The Nexus between Trade Policy and Manufacturing Employment in Nigeria: A Panel Cointegrating Regression

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Abstract

This paper uses firm level data to examine the impact of tariff and adoption of ECOWAS Common External Tariff (CET) on manufacturing sector employment in Nigeria. The empirical strategy is based on Pooled Mean Group (PMG), which is one of the panel cointegrating regression techniques. The findings show that tariff does not have short-run effect on manufacturing employment in Nigeria. However, in the long-run employment in manufacturing firms declines with increase in tariff rate. The decline is more in the non-exporting firms, than in the exporting firms. It is also evident that CET does not have short-run effect on manufactured employment but harms employment in the long-run. It however, enhances employment when reform is interacted with tariff. It is therefore, recommended that Nigeria should generally reduce tariff rates and avoid policy inconsistency in order to achieve the desire long-run impact. Blanket policy reform targeting at all firms in the manufacturing sector should be discouraged. Case by case analysis should always be carried out so as to identify which policy is most appropriate for each manufacturing sub-sector. Finally, it is recommended the government should always follow up trade agreements with corresponding appropriate trade policy reform so as to maximize the gains from such agreement.

Keywords: Trade Policy, Tariff, Manufacturing employment, Common External Tariff, Pooled Mean Group, Export-oriented

JEL Classification Codes: L60, F13, E24, E23

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1. Introduction

The influence of trade liberalisation on employment and other macroeconomic indicators have been established in theoretical literature. The theoretical underpinning base on traditional Heckscher-Ohlin theory is that trade liberalization would lead to generation of employment particularly in export oriented sector. Trade openness would stimulate production expansion in the export manufacturing sector, hence more factors of production including labour are engaged in the sector. Consequently, employment in the manufacturing sector is expected to grow with trade liberalization. However, the findings in the empirical literature is divergent. While, some studies show that trade openness promote employment in the manufacturing sector (see for example, Ghose, 2000; Spiezia, 2008; Kakarlapudi, 2010; Winters, 2014), some other studies show that trade liberalization hurt manufacturing sector employment (see for example, Garba & Usman, 2006; Said, 2012; Asaleye, Okodua, Olani & Ogunjobi, 2017). On the other hand, Feliciano (2001) shows that trade policy reform has no significant effect on both relative wages and employment in the case of Mexico experience. Therefore, it is imperative to conduct country specific study so as to ascertain the actual nature of relationship between trade policy and manufacturing employment in each country. This would make for an informed judgment by policymakers in each country the appropriate trade policy relevant in promoting manufacturing sector employment.

Tariff is the key trade policy instrument used in most countries including Nigeria, though, some other instruments such as quotas, embargo and licensing are also used from time to time to promote trade and manufactured output. Nigeria operated different trade regime ranging from restrictive, highly restrictive, liberal and highly liberal, and reviews tariff rates periodically until the adoption of Common External Tariff (CET). For instance, in pursuance of common market, member countries of the Economic Community of West African States (ECOWAS), including Nigeria adopted Common External Tariff (CET) in 2005 with four tariff band structure. In 2013 the structure was adjusted to five bands, which include zero percent (0%) for essential social goods; five percent (5%) for goods of primary necessity such as raw materials and specific inputs; ten percent (10%) for intermediate goods; twenty percent (20%) for final consumption goods; and thirty five percent (35%) for specific goods for economic development.

Hence, this paper intends to investigate the impact of trade policy on manufacturing sector employment in Nigeria. Specifically, the paper examines the effect of tariff on manufacturing sector employment in Nigeria. The paper also examines if the effect of tariff on employment vary between export-oriented and import oriented industries in the country. Equally, the impact of adopting CET on manufacturing sector employment is evaluated. Connected to the last objective, the paper also examines the role of the reform on the effect of tariff on manufacturing employment.

One of the merits of this paper is the fact that firm level data were used to investigate the impact of tariff on manufacturing sector employment in Nigeria unlike most of existing studies that either used aggregate employment in the country or aggregate employment in the manufacturing sector. Secondly, the response of employment in export-oriented firms and import-oriented firms were separately investigated in the paper, which brings out policy implications specific for each category of firms (export-oriented and import oriented industries). The third distinction of the paper is that, it is one of the very first attempt to evaluate the impact of adopting CET on manufacturing employment. After more than fifteen years of adopting this trade policy, it is

imperative to evaluate its impact particularly on key variables like employment. This would provide evidence to either support the continue participation or otherwise.

2. Brief Literature Review

The literature on the relationship between trade and employment has grown over the years. The conventional wisdom in the extant literature is that trade liberalization promote employment. For example, Matusz and Tarr (1999) reviewed fifty studies, and most of the studies show that manufacturing employment increased subsequent to trade liberalization. Studies such as Ghose (2000), Spieza (2008), Kakarlapudi (2010) among others reveal that trade liberalization promote employment in the manufacturing sector, particularly in the export oriented firms and the import-competing firms. However, the evidences are more prominent in the developed countries than developing and less developed countries. Related to this, a number of studies show that trade protection often have negative effects on manufacturing employment (Ciuriak & Xiao, 2018; Li, He & Lin, 2018, Li & Whalley 2021)

In line with the conventional wisdom, Milner and Wright (1998) studied the effect of trade liberalization in Mauritius between 1985 and 1987 in the form of reduction in protection for local firms which led to increase in employment in export-oriented industries. Similarly, Winters (2014) reveals that trade liberalization boost employment even in developing countries. He observed that the experiences of trade liberalization in Mauritius, Vietnam and Brazil supported this claim. In the Mauritius experience between 1971 to 1991, employment increased in both the exportable and the importable goods industries. Though, Winter (2014) shows mixed findings in the case of Brazil, while lower tariff on inputs of the manufacturing sector enhanced employment, lower tariff on final goods displaced workers from import-competing industry, and the exporting industry failed to absorb them.

However, the study by Rashid (2000) shows mixed results, while trade liberalization benefits large and medium scale industries in Bangladesh, it adversely affects small and cottage industries. On the other hand, studies such as Ravenga (1997), Rattso and Torvik (1998), Levinsohn (1999), Mesquita and Najberg (2000), Lohani (2017), and Sankaran, Abraham and Joseph (2020) among others show that trade liberalization hurts manufacturing sector employment. Similarly, Rattso and Torvik (1998) shows that trade liberalization led to decline of both manufacturing sector output and employment in Zimbabwe. Levinsohn (1999) shows that trade liberalization led to about 8% decline in net manufacturing employment in India. Ravenga (1994) study on Mexico for the period between 1984 and 1990 reveals that a 10 percent reduction in tariff led to a 2 to 3 percent decline in employment in Mexico. The study by Mesquita and Najberg (2000) on Brazil between 1990 and 1997 reveals also that trade liberalisation led to 32.4 percent decline in employment in import-competing industries and 13.3 percent decline in export-oriented industries.

The study by Said (2012) shows a little more complicated finding in the case of Egypt's experience between 1998 to 2006. He shows that there was increase in income of the poor, while there was greater casualization of workers in manufacturing sector, with increase in low quality job opportunity. Similarly, Mattia and Winters (2020) shows that trade protection may increase job availability in import-competing sectors or at least reduce the rate of job loss in the sector, but would lead to decline in available jobs in export-oriented sector. On the other hand, trade liberalization constitutes cost in the short and medium terms, though, in the long-run trade

liberalization would boost employment. And that trade reform is usually associated with increase in number of better jobs.

In the case of Nigeria, Garba and Usman (2006) show that trade openness exposed 'ill-equipped and not ready' manufacturing sector to external commodity aggression which reduced their growth potentials and led to their poor performance. Thus, trade liberalization had a negative impact on employment in Nigeria. In similar vein, Asaleye, Okodua, Olani and Ogunjobi, (2017) shows that trade liberalization harms employment in the long-run in Nigeria.

3. Model and Method of Analysis

Going by the theoretical postulations, it is expected that policies that liberalize trade would promote employment in the manufacturing sector, particularly the export manufacturing sub-sector. Thus, it is common in the literature to examine the effect of tariff on employment and other macroeconomic indicators. This line of research is still relevant today because the response varies according to situations around trade policy and the manufacturing sector (see more current studies like Ciuriak & Xiao, 2018; Li, He & Lin, 2018, Li & Whalley 2021). Hence, in this study manufacturing employment is regressed on tariff, the performance of firms and fixed assets investment in the firms are controlled for in the model. The argument is that the performance of firm's proxied by value added and the amount of fixed capital proxied by plant and machinery used in production influence the amount of labour force engaged in the manufacturing industries. In order to capture the Phillips curve effect, the rate of inflation is controlled for in the model. Thus, the empirical model is specified as:

$$EMP_{it} = \alpha_0 + \alpha_1 VA_{it} + \alpha_2 FA_{it} + \alpha_3 INF_{it} + \alpha_4 TAR_{it} + \mu_{it} \quad (1)$$

Where EMP_{it} is employment measured as unit of labour employed by firms, VA_{it} is value added which proxied firm performance, FA_{it} is fixed assets which is measured as the naira value of plant and machinery at the firm, INF_{it} is inflation measured as percentage change in consumer price index, TAR_{it} is tariff measured in percent levied on manufactured goods, and μ_{it} is the stochastic term.

To capture the effect of the adoption of Common External Tariff (CET) in 2005, a dummy variable called $Reform_{it}$ is introduced, the variable equals one from 2005 and beyond, while it is 0 for other years. Hence, equation (1) becomes:

$$EMP_{it} = \gamma_0 + \gamma_1 VA_{it} + \gamma_2 FA_{it} + \gamma_3 INF_{it} + \gamma_4 TAR_{it} + \gamma_5 Reform_{it} + \mu_{it} \quad (2)$$

To be able to investigate the role of CET reform on the effect of tariff, an interaction variable between TAR_{it} and $Reform_{it}$ is introduced which gives:

$$EMP_{it} = \gamma_0 + \gamma_1 VA_{it} + \gamma_2 FA_{it} + \gamma_3 INF_{it} + \gamma_4 TAR_{it} + \gamma_5 TAR * Reform_{it} + \gamma_6 Reform_{it} + \mu_{it} \quad (3)$$

3.1 Estimation Procedure

The analysis began with unit root test, three different techniques are used. The Im-Pesaran-Smith (IPS), Fisher type Augmented Dicky Fuller (Fisher ADF), and Fisher type Phillips-Perron (Fisher PP) are used to investigate the stationary properties of the variables in the model. The results of the test show combination of I(1) and I(0). Given this outcome and the fact that the T is relatively large (1995 to 2019) with relatively large N (67), the Autoregressive Distributed Lag (ARDL) modelling procedure is employed to gauge the models. The study used three alternatives long run panel cointegration techniques namely; Mean Group (MG), Pool Mean Group (PMG) and Dynamic Fixed Effects (DFE). The three alternatives are attributed to Pesaran and Smith (1995), Pesaran, Shin and Smith (1997) and Pesaran, Shin and Smith (1999) who stated that the three techniques are consistent when both T and N are large. Even though they are based on different assumptions, all the three employ Autoregressive Distributed Lag (ARDL) framework where the series are combination of I(0) and I(1). Both MG and DFE are two opposite extremes while PMG is intermediate. MG assumes heterogenous slope and intercept coefficient and thus derives long-run parameters by averaging the long run parameters of the ARDL for individual units. DFE imposes the homogenous slope coefficients but allows constant intercepts to vary across units. PMG imposes assumption of short run heterogenous slope coefficients and long run homogenous slope coefficients. The most efficient of the alternatives is determined using familiar Hausman specification test.

3.2 Nature and Sources of Data

The study covered 67 manufacturing firms quoted on the Nigerian stock exchange for the period between 1995 to 2019. The data is sourced from Annual Reports and Statement of Accounts of selected firms, the Nigerian Stock Exchange Fact Books, Federal Government of Nigeria Official gazette on Nigeria Customs and Excise Tariff Books, while inflation data is sourced from Central Bank of Nigeria (CBN) statistical bulletin.

4. Empirical Results

The results of the empirical analysis are presented and discussed in this section. The results include preliminary analysis which are descriptive statistics presented in Table 1, correlation analysis presented in Table 2, unit root test results reported in Table 3, and cointegration test in Table 4 as well as regression results which are reported in Tables 5 to 9.

4.1 Preliminary Analysis

The descriptive statistics as presented in Table 1 show mean, standard deviation, minimum and maximum values of the variables used in this study. These statistics are presented in their overall, within (over time) and between (across unit) dimensions. There are about 994 individuals working in an average manufacturing firm each year. While value added of an average firm is in its millions, its fixed assets is in tens of million. Tariff on goods to and from foreign transactions imposed on an average manufacturing firm in Nigeria is 22.96 per cent. During the period under study, some firms, particularly in the pharmaceutical industry recorded zero tariff while firms in the breweries and soft drink industry witnessed a maximum tariff of 100 per cent.

Pairwise correlation analysis results presented in Table 2 display the relationship that exists among the variables. It was also conducted to verify if any of the correlation coefficients is high to imply a possibility of multicollinearity problem in the regression model. The results show that employment is positively related to value added, fixed assets, inflation and tariff. This preliminary test suggests a possible, though not sufficient view that these variables may have positive impact on employment. Since most of other relationships have correlation coefficient lower than 0.8, as suggested by Asteriou and Hall (2016), these variables may be included in a single regression model without a consequence of severe multicollinearity problem.

Unit root test was conducted to verify if the variables are stationary or not. Given that the data at hand is unbalanced panel in nature, the unit root test procedures of Im-Pesaran-Smith (IPS) and Fisher-type augmented Dickey-Fuller (Fisher ADF) and Fisher-type Phillips-Perron (Fisher PP) were employed to conduct the unit root test. From the results presented in Table 3, IPS and Fisher-PP procedures suggest that employment is not stationary at level. However, its first difference is found stationary from the results of the three procedures. Fixed assets and tariff were also found to be non-stationary at level from the three test procedures, but they were stationary after first difference. Value added and inflation are all seen to be stationary at level. From the overall results, it can be seen that some variables are stationary at level while others are stationary at first difference, indicating that there is a combination of I(0) and I(1) series in this study. The implication of this outcome in a panel setting is, that fitting the model with the common static pooled OLS, fixed effects or random effects method may generate spurious result. The model is therefore, estimated with in panel autoregressive distributive lag (ARDL) framework.

The Westerlund Error Correction Mechanism (ECM) cointegration test reported in Table 4 is used to examine the existence of long run equilibrating relationships among the variables of the model. Out of the four (G_t, G_a, P_t, P_a) statistics reported, one (P_t) came out statistically significant while the other three (G_t, G_a, P_a) were insignificant. Given that P_t statistic is significant, it can be concluded that there is presence of long run relationship among the series and hence, there is cointegration.

Table 1: Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max
Employment	Overall	993.73	2,920.34	3.0	92,981
	Between		1,799.97	28.18	11,716.71
	Within		2,371.77	-5,116.98	82,258.02
Value Added	Overall	5,390,240	14,000,000	-7,745,593	127,000,000
	Between		10,100,000	-39,654.42	61,400,000
	Within		9,079,563	-50,300,000	71,700,000
Fixed Assets	Overall	11,300,000	35,800,000	921	413,000,000
	Between		21,900,000	8,142.25	126,000,000
	Within		29,000,000	-114,000,000	325,000,000
Inflation	Overall	15.3	13.24	5.40	72.8
	Between		2.55	11.28	19.67
	Within		13.03	1.03	73.24
Tariff	Overall	22.96	21.13	0.0	100.0
	Between		14.98	5.88	74.67
	Within		15.14	-31.71	72.56

Source: Author's Computations

Table 2: Correlation Analysis

Variable	(1)	(2)	(3)	(4)	(5)
Employment	1.00				
Value Added	0.13***	1.00			
	(0.00)				
Fixed Assets	0.06**	0.60***	1.00		
	(0.02)	(0.00)			
Inflation	0.15***	-0.07**	-0.07**	1.00	
	(0.00)	(0.01)	(0.01)		
Tariff	0.20***	0.02	-0.07**	0.15***	1.00
	(0.00)	(0.52)	(0.01)	(0.00)	

Source: Author's Computations.
*Note: p-values in parenthesis; *; **; *** indicate significance at 10%; 5%; and 1% respectively.*

Table 3: Unit Root Test

		IPS		Fisher-ADF		Fisher-PP	
		Level					
		Stat.	prob.	Stat.	prob.	Stat.	prob.
lnEMP	Level	3.45	0.999	3.26***	0.000	1.19	0.116
	First Diff.	-15.9***	0.000	32.3***	0.000	56.4***	0.000
lnVA	Level	-4.08***	0.000	1.51*	0.064	12.6***	0.000
lnFA	Level	3.51	0.999	-0.85	0.805	0.30	0.380
	First Diff.	-16.4***	0.000	21.9***	0.000	68.1***	0.000
INF	Level	-13.9***	0.000	175.8***	0.000	48.5***	0.000
TAR	Level	-	-	-1.64	0.950	-0.32	0.627
	First Diff.	-	-	17.1***	0.000	55.0***	0.000

Source: Author's Computations.
*Note: p-values in parenthesis; *; **; *** indicate significance at 10%; 5%; and 1% respectively.*

Table 4: Westerlund ECM Cointegration Test

Statistic	z-value	P-value
G_t	2.86	0.998
G_a	5.733	1.000
P_t	-3.181***	0.001
P_a	-0.599	0.275

Source: Authors' Computations.
*Note: *** indicate significance at 1% respectively.*

4.2 Regression Results

Tables 5 to 9 present the regression results which consist of the long-run and the short-run coefficients of the dynamic panel analysis. The estimates of the main model are presented in Table 5, in Table 6 CET reform in ECOWAS is controlled for, interaction between CET reform and tariff is introduced in Table 7, while results from sample of exporting firms is reported in Table 8 and Table 9 reports the results of non-exporting firms sample. The results were obtained using Pooled Mean Group (PMG), Mean Group (MG) and Dynamic Fixed Effects (DFE) estimation techniques. However, the Hausman specification test results which was conducted to choose the most appropriate method among the three variants, suggest that the PMG is the most appropriate. Though, results from the three techniques are reported, the interpretation is derived from PMG results.

In all the PMG estimates with exception of one, the coefficient of the error correction term is statistically significant and negative, this indicates that there is convergence of the model to long-run equilibrium (Pesaran & Smith, 1995). The speed of adjustment per year is about 13% in the average when the full sample is used, but it increases to about 24% using sample of export oriented firms. While, it reduces to just 4% and not statistically significant when non-exporting firm sample is considered. This suggests that about 13% of the short-run disequilibrium is being corrected on average each year for all firms, while about 24% on the average is corrected for exporting firms.
Through all the results, the coefficients of tariff are not statistically significant in the short-run. This finding implies that changes in tariff rate does not have short-run effect on the level of firm employment. However, tariff shows significant long-run coefficients all through the regressions, with varying sizes. In the main model with full sample, a percentage point increase in tariff rate would reduce employment in manufacturing firms on the average by 1.4. When CET reform is introduced, similar increase in tariff would lead to 3.9 point decrease in employment. The reduction in employment for the exporting firms is more than the average decline when full sample is considered. Employment in the exporting firms reduces by 4.11 point as a result of one percentage point increase in tariff. The non-exporting firms suffers more, average employment in this sub-sector reduces by about 525.2 with a percentage point increase in tariff.

The findings from the long-run results support the hypothesis that trade restriction hurts manufacturing sector employment. Evidence from this, any trade policy reform that aims to restrict trade by raising tariff in Nigeria would lead to loss of job in the manufacturing sector generally, and particularly more jobs will be lost in the non-exporting sub-sector. Findings in previous studies

such as Ciuriak and Xiao, 2018; Li, He and Lin, 2018, Li and Whalley 2021 are in agreement with current findings.

In similar vein, CET reform is not statistically significant in the short run through all the regressions. This implies that ECOWAS member countries should not expect quick return particularly in term of job creation from this reform. It is significant in the long-run through all the regressions. However, the coefficients are negative which is contrary to expectations. The only exception is the regression where the interaction between tariff and reform is introduced, here, the coefficient is positive and statistically significant. Meaning that the reform would have positive effect on manufacturing employment when the reform is implemented by adjusting tariff accordingly. The implication is that mere adoption of CET cannot yield desire result till the reform is back up with tariff reform. Meanwhile, increase in tariff does more harm on manufacturing employment with the adoption of CET reform. The CET reform is more of a cooperative game where players (member countries) agreed to open up trade among themselves. On the other hand, each country has the alternative of choosing restriction. In this case, as evidence in the findings, any member who decide to cheat by raising tariff after CET reform would do more harm than good to manufacturing employment. In Nigeria, a one percentage point increase in tariff after CET would reduce manufacturing employment by about 4%.

The sign and significance of the control variables are not consistent through the regressions. Value added is not statistically significant in the short run through all the regressions except in the regression with full sample without reform where it is significant at 10%. The long-run coefficient of value added is positive and significant in the models with full sample, while it is not significant in model for export firms, and it is significant negative in non-export firms' sample. Fixed assets is not also significant in the short run except in non-exporting firms' sample where it is just significant at 10%. It is significant all through in the long-run but varying signs. It is negative in regressions with full sample, while it is positive in both exporting and non-exporting sample. Finally, inflation is not statistically significant in the short-run through all the regressions. In the long-run, it is only significant in the regressions with full sample, while is not significant in exporting and non-exporting firms' samples respectively.

Table 5: Results of Model without Reform (full sample)

		PMG			MG			DFE	
DV = EMP	Coeff.	z	prob	Coeff.	z	Prob	Coeff.	Z	prob
Long-run Coefficients									
lnVA	65.4	6.31	0.000	-631.8	-0.87	0.385	18.5	0.86	0.389
lnFA	-18.9	-2.89	0.004	-412.6	-0.73	0.465	-86.5	-1.23	0.219
INF	2.50	6.32	0.000	68.8	1.12	0.264	37.3	5.23	0.000
TAR	-1.41	-1.94	0.053	-17.8	-0.46	0.643	-1.92	-0.34	0.732
Short-run Coefficients									
ect(-1)	-0.13	-6.12	0.000	-0.52	-8.54	0.000	-0.92	-32.75	0.000
D.lnVA	130.0	1.94	0.052	-19.2	-0.43	0.669	-7.22	-0.44	0.660
D.lnFA	-107.1	-0.41	0.684	169.2	0.93	0.354	115.9	0.83	0.405
D.INF	25.2	0.99	0.320	-3.55	-1.02	0.309	6.99	0.95	0.343
D.TAR	3.20	0.90	0.371	3.26	0.64	0.523	6.75	0.73	0.466
Constant	174.2	1.21	0.226	-2355.1	-0.58	0.561	1361.7	1.34	0.182
Observation		1,346			1,346			1,346	

Source: Author's Computations

Table 6: Results of Model with Reform (full sample)

		PMG			MG			DFE	
DV = EMP	Coeff.	Z	prob	Coeff.	z	Prob	Coeff.	Z	prob
Long-run Coefficients									
lnVA	78.7	8.11	0.000	-525.3	-0.73	0.465	18.6	0.86	0.387
lnFA	-20.1	-3.28	0.001	-393.5	-0.71	0.480	-94.0	-1.17	0.244
INF	2.51	7.32	0.000	56.1	0.91	0.362	37.6	5.17	0.000
TAR	-3.91	-4.48	0.000	-38.5	-0.78	0.434	-1.43	-0.23	0.822
Reform	-39.9	-2.66	0.008	-1269.7	-0.52	0.604	34.0	0.13	0.893
Short-run Coefficients									
ect(-1)	-0.13	-5.52	0.000	-0.57	-8.3	0.000	-0.92	-32.7	0.000
D.lnVA	39.7	0.62	0.536	3.06	0.07	0.944	-7.07	-0.43	0.668
D.lnFA	123.0	1.42	0.154	-34.1	-0.56	0.576	117.3	0.83	0.408
D.INF	33.9	1.0	0.319	-3.19	-0.93	0.350	7.19	0.97	0.332
D.TAR	19.8	1.17	0.243	8.66	1.2	0.231	3.08	0.28	0.776
D.Reform	1309.0	1.12	0.264	193.4	0.84	0.401	-268.0	-0.66	0.511
Constant	76.0	0.99	0.320	270.6	0.05	0.962	1431.5	1.36	0.175
Observation		1,346			1,346			1,346	

Source: Author's Computations

Table 7: Results of Model with Interaction of tariff and reform (full sample)

		PMG			MG			DFE	
DV = EMP	Coeff.	Z	prob	Coeff.	z	prob	Coeff.	z	prob
Long-run Coefficients									
lnVA	-0.12	-0.19	0.846	-313.4	-0.42	0.677	17.78	0.83	0.409
lnFA	17.5	8.91	0.000	-1239.8	-1.37	0.17	-100.4	-1.25	0.213
INF	0.01	0.03	0.975	-544.1	-0.92	0.36	37.51	5.17	0.000
TAR	5.87	9.32	0.000	-1419.1	-1.04	0.297	0.468	0.07	0.942
Reform	162.1	6.91	0.000	-153509	-1.0	0.316	448.4	1.29	0.198
TAR*Reform	-5.20	-8.45	0.000	2045.2	0.93	0.35	-23.31	-1.72	0.085
Short-run Coefficients									
ect(-1)	-0.182	-6.8	0.000	-1.05	-2.21	0.027	-0.92	-32.79	0.000
D.lnVA	36.42	0.57	0.572	-4.39	-0.1	0.921	-6.75	-0.41	0.681
D.lnFA	113.4	1.33	0.183	-75.7	-0.9	0.368	122.0	0.86	0.389
D.INF	34.39	1.0	0.316	-2.69	-0.79	0.432	7.15	0.97	0.334
D.TAR	19.81	1.11	0.268	31.0	1.32	0.186	3.15	0.26	0.792
D.Reform	180.4	0.69	0.491	350.5	0.93	0.352	-401.9	-0.64	0.525
D.TAR*Reform	51.86	0.87	0.385	-7.08	-0.79	0.43	10.0	0.43	0.664
Constant	110.2	1.45	0.146	-121.4	-0.02	0.983	1444.8	1.37	0.171
Observation		1,346			1,346			1,346	

Source: Author's Computations

Table 8: Only Exporting Firms

		PMG			MG			DFE	
DV = EMP	Coeff.	Z	prob	Coeff.	z	Prob	Coeff.	Z	prob
Long-run Coefficients									
lnVA	-87.2	-8.67	0.000	368.4	2.08	0.038	20.4	0.33	0.740
lnFA	34.3	3.9	0.000	384.3	0.69	0.491	364.3	2.97	0.003
INF	-0.71	-1.02	0.308	-42.9	-1.48	0.140	18.4	2.34	0.019
TAR	-4.11	-3.35	0.001	-72.4	-1.96	0.049	0.50	0.08	0.934
Reform	-675.6	-7.25	0.000	-5479.4	-2.13	0.033	-1235.4	-3.66	0.000
Short-run Coefficients									
ect(-1)	-0.24	-2.48	0.013	-0.60	-3.74	0.000	-0.29	-8.62	0.000
D.lnVA	214.5	1.53	0.126	-88.3	-0.81	0.417	0.58	0.05	0.961
D.lnFA	444.7	1.84	0.066	-82.3	-0.44	0.658	91.5	1.29	0.196
D.INF	0.98	0.46	0.647	-3.12	-0.49	0.622	-1.69	-0.64	0.519
D.TAR	9.01	1.06	0.288	10.19	0.55	0.584	2.15	0.59	0.557
D.Reform	334.4	1.18	0.239	998.5	1.54	0.123	339.4	2.13	0.033
Constant	836.2	2.64	0.008	-13744.2	-1.13	0.257	-1134.6	-2.09	0.037
Observation		1,346			1,346			1,346	

Source: Author's Computations

Table 9: Only Non-Exporting Firms

	PMG			MG			DFE		
DV = EMP	Coeff.	Z	prob	Coeff.	z	prob	Coeff.	Z	prob
Long-run Coefficients									
lnVA	-90.7	-7.0	0.000	-905.7	-0.89	0.375	18.1	0.7	0.485
lnFA	-724.7	-9.49	0.000	-724.6	-0.96	0.338	-179.5	-1.74	0.083
INF	564.7	21.97	0.000	98.3	1.14	0.256	54.8	5.2	0.000
TAR	-525.2	-18.01	0.000	-24.1	-0.35	0.725	-3.96	-0.4	0.687
Reform	-40166.4	-18.01	0.000	521.6	0.16	0.874	296.5	0.87	0.387
Short-run Coefficients									
ect(-1)	-0.04	-1.09	0.278	-0.54	-7.84	0.000	-0.94	-27.73	0.000
D.lnVA	-36.7	-0.56	0.578	41.9	1.02	0.306	-7.07	-0.34	0.730
D.lnFA	220.7	0.99	0.323	-13.6	-0.35	0.726	156.9	0.85	0.393
D.INF	-7.35	-1.23	0.218	-3.21	-0.79	0.432	13.1	1.23	0.219
D.TAR	3.04	0.73	0.467	8.01	1.18	0.237	7.74	0.48	0.630
D.Reform	-156.8	-0.69	0.491	-149.2	-0.92	0.357	-589.1	-1.04	0.300
Constant	2594.2	1.08	0.281	6234.3	1.01	0.310	1941.2	1.42	0.156
Observation		1,346			1,346			1,346	

Source: Author's Computations

5. Concluding Remarks

A voluminous literature has shown that trade liberalization promotes employment in the manufacturing sector, particularly in the exporting sub-sector. Hence, there is global campaign for countries to remove all forms of trade barriers. However, the experience of trade policy reform varies across countries. It is therefore, imperative to carry out country specific investigation. Thus, this study examines the effect of tariff and the adoption of CET on employment in manufacturing sector. The study further investigated if this effect varies between exporting and non-exporting firms. Panel data were gathered covering 67 firms over the period 1995 to 2019. The unit root test results show combination of I(0) and I(1) series. Hence, panel cointegration regression techniques were used to gauge the models. The Hausman specification test shows the Pooled Mean Group (PMG) is more appropriate.

Findings from the PMG results reveal that changes in tariff does not have significant effect on manufacturing sector employment in the short-run. In long-run, increase in tariff rate would lead to decline in employment in the manufacturing sector. The decline in employment among the exporting firms is higher than the average fall in the entire manufacturing sector. While the decrease in employment is more in the non-exporting firms than the exporting firms. Similarly, CET reform did not have short-run effect on the manufacturing employment. The long-run effect

is significant but negative except when tariff is interacted with CET reform. The take home here is that mere free trade agreement without corresponding reform in tariff would not yield desire results.

Since short-run effect is not evident, there is need for policy consistency for Nigeria to achieve desire long-run impact in Nigeria. Frequent changes of trade policy should be avoided. Blanket policy reform directed at all firms in the manufacturing sector would be harmful. There is need for case by case analysis so as to identify which policy is appropriate for each sub-sector. Finally, it is recommended that the government should always follow up trade agreements with corresponding appropriate trade policy reforms so as to maximize gains from such agreement.

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