

The Infant Manufacturing Industry Argument on Tariff: the Nigeria Hypothetical Example

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Abstract

This study was set to establish the fact that infant industries argument in favour of Nigerian manufacturing sector still holds. This is owing to its strategic importance in promoting the nation's economic growth. This study employed OLS method to analyse the secondary data obtained from Central Bank of Nigeria statistical bulletin from 1988-2010. The Regression result shows that tariff impacts positively on the growth of manufacturing sector while, inflation, interest rate and import impact negatively. Specifically, the analyses revealed that inefficiency in the manufacturing sector is mostly caused by high interest rate. Since tariff and import are insignificant determinants; Nigerian manufacturing sector can thrive in the presence of foreign competition if government can address more significant issues. It is on this note that we recommend a shift in attention to the provision of sound and effective economic policies as well as good management of the monetary sector as a way out of persistently high interest and inflationary rate problem. Improvement in the provision of physical infrastructure notably in the area of power supply will also be thought geared towards the right direction

Keywords: Tariff, Manufacturing output, Free trade, Protection, Import

1. Introduction

1.1 Background To The Study

No country is an island. Trade is considered an important part of a nation's economic activities. International trade is explained to owe its origin to varying natural resources, climatic conditions, and technical knowledge of different countries of the world (Oloyede, 2002). David Ricardo (1815) a classical economist formulated comparative cost theory. It presumes that there would be an increase in world output, wider market, varieties, technological transfer, and enhanced standard of living if every nation specialises in production and exchange of goods for which her resources are most suitable (Bay, 2005).

An overview of Nigerian economy may be incomplete without mentioning its trade relationship with other countries. Establishment of multilateral ties with other countries is believed to have improved the country's trade over the years. Nevertheless, it is now generally believed that free trade is not a realistic or appropriate commercial policy for the developing countries whose objectives is to accelerate economic development, and hence the argument for protection (Adedayo, 2006). Tariff is one of the instruments of protection in Nigeria. It is associated with protectionism; the economic theory of restraining trades among nations. Tariff is a tax levied by the state usually on imported commodities (Oladapo, 2010).

Tariff policy have evolved over the years as not only a means of generating revenue for the government but also as tool for achieving other policy objectives like industrialisation (via production of infant industry and import substitution) and a rapid economic growth (Akinlo, 1996). Tariff has found increasing application as a discriminatory tool of restraining the importation of certain commodities in Nigeria (Alaba, 2000). This is in a bid to avoid competition with local market often refers to as infant industry argument in favor of protection. Conversely, the proponents of free trade consider protection as a check on industrial growth and argue that protection tends to become a permanent features as protected industries continues to be considered as infant. As a matter of fact, the impacts of protection in the forms of tariff enjoyed by Nigerian companies remain vague and it is essentially a matter of empirical findings/investigation. Several studies have been carried out on Nigeria trade openness and economic growth (Adegbelemi, Onakoya and Fasanya, 2012) others have focused on the performance of manufacturing firms and power (energy) (Ku and Gohl, 2010; Malik, Teal and Baptist, 2004; Alaba, 2000; Akinlo, 1996; Ukaegbu, 1998; Hale, 2002). However, there exists a dearth of empirical studies on the impact of tariffs on the performance of Nigerian manufacturing sector. It is expedient to conduct a research that seeks to provide answers to the following questions: does tariff improve the performance of manufacturing organisations? Is tariff an important determinant of growth in manufacturing sector? Can infant industry argument for tariff be justified in Nigeria? Are there other factors which drive the growth of Nigerian Manufacturing sector? What can be done to improve the performance of Nigerian manufacturing organisations?

This paper is organised into sections. The first section is the introduction, followed by review of literature, methodology, results and discussions and lastly policy recommendations.

2. Review Of Literature

Oluwole (2011) defines tariff as a means of generating revenue for the government for the improvement of the welfare of her citizenry or serves as a protection for infant industries. Tariff

reduces import by raising prices. Tariff makes the price of imported goods to be doubled (Enebong, 2003). The rationale for tariff and other restrictive measure employed by most less developed countries is to protect infant industries or to keep non-essential imports while capital items and other essential import are encouraged (Adebayo, 2006).

In the past, tariff formed a larger part of government revenue and was derived as a means of augmenting revenue from direct taxes which in the main formed the earliest sources of government income. Consequently, the tax revenue and individual assessment rise, and there is a variation in customs and needs because of the prosperity and living in which they have immersed, with time the scope of tariff is shifted to the traditional revenue generation motive but found increasing relevant as a discriminatory tool. Nigeria embarked on a major trade liberalisation policies in 2001. This witnessed the removal of import quota and lowering of tariffs such that the average tariff rate is less than 10%. These changes, in addition to export subsidies, enable the country to remove the anti-export bias from its external incentive regime. The impact of these policies has received appreciable attention from researchers (Kola, 2006). There are other liberalisation options opened to Nigeria government. One is across the board under which the country would completely remove its tariffs and export subsidies. The second option is to consider sectoral liberalisation of tariffs and subsidies. The final option is to implement harmonisation of Nigeria tariff structure to the common external tariff of the European community.

Anthony (2010) observed that inefficiency in Nigeria customs can be attributed to import ban and high tariff without positive effect on the manufacturing sector which it is designed to protect. In their extensive study of Nigerian trade policy, Raballand and Edward (2001) revealed a negative link between import and Nigerian economic growth. From 1980's to date, dependency on oil revenue, poor infrastructure, lack of skilled labour, inadequate financial resources, poor management and planning are the major problems inhibiting growth and development of Nigerian manufacturing sector (Ku, *et al*, 2010). Nigeria Bureau of Public Enterprises attributed inefficiency in Nigerian manufacturing sector to unfair tariff regime, dumping, high interest rate, unpredictable government policy, ineffective regulatory agencies, and infrastructural inadequacies, lack of skilled work force among others. These factors were further confirmed by Dipak and Ata (2003), UNIDO (2006), Alli (2008), Malik, *et al* and Adenikinju and Alaba (2000) added corruption and bureaucracy. Onayemi (2007) stressed that manufacturers incur high expenses on energy resources consumed in manufacturing process as oil price rises. Nigeria economy is determine by oil production and oil prices.

Adenikinju and Chete (2002) conducted a study on the performance of Nigerian manufacturing sector. They observed a satisfactory performance during 1970–1980 and decline in the 1980's due to oil price collapse in the international market. Measures adopted by government to control her trade include import licenses and tariffs and restriction of importation of certain commodities. Consequently, Manufacturers suffered a massive cutback in raw materials and spare parts subsequent decline in capacity utilization. Their findings were supported by the work of Anyawu (2000), Ukaegbu (1998) and Manufacturing Association of Nigeria (MAN) found that, for the period between 1980 – 1989, a generally negative trend in the growth of manufacturing sector. Dipak and Ata (2003) noted that trade restriction as a result of oil price crisis was the major factor responsible for decline in manufacturing growth rate and output by

25% between 1982 – 1986 and the resultant decline in the share of manufacturing sector in the total GDP.

Adegbemi, Onakoya and Fasanya (1994) studied the effect of trade policy in the performance of Nigerian manufacturing sector after 1985 and found that the adoption of a flexible exchange rate alongside some trade liberalisation policies brought some major changes such as reduction in tariff and trade rate. For instance, duties on raw materials and spare parts were reduced while tariffs on commodities which could compete with locally made goods were raised in a bid to provide local manufacturers with sense of protection. Kola (2006) considered the welfare aspect of tariff. He opined that piecemeal across the board tariff reduction cannot always be beneficial except it is coordinated with export subsidy reduction to ensure welfare gain. Divergence between domestic commodity price ratio and marginal ratio of transformation may be induced by external economics. Therefore, due largely to distortion in the economy, the exportation of commodity abroad would not be plausible (Anthony, 2010). Adenikinju and Alaba (2000) evaluated the relationship between productivity/performance and energy consumption within manufacturing organizations. Despite the fact that efficiency and productivity are related to energy supply and prices, reforming the energy sector alone would be myopic as the sector kept to adoption of old technology. Hence, the recommendation of energy reform alongside the adoption of advanced energy – efficient technology devices and techniques.

Alli (2008) reviewed the study of MAN (2007) and discovered that only few say 10% of manufacturing companies are operating at a sustainable level while whopping 60% are on the road to distress/ liquidation. Enebong (2003) predicted further decline in the performance of manufacturing organization as a result of backward integration and inward orientation strategies of government in the late 1990's. Import barriers, tariffs licenses lead to unavailability to raw materials and minimize the role of private sector. Adegbemi, Onakoya and Fasanya, (2012) carried out an empirical analysis on trade openness and Nigerian manufacturing sector growth and found that there exists a significant pay off from the theory of trade liberalisation. However, inflation rate and exchange rate exerts negative influence on the the Nigerian manufacturing sector performance

3. Methodology

3.1 Research Design

The data used for this study were predominantly secondary. They were time series data obtained from Central Bank of Nigeria (CBN) publications and other sources. Manufacturing output, consumer price index, import and interest rate and tariff were specifically sourced from the CBN statistical bulletin. The estimation technique employed in this study was a parametric statistical technique since the research is experimental and data are quantitative in nature. We shall test the above hypotheses using the Ordinary Least Square (OLS). Hence the multiple regressions technique is used to estimate the parameters the objective being to minimize the error term with a view of finding the regression equation that explains the data.

3.2 Research Hypotheses

To the questions stated in the introductions of the study, temporary answers are given below

- i. Tariff will not significantly impact on manufacturing output
- ii. Import will not significantly impact on manufacturing output

- iii. Interest rate will not significantly impact on manufacturing output

3.3 Model Specification

In order to capture the relationship between tariff and manufacturing output, empirical model that incorporates the effect of tariff on manufacturing output were specified below. The model is a multiple regressions specified as follows:

$$MAN = f(CPI, IMP, INT, TRF, U) \dots\dots\dots (1)$$

i.e

$$MAN = B_0 + B_1CPI + B_2IMP + B_3 INT + B_4 TRF + U \dots\dots\dots (2)$$

Where

MAN = Manufacturing Contribution to GDP

CPI = Consumer Price Index

IMP = Import

INT = Interest rate

TRF = Tariff

U = Stochastic Error Term

$B_0 - B_4$ = Coefficients of each of the independent variables

By log linearising the model becomes,

$$\text{Log (MAN)} = B_0 + B_1 \text{Log (CPI)} + B_2 \text{Log (IMP)} + B_3 \text{Log (INT)} + B_4 \text{Log (TRF)} + U \dots (3)$$

Where:

Log = Natural Logarithm

On a priori, coefficients of LCPI and LIMP are expected to be negative while coefficients of LINT and LTRF are to be negative

4. Results And Discussion

4.1 Ordinary Least Square (Ols) Regression Result

The result of ordinary least square estimation is presented in table 4.1

Table 4.1:

Results of the Ordinary Least Square Regression

Model coefficients					
MAN	C	LCPI	LIMP	LINT	LTRF
B	0.017852	-0.131822	-0.053606	-0.438798	0.0175055
Standard error	0.682899	0.075741	0.070627	0.158070	0.085307
t-statistic	0.026142	-1.740445	-0.758996	-2.775974	2.052062

$R^2 = 0.9215$, $F = 52.873$, $D. W = 1.9$

Source: Researchers' Computation Using E-Views Statistical Package

$$LMAN = 0.01785 - 0.1318 LCPI - 0.05361 LIMP - 0.4388 LINT + 0.1750LTRF$$

The result in table 4.1 shows that LTRF has positive relationship with manufacturing output in Nigerian. On the other hand LCPI, LINT and LIMP all have negative relationship with manufacturing output. That is to say, a unit rise in LTRF will bring about 0.1750rise in MAN. This is consistent with our expectation. However, the coefficients of other parameters are negative,

meaning that they have decreasing effect on MAN. The implication is that a unit increase in LCPI, LINT, and LIMP will lead to 0.1318, 0.0536, and 0.4388 declines in MAN respectively. Hence, our a priori expectations hold except for LINT

Table 4.2

Results of the Standard Error Test

Variables	Coefficients	Coefficients (2)	Standard Error	Remark
LCPI	-0.131822	-0.065911	0.075741	Insignificant
LIMP	-0.053606	-0.026803	0.070627	Insignificant
LINT	-0.438798	-0.219399	0.158070	Significant
LTAR	0.175055	0.0875275	0.085307	Insignificant

Source: Researchers' Computation Using E-Views Statistical Package

The standard error test is a test for the statistical significance of the parameter estimates, and the rule of thumb asserts that the standard error of the parameter estimates should be less than half of the parameter estimates themselves. This implies that for standard of error of a parameter to be significance. $S.E. (b_0) < b_0/2$ etc. using the standard error test and the t-statistics, it was found that LINT is statistically significant in determining manufacturing output at 5% level of significance as against other explanatory variables; log of consumer price index (inflation), import, and LTRF itself is not very statistically significant due to closeness in the figures.

The R^2 of 0.9215 (92.2%) shows that the model has a good fit, as it reveals that the explanatory variables explain 92.2% of the variation in the Nigerian manufacturing output while the remaining 7.9% is explained by factors not captured in the model. The Durbin Watson statistics shows the absence of serial correlation, as the value approximates 2; 1.97. The f -statistics also shows the joint significance of the explanatory variables as significant determinants of the dependent variable.

The multiple regression result shows that there exist a positive relationship between tariff and manufacturing output. Standard error test shows that tariff is not a very significant determinant of manufacturing output in Nigerian. (0.087-0.085). Coefficient of multiple determination shows that the model has a good fit. Durbin Watson shows that data are free from serial correlation and Model significance test reveals that the explanatory variables are jointly significant.

From The objective of this paper is to establish whether the infant industry argument in favour of tariff holds in Nigerian manufacturing sector owing to its strategic importance in promoting the nation's economic growth. The empirical results indicate that the contribution of the manufacturing sector to growth increases as tariff increases. This is in consonance with our a priori expectation. However the insignificance of tariff as a determinant of manufacturing growth in Nigeria points to the fact that most Nigerian companies like their foreign counterpart are indifferent as to the tariffs being charged, as long as supportive facilities are put in place by the government.

As expected, the study uncovered the fact that inflation (measured by the log of consumer price index) and interest rate negatively impact the growth of the Nigerian manufacturing sector. This is consistent with the result of Adegbelemi, Onakoya and Fasanya,, (2012); Dipak and Ata, (2003). In a normal economy, producers/business men benefit from inflation while consumers/fixed income earners bear the cost. However, in a country like Nigeria where rate of interest is higher

than inflation, high interest paid by manufacturers on borrowed funds/credits would be more than that offset by inflationary benefits. This further explains the significance of interest rate as a determinant of manufacturing growth. Unfortunately, Central Bank of Nigeria maintained that pursuance of single digit inflationary and interest rate in Nigeria at this point in time is almost impossible. Interest rate is dependent on money market rate, and considering inflation, if depositors do not have positive real interest rate it would affect savings. These in addition to risk premium on credit risk, other operational risk and high cost of doing business in Nigeria leads to high lending rate (Vanguard, 2003).

Lastly, empirical results also show negative relationship between import and manufacturing growth. This also gain support from Raballand and Edward (2001). Just like tariff, effect of import is statistically insignificant and its negative relationship with manufacturing growth may not be unconnected to high operating cost and other Nigerian factors rather than foreign competition.

5. Policy Recommendations

Since the impact of import and tariff are not significant, Nigerian manufacturing sector can grow even in the presence of foreign competition. However to combat the major problem confronting Nigeria manufacturing sector as revealed in this study, the following recommendations are made:

- i. Provision of sound and effective economic policies as well as good management of the monetary sector is a way out of persistently high interest and inflationary rate problem.
- ii. Specialised banks should be made favourably disposed to extending credit to manufacturing organizations at lower interest rate.
- iii. Rather than protection, government should shift attention to improving physical infrastructure notably in the area of power supply as well as making it accessible to manufacturers in order to reduce self-supply of electricity that contributes to mounting operating cost.

These factors, if put together and infant manufacturing firms are better positioned to develop, export will be encouraged and they will have what it takes to compete favorably in the international scene.

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Appendix 1

YEAR	MAN	CPI	TARIFF	IMPORT	INTEREST
1988	0.079215992	25.12	27,326.42	21,445.7	16.50
1989	0.057544518	27.2	30,403.22	30,860.20	26.80
1990	0.054951974	27.39	33,547.70	45,717.9	25.50
1991	0.062010688	26.57	41,352.46	89,488.2	20.01
1992	0.050700918	27.57	58,122.95	143,151.2	29.80
1993	0.057009595	27.1825	127,117.71	165,629.4	18.32
1994	0.069896945	27.178125	143,424.21	162,788.8	21.00
1995	0.054463563	100.81	180,004.76	755,127.7	20.18
1996	0.049171613	22.58	238,596.56	562,626.6	19.74
1997	0.051430535	22.63	316,207.08	845,716.6	13.54
1998	0.052242958	22.63	351,956.19	837,418.7	18.29
1999	0.047259177	24.32	431,168.36	862,515.7	21.32
2000	0.036672272	24.21	530,373.30	985,022.4	17.98
2001	0.042132423	28.87	764,961.52	1,358,180.3	18.29
2002	0.034261063	23.68	930,493.93	1,512,695.3	24.85
2003	0.033903418	23.92	1,096,535.57	2,080,235.3	20.71
2004	0.030612065	23.82	1,421,664.03	1,987,045.3	19.18
2005	0.028321427	11.29	1,838,389.93	2,800,856.3	17.95
2006	0.025776169	10.31	2,290,617.76	3,108,519.3	17.26
2007	0.025215424	10.61	3,680,090.19	3,911,952.6	16.94
2008	0.024101297	10.53	6,941,383.41	5,189,802.6	15.14
2009	0.024695612	10.53	9,147,417.17	5,102,534.4	18.36
2010	0.022181319	10.74	10,157,021.18	8,005,374.2	17.59

Sources: CBN statistical Bulletin

Appendix 2

Ordinary Least Square Regression

Variable	Coefficient	Std. Error	t-Statistics	
Prob.				
LCPS	-0.131822	0.075741	-1.740445	0.0988
LIMP	-0.053606	0.075741	-0.758996	0.4577
LINT	-0.438798	0.158070	-2.775974	0.0125
LTRF	0.175055	0.085307	2.052062	0.0550
C	0.017852	0.0682899	0.026142	0.9794
R – squared	0.921565	Mean Dependent Var.		-3.188201
Adjusted R – squared	0.904135	S.D Dependent Var.		0.378950
S.E. of regression	0.117331	Akaike info criterion		-1.257982

Sum squared residual	0.247797	Schwarz criterion	-1.011135
Log likelihood	19.46679	Hannah – Quinncriter	-1.195901
F – Statistic	52.87257	Durbin- Watson Stat.	1.974483
Prob. (F – Statistics)	0.000000		