \alpha\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2 \quad (V)$$

Equation (IV) is the mean equation and (V) is the variance equation. The stock price is written as a function of exogenous variables (in this case, the major factors in stock prices) with an error term. While σ_{t-1}^2 is the conditional variance because it is the one-period ahead forecast variance based on past information. The conditional variance equation specified in (V) is a function of three terms:

- The mean: ω .
- News about volatility from the previous period, measured as the lag of the squared residual from the mean equation: ε_{t-1}^2 (the ARCH term).
- Last period's forecast variance: σ_{t-1}^2 (the GARCH term).

After generating the volatility properties of stock price, the ARDL technique were used to capture its response to dividend policy determinants. The generalized form of an ARDL model is given as;

$$\Delta Y_t = \beta_0 + \sum_{i=1}^p \theta \Delta Y_{t-i} + \sum_{i=0}^q \beta_1 \Delta X_{t-i} + \varepsilon_{it} \quad (VI)$$

Adapting equation (VI) to our study we obtain equation (VII) which is given as;

$$\begin{aligned} SPV_{it} = & \beta_0 + \sum_{i=1}^p \theta_1 \Delta SPV_{it-i} + \sum_{i=1}^p \beta_2 \Delta DPR_{it-i} + \sum_{i=0}^q \beta_3 \Delta DY_{it-i} + \sum_{i=0}^q \beta_4 \Delta EPS_{it-i} \\ & + \sum_{i=0}^q \beta_5 \Delta LEV_{it-i} + \sum_{i=0}^q \beta_6 \Delta FSZ_{it-i} + \varepsilon_{it} \end{aligned} \quad (VII)$$

Where:

- SPV_{it} = Stock price volatility
 DPR_{it} = Dividend payout ratio of listed firms i in time t.
 DY_{it} = Dividend Yield of listed firms i in time t.
 FSZ_{it} = Firm size of listed firms i in time t.
 LEV_{it} = Leverage of listed firms i in time t.

EPS_{it} =	Earnings Per Share of listed firms i in time t.
Δ =	Difference Operator
B_0 =	Slope or intercept of the equation
p, q =	Lag length of dependent and independent variables respectively
θ =	Coefficient of lagged dependent variable
β_1 =	Co-efficient of explanatory variables
ε_{it} =	Error term of listed firm i in time t.
i, t =	Cross section and time respectively

Apriori expectations: $\beta_2, \beta_3 < 0, \beta_4 - \beta_6 > 0$

Apriori expectation for the model is considered so because it is believed that any action of managers on each of the main independent variables (DY and DPR) is likely to cause fluctuation in the share price of the firm; which means stock price will be less volatile, an inverse relationship. However, since the control variables areas a result of the activities/performance of the firm and not necessarily because of decision of the managers, the result can go either way.

Table I: Measurement of Variables

Variables	Abbreviations	Measurements
Stock Price Volatility	SPV	ARCH & GARCH
Dividend Payout Ratio	DPR	$\frac{\text{Dividend paid}}{\text{Profit After Tax}}$
Dividend Yield	DY	$\frac{\text{Dividend per share}}{\text{Market price per share}}$
Firm Size	FSZ	Natural logarithm of total asset value
Leverage	LEV	$\frac{\text{Total Debt}}{\text{Total Assets}}$
Earnings Per Share	EPS	$\frac{\text{Net Income}}{\text{Number common share outstanding}}$

Source: Authors' compilation (2021)

3.1 Panel Unit Root Test

Two different unit root test is employed to test for the stationarity of the dataset. These two-unit root test are based on two different assumptions. The Levin, Lin and Chu (LLC) test is based on the assumptions of common unit process. However, the Im, Pesaran and Shin (IPS) test is based on the assumption of individual unit root process. The panel unit root test of the individual

countries is first reported before pooling the entire sample. In Nigeria, majority of the variables are observed to be stationary at levels given the assumption of a common unit root process. However, holding to the assumption of individual unit root process, it is observed that all variables are only stationary after first difference. In Kenya, the finding is observed to be mixed, as some variables are found to be stationary at levels given both assumptions (DPO, LEV & FSZ). However, variables that were non stationary at levels given both assumptions were subjected to first difference to bring them to stationarity.

Table II: Panel Unit Root Test (Country-specific)

Nigeria										
	Levin, Lin and Chu Test (assuming common unit root process)					Im, Pesaran and Shin (assuming individual unit root process)				
	Levels		1 st Diff			Levels		1 st Diff		
	Stat	Prob	Stat	Prob	Order	Stat	Prob	Stat	Prob	Order
Nigeria										
SPV	-2.67	0.00	-2.19	0.01	I(0)	-0.11	0.45	-2.39	0.04	I(1)
DPR	-3.57	0.00	-2.69	0.00	I(0)	-1.22	0.11	-3.52	0.00	I(1)
DY	-1.87	0.03	-6.07	0.00	I(0)	-0.95	0.17	-3.26	0.00	I(1)
FSZ	-0.55	0.29	-2.36	0.00	I(1)	0.90	0.81	-3.20	0.00	I(1)
LEV	-1.36	0.08	-2.26	0.00	I(1)	-0.91	0.17	-4.13	0.00	I(1)
EPS	-3.32	0.00	-5.29	0.00	I(0)	-0.44	0.32	-3.87	0.00	I(1)
Kenya										
SPV	-0.23	0.40	-8.59	0.00	I(1)	0.69	0.75	-5.70	0.00	I(1)
DPR	-4.99	0.00	-2.65	0.00	I(0)	-1.84	0.03	-3.13	0.00	I(0)
DY	-3.24	0.00	6.09	0.00	I(0)	-0.10	0.45	-3.59	0.00	I(1)
FSZ	-10.49	0.00	-14.44	0.00	I(0)	-3.74	0.00	-4.39	0.00	I(0)
LEV	-0.14	0.44	-4.01	0.00	I(1)	1.09	0.86	-3.86	0.00	I(0)
EPS	-4.27	0.00	-4.80	0.00	I(0)	-1.55	0.06	-3.56	0.00	I(1)
South Africa										
SPV	-537.94	0.00	-30.10	0.00	I(0)	-166.8	0.00	-13.1	0.00	I(0)
DPR	-1.45	0.07	-5.28	0.00	I(1)	-0.74	0.22	-3.41	0.00	I(1)
DY	2.63	0.09	4.97	0.00	I(1)	-0.37	0.35	-6.42	0.00	I(1)
FSZ	-5.13	0.00	-2.66	0.00	I(0)	-1.19	0.11	-1.23	0.04	I(1)
LEV	-0.25	0.39	-4.12	0.00	I(1)	0.93	0.82	-3.89	0.00	I(1)
EPS	-13.28	0.00	-6.92	0.00	I(0)	-2.92	0.00	-3.69	0.00	I(0)

Source: Authors computation (2021)

In South Africa, it is observed that majority of the variables are stationary only after first difference. However, some variables were observed to be stationary at levels (SPV, FSZ & EPS). Given the assumption of individual unit root process, finding is also found to be mixed as some

variables are found to be stationary at levels while others became stationary only after first difference.

Table III: Panel Unit Root Test (Pooled Data)

Variables	Levin, Lin and Chu Test (assuming common unit root process)					Im, Pesaran and Shin (assuming individual unit root process)				
	Levels		1 st Diff		Order	Levels		1 st Diff		Order
	Stat	Prob	Stat	Prob		Stat	Prob	Stat	Prob	
SPV	-670.4	0.00	-35.64	0.00	I(0)	-142.9	0.00	-8.44	0.00	I(0)
DPR	-6.30	0.00	-3.67	0.00	I(0)	-2.19	0.01	-3.00	0.00	I(0)
DY	-3.34	0.00	15.21	0.00	I(0)	-6.82	0.00	-5.34	0.00	I(0)
FSZ	-6.60	0.00	-11.98	0.00	I(0)	-2.18	0.01	-2.61	0.00	I(0)
LEV	-1.34	0.08	-3.31	0.00	I(0)	0.64	0.74	-2.25	0.01	I(1)
EPS	-11.8	0.00	-1.62	0.05	I(0)	-2.81	0.00	-4.79	0.00	I(0)

Source: Authors computation (2021)

For robustness, the panel unit root of the samples pooled together is presented in Table III. The LLC which assumed common unit process indicates that all variables are stationary at their levels. However, the IPS indicates that most of these variables are stationary at levels although the IPS confirms that some variables are non-stationary at levels (LEV). These results indicate that some variables are stationary given both assumptions while others are not. All series were subjected to their first difference and the two test result indicated that all series remained stationary after first difference. Given that the variables are integrated of I(0) and I(1), the ARDL technique was used to estimate the long run relationship between various variables.

3.2 Volatility Testing

In this section, we test for the presence of volatility in the series (stock price) to ensure that there is volatility in the series before proceeding to estimate a GARCH model already specified. The Autoregressive Heteroskedasticity test (ARCH-Test) was used to perform this test with the null hypothesis of no ARCH effect. The test result for the individual country and the pooled are reported concurrently. The result is presented in Table IV

Table IV: ARCH Test (Country-specific and Pooled)

Heteroscedasticity Test				
Null Hypothesis: No ARCH Effect				
Market	F-Stat	Obs-squared	Prob	Decision
South Africa	71.18	56.19	0.00	Reject
Nigeria	54.21	21.22	0.00	Reject
Kenya	50.69	37.24	0.00	Reject
Pooled	78.66	72.22	0.00	Reject

Source: Authors computation (2021)

Findings from Table IV show the presence/absence of volatility in stock prices for the sampled countries. Volatility is found to be present in all sampled countries. Specifically, the null hypothesis of no ARCH effect is rejected for all countries. This indicates that we can correctly estimate a GARCH model. Result findings from Table IV also confirm the presence of volatility in the combined stock price (pooled) as the F-stat is found to be significant at the 1% level thus evidencing the rejection of the null hypothesis.

3.3 Volatility Analysis

Herein, the GARCH model is being estimated and insight provided as to the model parameters provided in the estimation output. The essence of this is to analyze and ascertain the volatility properties of stock price as well as the persistence of volatility in the series. The GARCH result is shown in Table V

Table V: Summary of the GARCH Model (Country-specific)

Method: ML ARCH-Normal Distribution			
Parameters	Nigeria	South Africa	Kenya
ω	0.07 (0.00)	66.7 (0.33)	0.14 (0.27)
δ	-0.24 (0.00)	-0.10 (0.00)	0.35 (0.31)
β	1.17 (0.00)	0.79 (0.01)	0.59 (0.05)

Source: Authors computation (2021)

The result findings from Table V summarize the GARCH model for the individual countries. The ARCH term(δ) shows the extent to which past volatility impacts on current volatility in the market. Findings from Table V shows the ARCH term to be negative indicating that there is a negative relationship between past volatility and current volatility in Nigeria. The implication of this is that an upward spiraling of stock price in the previous period will negatively affects current volatility. Similar trend is observed in South Africa as the ARCH term is equally found to be negative and significant at the 5% level. This suggests that past volatility has a significant negative impact on current volatility in South Africa. In Kenya however, no relationship is found between past volatility and current volatility. Findings from Table V also suggest that among the sampled countries, Nigeria records the highest volatility persistence followed by Kenya and lastly South Africa.

Table VI: Summary of GARCH Model (Pooled)

Method: ML ARCH-Normal Distribution			
Parameters	Co-efficient	z-stat	p-value
Mean Equation			
SP(-1)	0.76	22.23	0.00
Variance Equation			
ω	0.04	0.61	0.53

δ	0.15	13.55	0.00
β	0.83	32.34	0.00

Source: Authors computation (2021)

Table VI presents the volatility behavior when the samples are pooled. As seen from the mean equation, lagged stock price (SP) has a positive impact on current stock price. This relationship is found to be significant, signifying that past period SP reinforces current stock price in the market. The particular focus is on the variance equation which presents the volatility properties of stock returns. Indeed, the results of the conditional variance equation are rather interesting. The mean term in the result (ω) is positive but fails the significance test at the 5 percent level. This shows that generally, the position of stock prices at any given period has a strong positive effect on its pattern of volatility although not significant. Thus, apart from the external factors, many internal factors may actually be responsible for the inherent movements in stock prices.

The ARCH term (δ) measures the extent to which past volatility can lead to present volatility. The ARCH term is positive (0.15) and significant (0.00) indicating that past volatility amplifies current stock price volatility. This also shows that the tendency of stock prices gaining an upward movement at any given shock is high. Unexpected shocks in the market are expected to generate upward spiraling of the prices rather than downward movements most of the time. The parameter " β " measures the persistence in conditional volatility irrespective of anything happening in the market and the coefficient is found to be highly significant at the 1 percent level. The γ term is positive and quite large in size, i.e. 0.83 implying that volatility is persistent and does not quickly die out.

3.4 Regression Analysis

Table VIIa: (South Africa)

Method: ARDL Model Selection Criteria: AIC Model Selected: ARDL 1,1,1,1,1						
Variables	Short run parameters	t-stat	P-value	Long-run parameters	t-stat	P-value
LEV	-85.06762	-0.93	0.36	-5.50	2.34	0.03
FSZ	-0.778303	-0.49	0.62	1.99	24.08	0.00
EPS	-73.06114	-0.33	0.74	39.31	1.99	0.06
DY	-204.5371	-0.28	0.77	-179.96	-2.62	0.01
DPR	2.564789	0.50	0.14	3.23	2.56	0.01
ECM	-0.421435	-4.01	0.00			

Table VIIb: (Nigeria)

Variables	Short run parameters	t-stat	P-value	Long-run parameters	t-stat	P-value
LEV	-0.59	-2.06	0.05	-0.11	-4.53	0.00
FSZ	0.00	0.37	0.71	-0.00	-34.34	0.00
EPS	0.02	0.70	0.52	-0.13	-37.35	0.00
DY	0.21	0.84	0.26	-0.47	-4.74	0.00
DPR	0.42	0.70	0.48	0.21	8.54	0.00
ECM	-0.89	-3.50	0.00			

Table VIIc: (Kenya)

Variables	Short run parameters	t-stat	P-value	Long-run parameters	t-stat	P-value
LEV	-0.47	-1.04	0.30	0.44	9.95	0.00
FSZ	0.00	0.01	0.98	-0.01	-2.68	0.01
EPS	1.78	1.05	0.30	-0.34	-4.72	0.00
DY	3.72	1.02	0.25	0.14	2.92	0.02
DPR	1.72	1.18	0.12	0.52	4.10	0.00
ECM	-0.85	-2.66	0.01			

Source: Authors computation from E-views 9.

Table VII a,b,c summarizes the result of dividend policy determinants and stock price volatility in each of the three countries. The AIC was used to select the model and the ARDL 1,1,1,1,1 was the final selected model. The long run relationship reveals a negative relationship between leverage (LEV) and stock price volatility (SPV) in two of the three economies. The coefficient of LEV is found to be -5.50, -0.11 in South Africa and Nigeria respectively while it is 0.44 in Kenya. These relationships were observed to be significant at the 5% level. Firm size (FSZ) is observed to have a positive (South Africa), negative (Nigeria and Kenya) relationship with SPV in the long run and were observed to be significant at the 1% level. In contrast, a negative (South Africa) and positive (Nigeria and Kenya) relationship is found between FSZ and SPV in the short run.

Dividend yield (DY) is observed to have a negative relationship with SPV in the long run and short run in South Africa while it has positive and significant relationship in both short and long run in Kenya. However, only the long run relationship is observed to be positive and significant in the case of Nigeria. Dividend policy (DPO) is observed to be positive and significant in both short and long run in all the three countries analyses. This implies that a unit increase in the DPO will lead to an increase in SPV in both the short and long run. The error correction term (ECT) is observed to possess the expected sign and is statistically significant. The ECM (-0.42, -0.89 and -0.85) indicates that past period disequilibrium is corrected in the current period. This shows that the speed at which disequilibrium is corrected is moderately high.

Table VIII: Regression Summary (Aggregate Result)

Method: ARDL						
Model Selection Criteria: AIC						
Model Selected: ARDL 1,1,1,1,1						
Variables	Short run parameters	t-stat	P-value	Long-run parameters	t-stat	P-value
LEV	17.79	0.58	0.55	120.34	46.40	0.00
FSZ	-1.75	-1.51	0.13	-0.55	-5.96	0.00
EPS	-47.37	-1.70	0.09	-41.05	-13.66	0.00
DY	-1.28	-0.26	0.25	-12.82	-2.65	0.00
DPR	0.67	0.36	0.13	-10.07	-2.61	0.00
ECM	-0.25	-2.77	0.03			

Source: Authors computation from E-views 9.0

The result summary of the aggregate (pooled) of the three sampled economies (Kenya, Nigeria & South Africa) is presented in Table VIII. The AIC criteria are also used to select the optimal lag

length and the ARDL 1,1,1,1 was chosen for the study. Findings showed that there is a positive relationship between LEV and SPV in the economies pooled together. The result is also observed to be significant thus indicating that a unit change in LEV will lead to a change in SPV by 120.3 in the long run. Findings show that in the short run, LEV and SPV have a positive relationship although the relationship is not significant at any level. FSZ is observed to be negative which signifies that a unit increase in FSZ will lead to a reduction in SPV in the long run. A unit change in FSZ will lead to a change in SPV by -0.55. The relationship is also found to be significant at the 1% level. The relationship between FSZ and SPV is also found to be negative in the short run although the relationship is observed to be insignificant. Earnings per share (EPS) was found to predominantly negative in the long and short run. Specifically, a unit change in EPS will lead to a -41.05 change in SPV in the long run. However, the relationship between EPS and SPV is found to be insignificant in the short run. Similar pattern is found between DY and SPV in the long run. The coefficient of DY is observed to be negative and significant. A unit change in DY will lead to a -12.82 changes in SPV in the market combined (aggregate). However, the short run relationship is observed to be insignificant although a negative relationship is also recorded. Finally, DPO is observed to be positive and significant the regression. This implies that changes in DPO will further amplify SPV in the combined market (aggregate). A unit change in DPO will lead to a 10.07 change in SPV in the combined market. The ECM (-0.25) is observed to be negative and significant at the 5% level. This implies that there is convergence after short run disequilibrium. 25% of previous disequilibrium is corrected for in the current period.

4. Result and Discussion

The study was undertaken to investigate the impact of dividend payout determinants and firms value in Sub Sahara. The analysis of the stock prices using the GARCH modeling technique revealed the presence of volatility in the stock price of firms listed in Nigeria, Kenya and South Africa. Volatility was also found to be present after the data of the sampled firms were pooled. Specifically, in Nigeria previous period volatility was found to reinforce current period volatility and similar pattern was found in South Africa. However, no relationship was found between past period and current period volatility in Kenya. The implication of this is that high volatility in Nigeria and South Africa results in the inability to predict stock price as prices are not stable. Using the pooled data, findings showed that stock price is highly volatile and such volatility does not quickly die out.

On the determinants of dividend policy and stock price volatility, findings showed that leverage is negative for both South Africa and Nigeria while positive for Kenya. The implication of this is that higher leverage reduces stock price volatility in Nigeria and South Africa while it reinforces that of Kenya. However, the relationship was significant indicating that leverage is a strong determinant of stock price volatility given the respective countries. Similar pattern was found when the samples were pooled. Leverage was found to also be a significant determinant of stock price volatility in the combined market. In particular, leverage was found to be positive indicating that leverage reinforces volatility in the African Market.

Dividend payout is found to reinforce stock price volatility in Nigeria, Kenya and South Africa. And the relationship was significant in Nigeria, Kenya and South Africa. Using pooled data, it was also observed that dividend payout was negative and significant. By implication, variations

in dividend payout can either amplify or tamper rapid movement of stock prices depending on the direction of dividend payout. Finance managers must therefore smooth dividend or maintain a constant or regular policy so as to avoid the downward movement of dividend payout thus triggering volatility in stock price. This finding is in line with *apriori* and follows the submission of Al-Shawawreh (2014), Phan and Tran (2019) whose studies found a negative and significant relationship with stock price volatility. The result also negates the findings of Khan (2012) that found a positive relationship between dividend payout and stock price volatility.

Dividend yield was observed to have had a positive impact on stock price volatility in Kenya, while a negative relationship was recorded in Nigeria and SA. However, it was observed that dividend yield is a strong determinant of stock price volatility in these countries given its level of significance. Findings from the pooled estimate indicated that dividend yield (DY) was negative and significant. This implies that higher dividend yield can be used to regulate and reduce rapid movements in firm's stock price. This implies that finance managers must make investments to create more profits that can be distributed to shareholders so as to increase the dividend yield. This result confirms the earlier submission of Nishat and Irfan (2003) and Kenyuru, Kundu & Kibiwott. (2013) where their studies found a negative relationship between dividend yield and stock price volatility. However, this finding is in contrast to the findings of Al-Shawawreh (2014) that found a significant positive relationship between dividend yield and stock price volatility.

The relationship between earnings per share and stock price volatility is found to be negative for Nigeria and Kenya while positive for South Africa. This implies that earnings per share reinforce stock price volatility in South Africa while it reduces volatility in Kenya and Nigeria. Using pooled data, earnings per share was found to be negative and significant. By way of implication, higher EPS stabilizes stock prices and reduces volatility. Higher EPS is expected to reinforce investor's confidence leading to more demand for the firm's stock. This result is in line with *apriori* and follows the submission of Sewelen (2017) whose study established a negative relationship between EPS and stock price volatility. However, this finding negates the study outcomes of Khan (2012), Nadeem *et al.* (2014) and Sulaiman & Migiro (2015) which found a significant positive relationship between earnings per share and stock price volatility.

Lastly, the coefficient of firm size is found to be positive in South Africa and negative in Nigeria and Kenya. For the pooled data, firm size was also negative and significant. By implication, bigger firms are more likely to experience lower volatility in stock price than smaller firms. The rationale for this could be as a result of the ability of bigger firms to instill trust among investors because of their efficient and effective way of doing things. This result is in line with *apriori* and follows the submissions of Agbatogun, *et al* (2019) where a significant negative relationship between firm size and stock price volatility was reported in their study.

4. Conclusion

Dividend payout of firms affects the movement of its stock price and inconsistent dividend payment has been found to lead to rapid movement and fluctuation of stock prices. Other factors apart from dividend payout have been theorized to impact on the rapid movement of stock prices. This study examined just few of these factors so as to access the significance of these factors on stock price movement in the major African markets. Factors like leverage, firm size, earnings per

share and dividend yield were considered in this study and findings varied for each of the factors examined and across sampled economies. Based on research findings, this study concludes that leverage has a significant impact on stock price volatility in Kenya, Nigeria and South Africa and by extension the African market. It is also the conclusion of this study that firm size is a strong determinant of stock price volatility in Africa market with peculiarity to the Kenya and South African Market. And finally, this study confirms that earnings per share, dividend payout and dividend yield are a strong determinants of stock price volatility in the Africa market.

Premise on research findings, the study recommended that dividend payment should be consistent or rather smoothed so as to temper volatility of stock prices especially since dividend payment is found to be significant and has the ability to either amplify or temper stock price volatility. Dividend when smoothened is expected to improve corporate performance as firms will have increased value in share price since their share will become competitive in the market hence a reduction in its volatility. Secondly, in order to stabilize stock price, higher dividend should be paid out so as to increase the dividend yield curve. This is especially important as dividend yield is found to be a determining factor in the volatility of stock price.

Since higher earnings per share indicate higher firm value, it is recommended that firms engage in investment with positive net value so as to increase net profits thus increasing the earnings per share. Since higher earnings per share will translate into higher dividend payment, corporate performance is expected to be engendered and improved. Firms should also do well to cut down on debt especially as it has been found to amplify stock price volatility. Firms should rather look to internal source of financing or equity to finance investment and consider debt only as the last resort. However, an optimal capital mix should be adopted such that the level of equity does not lead to higher cost of financing so as to improve corporate performance. Lastly, firms should engage in economies of scale especially as enjoyed by bigger firms since bigger firms are found to have lesser stock price volatility. Firms should be more efficient and effective in carrying out operational activities so as to lower marginal cost of production/service.

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Capital Structure and Performance of Non-Financial Firms in Sub-Sahara Africa

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Abstract

The study examines the impact of capital structure on return-on-assets (ROA) performance of non-financial firms in Sub-Sahara Africa for a period of nine (9) years (2012-2020). A total of forty (40) non-financial firms were studied using their capital structure variables of long term debt to equity (LTDQ), total debt (TD), total debt to equity (TDQ), and total debt to total assets (TDTA) as well as their ROA performance. The panel data analysis technique was employed. It was found that LTDQ, TD and TDQ have positive impact on ROA performance; while TDTA has a negative impact on ROA performance, and all variables were significant at 1 percent level. The study recommends that, since long term debt to equity strongly explain corporate performance in the Sub-Saharan African Countries, management should sustain their current policies and should also be very sensitive in determining the appropriate amount of long term debt that ought to be included in their capital structure build up.

Keywords: Financial Performance, Return-on-Assets, Debt-to-Equity, Sub-Sahara Africa, Non-financial Firms

GEL Classification: G32

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1. Introduction

Capital structure has been an interesting issue among several economics and financial experts such as Modigliani and Miller (M& M) (1958; 1963), Myers and Majluf (1984). The seminal works of M & M (1958, 1963) on capital structure irrelevance and its interplay with value of firms, has since been a subject of debate in business finance; and was the first to triggered researchers' interest to this theory. Modigliani and miller (1958) had earlier argued that the association between capital structure and cost of capital (k_o) is irrelevant; meaning that the

upsurges or decline in debt finance does not have influence on k_0 and overall performance of the firm. However, M & M (1963) provided proof on the relevancy of capital structure to performance of firms. According to him, capital structure is very central to overall performance.

Capital structure is a decision on how a firm is financed, which is a complex task often subjected to the management and suppliers of fund. It connotes how a firm finances its asset through the combinations of equity and debt (Saeedi & Mahmoodi, 2011). The traditional theories such as M & M (1963) and Myers (1984) Static Trade-off Theory argue otherwise on how relevant capital structure is to firm value. Saying, debt capital has a lesser value in relation to equity; thus, a company has the ability to step-up its value through borrowing, but to a judicious level. It is assumed by this theory of that the cost of debt remains constant to a critical level wherein it begins to ascend. It postulates that optimal capital structure exist, which increases value of a firm to its peak, likewise reducing the firm's k_0 . Thus, the firm's value is not expected to be equal at varying levels of capital structure employed by the firm.

Capital structure decision remains a crucial decisions by financial manager to ensure effective performance of the firm. To effectively maximize the firm performance, management carefully analyze the capital structure decision to achieve optimality. Corporate managers always try to arrive at and employ the optimal capital structure that will guarantee better returns on investment (Abata, Migiyo, Akande & Layton, 2017). So, to obtain optimum capital, the managers will have to act in the best interest of shareholders in such a way that they will have enough, but not excess free cash flow (Onaolapo & Kajola, 2010; Guangchen, 2012).

Since M & M (1958, 1963), Jensen and Meckling (1976) arguments on capital structure, these arguments have been tested in several empirical works across the globe on capital structure variables that are relevant to the determination of corporate performance. For instance, the studies of Idode, Ogunlowore, Adeleke, and, Ashogbon (2014), Dahiru (2016), Mathanika, Virginia and Paviththira (2015) all showed that a significant relationship exist. However, Mykhailo (2013), Appah, Okoafor and Bariweni (2013), Oino and Ukaegbu (2016) and, Ajayi and Zahiruddin (2016) conclude otherwise. Thus, this study is an attempt to domesticate the above arguments in the Sub-Saharan Africa region by empirically investigating this relationship using non-financial firms in the Sub-Saharan Africa countries of Nigeria, Kenya, and South Africa. Therefore, considering the few studies in this area taking Sub Saharan African as a unit, coupled with the nature of the non-financial sector and its contributions to the Sub Saharan African Countries GDP, it is important to provide current empirical investigation on firms overall financial performance with respect to capital structure composition. The specific objectives are to;

- (i) Examine how long term debt-to-equity affects financial performance of non-financial firms in Sub-Sahara African Countries;
- (ii) Investigate the impact of total debt on financial performance of non-financial firms in Sub-Sahara African countries;
- (iii) Determine how total debt-to-equity ratio affects financial performance of non-financial firms in Sub-Sahara African countries;
- (iv) Examine the impact of Total debt to total asset on financial performance of non-financial firms in Sub-Sahara African countries.

Aside this subsection, the reminder of the work is structured into four sections. The second section considers conceptual and theoretical literature on financial performance and capital

structure. The third section is on methodology. The results and discussion are presented in the fourth section and the fifth section concludes the paper with some recommendations made.

2. Literature Review

Performance: Corporate performance is based on how efficient and effective a firm uses its available resources to generate revenues (Olaniyi, Elelu & Abdulsalam, 2015). Corporate performance is an indication of how efficient and effective the finance manager is with the management of funds. Performance can be taken as the returns generated from an investment resources within a certain period of time. Performance according to Bello (2008), is a yardstick for assessing the total productivity of businesses by employing input and output analyses. A major measure of firm's financial performance is Return of Assets (ROA). Others are Return on Capital Employed (ROCE), Gross Profit Ratio (GPR), Return-on-investment (ROI), Return on Equity (ROE), Tobin's Q, among others. This study used ROA as measure of financial performance. ROA measures corporate performance and how a company efficiently employs its asset to get income. A high ROA tells how efficient the performance of management is when asset is employed in income generation. (Pandey, 2010).

Capital Structure: This is the percentage of long term funds (debt or equity) released or approved to embark on the activities of a business. Capital structure according to Nirajini and Priya (2013) and Olaniyi, Elelu and Abdulsalam (2015) is the various ways of financing firms' operations; that is basically debt, equity, or both. The mix of long-term fund like debt, debenture, bond, preferences and equity share capital is capital structure. More importantly, this is an intricate area in making of financial decisions due to its interrelations with other variables of financial decision. According to Olowo (2009), equity capital is shareholder money available for business operations (owners' fund), typically made up of two categories namely contributed capital and retained earnings. Contributed capital this is the money raised or spent in the business organization such as stocks ownership. Retained earnings is the profit generated from the business in the previous years that a company keeps to be used for reinvestment purposes which in turn strengthens the company balance sheet while serving as a seed for expansion and further growth. Also, Pandey (2010) and Van – Horne, (2002), considered equity capital as the most expensive sources of fund for a firm. While debt capital is the borrowed fund used in financing the organizational activities.

The expected interaction between capital structure components and ROA is discussed below:

Long Term Debt-to-Equity and ROA Performance: this is solvency ratio and it measures "the ability of a company to pay its long-term liabilities, such as debt and the interest on that debt" (Smith, 2020:3). Long-term debt therefore affects firm's financial performance when it has a maturity of more than one year. A positive relationship is expected with financial performance

Total Debt and ROA Performance: This is the capital that a business raises by taking out a loan. And subscribers to debt capital do not become part shareholders of the business they are creditors. According to MacCarthy and Ahulu (2019:12) "debt is a cheaper fund than equity, and interest payments on it are tax-deductible. Subsequently, as the level of debt increases, returns to equity holders also increase enhancing the company's value".

Total Debt-to-Equity (or Leverage) and ROA Performance: Leverage is consider "an investment strategy of using debt". Precisely, it is the use of borrowed fund to increase investment's return (Hayes, 2020). However, debt fund is mostly cheaper than equity fund, interest paid on debt are tax-deductible; therefore, it is expected that as debt increases,

rewards to equity fund will also increase, hence improving the firm's overall financial performance (Hayes, 2020). Removing risk factor, the more the debt, the higher the value (Dessi & Robertson, 2003).

Debt-to-Total Assets and Firm Performance: This ratio expresses the degree or extend to which a firm uses debt to finance its assets. It takes account of all debt and all assets of the company (Malm & Roslund, 2013). Corporate Finance Institute (2019) says that this ratio is commonly employed to estimate the overall risk of a firm. Firms with high ratio are more leveraged and, hence, riskier. For instance, the findings of Ngoc and Jeremy (2011) revealed a substantial negative relationship between this variable and firm performance. However, those of Goyal (2013) and Khalil (2014) showed a significant positive relationship with firm performance.

Empirical Review: Mykhailo (2013) researched on how capital structure affects how a firm performs. The study employed the method of triangulation. Employing a sample size of 16.5 thousand firms in Ukraine for the period 2001 to 2010, the findings shows that leverage correlates negatively with how well the firm performs. Thirty-six (36) quoted firms in Bangladesh Dhaka Stock Exchange for a 6 years (2007 to 2012) was investigated by Hasan, Rahaman, Ahsan, and Alam (2014). Results obtained from the Panel data analysis showed an appreciable positive correlation between ROA and capital structure. Nguyen (2020) examined listed firms on the Vietnam stock market for six years, from 2013 to 2018. The study employed the GLS and the empirical results showed a statistically significant negative effect. Ibrahim (2009) studied how capital structure affects selected firms in Egypt ROA performance between 1997 and 2005 by applying OLS. The findings show that capital structure is irrelevant to financial performance. Similar work of Nimalathasan and Valeriu (2010) studied manufacturing firms in Sri Lanka. With panel data analysis, debt-equity ratio was found to strongly and positively affect profitability ratios. Fosu (2013) employed a unique measure of competition panel data, encompassing 257 firms from South African from 1998 to 2009. Findings suggest that leverage significantly and positively affects the firms' performance. Lucy, George and Muathe (2014) examined 42 selected non-financial firms from the Nairobi securities exchange from 2006 to 2012. Findings revealed that financial leverage negatively related with the way the firms perform as determined by ROA and ROE. Similarly, Mukaria, Mugenda and Akenga (2015) examine 38 non-financial companies from the securities exchange of Nairobi. From 2006 to 2013. Using OLS technique there was negative correlation between leverage and firm performance. In another related study by Daniel (2017) in Kenya focused on 36 listed companies for the period 2011 to 2015. From the findings, the value of non-financial firms is statistically and significantly associate with capital structure; specifically, long term debt impacts positively on firm values.

Further work on non-financial firms was embarked on by Osuji and Odita (2012) in Nigeria. Results indicate the firm's Debt Ratio (DR) exerts a notable negative effect on ROA and ROE. Chandrasekharan (2012) and Appah, Okoafor and Bariweni (2013) examined how 87 listed firms (2007 to 2011) and 32 firms quoted (2005 to 2011) respectively on the Nigerian Bourse. The studies used the PLS analysis and the outcomes revealed a noteworthy correlation between debt ratio and performance. Ikponmwosa and Eriki (2014) examined fifteen (15) selected non-financial multinational companies, they employed panel data and correlation analysis. Empirical outcomes indicated that generally, the variables of capital structure constitute a *sine qua non* in determining the profitability and value of firms in Nigeria. Lawal, Monica, Edwin, and Adisa (2014), studied how capital structure affects the way firms perform

from 2003 to 2012, with Nigerian manufacturing companies. They applied the OLS technique and empirical outcomes show that indices of debt to equity ratio, and overall debt correlates in a negative way with how firms perform.

Babalola (2014) did a work on how capital structure correlates with the way firms perform, using 31 manufacturing (1999 – 2012). Employing the triangulation method, the research showed that capital structure display trade-off theory proposition and countered that large firms have a greater propensity to maintain greater performance. Dahiru (2016) sought to determine how capital structure affects the way 31 listed Nigerian manufacturing firms performed from 2009 to 2014 employing PLS method. The conclusions indicate that long-term debt, total debt, and short-term debt have noteworthy impacts on how the firms performed financially. Oino and Ukaegbu (2016), researched on Nigerian listed non-financial firms, using the pool OLS and GMM in ensuring the robustness of results. Empirical findings showed profitability and asset structure correlate negatively with leverage. The results of Asen, Nwude, Idamoyibo, Ufodiana and Udo (2021) in Nigerian manufacturing firms also confirm a significant negative relationship of variable of study. In conclusion, most empirical works reviewed have stated a strong relationship between capital structure and performance of firms for individual countries and sectors. This study did a combine effect study for three Sub-Sahara Africa counties and non-financial sectors.

3. Research Methods

The traditional or relevance theory as postulated by M & M (1958), is the adopted theoretical framework. The Relevance Theory debates that the firm's total value at any given period is strongly influenced by its capital structure. The mixture of debt and equity determine how the firm will perform financially. This proposition is given by:

$$FMV = f(DT, EQ) \dots\dots\dots (1)$$

Where: FMV represents firm market value;

DT is debt and while EQ stands for equity.

The theory believe that debt has a limit, beyond which, further increase would results to decrease in the value of the firm. Thus, management must be astute in the choice of corporate financing. Although, it has been debated that there exists no one universal optimal capital structure for firms, however, the right debt-equity combination that enhances the overall way the firm performs at any material point in time is deemed as its optimal capital structure.

The population of the study comprises of 185 non-financial firms listed in Nigeria, Kenya and South Africa Stock Exchanges as at 31st December 2020. This comprises of 77 firms for Nigeria, 42 firms for Kenya and 66 firms for South Africa respectively. The sample size for the study is 40 consisting of Nigeria (16), Kenya (10), and South Africa (14). The justification for the sample used was based on data availability, coupled with the fact that each company must have fulfilled its obligation of publishing their annual reports for the year ended 2012 to 2020. The secondary data used is collected from audited report of non-financial firms submitted to the Nigeria, Kenya and South Africa Stock Exchanges.

The above model was slightly modified in this study by incorporating four (4) variance of the two independent variables in the traditional approach model. Which are LTDQ, TD, TDQ and TDTA; while the dependent variable FMV (performance indicator) is replaced by CPER (corporate performance).

Thus, the modified version of this model which flows from the traditional theory as advocated by M & M (1958) is stated in its functional form as follows:

$$CPER = f(LTDQ, TD, TDQ, TDTA, FAGE) \dots\dots\dots (2)$$

However, the econometric form of the above model is as follows.

$$CPER_{it} = \alpha_0 + \alpha_1 LTDQ_{it} + \alpha_2 TD_{it} + \alpha_3 TDQ_{it} + \alpha_4 TDTQ_{it} + \alpha_5 FAGE_{it} + \varepsilon_{it} \dots\dots (3)$$

Where: *CPER* = performance (proxy by ROA)

LTDQ_{it} = Long term debt to equity; *TD_{it}* = Total debt for firm i at period t

TDQ_{it} = Total debt to asset for firm i at period t; *TDTA_{it}* = Long term debt-to-total asset for firm i at period t; α_0 = Intercept; $\alpha_1 - \alpha_5$ = Parameter Estimate

The a priori expectations of the coefficients are $\alpha_1, \alpha_2, \alpha_3$ and $\alpha_4 > 0$.

Table 1: Operationalization of Variables

SN	Variables	Definition / Measurement	Type of Variable	Source	Apriori sign.
1.	CPER	Corporate performance	Dependent	Hasan, Ahsan, Rahaman and Alam (2014)	+
2.	LTDQ	Long term debt to equity	Independent	Babalola (2014), Fosu (2013)	+ and -
3.	TD	Total debt	Independent	Lawal and Edwin (2014)	+
4.	TDQ	Total Debt to Equity	Independent	Babalola (2014) and Fosu (2013)	+
5.	TDTA	Total debt to total asset	Independent	Akinyomi (2013)	+
6.	FAGE	Firm Age	Control	-	+

Source: Author's Computation, (2021).

The descriptive statistics, correlation test and the panel data analysis is used in this study. The Hausman test specification was carried out to effectively choose the best performing effects

between the fixed effects, and the random effects. The Eview 9.0 econometric software is used for the analysis.

4. Result and Discussion

The summary statistics are presented in Table 2.

Table 2. Descriptive Statistics

	CPER	LTDQ	TD	TDQ	TDTA	LFAGE
Mean	16.8004	15.9791	16.0992	1.00836	0.95736	3.12188
Median	16.5893	15.7201	16.0476	1.00417	0.96063	3.27696
Max	21.2336	20.4968	20.6005	1.53599	0.99968	4.00733
Min	14.2763	9.91195	12.8650	0.87912	0.86266	0.00000
Std. Dev.	1.64892	1.65707	1.75894	0.05751	0.02215	0.78429
Skew	0.51558	0.47803	0.29657	3.66400	-0.88568	-1.32931
J-B.	11.5291	9.44732	6.25710	9374.50	37.5094	79.4384
Prob.	0.00313	0.00888	0.04378	0.00000	0.00000	0.00000

Source: Author's computation (2021)

The mean value of corporate performance (CPER) reported for all the sampled non-financial firms in Sub-Saharan Africa (combined) is 16.8004 billion. The mean value (16.8004) is slightly higher than the median value (16.5893), and both are positive signed. The data distribution is rightly skewed, and that is why the skewness coefficient of 0.51558 positive. The maximum value of CPER is 21.2336 while the minimum value stood around 14.2763. It shows more firms in the region have performed averagely well. There is very low variations in the overall CPER, since the SD value of 1.64892 is very low. This simply suggests a low level of variability of CPER either across all the non-financial firms or in the region as a whole. The Jaque-Bera (J-B) statistic value is 11.5291 and significant at 1 percent. It implies non-normal distribution, hence heterogeneous with firm-specific characteristic. Thus the justification for the use of panel data estimation technique for analysis.

The mean value of LTDQ is 15.9791 and the median value is 15.7201; suggesting that the average LTDQ of firms in the region is almost similar to the median LTDQ. The SD value of 1.65707 is very low among the firms. The mean value for total debt (TD) for the entire sample is 16.0992 with corresponding maximum values of 20.6005 and minimum values of 12.8650. This clearly shows that within the sampled firms, more seem to employ the use of debt financing than equity. Averagely, the standard deviation values of 1.75894 is quiet low. The mean value of firm age (FAGE) is 3.12188, with low SD value of 0.78429. The two variables in the study TDQ and TDTA also present interesting outcomes. The mean value (1.00836) for

leverage or TDQ, even though is low seems to perform better than those of TDTA with an average value of 0.95736 and low SD values of 0.05751 and 0.02215 respectively. All the variables in the study have J-B values significant at 1 percent, which shows that the individual firm's characteristics are essential in the measurement of corporate performance with respect to capital structure in the Sub-Saharan African Countries.

Correlation Analysis: In the result, corporate performance (CPER) is seen to have a strong positive correlation with LTDQ and TD, with respective values of 0.9559862 and 0.9827449. CPFR has a moderate correlation value of 0.4150232 with TDTA, and a weak positive and negative correlation values of 0.1495743 and -0.3998623 with leverage TDQ and FAGE.

Table 3. Pair-wise Correlation Table

	CPFR	LTDQ	TD	TDQ	TDTA	FAGE
CPFR	1					
LTDQ	0.955986	1				
TD	0.982744	0.896776	1			
TDQ	0.149574	-0.142705	0.299610	1		
TDTA	0.415023	0.189393	0.575310	0.813626	1	
LFAGE	-0.399862	-0.381414	-0.414271	-0.089542	-0.260102	1

Source: Author's computation (2021)

Among the explanatory variables, only LTDQ and TDTA have a strong positive correlation with TD of 0.8967769 and TDQ of 0.8136 respectively. This could be an indication of autocorrelation problem, which the model will correct.

Hausman Test Specification Result

The Hausman test specification for random effect is conducted and the result is as seen in table 4 below. Thus, the probability value for the model is significant at the 1 percent level. Therefore the Fixed-effect estimation is the best model to apply.

Table 4. Hausman Test for Panel Effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	19.278210	5	0.0017

Source: Author's computation (2021)

Fixed Effects Results: For robustness check, both model results are presented. However the fixed-effect model will be interpreted. The result of the fixed effects model for the Sub-Saharan Africa is presented in table 5. The goodness of fit is impressive with R squared value of 0.99 which is very high and indicates that 99 percent of the systematic variations in CPFR in the sub-region is explained by the model. The adjusted R-squared value of 0.99 percent is equally

very high, with F value of 181706.5 and significant at 1 percent. This implies a good predictive ability of the model.

Table 5: Capital Structure and Firms Performance in Sub-Sahara Africa (Dependent Variable = CPER)

Variable	<i>Fixed Effects (FE)</i>			<i>RandomEffect(RE)</i>		
	Coeff.	t-Stat.	Prob.	Coeff.	t-Stat.	Prob.
Constant	11.07693	45.34704	0.0000	10.89378	44.71567	0.0000
LTDQ	0.242515	20.96645	0.0000**	0.246233	22.49582	0.0000
TD	0.799879	66.55104	0.0000**	0.789514	70.08517	0.0000
TDQ	2.240991	21.49726	0.0000**	2.270183	22.05995	0.0000
TDTA	-13.88285	-78.54282	0.0000**	-13.61144	-78.61979	0.0000
FAGE	0.000287	0.055729	0.9556	0.001094	0.464818	0.6426
AR(1)	0.505661	6.615123	0.0000			
R-squared	0.99			0.99		
Adj. R-squared	0.99			0.99		
F-statistic	181706.5	D.W = 1.64		133802.4	D.W = 0.96	

Source: Author's computation (2021). Note: ** significant at the 1% level.

From the results, all the coefficients for LTDQ, TD and TDQ are rightly signed with the expected positive a-priori signs. However, the coefficient of TDTA does not possess the expected a priori positive sign, as it is negatively signed. For the individual coefficient of the variables, the coefficients of LTDQ and TD have significant positive relationship with corporate performance (CPER) at 1 percent. Meaning LTDQ and TD separately employed in the capital structure of firms in the sub-region significantly and positively affect the overall performance of listed non-financial firms on the Stock Exchanges. This presupposes that, management must be very sensitive in determining the appropriate amount of LTDQ and those of TD that should be included in their capital structure build up. Since there are no universally approve optimal capital structure for all firms, it therefore follows that the best combinations of equity and debt capital that would yield the highest possible returns within a given financial year, should be regarded as the firms' optimal capital structure. Indeed, a 1 percent increase in LTDQ and TD results in about 0.242515 and 0.799879 percent increases in the non-financial firms' ROA performance. This seen to agree with the works of Nimalathan and Valeriu Brabete (2010), Fosu (2013), Bassey, Aniekan, Ikpe and Udo (2013) that reported significant positive impact of LTDQ on corporate performance. It disagreed with those of Lucy, Muathe and George (2014), Mukaria, Mugenda and Akenga (2015), Oladeji, Ikpefan and Olokoyo (2015), Oino and Ukaegbu (2016); and Dahiru (2016), who concluded negative and no relationship between LTDQ and performance. As it relates to

total debt, the finding agrees with those of Dahiru (2016) and Daniel (2017), but disagree with those of San and Heng (2011) and Lawal et.al (2014) that submitted non-significant negative relationship between TD and corporate performance in their respective countries.

The coefficients of total debt to equity (TDQ) which represents the firms' level of leverage in the sub-region indicates a positive relationship with firms' performance at 1 percent significant level. This means that highly levered firms seem to perform very well in the Sub-Saharan Africa. This equally follows that, policies that would encourage firms to employ more leverage while reducing equity financing in the operations of non-financial firms activities should be pursued in this regard. The results is also in line with those of Nimalathasan and Valeriu Brabete (2010), Fosu (2013), Bassey, Aniekan, Ikpe and Udo (2013) who concluded a significant positive impact of TDQ on corporate performance. However, the finding did not agree with the findings of Oino and Ukaegbu (2016) and Dahiru (2016) who concluded that TDQ has significant negative impact on performance.

The TDTA coefficient shows significant inverse relationship with ROA in the sub-region. This goes to show that the amount of debt employed relative to firms' total assets at any point in time, is a major determinants of corporate performance in the SSA non-financial firms. This again suggests that corporate managers in the sub-region have not been effective in the management of corporate assets in relation to borrowings. It also suggests that the amount of debt employed on the basis of assets has never been recovered. Therefore, management should have a second look at current policy of borrowing with a view to reviewing it so that the expected positive impact on non-financial firms' performance can be achieve through the efficient management of TDTA component in their choice of capital structure buildup. This finding disagrees with the studies of Goyal (2013) and San and Heng (2011) who separately submitted significant positive interaction and a non-significant correlation between TDTA and corporate performance respectively.

The coefficient of firms age (FAGE) is not significant. This shows that in determining corporate performance, how long non-financial firms have been in existence does not matter and does not significantly affect its performance. Therefore, proper care must be taken by management to ensure that irrespective of the age of the firms, their corresponding assets should be properly managed and utilized to achieve optimal capital structure and in turn enhance firms' performance in the Sub-Saharan Africa. The result agrees with those of Chandrasekharan (2012) who didn't find any significant effect of firm age on performance. But however, disagrees with those of Ajayi and Zahiruddin (2016) who submitted negative relationship between age and corporate performance. After correcting for serial correlation with Autoregressive process that had 18 iterations and 1 lag, the improved estimated equation with t-statistics and 1 percent significant probability value was achieved. The overall results are applicable for structural analysis and policy decisions.

5. Conclusion

The study investigated the nexus between capital structure and performance of non-financial firms in Sub-Saharan Africa. Although study on capital structure has been well researched in Nigeria but are still scanty in terms of cross-country studies especially in the Sub-Saharan Africa. Optimal capital structure is at the heart of corporate success, even though there have been a lot of debates as to whether it affect how the firm perform or not. For this reason, the study employs the panel data analysis technique on four capital structure variables that is LTDQ, TD, TDQ and TDTA as well as firm age (FAGE) to explain ROA performance. From the findings we conclude that LTDQ, total debt and TDQ are significant determinant of ROA

performance positively; while TDTA significantly explain ROA performance with reverse effect in the SSA Countries.

From the findings, the following recommendations which are imperative for policy decisions are made. Firstly, management should sustain their current policies and should be very sensitive in determining the appropriate amount of long term debt to equity ratio in determining the firm's capital structure. Secondly, it therefore follows that management should continue to employ additional debt in their financial policy to continuously assures overall corporate performance. They must also ensure that these debt are properly channeled on assets yielding investment, while at the same time eliminate all idle assets and toxic assets. Thirdly, policies that would encourage firms to employ more leverage (due to the tax shield benefits) while reducing equity financing in the operations of the firms activities should be pursued by management in this regard.

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Good Corporate Governance in Mediating the Effects of Intellectual Capital and CSR on Company Performance: Empirical on BUMN in Indonesia

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Abstract

Finance is a vital aspect for companies, especially State-Owned Enterprise (BUMN). In Indonesia, the trend of financial markets determines the company's profit. It oriented this study to get empirical evidence about the effect between intellectual capital and corporate social responsibility (CSR) on company performance, where the relationship is determined by good corporate governance (GCG) which acts as a moderator for BUMN companies. The sample includes 13 state-owned companies listed on the Indonesia Stock Exchange (IDX) through a purposive sampling stage. Interpreting the data using the model is the SEM structural equation method (SEM) for the period 2012-2020. The statistical software is supported by SmartPLS. The results of the analysis conclude that intellectual capital and CSR have a significant effect on company performance. Then, GCG has no significant effect on the relationship between intellectual capital and company performance. Interestingly, GCG also does not significantly moderate the relationship between CSR and company performance. The limitations of the study need to be discussed.

Keywords: Company Performance, Intellectual Capital, CSR, GCG, BUMN, Indonesia

JEL Classification: L25, J11, M14, G34, O43

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1. Introduction

1.1 Background

Company performance is a measure that reflects the condition of the company based on an evaluation of existing standards and criteria (Bin Yusoff, Zainol, Ismail, Kasuma & Darma, 2021). The criteria and standards for measuring company performance (CP) are usually related to the ratio of profit and market-based performance (Azis, Ilmi, Hakim, Qodri & Darma, 2021). This can be understood because performing a company is good if the company has a high level of profit. CP is also said to be good if they project it to earn profits in the future, because it is related to business continuity. According to the publication by Yu (2013), the ratios that are widely used to calculate the level of company profitability are Return on

Assets (ROA) and Return on Equity (ROE). The company's performance is also said to be good if it is projected to earn profits in the future, because it is related to business continuity. According to research by Inoue & Lee (2011) and McConnell & Servaes (1990), market-based performance is proxies by the value of Tobin's Q.

Increasing the performance and existence of the company depends not only on the company's tangible assets but also comes from other things that are no less important, namely intellectual capital or intellectual capital (IC), which is an intangible asset. A good IC will manage and optimize tangible assets for the company's performance and existence in the new economic era, namely the knowledge-based economy. The most popular model in measuring intellectual capital was proposed by Pulic (1998) with the concept of Value Added Intellectual Coefficient (VAICTM). The proxies for the VAICTM model are Value Added Capital Employed (VACE), Value Added Human Capital (VAHC) and Structural Capital Value Added (SCVA).

BUMN is aware of the importance of IC, as can be seen from the selection of BUMN as a finalist for the Indonesian Most Admired Knowledge Enterprise (MAKE) Study Award. This means that it has recognized the company for managing knowledge in its organization so that it has a beneficial effect on the company's performance and results. PT Bukit Asam (PTBA) is one of the BUMNs that has consistently been a finalist for the MAKE Study Award for the 2018-2020 period. This indicates that PTBA has been recognized to manage knowledge well in the organization so that it will increase CP. When IC increased (proxies by VAHC) in PTBA, in fact, CP did not follow it (proxies by ROA & ROE), as shown in *Fig. 1*.

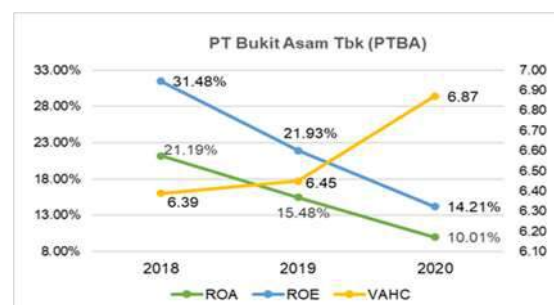


Figure 1. Graph of ROA, ROE and VAHC at PTBA (2018-2020)

Source: *The IDX* (2021).

Besides contradicting the theory of IC effects on CP, *Fig. 1* also contradicts observations by Maheran & Ismail (2009), Sutanto & Siswantaya (2014), Bontis (1998), and Chen, Bontis, Wu, Cheng & Hwang (2005) which states a significant and positive relationship between IC and CP. But on the other hand, it is relevant to studies by Firer & Williams (2003), Santosa (2012), Boekestein (2012) and Ramdani, Enas & Darna (2019) which confirms that there is no significant relationship between IC and CP.

The obligation to allocate a minimum of 2% of profits for CSR costs by BUMN companies can be found in Law No.19 of 2003 concerning BUMN. With the implementation of CSR, the company will gain social legitimacy to ensure the company's sustainability. Optimal implementation of CSR can affect the company's image and will ultimately have an impact on CP as a whole because the company's products are well known by consumers so that their

loyalty will also increase. This study identifies CSR through proxies that are adjusted to indicators of CSR disclosure according to the GRI Index (2020), namely economic (economic-ECO), environmental (environment-ENV) and social (social-SOC) indicators.

The importance of CSR is realized by BUMN, as can be seen from the selection of BUMN as finalists for the TOP CSR Award. This award is an activity of assessing and giving the highest award to companies that are considered to have carried out the best CSR programs. PT Perusahaan Gas Negara (PGAS) is one of the BUMNs that has consistently been a finalist for the TOP CSR Award for the 2018-2020 period. This indicates that PGAS has implemented CSR well so that it will increase CP. However, the increased implementation of CSR (proxied by CSR on the economic dimension) in PGAS was not followed by CP (proxied by ROA & ROE).

Besides contradicting the theory of CSR effects on CP, where *Fig. 2* clarifies that there are things that are contrary to the publications of Bai & Chang (2015), Nugroho & Rahardjo (2014), and Ariantini, Yuniarta & Sujana (2017) which states a significant and positive relationship between CSR and CP. In contrast, Alexander & Buchholz (1978), Kusuma & Aryani (2020), and Hackston & Milne (1996) revealed an otherwise significant relationship between CSR and CP.

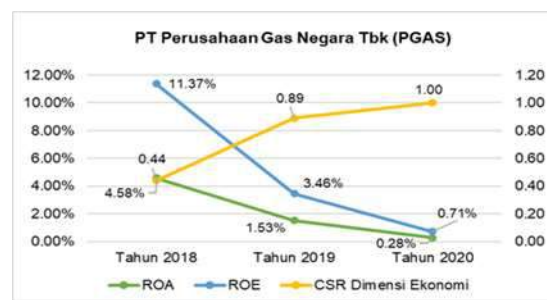


Figure 2. Graph of ROA, ROE and CSR on PGAS (2018-2020)

Source: The IDX (2021).

In the past, it used BUMN as “cash cows” for high-ranking government officials, political parties and their cronies. However, in practice, the government firmly positions BUMN as a business entity that must be managed based on GCG to generate profits and provide maximum contribution to the national economy. GCG exists as a solution to the problem of differences in interests between shareholders (principals) and management (agents) which is called the agency problem (Jensen & Meckling, 1976). Good GCG will increase the accuracy of CP presentation by management. This study uses 3 (three) internal mechanisms as GCG proxies, namely the proportion of the Independent Commissioners (INDP), the size of the board of directors (BOARD) and the number of meetings of the board of commissioners (MEET). This internal mechanism will ensure that the company follows the existing GCG.

Based on the description above, we can see that GCG has a significant effect on CP. However, previous research discovered inconsistent results. Where INDP has no effect on CP. Studies by Koerniadi & Tourani-Rad (2012), Syed, Rashid & Syed (2014), and Belkhir (2009) explain that MEET has no effect on CP (e.g. Zahra, Pratomo & Dillak, 2016; Hermawan, 2011;

Mardiyati, 2016) and BOARD has no effect on CP (e.g. Romano, Ferretti & Rigolini, 2012; Syed, Rashid & Syed, 2014). This gap is the reason for placing GCG as a moderating variable in the relationship between IC and CSR towards CP. This is under the opinion of Rahadi & Farid (2021), where a moderating variable can be introduced when there is an unexpectedly inconsistent relationship between the independent variable and the results across research studies.

Another reason for choosing GCG as a moderator variable in the relationship between IC and CSR to CP is because previous researchers often use the GCG variable as a moderator variable. However, there have been gaps. This is under the opinion of Rahadi & Farid (2021), where the choice of moderator must be based theoretically and inconsistent findings in previous studies regarding the use of the effect of the same moderating variable. The theory of using GCG as a moderator variable and we will explain the gap as follows. Holland's research (2001), reports that management's compliance with GCG principles will influence the quality of IC, especially human capital. This is because the principles of GCG will direct the company's personnel to run the company with accountability, transparency and integrity. Then this increase in Intellectual Capital will lead to an increase in CP. Companies that implement GCG will find it easier to implement CSR, because both activities are based on the same understanding. GCG concerns the company's responsibility to other interested parties, especially for economic activities and all their effects, while it held CSR to increase the level of community welfare outside of the company's major activities. These two activities will go hand in hand to ensure the sustainability of the company. Effective, transparent and accountable CSR can only be implemented if the company has implemented GCG properly.

BUMN is aware of the importance of GCG, as can be seen from the selection of BUMN as a finalist for the Annual Report Award. This award is an event to give awards to companies for their achievements in implementing GCG. PT Bank BNI (BBNI) is one of the BUMNs that has consistently been a finalist for the 2017-2019 Annual Report Award. This shows that BBNI has implemented GCG well so that it will increase CP through CSR and IC. Implementing increased GCG (proxies by the Board of Commissioners' Meeting) at BBNI increased CSR (proxies by Social Dimensions) and IC (proxies by VACE), but not followed by CP (proxies by ROA).



Figure 3. Graph of ROA, ROE, commissioner meetings, and CSR at BBNI (2018-2020)

Source: The IDX (2021).

Besides contradicting the theory of the effect of GCG on the relationship between IC and CP, the picture also contradicts the results of Hamdan, Buallay & Alareeni (2017) and Wu, Lee &

Wang (2012), which states that GCG significantly moderates (strengthens) the relationship between IC and CP. However, in line with the research results of Hermanto, Lusy & Widyastuti (2021), who found that GCG could not moderate the relationship between IC and CP.

From *Fig. 3*, we also drawn conclusions which contradict the results of the research by Javeed & Lefen (2019) which states that GCG significantly moderates positively (strengthens) the relationship between CSR and CP. However, in line with the research results of Karim, Manab & Ismail (2020) and Selcuk (2019), which state that GCG does not affect CSR's relationship with CP.

1.2 Problem Statements and Purpose

According to Law No. 19 of 2003 concerning State-Owned Enterprise (BUMN), the companies included in it are not ordinary economic entities. The goal of BUMN is not only to pursue high performance to contribute to the state budget but also to be established intending to be an economic locomotive, agent of development, organizing public benefits, and actively taking part in providing direct help to the community's economy (Sumantyo & Nugrahani, 2017). To carry out this function, enormous assets support BUMN. In 2020, it recorded the total assets of BUMN at Rp. 9100 trillion, with an average growth of 9% over the last 5 years. Ironically, the size of this BUMN's total assets does not guarantee that BUMN companies will get excellent performance either. Based on the Central Government Financial Report (LCPP) during 2017-2020, the number of state-owned enterprises that lost money has increased. If calculated from 2017, the number of state-owned enterprises that suffer losses increases by an average of 18% per year with an average increase in loss of Rp. 6.53 trillion per year.

There are indications of the trend of BUMN performance that are not in line with expectations, causing the existence of BUMN to be worrying (Azis, Hadjaat, Rositawati & Darma, 2020). In fact, the existence of BUMN is very important and has become one of the key entities in the national economic system, so that increasing company performance and the existence of this BUMN company are very important to maintain.

The aim of this study is to investigate the effect of intellectual capital and CSR on performing state-owned companies in Indonesia through the role of GCG. We summarize the research framework into an introduction, literature review, method, findings, discussion, and conclusions.

2. Literature Review

2.1 Stakeholder Theory

In its implementation, stakeholder is a theory that describes which party (especially in the company) is responsible (Freeman & McVea, 2001). This theory states that the company is not an entity that only operates for its own sake, but must provide benefits to all its stakeholders (shareholders, creditors, consumers, suppliers, government, society, analysts, and other parties). This stakeholder theory is also the justification for actualization of CSR by companies, where they need support from their stakeholders, not only for the sake of the company's current performance, but also for the existence of the company.

2.2 Legitimacy Theory

O'Donovan (2002) illustrates that legitimacy theory is because in order to continue to operate successfully, companies must act within the limits of what society identifies as socially acceptable behavior. This theory has also become the basis for implementing CSR by companies, where strong legitimacy will emerge when the management of the company is carried out with an orientation towards community support.

2.3 Resource Based Theory

Wernerfelt's (1984) explanation reveals that, according to resource-based theory, companies will excel in business competition and get outstanding performance by owning, controlling, and using important strategic assets (tangible and intangible assets). Then Bontis (1998) stated that IC has been identified as a set of intangibles (resources, capabilities and competencies) that drive organizational performance and value creation. The existence of intellectual capital based on this theory also contributes to the increase in CP.

2.4 Agency Theory

According to Jensen & Meckling (1976), agency theory talks about a contract where the "principal" hires the "agent" to contribute to their interests by giving some decision-making authority to the agent. In their research, Jensen & Smith (1985) stated that the conflict of interest between the principal (owner/shareholder) and agent (management) causes agency problems.

The GCG mechanism is believed to minimize the possibility of agency problems that will occur. Similarity of interests or harmony will arise when there is transparency between company owners and management and fairness to other stakeholders, where this will be guaranteed towards GCG principles.

2.5 Company Performance

In the industrial context, performance is a reference process and a measure to measure the efficiency of actions and effectiveness in the company (Neely, Gregory & Platts, 2005). With the concept of performance, companies can measure the results that have been achieved through corporate governance in various aspects. In their research, Inoue & Lee (2011) stated that there are two dimensions of CP, namely the dimension of short-term profitability and the dimension of market evaluation related to future profitability. The dimension of short-term profitability is proxied by the ratio of Return on Assets (ROA) and Return on Equity (ROE). Meanwhile, the market dimension is proxied by the value of Tobin's Q (Brigham & Houston, 2009: 96). The formulas for ROA, ROE, and Tobin's Q are:

$$ROA = \text{net income} / \text{total assets} \quad (1)$$

$$ROE = \text{net profit} / \text{capital} \quad (2)$$

$$MVA = (MVE + BVA) - BE \quad (3)$$

$$\text{Tobin's } Q = MVA / BE \quad (4)$$

Where: MVA = Market Value of Assets, MVE = market capitalization (number of shares x share price), BVA = total assets, and BE = capital.

2.6 Intellectual Capital

Stewart (2010) defines intellectual capital as intellectual material, namely knowledge, information, intellectual property, experience that is used to create prosperity. We calculate intellectual Capital according to the model used by Pulic (1998), namely the Value Added Intellectual Coefficient (VAICTM). Concretely, VAICTM measures intellectual capital with three separate indicators, namely Value Added Human Capital (VAHC), Value Added Capital Employed (VACE), and Structural Capital Value Added (SCVA). Ulu (2009) assumes the following calculations on VAHC, VACE, and SCVA:

$$VAHC = VA / HC \quad (5)$$

$$VACE = VA/CE \quad (6)$$

$$SCVA = SC / VA \quad (7)$$

Where: VA = OUT – IN, OUT = Total sales and other income, IN = Other expenses and expenses (except Employee Expenses), HC = Employee expenses, CE = Available funds (equity, net income), and SC = VA – HC.

2.7 The CSR

Dahlsrud (2008) termed Corporate Social Responsibility (CSR) as a concept in which the company integrates social and environmental concerns in the company's operations and the company's interactions with stakeholders in their daily life. In addition, they can also interpret CSR as an action taken by a company to meet the demands of society, and of course, the company takes this action to achieve company goals (Moir, 2001). CSR is proxies based on the 2020 version of the Global Report Initiative (GRI), comprising three dimensions, namely the economic dimension (ECO), the environmental dimension (ENV) and the social dimension (SOC). The formula for measuring CSR in economic, social, and environmental dimensions, according to Shobirin (2012) is:

$$CSR_{Dimensions} = X_{Dimension} / n_{Dimension} \quad (8)$$

Where: X_{dimensions} = ECO/SOC/ENV dimension items disclosed, and n_{Dimensions} = Total item dimensions Economic (9 aspects), Social (40 aspects), Environmental (30 aspects).

2.8 The GCG

The earliest definition of Good Corporate Governance emerged from the Cadbury Committee, where GCG is mentioned as a set of rules governing the relationship between shareholders, managers, creditors, government, employees, and other interested parties both internally and externally related their rights and obligations (Cadbury, 1992). Meanwhile, according to Brigham & Erhardt (2014), corporate governance is defined as a set of rules and procedures that guarantee managers to apply the principles of value-based management.

Internal control tools are needed to ensure the company follows the existing set of GCG rules, which is called the internal GCG mechanism. The internal GCG mechanism used in this study

comprises the size of the Board of Directors, Independent Commissioners, and Board of Commissioners Meetings. Beiner, Drobetz & Schmid (2004) measure the performance of the board of directors:

$$BOARD = \text{Number of Company's Board of Directors} \quad (9)$$

Meanwhile, the Independent Commissioners and the number of Board of Directors meetings are reviewed with the following formula (El-Charaani, 2014; Hermawan, 2011):

$$INDP = \text{Independent Commissioners} / \text{Commissioners} \times 100\% \quad (10)$$

$$MEET = \text{Board of Commissioners Meetings} \quad (11)$$

2.9 Hypothesis Development

With optimal IC, companies will use company resources efficiently, economically and effectively, therefore intellectual capital will contribute to CP (Harrison & Sullivan, 2000). Studies by Maheran & Ismail (2009), Sutanto & Siswantaya (2014), Bontis (1998), and Chen, Bontis, Wu, Cheng & Hwang (2005) illustrates that IC has a significant and positive effect on CP. Responding to this, Firer & Williams (2003), Santosa (2012), Boekestein (2012) and Ramdani, Enas & Darna (2019) presented that there was no significant correlation between IC and CP. The first hypothesis is formulated as follows:

H1: The increase in IC has a significant effect on CP.

Through the maximum implementation of CSR, the company will get a stake in the stakeholders, not only for outstanding performance but also for the company's sustainability. With CSR, companies will try to gain social legitimacy because CP requires good social performance to ensure the company's sustainability. In addition, optimal CSR can affect the company's image and in the end will affect overall CP consumers well known because of the company's products, so that their loyalty will increase. This applies to the studies of Bai & Chang (2015), Nugroho & Rahardjo (2014), and Ariantini, Yuniarta & Sujana (2017). On the one hand, this is in contrast to studies by Alexander & Buchholz (1978), Kusuma & Aryani (2020), and Hackston & Milne (1996). Where the researchers stated that there was no significant correlation between CSR and CP. It is logical to design the following second hypothesis:

H2: The increase in CSR has a significant effect on CP.

Holland (2001) reports that the quality of IC, especially human capital, will be influenced by management's compliance with GCG principles. This is because the principles of GCG will direct the company's personnel to run the company with accountability, transparency and integrity. Then this increase in Intellectual Capital will lead to an increase in CP. As is well known, a recent study by Hamdan, Buallay & Alareeni (2017) and Wu, Lee & Wang (2012) found that GCG significantly moderated (reinforced) the relationship between IC and CP. However, contrary to the research of Hermanto, Lusy & Widyastuti (2021) who found that GCG could not moderate the relationship between IC and CP. Furthermore, it makes sense to conceptualize the following hypothesis:

H3: The increase in GCG strengthens the relationship between IC and CP.

Companies that practice GCG will find it easier to implement CSR, because both activities are based on the same understanding. The GCG concerns the company's responsibility to other interested parties, especially for economic activities and all their affects, while it held CSR to increase the level of community welfare outside of the company's principal activities. These two activities will go hand in hand to ensure the sustainability of the company. Effective, transparent, and accountable CSR can only be implemented if the company has implemented GCG properly (Javeed & Lefen, 2019). Karim, Manab & Ismail (2020) and Selcuk (2019), actually conclude that GCG does not affect the relationship between CSR and CP. The inspiration for the fourth hypothesis is as follows:

H4: The increase in GCG strengthens the relationship between CSR and CP.

2.10 Conceptual Framework

Fig. 4 displays the framework of the study referring to a theoretical review and an empirical review of the relationship between variables. The suitability of the causative model focuses on four hypotheses, where IC and CSR reflect CP. Then, GCG will be calculated how big its effect is in moderating the relationship between CSR and IC on CP. The symbol "X" is the independent variable, while "Y" and "M" functions as a dependent variable and the moderating variable.

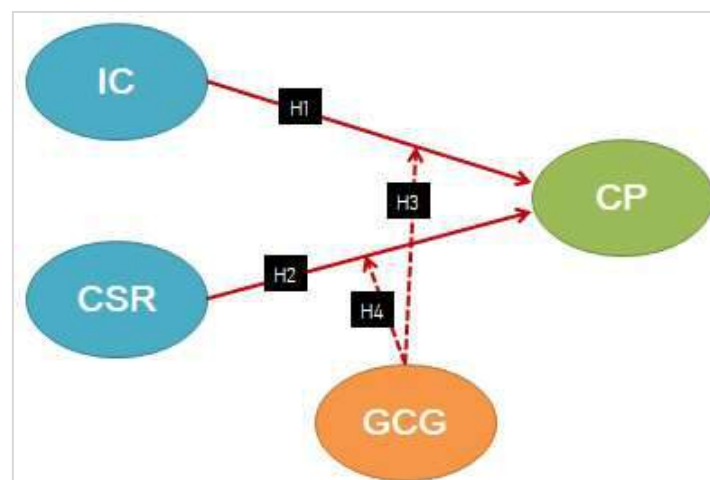


Figure 4. Proposed model

Source: own.

3. Research Method

3.1 Samples

The sample was collected from all state-owned companies licensed on the Indonesia Stock Exchange (IDX). There are twenty companies for prediction during 2012-2020. We set sampling through purposive sampling technique. The motive refers to the basis for considering the suitability of the data with the characteristics required as a sample (Latan, 2014). We got the sample criteria from state-owned companies officially registered on the

IDX that publish financial reports, do not experience losses, and have a motive for sustainability reports, all of which must be complete for investigation. Of these, only thirteen objects matched the criteria. The total data unit is 117 samples ($N = 17$) based on 9 time-series multiplied by 13 companies.

3.2 Analysis Techniques

The stages of data interpretation were arranged by two analyzes (descriptive statistics and inferential statistics). Descriptive analysis is a statistical section that functions to describe empirically or summarize the data collected in research (Ferdinand, 2014). The analysis is useful for explaining the characteristics of the object of study, especially in relation to variables. Irwansyah, Paminto, Ilmi, Darma & Ulfah (2022) asserted that inferential statistics are useful for testing the conception of hypotheses. The inferential model describes the calculation conditions through Partial Least Square (PLS). With the SmartPLS application, it will answer the proposed hypothesis empirically. According to Abdillah & Jogiyo (2015), PLS implements measurement model testing (outer model), structural model testing (inner model), and explains the construct between latent variables.

4. Result and Discussion

4.1 Descriptive Statistics

The overall average of indicators for IC reached 1.77. The highest average is VAHC of 4.34 and the lowest is VACE, with a value of 0.26. For comparison, the average of all CSR indicators is 0.47. The highest average is ECO, with a value of 0.57. On the one hand, the lowest average came from ENV, which only got 0.40. The average of all indicators on GCG is 9.46. Interestingly, the highest average is MEET with a score of 20.6, while the lowest is INDP with a score of 0.41. The average overall indicator of the IC is 6.70. For ROE, the average is 14.1, where the lowest is TOBIN because the value is only around 1.34.

4.2 PLS: Outer

The outer model test aims to ensure that the measurement model used is “workable” to be used as a measurement (valid and reliable). In addition, this analysis is important to verify the relationship between latent variables and their indicators. Two criteria in validity testing (convergent and validity). Convergent validity measures the PLS and is evaluated based on the loading factor and Average Variance Extracted (AVE). Table 1 concludes that the overall loading factor is above the conditions ($LF > 0.6$) and the AVE value of all variables is above the conditions ($AVE > 0.5$). This study model represented it is “valid”.

Table 1. Summary of loading factor and AVE

Variables	AVE	Items	Loading Factor
IC	0.666	VACE	0.735
		VAHC	0.859
		SCVA	0.847
		SOC	0.660
CSR	0.570	ECO	0.819
		ENV	0.778
		BOARD	0.842
GCG	0.730		

CP	0.810	INDP	0.953
		MEET	0.757
		ROA	0.929
		ROE	0.889
		Tobin	0.881

Source: SmartPLS outputs.

Discriminant validity is used to see the extent to which a construct differs completely from another construct by empirical standards. Discriminant validity in the PLS measurement model, calculated based on the cross loading and the root value of the AVE. From *Table 2*, we can see that all cross loading gains show discriminant validity, which is classified as “strong” because the value is above the statistical requirement ($CL > 0.7$).

Table 2. Summary of cross loading

Items	X1	X2	M	Y
VACE	0.735	0.102	0.226	0.745
VAHC	0.859	0.180	-0.410	0.689
SCVA	0.847	0.024	-0.428	0.573
SOC	0.080	0.760	0.072	0.144
ECO	0.118	0.819	0.091	0.229
ENV	0.096	0.778	-0.261	0.238
BOARD	-0.158	-0.103	0.842	-0.103
INDP	-0.228	-0.003	0.953	-0.215
MEET	-0.161	-0.117	0.757	-0.123
ROA	0.732	0.339	-0.341	0.929
ROE	0.858	0.184	0.070	0.889
Tobin	0.636	0.232	-0.279	0.881

Source: SmartPLS outputs.

Table 3. AVE root

Variables	M	X1	X2	Y
M	0.854			
X1	-0.221	0.835		
X2	-0.067	0.131	0.755	
Y	-0.187	0.816	0.278	0.900

Source: SmartPLS outputs.

Impressively, the determination between the square root of AVE and the correlation value of a latent construct with other constructs also becomes the PLS standard. Thus, it is concluded that all indicators in this model are considered “valid” (see *Table 3*).

Table 4. Measurement model reliability

Variables	CA	CR
X1	0.748	0.856
X2	0.631	0.798
M	0.816	0.889
Y	0.884	0.928

Source: SmartPLS outputs.

The reliability test of a construct, along with its reflexive indicators, was applied through Cronbach's Alpha (CA) and Composite Reliability (CR). *Table 4* confirms that the achievement of CA and CR is over 60% ($CA > 0.60$ and $CR > 0.60$) meaning that all indicators have reliability in the "good" classification.

4.3 PLS: Inner

At this stage, the goal of evaluating the structural model is to predict the relationship between latent constructs. In evaluating the performance of the PLS, there are several sections that support the provisions, including the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and model feasibility (goodness of fit).

Table 5. Summary of R^2

Construct	R^2
CP	0.735

Source: SmartPLS outputs.

The value of R square is used to review the strength of the effect of endogenous variables that reflect exogenous variables. The calculation results show the amount of R^2 , the CP variable reaches 0.735 (strong determination). This shows that 73.5% of CP is influenced by IC, CSR, GCG, as well as the moderating effect of GCG on the relationship between IC and CP, as well as the moderating effect of GCG on the relationship between CSR and CP of 26.5% were other factors not investigated in this study (see *Table 5*).

Table 6. f^2 test

Linkages	CP
X1 (IC)	1.925
X2 (CSR)	0.081
M (GCG)	0.002
M1 (X1*M)	0.021
M2 (X2*M)	0.007

Source: SmartPLS outputs.

Then, to examine the strength of the influence or effect of each endogenous in the structural

model, it is applied with f-square. As a result, *Table 6* shows that the relationship between IC and CP has a “big” effect, the effect of CSR on CP has a “moderate” effect, and successively the moderating effect of GCG on the relationship between IC and CP and the moderating effect of GCG on the relationship between CSR and CP is a “low” effect.

Table 7. Q^2 test

Linkages	SSO	SSE	$Q^2 (1 - SSE / SSO)$
M (GCG)	351	351	-
M1 (X1*M)	117	117	-
M2 (X2*M)	117	117	-
X1 (IC)	234	234	-
X2 (CSR)	351	351	-
Y (CP)	351	212	0.396

Source: SmartPLS outputs.

The Q^2 aspect is useful for validating the ability to predict the fit of the model on endogenous constructs that have reflective indicators. Referring to *Table 7*, it is known that the magnitude of Q^2 is 0.396. The gain is over 0 ($0.396 > 0$). Therefore, the applied model is concluded to have “relevant predictive value”.

Table 8. Goodness of fit

Variables	Com	R^2
X1 (IC)	0.542	-
X2 (CSR)	0.154	-
M (GCG)	0.464	-
M1 (X1*M)	1	-
M2 (X2*M)	1	-
Y (CP)	0.585	0.735
Average	0.624	0.735
GoF	0.677	
Remark	“Great GoF”	

Source: SmartPLS outputs.

The Goodness of Fit (GoF) is to identify the feasibility of PLS, where this test applies to simultaneously validate the model by combining the inner and outer models. Based on *Table 8*, we concluded that the overall fit of the model is 0.677. The model formed has a “high degree” or “very fit” in explaining the data.

4.4 Hypothesis Test

In the substance of hypothesis testing, probabilities (t-statistics and p-values) become attributes to examine the effect between variables and the moderator variable to determine whether the effect is on the relationship between directive variables or vice versa. The original sample size also implied the relationship path. Positive values show a supportive/reinforcing influence and vice versa. If the t-statistic is greater than 1.96 ($t > 1.96$) and the p-value is less

than 5% ($p < 0.05$), ensure a significant effect. Hypothesis testing between constructs in PLS, supported by the re-sampling bootstrapping method (Ghozali & Latan, 2015).

Table 9. Hypothesis path

Components	Orig. Sample	T-Statistics	Prob.	Remarks
<i>Direct Effect</i>				
X1 (IC) -> Y (CP)	0.784	22.574	0.000	Significant-positive
X2 (CSR) -> Y (CP)	0.155	2.562	0.011	Significant-positive
M (GCG) -> Y (CP)	-0.026	0.618	0.537	Not significant-negative
<i>Moderation Effect</i>				
M1 (X1*M) -> Y (CP)	-0.106	1.779	0.076	Not significant-negative
M2 (X2*M) -> Y (CP)	-0.055	0.934	0.351	Not significant-negative

Source: SmartPLS outputs.

The following is the path of achievement of T-statistics, p-values, and the original sample. Referring to Table 9, only two hypotheses were accepted, namely IC towards CP ($t = 22.574$ and $p = 0.000$) and CSR to CP ($t = 2.526$ and $p = 0.011$). In addition, the other three relationships, such as GCG to CP, IC to CP through GCG and CSR to CP through GCG, were proven not to be significant with negative coefficients because $t < 1.96$ and $p > 0.05$.

Table 10. Determination of the type of moderation

Path	M (GCG) -> Y	(X1*M) -> Y	(X2*M) -> Y	Conclusion
(X1*M) -> Y	Not significant	Not significant	-	Moderation potential
(X2*M) -> Y	Not significant	-	Not significant	Moderation potential

Source: SmartPLS outputs.

Therefore, the above test needs to be identified in more detail regarding the function of the moderating variable with the determination in Table 10. It confirmed the moderating variable in this study to be included in the potential moderation. Rahadi & Farid (2021) assume that when the moderating variable does not have a significant effect directly or through its interaction, then the variable is only a potential moderator.

4.5. Discussion

IC has a significant and positive effect on CP. When the IC, which includes VAHC, VACE, and SCVA, increases, it can increase CP, which includes ROE, ROA, and Tobin's Q. The most dominant factor in increasing CP through IC is the VAHC factor because it has the highest loading factor value of 0.86 and average The highest average is 4.34. That fact is because good intellectual capital can manage and optimize tangible assets for the company's performance and existence in the new economic era, namely the knowledge-based economy. This study is consistent with publications by Maheran & Ismail (2009), Sutanto & Siswantaya (2014), Bontis (1998), and Chen, Bontis, Wu, Cheng & Hwang (2005).

CSR has a significant and positive effect on CP. It represented this when the CSR comprising

ECO, SOC, and ENV is increasing, thus increasing the CP. The most dominant factor in increasing CP through CSR is the ECO factor because it has the highest loading factor value of 0.82 and the highest average is 0.57. Implementing the company's CSR will gain social legitimacy to ensure the sustainability of the company and increase the company's image because the company's products are well known by consumers, so that their loyalty will also increase. Thus, it is relevant to the publications reviewed by Bai & Chang (2015), Nugroho & Rahardjo (2014), and Ariantini, Yuniarta & Sujana (2017).

GCG has no effect on the relationship between IC and CP. This is because the supervisory function in GCG does not work well because INDP often loses votes with other commissioners in deciding. In addition, the internal GCG mechanism actually slows down the decision-making process because there are too many BOARDS and too many MEETs which cause the inefficiency of the supervisory function. It proved the proposed third hypothesis to be in line with Hermanto, Lusy & Widyastuti (2021).

GCG has no effect on the relationship between CSR and CP. The existence of obstacles in making CSR decisions by the board of directors and the board of commissioners due to problems with internal GCG mechanisms such as INP, actually hinders and often loses votes. BOARD has stifled communication, coordination, and too frequent MEETs have led to the inefficiency of the supervisory function. These results also complement the study published by Karim, Manab & Ismail (2020) and Selcuk (2019), where GCG is proven to negatively moderate the relationship between CSR and CP.

6. Conclusions

6.1 Resume

This study has the ambition to examine the contribution of intellectual capital (IC) and corporate social responsibility (CSR) to corporate performance (CP) through the role of good corporate governance (GCG) which focuses on state-owned companies in Indonesia. Statistical testing for the period 2012-2020 found that IC had a positive effect on CP. The dominant factor in increasing CP through IC is VAHC. CSR has a positive effect on CP, where the dominant aspect of increasing CP through CSR is ECO. Then, GCG has no effect on the relationship between IC and CSR on CP.

6.2 Managerial Implications and Future Studies

Practical and theoretical contributions in managerial attributes need to recommend several things. Company management should evaluate policies related to IC and CSR because they have a positive influence on CP. It can start this part through VAHC, which is the dominant factor for IC, and through ECO as a factor that reflects CSR. For corporate investors, it is advisable to consider the IC level, especially the VAHC and ECO levels. Ideally, company managers should not concentrate on internal GCG mechanisms including INDP, BOARD, and MEET because they do not affect the level of IC and CSR on CP. Investors can expect internal GCG mechanisms such as INDP, BOARD, and MEET percentages. Future research agenda deserves to be discussed. The addition of indicators outside of IC, CSR, and GCG can be expanded. Please note, there are still 26.5% dimensions outside of the factors that impact on CP, so constructive reviews allow development.

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