

International Trade, Consumer Protection and Public Health in Nigeria: An Empirical Analysis

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Abstract: The paper empirically examines the nexus between foreign trade, consumer protection and public health in Nigeria, using annual time series data from 1981 to 2021. Cointegration and dynamic error correction modelling techniques were utilized in the analysis. The empirical findings show that foreign trade policy has a positive and significant effect on public health in Nigeria. Consumer protection (proxied by consumer protection dummy) and per capita income are both positively related to public health, although the effects are weak, attributable to the low level of consumer protection and awareness, in addition to the low level of per capita income that fuels income and wealth disparity, with the effect of reducing health outcomes in Nigeria. Public expenditure on health and inflation rate (proxy for macroeconomic policy environment) are negatively and significantly related to public health outcomes in Nigeria. Based on these findings, it is recommended that appropriate consumer protection awareness on public health concerns through greater level of public campaigns on the dangerous effects of imported fake, substandard and illicit goods that are inimical to public health be aggressively launched. Increase government expenditure on health institutions, as well as judicious and efficient deployment of public and private resources to the health sector is also important to enhancing health outcomes in Nigeria. A strong institutional and regulatory environment to curtail illicit and nefarious importation of fake and substandard goods, particularly pharmaceuticals and food into the country is important, in addition to a sound and stable macroeconomic environment that is capable of promoting the public health status of the citizenry in Nigeria.

Keywords: Trade, Consumer Protection, Public Health, ECM, Nigeria

JEL Classification: F1, F18, D18, I12, I18

1. INTRODUCTION

It is now globally accepted that increase foreign trade between or among nations is important to the sustenance and well-being of the participating countries. Globalization and trade liberalization has introduced a new

concept of trade, which is trading without borders; the consequence of which has been outright proliferation and transmission of goods across borders, since markets are no longer confined. Increased foreign trade, if well managed and harnessed, not only engenders economic wellbeing of the populace, but also enhances the health and living standards of the people (Ozekhome, 2015). Standard trade theories assert that increased trade can engender welfare gains through efficient allocation of resources, exposure to international competition, transfer of goods and services, technology and knowledge spillovers and access to foreign market (Choi & Diaz, 2011). Nevertheless, the beneficial effect of trade can only be guaranteed in the presence of strong institutional and regulatory framework that enhance public welfare in the consumption of foreign goods with respect to consumer protection, against sub-standard and sub-optimal goods .

In general, assessing the effects of international trade on the socio-economic well-being of the people is measured not only in terms of the consumption of goods traded (imported goods in this context), but in terms of the quality, safety and health-fitness of such goods (WHO, 2006). It is against this backdrop that various standard regulations that assess the health-fitness of the goods produced or imported into the country have been put in place by the government through regulatory agencies. While international trade brings with it numerous benefits in terms of public welfare and health, a number of health-related risks and hazards are prone if strong regulatory and supervisory framework that promotes consumer protection are not adopted and implemented (Rilland, 2014). For instance, effective and robust consumer protection mechanisms through appropriate regulatory and institutional framework are required to guard against dumping of hazardous goods in the country, and thus, enhancing public health welfare. Dumping of substandard goods that fall short of the required regulatory standard have detrimental effects on the health well-being of the citizens of any country (Brian, 2013).

The goal of consumer protection against substandard products and unethical and unfair trading is therefore, to promote the economic and social and health well-being of the people through shared purpose and information dissemination (UNCTAD, 2010). Through international trade, fake and substandard goods, including consumables can find their way into the country. Over the past years, expired medical drugs, medical equipment and food that are hazardous to human health being have been smuggled into the country.

While it also seems logical that increased trade enhances the economic well-being and health of the citizenry, if proper consumer protection and

regulatory structures are not implemented, these may be jeopardized. However, an empirical investigation is required to support this. It is in this regard that this study has become imperative (Pischas & Gerserter, 2017). Sequel to the above discussions, the study seeks to empirically examine the nexus between trade, consumer protection and public health (i.e public well-being) of the citizenry in Nigeria. This aspect of analysis seems to be missing in the literature, as it has not been investigated hitherto, thereby necessitating an important gap in the extant literature that needs to be filled, for which this study becomes handy. In addition, against the backdrop of the importance of a medically sound human workforce to productivity, output and growth, this study become important for policy perspectives.

Aside the introductory Section, Section 2 provides a review of the pertinent literature. Section 3 contains the methodology and empirical strategy. The empirical results and analysis are provided and discussed in Section 4, and Section 5 concludes the paper with some evidence-based policy perspectives.

2. LITERATURE REVIEW

2.1. Theoretical Issues on Consumer protection and Public Health

Consumer protection describes privacy, confidentiality and security measures that protect the personal data of consumers of goods and services, through regulatory, legal and institutional settings. It is the practice of safeguarding buyers of goods and services and the public, against unfair practices in the market place. The law often establishes consumer protection measures. Such laws are intended to prevent businesses from engaging in fraud or specified unfair practices, in order to gain advantage over competitors or to misled consumers. They could also provide additional protection to the public that may be impacted by a product (or its production), even when they are not the direct purchaser or consumer of that product. For instance, government regulations may require businesses to disclose detailed information about their products, particularly in areas where public health or safety is an issue, as in the case of pharmaceuticals, food or automobiles. Consumer protection is connected to the idea of consumer rights and to the formation of consumers organizations that help consumers make better and informed choices in the market place and pursue complaints against businesses that contravenes safety health standard of goods and services. Consumer protection and public health of safety therefore goes hand in hand.

Nigeria, is regarded as a heavily import dependent nation, given its low industrial base. As a result, most of the required goods and services

are imported. Given its high import dependent nature, large volume of goods and services flow in to the country via the channel of international trade. Much of the merchandise goods and consumables that flows into the country are manufactured goods such as pharmaceuticals cars, capital machineries, chemicals, e.t.c. These goods are usually subjected to regulatory inspection and quality conformity in order to ensure that they meet certain stipulated standards. Of particular importance are drugs and food substances, which are the most adulterated and distorted. Since imported products, particularly drugs and food substances that do not meet regulatory standards are by far, the greatest threat to public health, close and effective monitoring, inspection and assessment are required (Rilland, 2014).

In line with the maxim that 'a single fake drug or food substance can wipe out an entire nation,' various regulatory agencies like the National Agency for Food and Drugs Administration and Control (NAFDAC) and Standard Organization of Nigeria (SON) were established. The NAFDAC was established by Decree 15 of 1993, to regulate and control the manufacture, importation, exportation, distribution, advertisement, sale and use of food, drugs, cosmetics, chemicals, medical services and packaged water (known as regulated products). These regulatory agencies have been on the toe of importers of fake products into the country. Both agencies are concerned with the regulation and control of drugs and food related products, the consumption which if not properly and closely monitored to ensure quality standards, may have wholesale detrimental effect on the health of the citizenry. Despite the activities of these regulatory and standard agencies, sharp and unwholesome practices have still been witnessed over the years in Nigeria, arising from structural hiccups, weak legal and instructional framework and the problem of accessibility in the case of routine checks and inspection.

Given the rising trend of fake and substandard products that are either imported or domestically produced, the NAFDAC has assumed greater prominence given her jurisdiction that covers both food and drug-related products, while that of SON concerns primarily with food and other consumables. The institutional set ups of both agencies are important to the public health safety of Nigeria, as cases of highly sub-standard and proliferated drugs and food substances have been widespread in the country, with many people becoming vulnerable, leading to unexpected deaths, in many instances. With the increased level of globalization and trade, the destructive effects of sub-standard goods, particularly, drug related goods and chemical have become more discernible. While greater attention has been placed by the regulatory agencies on foreign imported

drugs and food, increased attention has also been placed on the domestic environment, as the public health safety of the people is of paramount importance, given the numerous cases of fake drug manufacturers and substandard foods all over the country. Through the regulation and enforcement of legislation on food safety and pharmaceuticals, the health of the consumers is protected by the conscious reduction of exposure to health hazard products.

As regard, consumer protection, a number of stipulated provisions are designed to protect the rights of the consumer against substandard products and unethical, unfair sharp and unwholesome practices (Bernauer & Meins, 2002). For example, the Consumer Protection Act (CPA) is aimed at protecting the consumer against specified unfair practices. This, being motivated by the fact that if the rights of the consumer are not guaranteed and protected, he/she might be a victim of unfair practices by fraudulent and deceitful merchants. The consumer's right, in such instance is protected under various consumer regulatory provisions that that enables him / her get the true money worth of the purchased good. Effective and improved consumer protection rights, therefore, enhances the health safety of consumers, and ultimately guarantees their longevity in terms of life expectancy.

While few studies have examined the link between foreign trade and public welfare, no study exist in the Nigerian context that has examined the nexus between international trade, consumer protection and public health. Such analysis is highly important, given the critical significance of public safety. It is the recognition of this fact that has warranted this study.

2.2. Empirical Literature

2.2.1. Trade and Public Wellbeing

Bhagwati and Srinivasan (2002) find evidence of the dynamic gains of trade in terms of better living standard, enhanced welfare and well-being of the people. They show that enhanced trade fosters the well-being of the people through equitable distribution of the economic gains from trade.

Osabuohien (2007) investigates the impact of trade and government expenditure on economic performance (economic and social well-being in this context) of ECOWAS member countries, using data from Nigeria Ghana over the period 1975 to 2004. The results from the cointegration and vector error correction model show a long-run relationship between trade, real government expenditure and economic well-being in Ghana and Nigeria.

Obadan and Okojie (2010) examine the impact of trade on economic performance in Nigeria. They employed OLS technique on annual time series data. The findings show that trade has a significant impact on economic well-being of the citizenry.

Iyoha and Okim (2017) examine the impact of trade and government expenditure on economic welfare of ECOWAS countries. Employing panel data that covers the period 1990-2013, for a fixed effect model, the results show that increase trade and expenditure on human capital (i.e health and education) stimulates better living standards.

2.2.2. Consumer Protection and Public Health

In the literature, only few studies have empirically examined the link between consumer protection and Public health safety. Some of the existing studies include Bidin (2009), who examined the issue of counterfeit medicine in Indonesia, Rahman (2012) that explored the issue of fake drugs as a challenge in Malaysia. Other studies are Abdul-Rahman (2012), who focused on the consequences of illegal advertisement of fake products; Ismail (2013), whose study concentrated on counterfeit medicinal product; and Zakum et al, (2014) that examined the relationship between consumer protection and public health safety.

The study by Tigerstrom (2016) explores the link between consumer protection and public health in the US. He submits that that the potential for a consumer protection perspective to complement public health lies in approaches in designing and justifying effective and efficient laws that aim to promote healthier food and drugs in terms of quality standards, prescriptions, labelling regulations or restrictions on marketing and advertising.

Rolland (2014) examines the effect of consumer protection in the context of new frontier of trade liberalization on the well-being of people. Employing a descriptive approach, he finds that consumer-oriented rules have become increasingly important to enhancing the welfare of the consumer against sub- standard products and unfair practices.

Rossi (2017) examines the relationship between consumerism (consumer protection-oriented policies and practices) in global trade and consumer well-being, using evidence from China. He finds a strong association between consumer protection laws and consumer welfare. He further suggests that trade regulatory rules and provisions enhances consumer well-being.

2.2.3. Health Policy and Public Health

Gupta, Verhoeven and Tiongson, (2001) using data for the 1990-999 period on a sample of 70 countries find positive effects of public health policy on public health outcomes. Specifically, the findings show that enhanced health expenditure and pro-health policies, such as consumer health protection, enhances public health.

Baldacci, Guin-Siu and Mello (2002) use cross-sectional data involving 94 countries to examine the nexus between public health expenditure policy and public health safety. The results from the Ordinary Least Squares (OLS) and Two Stage Least Squares (2SLS) show that increased public health expenditure policy raises the public health status, through the reduction of infant and child mortality.

Ayanwu and Erhijakpor (2007) investigate the effect of health expenditure policy on health outcomes in Africa, using data for 47 African countries. Employing the OLS and 2SLS technique, the results show that better health expenditure has a statistically significant effect in raising the public health status (life expectancy) of Africans.

Novignon *et al* (2012) investigate the impact of public and private health expenditure and other health policies on health status in Sub-Saharan Africa. Using the generalized least square estimator (GLS) on both the fixed and random effect models for 44 SSA countries, the findings show that health expenditure and other health-enhancing policies leads to improvement in life expectancy at birth, with the effect of public health expenditure higher than that of private health expenditure. Other studies that found a significant nexus between macroeconomic variables and public health are Yagihashi and Du (2015) that constructed a general equilibrium model to generate inflation dynamics and cyclicity of health in the US, when the model is subjected to an expansionary monetary policy shocks; Boyce and Brown (2019) that assessed the economic and social impacts and benefits of health system in the context of macroeconomic and financial policies and the World Health organization (2021) that examined the nexus between foreign trade policies, consumer protection and public health safety.

From the review of the pertinent literature, there is paucity of empirical studies on the foreign trade-consumer protection-public health nexus using evidence from Nigeria. It is therefore the intention of this study to extend the literature in view of the foregoing gap, to adduce empirically-oriented policy perspectives that are important to promoting public health, in the light of the impinging role of international trade and consumer protection.

3. EMPIRICAL METHODOLOGY

3.1. Model Specification

In order to examine a more systematic relationship between trade, consumer protection and public health in Nigeria, we specify a stylized trade-consumer protection –public health model- in the functional form as:

$$PH_t = f(\text{TRADE}_t, \text{CPD}_t, X_t) \quad (1)$$

Where:

where PH = Public health- measured as Life expectancy- indicating the years from infant to adulthood, given that the promotion of public health enhances life expectancy; TRADE is total volume of international trade- measured as sum of exports and imports to GDP percent; CPD = Consumer protection Dummy, where, 1 indicates years of explicit consumer protection legislation and other regulatory and institutional framework in Nigeria, and 0 otherwise; X is a vector of macro-economic variables, according to the literature, that largely influence public health, and therefore impact on the assumed relationship; and t is time. The inclusion of these variables is to avoid, as much as possible, omitted variable bias. The variables are government expenditure on health (GEH) as percentage of total public expenditure; per capita income –measured as real GDP per capita (RGDPP); and inflation rate- a proxy for the macroeconomic policy environment, measured as the changes in the consumer price index. On inclusion of these variables, the expanded functional model is captured in the form:

$$PH_t = f(\text{TRADE}_t, \text{CPD}_t, \text{GEXH}_t, \text{RGDPPC}_t, \text{INF}_t) \quad (2)$$

The empirical form of the model is thus, specified in the form:

$$PH_t = \alpha_0 + \alpha_1 \text{TRADE}_t + \alpha_2 \text{CPD}_t + \alpha_3 \text{GEXH}_t + \alpha_4 \text{RGDPPC}_t + \alpha_5 \text{INF}_t + \varepsilon_t \quad (3)$$

The *a priori* expectations are $(\alpha_1, \alpha_2, \alpha_3, \alpha_4) > 0$; $\alpha_5 < 0$

Where $\alpha_0 - \alpha_5$ are parameters to be estimated and ε is the error term.

3.2. Method of Data Analysis and Sources of Data

The study employs unit root testing, Cointegration, Error correction Model (ECM) to examine the empirical nexus among foreign trade, consumer protection and public health in Nigeria. As a prelude to this, the unit root properties of the time series variables is investigated, since the regression of non-stationary time series variable on another may yield spurious and inconsistent parameter estimates (Engle & Granger, 1987). The study covers

the period of (1981 – 2021). The data are obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank Development Indicators (WDI).

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Unit Root Testing

Unit root test involves test of stationary for variables employed in regression analysis. Stationarity of time series is hinged on the fact that non-stationary time series cannot be applied to an extended period apart from the present. This makes forecasting and policy inferences based on them of little practical value. Besides, the regression of a non-stationary time series on another may produce spurious and nonsense correlations. The results are presented in levels and first difference in table 1, using the Augmented Dickey Fuller (ADF) test.

Table 1: Unit Root Stationary Test for Variables in Levels and First Difference

<i>Variables</i>	<i>ADF Statistic (in Levels)</i>	<i>ADF Test Statistic (in First Difference)</i>	<i>Order of Integration</i>	<i>Remark</i>
PH	-1.022	-5.887**	I(1)	Stationary
TRADE	-1.162	-5.772*	I(1)	“
CPD	-1211	-6.211**	I(1)	“
GEXH	-1.332	-6.098**	I(1)	“
RGDPPC	-1.530	-5.450*	I(1)	“
INF	-0.997	-5.168*	I(1)	“

*(**) denotes significance at 5% (1%) level

Source: Authors' computation

From the unit root test results, the null hypothesis of no unit root could not be rejected for the time series variables at the 5% level of significance. This implies that the variables are non-stationary at levels. Following Box and Jenkins (1994), that non-stationary time series variables can be made stationary by differencing them, the variables were subjected to the first-differencing mechanism. After the first differencing, the variables became stationary. The variables are therefore, first difference-stationary. They are thus integrated of order one (i.e. I [1]).

4.2. Test of Cointegration

Having established that the series in the analysis are not stationary at levels, the test of cointegration is conducted on them. The Johansen multivariate

cointegration test approach is used for this analysis. The result from the test is presented in Table 2. As can be inferred from the table, both the λ -max and the trace test statistics indicate that there is at least five significant cointegrating vector among the variables since the hypothesis of no cointegrating vector ($r=0$) is to be rejected. Apparently, the number of cointegrating relations or vectors (indicated by r) is at least five. The implication of this is that a long run relationship exists between international trade, consumer protection and public health in Nigeria.

Table 2: Johansen Multivariate Cointegration Tests Results

<i>Trace Test</i>			<i>Maximum Eigenvalue Test</i>			
<i>Null Hypothesis</i>	<i>Test Statistic</i>	<i>Critical Value</i>	<i>Null Hypothesis</i>	<i>Test Statistic</i>	<i>Critical Value</i>	<i>Hypothesized No of CE(s)</i>
$r = 0^*$	118.30	87.43	$r = 0^*$	83.25	65.71	None**
$r \leq 1^*$	96.42	66.35	$r = 1^*$	61.45	49.84	At most 1**
$r \leq 2^*$	77.23	45.20	$r = 2^*$	38.43	35.24	At most 2**
$r \leq 3^*$	52.04	27.23	$r = 3^*$	21.02	18.62	At most 3**
$r \leq 4^*$	22.02	14.84	$r = 4^*$	11.40	10.82	At most 4**
$r \leq 5^*$	1.01	1.03	$r = 5^*$	1.01	1.03	At most 5*

*(**) denotes rejection of the hypothesis at 5% (1%) significance level.

Source: Authors' computation

4.3. Error Correction Model (ECM)

The results of the short-run dynamic error correction model, showing the response of public health to trade, consumer protection and other variables is presented in Table 3. The Autoregressive Distributed Lags (ARDL) approach is used for the ECM. The error correction mechanism result indicates that the model has impressive diagnostic statistics. The adjusted coefficient of determination (R^2) of 0.83 indicates that the explanatory variables and the ECM explain 83 percent of the systematic variations in public health. The model thus has a good fit, with high predictive capacity. The overall performance of the model as determined the F-statistic of 37.3 is high and significant at the 1 percent level. Thus, the hypothesis of a significant linear relationship between public health and all the independent variables in the short run is validated.

The contribution of each variable to the short-term movement in public health safety (proxied by life expectancy) is determined by observing the signs and t-ratios of the individual coefficients of the explanatory variables. A close investigation shows that all the coefficients have the expected signs, except that of health expenditure. The coefficient of the first lag of public health welfare is positively signed but not significant. Thus, past realized

Table 3: Error Correction Model Results

Dependent Variable: PH		
<i>Variable</i>	<i>Coefficient</i>	<i>T-ratio</i>
D(PH(-1))	0.0721	1.3310
D(TRADE)	0.2252	2.8771***
D(CPD)	0.0214	1.8072**
D(GEXH)	-0.1251	-2.1223**
D(RGDPPC)	0.2254	1.6602
D(INF)	-0.0853	-2.0312**
D(INF(-1))	0.0042	1.0174
C	0.1093	0.9216
ECM(-1)	-0.7532	-2.8541***
R-squared	0.88	
Adjusted R-squared	0.83	
F-statistic	37.3 (0.000)	
Breusch-Godfrey Serial Correlation	0.93 (0.85)	
LM Test Statistic		

*, **, *** denotes rejection of the hypothesis at 10%, 5% and 1% significance levels.

Source: Authors' computation

public health levels tend to induce greater level of public health safety through greater public education, orientation, awareness and prioritization of consumer health safety goods.

The coefficient of trade is appropriately positive and significant at the 5 percent level. This implies that increase trade tend to enhance the socio-economic well-being and health safety of the people in terms of better standard of living and greater ability to afford the necessary health facilities required to maintain an improved life expectancy. The coefficient of consumer protection dummy is positively signed, implying that increased regulatory activities in terms of consumer protection tend to enhance public health safety in Nigeria. Its t-ratio is significant only at the 10 percent level; an indication of the weak consumer protection in Nigeria, characterizing sharp and unwholesome practices on the part pf producers or sellers of fake and substandard goods, in addition to the weak legal, regulatory and institutional mechanisms. Invariably, greater and improved consumer protection tend to stimulate higher life expectancy of the citizenry through the elimination of fake and sub-standard goods, thus guaranteeing the consumption of high quality goods that are worth the true value of money on goods purchased. The coefficient of government expenditure on health is negatively signed and significant at the 5 percent level. The rather unexpected negative sign is due to the poor health expenditures over the

years, in addition to the pronounced corruption and diversion of resources meant to increase public health safety prevalent in Nigeria. With such pronounced corruption, the health sector has remained comatose and unable to deliver quality health outcomes.

The coefficient of per capita income is appropriately signed but fails the significance test. This insignificance could be explained by the rather low per capita income level in Nigeria, which makes it difficult for the poor citizens to afford basic health needs, particularly the required pharmaceuticals. Added to this, is the pronounced income inequality prevalent in Nigeria, where a large chunk of the resources and wealth is held by a few to the detriment of the larger population. This makes it difficult for such extremely low-income earners to afford the necessary health and medical facilities needed to stay alive, thus leading to poor health outcomes in Nigerian. This has tended to precipitate a vicious cycle of low per capital health spending and consequently, poor health outcomes in Nigeria, manifested in low life expectancy, particularly high infant and undermortality rates. Finally, the coefficient of inflation is negatively related to public health and significant at the 5 percent level. Thus, poor macroeconomic policy environment has an outright destabilizing effect on public health safety, since rising inflation rates makes it extremely difficult for the already impoverished citizens to afford the basic health needs.

The post- diagnostic test for the robustness and validity of the results obtained show that the results are satisfactory. The post-estimation evidence leads to the non-rejection of the null hypothesis of no serial correlation {with F-Statistic = 0.93 (0.85)}. There is thus no significant evidence to invalidate the model, considering the fact that the estimates are robust in the absence of serial correlation. The estimated model can therefore be used for structural and policy analysis., particularly with respect to policies aimed at enhancing public health safety in Nigeria.

Apart from the diagnostics, the error correction term has the correct negative sign and is significant test at the 5 percent level. Thus, any short-term disequilibrium (perturbation) in the system will be restored in the long-run. Its coefficient indicates that over 75 percent of the long run contemporaneous adjustment due to short-term disequilibrium is completed within the first year.

5. CONCLUSION AND POLICY PERSPECTIVE

This paper empirically examined the nexus between foreign trade, consumer protection and public health in Nigeria. This is predicated on the view that international trade and consumer protection both impinges on public health.

Using annual time series data covering the period 1981-2021, and the techniques of cointegration and error correction model, the empirical results reveal that trade is positively and significantly related to public health in Nigeria. Government expenditure on health is negative, due to the debilitating effects of corruption and routine diversion of resources meant to improve the health sector into private pockets in Nigeria. The effects of consumer protection and per capita income are both positive but not significant, indicating weak consumer protection and low per capita income in the country. Inflation, on the other hand, is negatively and significantly related to public health safety, an indication that poor macroeconomic environment adversely affects public health well-being.

Based on these empirical findings, we recommend the implementation of robust income-enhancing policies, particularly through the equitable and fair distribution of resources (i.e. distributive justice) that will enhance public health in Nigeria. Proactive government policies directed towards the health sector through increased health expenditure and prioritized spending, as well as judicious use of health resources meant for the sector are imperative. Strong legal, regulatory and institutional mechanisms geared toward enhancing consumer protection in Nigeria are also important, in addition to sound and stable macroeconomic policy environment.

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