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INTERNATIONAL TRADE, INTELLECTUAL PROPERTY RIGHT AND ECONOMIC DEVELOPMENT IN NIGERIA: IS THERE ANY LINK?

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Abstract
This study explored the nexus between trade (TRD), intellectual property right (IPR), and level of economic development (LDEV) over the period 1991-2018 using an Autoregressive Distributed Lag (ARDL) approach. The results suggest a long-run relationship between international trade, intellectual property right, and level of economic development. The results also revealed that while the export component of the IPR exerted no impact on LDEV, trade (TRD), on the other hand, showed a temporary positive effect on the level of economic development, possibly due to the instability in the macroeconomic environment and her overdependent on imported goods. Interestingly, foreign direct investment (FDI) exerted a positive and significant effect on the country's economic development. These results corroborate the outcome of the causality test, which revealed a uni-directional causality that runs from FDI, TRD to the level of economic development. In contrast, there seems to be a causal effect from the level of economic development to the import component of the IPR to total productivity factor to inflation, respectively. The study concludes that both trade and intellectual property right are not capable of influencing economic development within the study period due to weak IPR protection and the mono-product nature of the country. Based on the above, the study recommends that the government should provide an enabling environment that will further attract foreign investment in the country. Also, formulate a well-developed institutional framework that will promote intellectual property right and finally diversify the economy into other sectors that are promising to avoid external shocks that can emanate from relying on a single sector of an economy.
Keywords: *intellectual property right, economic development, ARDL, trade, inflation, Nigeria*

Abstrak
Studi ini mengeksplorasi hubungan antara perdagangan (trade/TRD), hak kekayaan intelektual (intellectual property rights/IPR), dan tingkat perkembangan ekonomi (level of economic development/LDEV) selama periode 1991-2018 dengan menggunakan pendekatan Autoregressive Distributed Lag (ARDL). Hasilnya menunjukkan hubungan jangka panjang antara perdagangan internasional, hak kekayaan intelektual, dan tingkat perkembangan ekonomi. Hasil penelitian juga mengungkapkan bahwa meskipun komponen ekspor IPR tidak berdampak pada LDEV, perdagangan (TRD), di sisi lain, menunjukkan pengaruh positif sementara pada tingkat pembangunan ekonomi, kemungkinan karena ketidakstabilan di lingkungan makroekonomi dan ketergantungannya pada barang impor. Menariknya, penanaman modal asing (FDI) memberikan pengaruh yang positif dan signifikan terhadap perkembangan ekonomi negara. Hasil ini menguatkan hasil uji kausalitas yang menunjukkan kausalitas searah yang berjalan dari FDI, TRD hingga tingkat pembangunan ekonomi. Sebaliknya, tampaknya terdapat efek kausalitas dari tingkat perkembangan ekonomi hingga komponen impor IPR

terhadap faktor produktivitas total terhadap inflasi. Studi tersebut menyimpulkan bahwa baik perdagangan maupun hak kekayaan intelektual tidak mampu mempengaruhi pembangunan ekonomi selama periode studi karena lemahnya perlindungan IPR dan sifat *mono-product* (produk tunggal) negara tersebut. Berdasarkan hal tersebut, studi merekomendasikan bahwa pemerintah harus menyediakan lingkungan yang kondusif yang selanjutnya akan menarik investasi asing di negara tersebut. Selain itu, merumuskan kerangka kelembagaan yang berkembang dengan baik yang akan mempromosikan hak kekayaan intelektual dan akhirnya mendiversifikasi ekonomi ke sektor lain yang menjanjikan untuk menghindari guncangan eksternal yang dapat berasal dari mengandalkan satu sektor ekonomi.
Kata Kunci: *hak kekayaan intelektual, pembangunan ekonomi, perdagangan, ARDL, inflasi, Nigeria*

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INTRODUCTION

Advocates of international economics believe that an optimum is realizable when there are no restrictions in the movement of goods, services, ideas, innovations, copyrights, and people amid free and open trade. Amazingly, intellectual property right (IPR) is introduced into different domestic countries to protect innovators' creative works, regulation of the health and safety standards, among others. Subsequently, impeding the trade's size, particularly those in the World Trade Organization (WTO), even though its members are in different stages of development. They are thereby making the dividends accruable from it to differ from country to country. Little wonder why several economists oppose introducing IPR into trade agreements, hence the prevalence system imbalances.

Past studies in developing and developed economies have evaluated the relationship between international trade and economic growth. Though, a number of these studies have indeed shown that there is a positive relationship between international trade and economic growth across the globe (see Dollar & Kraay, 2004; Frankel & Romer, 1999; Freund & Bolaky, 2004) except for few studies which claim otherwise (e.g., Musila & Yiheyis, 2015; Vlastou, 2010). The reason for the above-mixed feelings may not be far-fetched from the econometric techniques utilized, the sample of countries, the level of development, the extent to which the economy is technology-driven, and the indicator used as a proxy for international trade/trade openness, among others to mention a few which ranges from opening ratios; tariff barriers; the exchange rate and opening indicators among others. Besides, this may be due to the role international trade plays in the participating countries' economy.

The above justify why many economists are of the view that international trade is an instrument for growth according to (Adewuyi, 2002). Aside from the aforementioned, evidence from the literature shows that countries that are actively involved in international trade tend to benefit more than the ones that are less active and hence perform the dual role of transforming the economy and showcasing the social attributes of the participant country around the world mainly by the developing economies as pinpointed by (Ivus, 2010).

In this wise, past studies have shown how trade has contributed to the gross domestic product (GDP) of some countries, especially those from emerging economies like Japan, China, and Korea. Both theoretical and empirical studies have shown how trade has contributed a huge chunk to their countries' overall GDP through rigorous, efficient, and precise involvement. In the same vein, development economists have also emphasized that trade tends to accelerate the

growth process of nations' economies via the provision of foreign earnings, which in turn fosters economic growth both in the long and short run.

Evidence abounds from the above that only a few research have evaluated the nexus between international trade, intellectual property rights (IPRs) and economic development across the globe, especially in developing economies which Nigeria is inclusive. In contrast, some studies on the nexus between sub-components like; IPR and trade; IPR and growth respectively subsist. For instance, a study by De Soto (1990, 2000) argued that intellectual property rights are an essential economic institution in the sense that they serve as an engine of economic growth in a country. Although, this relationship may be more robust in the developed economies and weak in developing ones, according to Kim et al. (2012).

Intellectual property alludes to the innovation (manifestations of thoughts) which incorporates innovations, scholarly and imaginative works, and images, names, and pictures utilized in commerce. Intellectual property rights, among others, incorporate responsibility for, including titles and deeds. Protected innovation rights additionally incorporate licenses, copyrights, brand names and free and unbiased lawful frameworks. The inquiry that rings a bell is the motivation behind why licensed innovation right is essential. There are a few convincing explanations behind ensuring the protected innovation rights collected to development. Right off the bat, since, the advancement and prosperity of mankind lay on the degree to which it can make new things, particularly in the zone of innovation and culture on somewhat point of view to make reference to a couple. The following is the lawful security of the new manifestations, which thus empowers the use of included assets, subsequently prompting further advancement. Thirdly, is because the promotion and protection of intellectual property right tend to stimulate the rate of economic growth, creates new jobs and industries and enhances the quality and enjoyment of life at large, which is the perspective this study will rely mostly on.

Therefore, an efficient establishment and a secured intellectual property rights give people the motivating forces to advance and produce something of significant worth as opposed to improving themselves by means of some wasteful strategy, for example, lease looking for movement, burglary, subjective appropriation and tax assessment to make reference to a couple. Persistent financial development through advancement, human capital arrangement, and lower exchange costs is restrictive on the presence of enforceable property rights. Additionally, contemplates have demonstrated that intellectual property right advances the economic development of the beneficiary nations through heterogeneous roads specifically as buttressed by (Delgado et al., 2014). IPR should display a positive relationship on financial

development regardless of whether they owe from advancement or expanded developments as pinpointed by (Romer, 1990; Rivera-Batiz & Romer, 1991).

Conversely, an ongoing report by Maskus (2000) portrays that the connection between intellectual property right and economic development is not so clear. The above is on the grounds that the way IPR protection sway on growth rates varies from nation to nation. However, contingent upon their degree of development. Accordingly, they propose that there is a blended inclination with respect to the connection between the factors. The suggestion is that the result of certain investigations shows a positive relationship and the others negative. Of the investigations that demonstrated a positive relationship incorporate examinations like (Thompson & Rushing, 1999). Additionally, Rapp and Rozek (1990) find that IPR protection has a significant positive effect on growth.

To verify the above mentioned, Gould and Gruben (1996) in their study underlined that despite the fact that IPR – growth nexus is sure, its basic determinant is a component of whether the economy is open or closed. The later is on the grounds that IPR insurance influences growth in open versus closed economies in an unexpected way. Additionally, their examination, buttressed that IPR assurance can have a marginally more significant effect on development in open economies than in short ones. Put in an unexpected way, the scrutiny by Thompson and Rushing (1999) displayed that reviews which fuse the total factor productivity (TFP) in their growth model reinforces the role played by the IPRs by means of its effect on TFP and the other way around. All the more critically, a study by Shin et al. (2016) found that IPRs changes have the propensities to encourage worldwide trade, in spite of the fact that; they have not helped in advancing exports of developing nations, among others. The last classification is the probe of Park and Ginarte (1997) which portrays a negative connectedness among's IPR and economic growth.

Shockingly, Chen and Puttitanun's (2005) examination contend that IPR assurance impacts on developing nations since it can support inventive household exercises through patent application and advancements. The previously mentioned is on the grounds that household developments have a U-shaped relationship with Gross National Products (GNP) and IPR. The investigation of Chen and Puttitanun (2005) was additionally buttressed by Maskus (2000) where they affirm the conceivable presence of an experimental U-shaped bend among IPRs and per capita GNP. Funnily, Chen and Puttitanun (2005) further focused that IPR security does not affect economic growth autonomously or legitimately. However, instead, its collaboration with factors, such as exchange receptiveness, national competitiveness, IPR Index, human capital, FDI, and government strategy to specify a couple, yield the expected

result. It is in accordance with the affirmations of Chen and Puttitanun (2005) that this current study expects to research the nexus between international trade, intellectual property right and economic development if there is any utilizing Nigeria information and conditions around her strategies and institutions.

Furthermore, on the grounds that the few available studies researched on the effect of either international trade or IPR or both on economic development. Astonishingly, this study intends to determine the impact of the variables mentioned above on economic development because previous study have failed to identify how trade and intellectual property can impact the populace's quality of life, reduce poverty, and accelerate the standard of living, which are all components of development. The utilization of Nigeria as a case study is incredible for some reasons. One is on the grounds that Nigeria is known as the giant of Africa as far as her economy is a concern. Second is on the grounds that Nigeria is still particularly dependent on the English Laws. For example, the Trademarks Act of 1965, which was designed after the Trademarks demonstrations of 1938 even though present-day advances and monetary headway have surpassed these laws, is vital to growth. Thirdly because only a few or no studies have combined these three variables in Nigeria. This current study contributes to the existing literature due to the answer it provides to whether international trade and innovation via intellectual property rights have been able to stimulate economic development in Nigeria. This paper is different from the others because it will broaden the coverage of the few studies that have combined these variables' effect on economic development in Nigeria and developing economies at large.

This study will be structured as follows: Section 2 provides a review of the literature. Section 3 describes the data and empirical methodology adopted in the study. Section 4 reports the estimation results. Finally, section 5 concludes and proffers policy implication on the paper.

LITERATURE REVIEW

In particular, Krueger (1978) argued that trade liberalization has the potential to move forward specialization in sectors that have economies of scale via contributing to improving the efficiency and productivity in the long-run. The trade - economic growth nexus has gotten a lot of consideration both in the theoretical and empirical writing during the most recent five decades. There is no doubt that one of the most satisfactory measuring sticks for estimating international trade relies upon whether the economy is closed or open. Henceforth, trade openness is a basic pointer of international trade in like manner. Be they as it might, there is

no accord on whether more prominent transparency of exchange triggers economic growth. Albeit an investigation by Gozgor and Can (2016) pinpoints that nations that are effectively engaged with international trade will be in general advantage more than the ones that participates less. Proof from the theory of comparative advantage posits that, if one country desires to go into trade with another, the latter will produce goods in which it has a comparative advantage; although, other economists have further extended this theory. Specifically, Krueger (1978) contended that trade liberalization in sectors that have economies of scale by means of adding to improving the effectiveness and productivity in the long-run.

In a similar vein, economists like Schumpeter (1912) in his review have related market concentration and innovation, and patent rights; due to the fact that, they regularly empower the foundation of monopoly ventures. Therefore, nail-down that an imperative aspect of the patents and intellectual property, all in all, relies upon rivalry or antitrust policies. Additionally, works relating to IPRs cannot be finished without insinuating the conventional economic rationale set forth by Arrow (1962) in regards to the protection of IPRs as far as the inadequate appropriability of information. Put differently; he likewise depicts that IPRs has the second-best answers for the issues made by the "semi open great" nature of information. To the degree that IPRs upgrade appropriability, to foster investment in Research and Development (R&D) and information creation.

Besides, the endogenous growth models emphasized a positive relationship between international trade via trade openness and economic growth vis-à-vis the international diffusion of advanced technologies as popularized by Coe and Helpman (1995), Grossman and Helpman (1991), and Romer (1994). Their study pinpoints that, countries with a further extent of receptiveness tend to appreciate innovations produced in cutting-edge economies, and this capacity drives them to develop better than their partners with a lower level of transparency. Besides, Edwards (1993) raised another purpose of contention that the expense of imitation is a basic factor that similarly matters in the economic growth nexus. Conversely, study by Almeida and Fernandes (2008) contended that exchange transparency may now and then be disadvantageous to financial development. The above happens in a circumstance when a nation spends significant time in the creation of products in which innovative work exercises are not the center.

Taking the contention above from an empirical point of view, proof from the literature uncovered that there are blended and clashing sentiments with respect to the nexus among trade and economic growth over the globe. Specifically, studies like Baldwin et al. (2003), Rodriguez and Rodrik (2000) opine that there is a positive connection between international trade and

economic growth. Then again, studies like Vamvakidis (2002) and Ulaşan (2015) confirms a weak relationship among trade and economic growth. To help the discoveries from the above study, Rigobon and Rodrik (2005) in their investigation finds affirmed a critical negative effect of trade on economic growth while the study by Fenira (2015) affirms a weak connection between international trade and economic growth. All the more as of late in Uganda, Isaac and Ibrahim (2019) researched the impact of international trade streams on economic growth. Shockingly, the discoveries of their investigation uncovered that there is strong positive connection among exports and economic development, however the coefficient of imports to economic growth nexus is generally littler.

Strikingly, Kim, Lin, and Suen (2016) raised remarkable proof, by opining that economies with high income, low-inflation and non-agricultural reliant advances economic growth more than nations with the otherwise features. In a similar vein, a study carried out utilizing the same sample from both developing and developed nations by Were (2015), displayed that world-wide exchange shows a positive and noteworthy impact on economic growth rate. Notwithstanding, the acclaimed impact is unimportant in developing nations, including African. From China, Hye et al.'s (2015) investigation indicated that international trade has a positive relationship with development both in the long and short run.

Observably, no difference exists among studies carried out in Sub-Saharan African, which Nigeria is inclusive with respect to the above connections. For instance, a study by Chang et al. (2008) and Azeez et al. (2014) uncovered a positive development impact of trade on airfreight for an example of Economic Commission for Africa (ECA) nations. Conversely, a study by Gries and Redlin (2012) explored the instance of 16 Sub-Saharan African nations, and their outcomes find that there are no critical relationship among the factors for the majority of the example. Furthermore, their study also provides evidence that economic growth causes international trade through the mechanism of openness in Ethiopia, Gabon, Kenya, Mauritius, Senegal, Sierra Leone, and Togo, though, a feedback causal relationship subsists for Cameroon, Cote d'Ivoire, Nigeria and Rwanda. While, on the contrary, no causal relationship exists between trade and growth for Burundi, Ghana, Madagascar, South Africa, and the Gambia.

Against the above, a study by Vlastou (2010) finds that international trade indirectly affects economic growth. Additionally, the outcomes set up a causal relationship running from international trade to growth was similarly settled. This study was trailed by that of Polat et al. (2015) who likewise locate that international trade by means of transparency blocks economic growth in South Africa. More recently, studies by Brueckner and Lederman (2015) investigated this relationship; however, the results depict that trade fosters growth both in the short and long

run. In Nigeria, authors like Babatunde (2017) investigated trade-growth nexus. The result revealed that trade impacts on economic growth, both positive and negatively in the economy while studies by Lawal and Kamtochukwu (2017) and Muhammad and Benedict (2014) show that there is a long-run relationship among the variables of interest.

On the studies that investigate the relationship between intellectual property right and economic growth; evidence shows that several authors have showcased this in the theoretical literature; though, the results are with mixed feelings. For instance, in Hwang et al. (2016), their study revealed that the economic effects of IPRs protection differ from one country to another based on the level of economic development attained. In consonance, with the above, the studies by Grossman and Helpman (1991) stressed the consequences of imperfect IPRs protection on technical progress (technology) via economic growth through insinuating imitation which in turn dampens innovation. To buttress the aforementioned, Betul (2020) pinpoints that intellectual property currency encourages research and development (R&D), creation and innovation. Hence emphasizing that the link through which IPR protection passes translate into growth is through innovation knowing quite well that innovation is pivotal to the economic growth of any country. Thereby suggesting that the avenue through which IPR protects innovation determines the extent of economic growth realized.

In contrast, a study by Karami, Ghaffari, and Taghavi (2011) investigated on market capital, IPRs and economic growth of OPEC member countries. Their results suggest that international trade and international tourism as proxy for market capital are relevant in explaining per capita GDP growth irrespective of the fact that the coefficients are low, though international trade has stronger impact on per capita GDP than international tourism, while surpringly, IPRs does not trigger the growth of per capita GDP concurrently. In a similar but related study, Kamilia (2020) evaluated the effect of entrepreneurial activity on technologcal innovation in emerging and developing countries. Surprisingly the findings revealed that totap entrepreneurial activity decreases the level of innovation. In addition, opportunity driven entrepreneurship stimulates international patenting. In total, their findings show that entrepreneurship can only be significant only in countries that encourages free trade and possess the capacity to control corruption.

Furthermore, a study by Falvey et al. (2004) opines that IPR-growth rate nexus is positive and significant. Gould and Gruben (1996) in a related but different study (cross-section growth) also find that IPR has a significant positive impact on growth. The study went further to suggest that IPR exhibit a more significant effect on growth in economies that are open than the ones that are closed. In a little different way, Thompson and Rushing (1999) evaluated this

relationship measuring technology as a ratio of growth of real GDP per capita over Total factor productivity (TFP), and they conclude that IPR has a positive impact on TFP in countries that are relatively rich which in turn impacts positively on output growth. Arguably, it was observed that developing countries tend to benefit more from a higher inflow of technology transfer than the developed ones (Filippetti & Archibugi, 2015; Awokuse & Yin, 2010). Interestingly, a study by Flores and Perez (2019) examined the factors which stimulates innovation activity in Latin America. Their results suggest the existence of a positive and significant relationship of equilibrium.

Not forgetting that, better innovation can emanate through enhanced technologies which can attain through a diverse avenue such as domestic innovation; involvement in international trade; FDI via the transfer of technologies, investment; Licensing; imitation and piracy. Furthermore, an investigation by Falvey et al. (2004) opines that IPR - development rate nexus is sure and critical. Gould and Gruben (1996) in a related yet unique study (cross-area development) additionally find that IPR has a critical positive effect on growth. The study went further to propose that IPR show a more noteworthy impact on development in economies that are open than the ones that are closed. In a little unique manner, Thompson and Rushing (1999) assessed this relationship estimating innovation as a proportion of development of genuine GDP per capita over Total factor profitability (TFP), and they reason that IPR positively affects TFP in nations that are generally rich which thus impacts decidedly on yield development. Apparently, developing nations will in general enjoy more advantage from a higher inflow of innovation than the developed ones (Filippetti & Archibugi, 2015; Awokuse & Yin, 2010). Interestingly, research by Flores and Perez (2019) analyzed the components that invigorate development action in Latin America. Their outcomes propose the presence of a positive and significant relationship among the variables.

Those mentioned above was refuted by critics who believe that once IPR protection is accelerated, the resultant impact is that it ends up in enhanced costs that has the potential to distort alternative and eventually reduces welfare. The above results were conjointly supported by the study of Yang and Maskus (2009) that pinpoints that stronger IPRs in developing countries would enhance technology transfer vis-à-vis licensing and reducing the incremental cost of firms therefore increasing their competitiveness within the international markets.

A sizeable range of researches within the literature have focussed on the link between IPRs and international trade across completely different countries. For example, a study by Fink and Primo Braga (1999) found a negative however insignificant relationship between IPRs and international trade more notably in technology product like machinery,

telecommunications and electrical facilities to say some. The above was additionally reinforced by the work of Plasmans and Tan (2004) who in their study examined the link between weak IPRs and powerful imitation ability in China as a barrier to foreign exports to China. Astonishingly, the results disclosed that substantial patent rights enhance foreign exports to China in high – technology and patent-sensitive industries. At a similar time, more rigorous IPRs protection encompasses a weak impact on low technology and trademark-sensitive industries underneath the condition that China does have sturdy ability of imitation. Within the same vein, study by Canh et al. (2019) explored on the impact of economic openness and institutional quality on patents. Amazingly, their results showed that, although institutional quality appears as a vital driver for patents applications, FDI flows and trade openness have totally different influences, especially, higher inward FDI flows have a positive result on the number of patents whereas trade openness may need a negative result on patent. Notably, a study by Willoughby and Mullina (2019) buttresses that exploitation of endogenous technology is a very important factor for national economic development. In distinction, a study by Betul (2020) on the result of foreign trade on innovation in BRICS-T countries showed that aside from the fact that the variables are co-integrated within the long-run; exports exhibit a positive impact on innovation. While, inputs and FDI adversely affected innovation. Similarly, a bi-directional whereas was found between export and innovation whereas on the contrary a uni-directional relation was detected between FDI and imports.

In a similar, slightly different perspective, Ferrantino (1993) researched the link between IPRs and trade by examining the pattern of exports regarding national membership in IPR treaties exploiting U.S. aggregates. Astonishingly, their results discovered a weak link. In distinction, Maskus and Penubarti (1995) investigated this nexus between the variables by measuring IPRs in conjunction with bilateral trade on an industry level. They found a robust direct correlation between manufacturing exports of OECD countries and also the strength of patent rights in large and small developing countries. The above outcome confirms the study by Smith (1999) within the U.S. Following a distinct line of argument, Shin et al. (2016) found that IPRs could support export barriers to trade. They supported evidently that recent IPRs reforms have expedited international trade; but, they need not help promote exports of developing countries. Beyond the aforesaid, a study by PWC (2020) examined the impact of intellectual property (IP) infringement on businesses and the Nigerian economy. The study unfolds that prejudicial infringement is harmful to the country's economic prospects in many ways that embody her inability to realize the full economic potential and has to place varied lives in danger.

Based on the above theoretical and empirical review of the literature, we discover no clear-cut picture regarding the relationship between IPRs, trade, and economic development, respectively. Similarly, there is no specific theoretical model that past studies used to answer how strong IPRs and trade affect economic development? Consequently, this current study intends to investigate the nexus between international trade, intellectual property rights, and economic development in Nigeria: Is there any? In light of this, this current study intends to empirically investigate whether there is a correlation between this phenomenon of interest.

RESEARCH METHODOLOGY

Data and Data Sources

This study mainly examines the link between intellectual property, international trade and economic development in Nigeria. In this study, we employed secondary data sourced from World Bank indicator (WDI), National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) respectively.

Research Variables

Data for international trade, exchange rate, foreign direct investment, trade openness, total productivity factor were all sourced from the CBN Statistical Bulletin. Information for inflation were sourced from the NBS. Data for the level of economic development meant to quantify the quality of life. Moreover, it was attained from the averages of GDP annual growth rate, inequality, health (life expectancy), unemployment rate and secondary school enrollment were extracted from WDI. For instance, we generated inequality from the outcome difference of wealth, rate-poverty rate, i.e. (100 - poverty rate) in order to ensure that, it is all-encompassing. Similarly, due to unavailability of data on intellectual property right index, computer, communications and other services (% of commercial service exports) and computer, communications and other services (% of commercial service imports) were used to proxy the exports and imports components of intellectual property right or capital exports and imports. Due to restriction in getting these data, we confined our study to 1991-2018. Also, variables such as trade openness are used to proxy the integration of Nigeria into the world economy; the sum of exports and imports measures trade as a share of GDP; exchange rate, i.e. the ratio of dollars to the naira exchange rate. We also include the real exchange rate and inflation in

order to evaluate the stance of the macroeconomic environment in the external sector. While foreign direct investment was included in our model to verify the benefits inherent when an economy is open.

Econometric Model

In our analysis, we conduct an ARDL bound co-integration test to ascertain if there is a long-run relationship among the chosen variables. This co-integration test has some form of superiority over the classical co-integration test, which includes Engle and Granger (1987), Johansen (1991), among others. ARDL as an approach can be applied regardless of whether the series is I(1) or I(0) or when the series has a combination of I(1) and I(0) variables. The second advantage of ARDL is that it accommodates the series to have different optimal lags length, which tends to be impossible when using the conventional co-integration test. The third is that ARDL can be used when the size of the observation is small. Finally, the use of ARDL can help to summarize the use of multiple (simultaneous) equations into a single reduced form equation. Simplistically, the conditional error correction of the ARDL approach is specified as follows:

$$\Delta LDEV_t = \partial_0 + \sum_{i=1}^{p} \psi_{1i} \Delta LDEV_{t-i} + \sum_{i=1}^{p} \vartheta_{2i} \Delta LIPRE_{t-i} + \sum_{i=1}^{p} \delta_{3i} \Delta INF_{t-i} + \sum_{i=1}^{p} \eta_{4i} \Delta EXR_{t-i}$$

$$+ \sum_{i=1}^{p} \varphi_{5i} \Delta LIPRM_{t-i} + \sum_{i=1}^{p} \Omega_{6i} \Delta LFDI_{t-i} + \sum_{i-1}^{p} \zeta_{7i} \Delta LTRO_{t-i} + \sum_{i-1}^{p} \zeta_{8i} \Delta LTRD_{t-i} + \lambda ECT_{t-1} + \varepsilon_t \text{..(2)}$$

While determining the optimal lag length, it essential that one is mindful that there is no atom of serial autocorrelation if the validity of the model is to be guaranteed. We begin the co-integration test after determining the optimal lag length. The above is done by first testing the hypothesis of the existence of co-integrating relationship through the F-test. Importantly, if the null hypothesis, $H_{0:}\ \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$ is not accepted, we can conclude that there exists a co-integrating relationship between the variables. The implication is that the estimated F-statistics must be higher than both the lower and upper bounds as buttressed by Pesaran, Shin & Smith (2001). Once co-integration is established, then we would go ahead to analyze both the coefficients of the short and long run respectively. Next is to determine the long run and short-run causality between LDEV, LIPRE, LIPRM, LTRD, INF and EXR in more detail. Ideally, econometrics theory revealed that in Granger's causality framework, the past values of variables of interest could cause future values, but the reverse may not be

accurate. To do this, we estimate a VEC model and incorporate the error correction term as the long-run relationship. Consequently, the below dynamic VEC model is estimated to test the long and short-run causal effects between the variables under consideration.

$$\Delta Y = \alpha_i + \sum_{i=1}^{k} \psi \Delta Y_{t-i} + \sum_{i=1}^{k} \delta_j \Delta Y_{t-j} + \lambda_1 ECT_{t-1} + \mu_t .....(3)$$

From equation (3), μ_t represents the stochastic error term which contains a zero mean and homoscedastic variance. The optimal lag length of the above model is based on AIC. Granger causality can be verified based on the AIC criteria in several ways, according to Oh and Lee (2004). For instance, the coefficient of the ECT is an avenue where we can use to determine the long-run Granger causality among the variables, while on the other hand the short-run coefficient run can be used as a yardstick to determine short-run causality.

RESULTS AND DISCUSSION

Table 1 shows the results of the unit root of the variables employed in the study. Not forgetting that most of the time, series variables are non-stationary. Which connotes that their means and variance are not in any way constant over time such that, the covariance between say two points does not only depend on the lag between the two periods as suggested by elementary econometric accordingly. After doing the Augmented Dickey-Fuller (ADF) test, the results revealed that all the variables are differenced stationary. Meaning that they were not stationary at level but became stationary after first differencing.

Table 1. Results of the Unit root test

Variables	t-statistics	Critical Value	Order of Integration	t-statistics	Critical Value	Order of Integration
EXR	-0.8507	-2.9763	**NS**	-3.6879	-2.9810	S
LDEV	-1.9572	-2.9763	NS	-9.9564	-2.9810	S
LFDI	-1. 7678	-2.9763	NS	-5.9027	-2.9810	S
LIPRE	-1.4288	-2.9763	**NS**	-4.7097	-2.9810	S
LIPRM	- 2.6501	-2.9763	NS	-5.1605	-2.9810	S
LTRD	-2. 0916	-2.9763	NS	-5.7405	-2.9810	S
LTRO	-2.4645	-2.9763	NS	-6.1773	-2.9810	S
INF	- 1.9171	-2.9763	NS	-5.0151	-2.9810	S

Source: *Authors computation from E- views*

Consequent upon the results of the unit root test, where it was revealed that all the variables were stationary after first differencing. The study proceeds by testing for the existence of a long-run relationship among the variables. In order to accomplish this, the study employed

Autoregressive distributed lag (ARDL) bounds co-integration test as against the conventional Johannsen co-integration approach, is unique when all the variables are in order one integration. The reason for utilizing the ARDL approach is not far-fetched from the size of the observations. Which stands as one of the pre-requisite for adopting the ARDL approach among others. Irrespective of whether the variables are either integrated of order one, zero or mixed. The results of the bounds co-integration test are as reported in Table 2. The results revealed that there is a long run (L.R.) linear relationship between the variables under consideration. The above is because the F-statistics of 27.039 is higher than both the lower and upper bounds at 10% and 5% respectively.

Table 2. Results of Bounds Co-integration test with critical value

Significance	**I*(0)* Bound**	**I*(1)*Bound**
10%	1.95	3.06
5%	2.22	3.39
2.5%	2.48	3.70
1%	2.79	4.10
Null hypothesis: There is no long run relationship		
F-stat =27.039 K=8		

Source: *Authors computation from E- views 9*

The study further verified the authenticity of the long-run relationship affirmed above in Table 2, by checking the value of the coefficient of the error correction term (cointEq(-1)) keenly in Table 3. Interestingly, we found that the coefficients were rightly and statistically significant at 1% level. Consequently, depicting that there is a convergence among the variables under consideration.

Table 3. Results on the short run relationship between TRD, IPR and LDEV in the short run

Dependent Variable. *LDEV*				
Selected Model: *ARDL (1,1,0,0,1,1,1,1,1)*				
Cointegrating form: *(Short run Coefficients)*				
ΔLFDI	0.1020	0.0308	3.3115	0.0069
ΔLIPRE	- 0. 0010	0.0113	-0.0846	0.9341
ΔLIPRM	0.1258	0.0382	3.2913	0.0072
ΔLTFP	- 0. 4765	0.2176	- 2.1897	0.0510
ΔLTRD	0.0892	0.0394	2. 2649	0.0447
ΔLTRO	-0.0881	0.0384	-2.2895	0.0428
ΔLINF	*- 0.0033*	*0.0011*	*-2.9267*	*0.0138*
ΔLEXR	*-0.0001*	*0.2176*	*-2.1897*	*0.8657*
CointEq(-1)	*-1.0138*	*0.0996*	*-10.172*	*0.0000*

Source: Authors computation from E- views 9

Table 4. Results on the relationship between TRD, IPR and LDEV in the long run

Dependent Variable. *LDEV*				
Selected Model: *ARDL (1,1,0,0,1,1,1,1,1)*				
Co-integrating form: *(long run Coefficients)*				
LFDI	0.3202	0.0472	6.7832	0.0000
LIPRE	- 0. 0009	0.0112	-0.0847	0.9341
LIPRM	0.1242	0.0452	2.7437	0.0191
LTFP	- 1. 3553	0.1716	- 7.8992	0.0000
LTRD	- 0.0053	0.0233	-0. 2283	0.8236
LTRO	0.0312	0.0482	0.6466	0.5312
INF	- 0.0026	0.0009	-2.8718	0.0152
EXR	0.0015	0.0003	5.2240	0.0003
C	-4.2055	0.9920	-4.2396	0.0014

Source: *Authors computation from E- views 9*

Table 3 reports the link between international trade, intellectual property right and economic development within the short run. The results show that the coefficient of FDI, IPRM and TRD are completely associated with the extent of economic development within the short run. The above merely implies that a 1 percent rise in FDI, IPRM and TRD results in 102, 126 and 89 in the level of economic development severally. Specifically, the constant of TRD conforms to the study of Rigobon and Rodrik (2005). In the same vein, contradicts the study by Were (2015) United Nations agency posited otherwise. Still within the S.R., the coefficients of TRO and INF negatively affects the extent of economic development. Though, precarious, due to fact they are statistically insignificant. Moreover, this portrays that the additional associate economy is hospitable to the international trade setting, the additional the profit such a firm will derive from international trade and investment opportunities.

Disappointingly, despite the degree of openness of the Nigerian economy to the global market, yet, it has been ineffective in accelerating export-based trade, and level of economic development at large, and this is often in line with findings of Fernandes (2008) that pointed that trade openness might typically be inexpedient to economic growth. The above is also because of her over-reliance on foreign product and services, and this contradicts study by Yanikkaya (2003). In distinction, the coefficient of LIPRE exerts a negative, however insignificant relationship with the extent of economic development both within the short and long run (see Table 4); thereby, supporting the study by Shin et al. (2016) where they realize that, though IPRs help in facilitating international trade, it does not promote exports of developing countries as well as Nigeria. Hence, connoting that Nigeria has not been innovative in her industrial IPR. Also, the country has presumably been enshrouded with an over reliance on the importation of foreign-made product and services. Within the variety of electronics and

telecommunication gadgets, among others. It has pinpointed that the extent of IPR protection via innovation determines the degree of economic process and development that may be existent in the short run.

In the long run, FDI, LIPRM and EXR exerted a positive and significant relationship on the level of economic development. Specifically, the coefficient of FDI supports the study by Filippetti & Archibugi (2015) where they posited that developing countries which Nigeria is inclusive benefit more from a more significant inflow of technology transfer than the developed ones. Interestingly, this supported by the study of Anwer & Sampath (1999). Consistently, the outcome of the coefficients of LIPRM revealed weak IPR protection in the country and in line with study by Yildirim and Arun (2019). While the results of non-trade/macroeconomic variables such as (Inflation and exchange rate) dampens competitions of the external sector according to studies by Yanikkaya (2003) and (Gwainedepi, Musara & Dhoro, 2014), this was further buttressed by the coefficients of INF and EXR which revealed that the macroeconomic environment is not stable and consequently decreases the level of economic development. The results conform to the study by Gokal & Hanif (2004). Also, because an economy with high inflationary pressure erodes the purchasing power which will, in turn, depletes aggregate demand and also the increasing cost of production on the supply side and consequently deteriorates the level of economic development, interestingly, this conforms to the study by (Chude & Chude, 2013; Checherita & Rother, 2010) among others.

In the long-term, FDI, LIPRM and EXR exerted a positive and vital relationship on the level of economic development. Specifically, the coefficient of FDI supports the study by (Filippetti & Archibugi, 2015) where they posited that developing countries which Nigeria is inclusive benefit more from a more significant inflow of technology transfer than the developed ones. Apparently, this is supported by the study of Anwer & Sampath (1999). Consistently, the result of the coefficients of LIPRM discovered weak IPR protection in the country, and is in line with study by Durmus and Korhan (2018). Whereas the results of non-trade/macroeconomic variables like (Inflation and exchange rate) dampens competitions of the external sector and is consistent with studies by Yanikkaya (2002) and Gwainedepi, Musara and Dhoro (2014). This was more buttressed by the coefficients of INF and EXR that unconcealed that the economics setting is not stable and consequently decreases the amount of economic development. The results adapt to the study by Gokal and Hanif (2004). Also, because an economy with high inflationary pressure erodes the purchasing power which will, in turn, depletes aggregate demand and also the increasing cost of production on the supply side and consequently deteriorates the level of economic development, interestingly, this

conforms to the study by (Chude & Chude, 2013; Checherita & Rother, 2010) among others. Apparently, this conforms to the study by Chude and Chude (2013) as well as Checherita and Rother (2010) among others.

Furthermore, the coefficient of total factor productivity unconcealed a negative and vital impact on the extent of economic development, therefore, contravening the results of the study by Grossman and Helpman (1991) that pointed out that the implications of IPRs protection on technical progress via technology foster economic development of a country. More apparently, the parts of the export of the intellectual property right damage the extent of economic development in Nigeria. The above means the country's industrial IPR via domestic innovations has not been adequate, therefore, the rationale for low or in-consequential exports of manufacturing product (i.e., electronics and communication gadgets) and has, in turn, depleted our foreign exchange because of the implications of exchange rate depreciation that successively makes imports to be cheaper and exports expensive. Furthermore, this corresponds to the study by De Soto (2000).

The study conducted a causality test to determine the variable that causes another. Amazingly, the results of the causality test unconcealed a uni-directional causality between international trade, foreign direct investment, IPR imports to the extent of economic development, severally with none feedback the other manner round in Nigeria which is in accordance with the study of Betul (2020). The above implies that FDI, LIPRM, TRD, and TRO causes the extent of economic development. Within the same vein, the level of economic development causes inflation and TPF, severally. The latter implies that LDEV triggers both INF and TPF positively. Which means that as the level of the country's development increases, there is a tendency that it will cause an increase in total productivity factor (new technology) due to a rise in innovation. In the same vein, an increase in the level of development tends to increase inflationary pressures if not adequately regulated.

The appropriateness of the above results was guaranteed via the conduct of a series of diagnosis check, which includes the Serial Correlation L. M. Test, Normality test, normality test, among others. The result is as bestowed in Table 5. The results pass the serial correlation test, heteroscedasticity test, normality test, respectively. They are consequently portraying that the model was well specified.

Table 5. Results of Diagnosis test

Test	F-statistic	Probability
Breusch - Godfrey (Serial correlation LM test)	1.6170	0.2055
Breusch-Pagan-Godfrey(Heteroskedasticity Test)	1.1989	0.7622
Jarque-Bera (Normality Test)	0.1554	0.9252

Source: Adopted from E-views 9

CONCLUSION AND POLICY IMPLICATION

The study investigated a nexus among international trade, intellectual property rights, and economic development in Nigeria. The study used an Autoregressive Distributed lag Approach. The results disclosed a long-term linear relationship among international trade, intellectual property rights and economic development in Nigeria. Specifically, the results unveiled that international trade has a vital impact on the extent of development within the short-term but insignificant long-term. Similarly, intellectual property right has a negative, however insignificant impact on economic development in the long-term. The results confirmed that, despite the degree of trade openness within the economy, it had not triggered the export-based part of the intellectual property right and level of economic development at large, presumably, due to the country's overreliance on foreign merchandise and services within the short-term and long-run. Furthermore, the results showed that a stable economic environment is critical in fostering growth in international trade, and belongings right and economic development at large.

Consequently, the study concludes that international trade and intellectual property rights do not impact Nigeria's level of economic development at the end of the day. Furthermore, the study acknowledged that FDI fosters the extent of economic development both in the short run at last. Also, they confirmed that a stable economics surrounding is critical for international trade and intellectual property right to trigger economic development in Nigeria.

Based on the above, the study recommends that the government give an enabling environment that may attract additional foreign investment. Moreover, the government ought to formulate and guarantee a well-developed institutional framework that will promote intellectual property rights. Besides, they must diversify the economy into different promising sectors. Despite the superb results, the study had some limitations. Crucial of all is that the inaccessibility of data from some key African countries is not available, which will have been helpful in the study. The above would have attracted the utilization of some more recent and

robust technique for an additional comprehensive and broader policy implication such as PARDL and NARDL. Therefore, this paper suggests that in the future, studies such as the impact of trade, intellectual property, and economic development in Africa, the nexus between international trade and intellectual property right in Sub-Saharan Africa, and so on should be embarked upon.

REFERENCES

Adewuyi, A. O. (2002) Balance of Payments Constraints and Growth Rate Differences under Alternative Police Regimes, *Nigerian Institute of Social and Economic Research (NISER) Monograph Series No. 10*, Ibadan, Nigeria.

Ahmed, A. D., & Suardi, S. (2009). Macroeconomic volatility, trade and financial liberalization in Africa. *World Development, 37*(10), 1623–1636.

Almeida, R., & Fernandes, A. M. (2008). Openness and innovations in developing countries: Evidence from firm-level surveys. *The Journal of Development Studies, 44*(5), 701–727.

Anwer, M. S., & Sampath, R. K. (1999). Investment and Economic Growth. *Presented at Western Agricultural Economics Association Annual Meeting, July 11–14, 1999, Fargo, ND.*

Arrow, K. (1962). Economic Welfare and the Allocation of Responses for Innovation. The Rate and Direction of Innovative Activity: Economics and Social Factors. *National Bureau of Economic Research, 2*(1), 1–24.

Awokuse, T. O., & Yin, H. (2010). Does Stronger Intellectual Property Rights Protection Induce More Bilateral Trade? Evidence from China's Imports, *World Development, 38*(8), 1094–1104.

Azeez, B. A., Dada, S. O., & Aluko, O. A. (2014). Effect of International Trade on Nigerian Economic Growth: The 21St-century Experience. *International Journal of Economics, Commerce and Management, 2*(11), 21–34.

Babatunde, M. A. (2017). Are Exports and Imports Cointegrated? Evidence from Nigeria. *Journal of International and Global Economic Studies, 7*(2), 45–67.

Baldwin, R. E., Braconier, H., & Forslid, R. (2003) Multinationals, endogenous growth, and technological spillovers: theory and evidence. *Review of International Economics, 13*(5), 945–963.

Betul, G. (2020). The effect of foreign trade on innovation. The Case of BRICS-T Countries. *International Journal of Social, Humanities and Administrative Sciences*, *6*(27), 819–830.

Brueckner, M., & Lederman, D. (2015). Trade openness and economic growth: Panel data evidence from Sub-Saharan Africa. *Economica, 82*, 1302–1323.

Canh, N. P., Binh, N. T., Thanh, S. D., & Schinckus, C. (2019). Determinants of foreign direct investment inflows: The role of economic policy uncertainty. *International Economics.*

Chang, R., Kaltani, L., & Loayza, N. V. (2008). Openness can be useful for growth: The role of policy complementarities. *Journal of Development Economics, 90*(1), 33–49.

Checherita, C., & Rother, P. (2010). *The Impact of High and Growing Government Debt on Economic Growth an Empirical Investigation for the Euro Area* (ECB Working Paper Series). European Central Bank.

Chen, Y., & Puttitanun, T. (2005), Intellectual Property Rights and Innovation in Developing Countries. *Journal of Development Economics*, *78*(2), 474–493.

Chude, N. P., & Chude, D. I. (2013). Impact of Government Expenditure on Economic Growth in Nigeria. *International Journal of Business and Management Review, 1*(4), 64–71.

Coe, D. T., & Helpman, E. (1995). International R&D spillovers. *European Economic Review*, *39*(5), 859–887.

Delgado, M., Kyle, M., & McGahan, A. M. (2014). Intellectual property protection and the geography of trade. *The Journal of Industrial Economics*, *61*(3), 733–762.

De Soto, H. (1990). *The Other Path: The Invisible Revolution in the Third World.* Basic Books.

De Soto, H. (2000). *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else.* Basic Books.

Dollar, D., & Kraay, A. (2004). Trade, growth and poverty. *The Economic Journal, 114*(493), 22–44.

Edwards, S. (1993). Openness, Trade Liberalization, and Growth in Developing Countries *Journal of Economic Literature, 31*(2), 1358–1393.

Engle, R. F., & Granger, C. W. (1987). Co-integration and Error Correction: Representation, Estimation and Testing. *Econometrica, 55*, 251–276.

Fenira, M. (2015). Trade openness and growth in developing countries: An analysis of the relationship after comparing trade indicators. *Asian Economic and Financial Review, 5*(3), 468–482.

Ferrantino, M. J. (1993). The Effect of Intellectual Property Rights on International Trade and Investment, *Weltwirtschaftliches Archive, 129,* 300–331.

Filippetti, A., & Archibugi, D. (2015). *The Globalization of Intellectual Property Rights*. The Global Handbook of Science, Technology and Innovation. Wiley.

Fink, C., & Primo Braga, C. A. (2005). *How Stronger Protection of Intellectual Property Rights Affects International Trade Flows,* in C. Fink and K. Maskus, eds., Intellectual Property and Development: Lessons from Recent Economic Research. World Bank.

Flores, L. G., & Perez, J. F (2019). Factors which stimulates innovation activity in Latin America: A VECM approach. *Economia, 19*(61), 373–403.

Frankel, J. N., & Romer, D. (1999). Does trade cause growth? *American Economics Reviews, 89,* 379–399.

Freund, C., & Bolaky, B. (2008). Trade, regulations, and income. *Journal of Development Economics, 87*, 309–321.

Gokal, V., & Hanif, S. (2004). *Relationship between Inflation and Economic Growth* (Working Paper 2004/04). Reserve Bank of Fiji.

Gould, D., & Gruben, W. (1996). The Role of Intellectual Property Rights in Economic Growth. *Journal of Development Economics, 48*(2), 323–350.

Gozgor, G., & Can, M. (2016). *Does export product quality matters for Co_2 Emissions? Evidence from China* (MPRA Paper 71873). University Library of Munich, Germany.

Gries, T., & Redlin, M. (2012). *Trade Openness and Economic Growth: A Panel Causality Analysis* (Working Papers CIE 52). Paderborn University, CIE Center for International Economics.

Grossman, G. & Helpman, E. (1991). *Innovation and Growth in the Global Economy*. MIT Press.

Hye, Q. M. A., & Lau, W. Y. (2015). Trade openness and economic growth: empirical evidence from India. *Journal of Business Economics and Management, 16*(1), 188–205.

Hwang, H., Wu, J. Z., & Yu, E. S. H. (2016). Innovation, Imitation and Intellectual Property Rights in Developing Countries, *Review of Development Economics*, *20*(1), 138–151.

Ivus, O. (2010). Do stronger patent rights raise high-tech exports to the developing world? *Journal of International Economics, 81,* 38–47.

Isaac, M., & Ibrahim, K. R. (2019). The effect of international trade flows on economic growth of Uganda. *Journal of Developing Areas, 38*(2), 78–93.

Johansen, S (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica, 59*(6), 1551–1580.

Kamilia, C. (2020). Intellectual property rights, human capital and Innovation in emerging and developing Countries. *Journal of Social Economics Research, 7*(1), 35–41.

Karami, T. I. J., Ghaffari, F., & Taghavi, M. (2011). Market Capital, Intellectual Property Rights and Economic Growth of OPEC Member Countries. A Panel Data Approach. *Proceedings of the 8th International Conference on Intellectual Capital, Knowledge Management and Organisational Learnings, Vols 1 and 2* (pp. 715–723).

Kim, Y. K., Lee, K., Park, W. G., & Choo, K. (2012). Appropriate intellectual property protection and economic growth in countries at different levels of development. *Research Policy, 41*(2), 358–375.

Kim, D. H., Lin, S. C., & Suen, Y. B. (2016). Trade, Growth and Growth Volatility: New Panel Evidence, *International Review of Economics and Finance, 45,* 384–399.

Krueger, A. O. (1978). *Foreign trade regime and economic development: Liberalization attempts and consequences.* Ballinger.

Lawal, E. O., & Kamtochukwu, E. (2017). International trade and Economic growth in Nigeria. *IOSR Journal of Humanities and Social Sciences, 22*(6), 35–43.

Maskus, K. E. (2000), Intellectual Property Rights and Economic Development, *Case Western Reserve Journal of International Law, 32*(3), 471–506.

Maskus, K. E., & Penubarti, M. (1995). How Trade-related are Intellectual Property Rights? *Journal of International Economics, 39,* 227–248.

Muhammad, M. Y., & Benedict, N. A. (2014). The Impact of International Trade on Economic Growth in Nigeria. *European Journal of Business, Economics and Accounting, 3*(6), 26–36.

Musila, J. W., & Yiheyis, Z. (2015). The impact of trade openness on growth: the case of Kenya. *Journal of Policy Model, 37,* 342–354.

Oh, W., & Lee, K (2004). A causal relationship between energy consumption and GDP Revisited: The case of Korea 1970-1999. *Energy Economics, 26*(1), 51–59.

Park, W., & Ginarte, J. C. (1997). Intellectual Property Rights and Economic Growth. *Contemporary Economic Policy, 15*(3), 51–61.

Plasmans, J. E. J., & Tan, J. (2004) *Intellectual Property Rights and International Trade with China* (Working Paper of Department of Economics and CESIT). University of Antwerp, Belgium.

Polat, A., Shahbaz, M., Rehman, I. U., & Satti, S. L. (2015). Revisiting linkages between financial development, trade openness and economic growth in South Africa: Fresh evidence from combined cointegration test. *Quality and Quantity*, *49*, 785–803.

PWC (2020). *Impact of intellectual property infringements on businesses and the Nigerian economy*. https://www.pwc.com/ng/en/publications/intellectual-property-infringement-and-the-nigerian-economy.html

Rapp, R. T., & Rozek, R. P. (1990). Benefits and Costs of Intellectual Property Protection in Developing Countries. *Journal of World Trade, 24*(5), 75–102.

Rigobon, R., & Rodrik, D. (2004). *Rule of Law, Democracy, Openness, and Income: Estimating the Interrelationships* (NBER Working Papers 10750). National Bureau of Economic Research, Inc.

Rivera-Batiz, L., & Romer, P. (1991). International Trade with Endogenous Technological Change. *European Economic Review*, *35*(4), 971–1001.

Rodriguez, F., & Rodrik, D. (2000). Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence. *NBER Macroeconomics Annual, 15*(2000), 261–325.

Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economics, 98*(5), 71–102.

Schumpeter, J. A. (1912). The Theory of Economic Development. Stanford University Press, 1969 (Reprint).

Shin, W., Lee, K., & Park, W. G. (2016). When an Importer's Protection of IPR Interacts with an Exporter's Level of Technology: Comparing the Impacts on the Exports of the North and South. *The World Economy, 39*(6), 772–802.

Smith, P. (1999). Are Weak Patent Rights a Barrier to U.S. Exports? *Journal of International Economics, 12*, 125–145.

Thompson, M. A., & Rushing, F. W. (1999). An Empirical Analysis of the Impact of Patent Protection on Economic Growth: An Extension. *Journal of Economic Development*, *24*(1), 67–76.

Ulaşan, B. (2015). Trade openness and economic growth: Panel evidence. *Applied Economics Letter, 22*(2), 163–167.

Vamvakidis, A. (2002). How Robust is the Growth-Openness Connection? Historical Evidence. *Journal of Economic Growth, 7*(1), 57–80.

Vlastou, I. (2010). Forcing Africa to open up to trade: Is it worth it? *The Journal of Developing Areas, 44*(1), 25–39.

Were, M. (2015). Differential effects of trade on economic growth and investment: A cross-country empirical investigation. *Journal of African Trade, 2*(1-2), 71–85.

Willoughby, K. W., & Mullina, N. (2019). Endogenous innovation, outward-bound international patenting and national economic development. *Intellectual Rights: Challenges of the 21st Century: Proceedings of the International Conference* (November 14-16, 2019). Tomsk, 2019.S. 165–170.

Yang, G., & Maskus, K. (2009). Intellectual Property Rights and Licensing: An Econometric Investigation. *Weltwirtschaftliches Archiv, 137*(1), 58–79.

Yanikkaya, H. (2003). Trade Openness and Economic Growth: A Cross-Country Empirical Investigation. *Journal of Development Economics, 72*(1), 57–89.

Yıldırım, D. Ç., & Arun, K. (2019). Effects of Economic Clusters, FDI and R&D on Innovation: Developing Countries in European Monetary Union Example. *International Journal of Innovation, 7*(2), 236–251.