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Review Article

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The Effect of Exchange Rate on the Performance of the Manufacturing Sector

Peter Ayodeji Adeoye*

Department of Economics, Kwara State University, Kwara State, Nigeria

***Corresponding Author**
Peter Ayodeji Adeoye, Department of Economics, Kwara State University, Kwara State, Nigeria.

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Abstract

This work examines the effect of exchange rates on the performance of the manufacturing sector. Yearly data were used from 1996 to 2020. The Auto Regressive Distributed Lag (ARDL) was used to analyze the data, and the yearly data were sourced from the World Development Indicator (WDI) and the Nigeria Bureau of Statistics. This research work considers exchange rates and some selected product classifications to account for the rate of performance of the manufacturing sector. Based on the ARDL approach, a test was carried out on each dependent variable and the independent variable to check the long and short-run regression findings for the coefficient of the lagged values of the dependent and independent variables. Some diagnostic tests like the serial correlation test, heteroskedasticity test, and stability test were also carried out on the variables. From the results obtained, export values of clothing and textiles were negatively statistically significant, import inputs of food and beverages were also negatively statistically significant, total manufacturing output was negatively statistically significant, while value added of medium and high-tech products was positively significant in explaining manufacturing performance. This means that the exchange rate has both negative and positive effects on manufacturing performance.

Keywords: Exchange Rate, Manufacturing Sector, Import Inputs, Manufactured Exports, Manufactured Goods

1. Introduction

The exchange rate can be seen as a means through which a country determines its level of economic performance. The exchange rate fluctuates daily due to the changes in market forces of demand and supply of currencies from one country to another. Thus, exchange rate refers to the rate at which a currency exchanges for another currency. It is the price of a currency for another country's currency. The exchange rate is determined by the interaction of demand and supply of foreign exchange. Thus, if demand for a currency rises with the supply being constant, the exchange rate of the currency will appreciate. However, if the demand for the currency falls with the supply remaining constant, the exchange rate will depreciate. The exchange rate is an important macroeconomic indicator used in measuring the overall performance of an economy because the overall movement in exchange rate tends to have a ripple effect on other economic variables such as interest rates, inflation rate, and unemployment rate [1].

The manufacturing sector is a branch of manufacturing and trade based on the fabrication, processing, or preparation of products from raw materials and commodities. This includes all foods, chemicals, textiles, machines, and equipment. It also includes all refined metals and minerals derived from extracted ores. Fakiyesi posits that the manufacturing sector plays a catalytic role in a modern economy and has many dynamic benefits that are crucial for economic transformation [2]. In an advanced country, the manufacturing sector is a leading sector in many respects. It is an avenue for increasing productivity concerning import substitution and export expansion, creating foreign exchange earning capacity, raising employment, promoting the growth of investment at a faster rate than any other sector of the economy, as well as a wider and more efficient linkage among different sectors.

The Structural Adjustment Programmer (SAP) which was adopted in 1986 to restructure the Nigerian economy led to an increase in agricultural output but also had a negative effect on the manufacturing sector. The relative share of industrial output in GDP achieved a high level of 45.57 percent in 1980 and a low level of 26 percent in 1986. With the adoption of SAP, the manufacturing sector's relative share of national output declined even further, reaching a low level of 5.2 percent in 1989. Manufacturing capacity utilization fell from about 73.3 percent in 1981 to 38.3 percent in 1985. This translates to a decline of about 45 percent. It further reduced from 38.1 percent in 1992 to an all-time low of about 29.29 percent in 1995 and has not exceeded an annual average of 57 percent up to 2010 [3,4].

Exchange rate fluctuation has become an issue in Nigeria due to the devaluation of currency. The exchange rate has brought about instability in the manufacturing output. Berman, Martin, and Mayer offer greater insight into a deeper understanding of the nexus between exchange rate and manufacturing output.

These studies specifically showed that exchange rate fluctuation is an impediment to manufacturing sector performance due to the reduction in output produced. Also, as a result of exchange rate volatility, exports of finished products may become more expensive, which could affect the performance of the manufacturing sector due to a reduction in profit margin. Adeoye & Atanda in their studies showed that the real exchange rate is a major determinant of unemployment, establishing that an appreciation of the real exchange rate can discourage the export of locally produced products and also result in losing trade competitiveness as exports become more expensive [5].

On the other hand, fluctuation in the exchange rate increases the cost of imported production inputs meant for further production thereby fueling inflationary pressures. Alabi cited that the significance of exchange rate changes in macroeconomic adjustment is determined, to a large extent, by its influence on domestic prices and the speed of its transmission [6]. If the degree of pass-through is high, the exchange rate movements will change the relative prices of commodities, thereby resulting in rapid adjustment in trade balances. For example, if the degree of exchange rate is high, imported inputs become expensive, which will in turn inflate the price of the finished products.

1.1. Research Objectives

The main objective of this study is to examine the Effect of the Exchange Rate on the Performance of the Manufacturing Sector in Nigeria.

Specifically, it sees to:

- Examine the effect of the exchange rate on domestic manufactured goods.
- Evaluate the effect of the exchange rate on import inputs.
- Evaluate the relationship between exchange rate and manufactured exports.

1.2. Research Hypotheses

$H_0$1: There is no significant relationship between the exchange rate and domestic manufactured goods.

$H_0$2: There is no significant relationship between the exchange rate and import inputs.

$H_0$3: There is no significant relationship between the exchange rate and manufactured exports.

2. Literature Review

2.1. Theory of Manufacturing Constraint

The theory of constraints refers to the fact that every process in a manufacturing or services business consists of a sequence of interlinked activities. The optimization of the performance of a process as a whole requires that every link in the sequence must serve its purpose as proficiently as possible. Here, the theory of constraints postulates that amongst all those links there is at least one weak link that acts as a limiting factor and restricts the output efficiency of the whole process. To optimize or improve the performance of the process, the business must focus its efforts on managing the limiting factor in the process. The theory of constraints is sometimes referred to as the bottleneck approach because the limiting factor acts as a /bottleneck within a process. The neck of a bottle determines the flow of liquid from a bottle, no matter what the actual size of the bottle is. Similarly, the functioning capabilities of a limiting factor in the process determine the production or output efficiency of the whole process, no matter how efficient other activities in the process are. A process is as efficient as its weakest link. Therefore, we can say that focusing attention on the performance of the weakest link in the process would provide the greatest benefit to an organization.

2.2. International Production Theory

International production deals with the production of goods and services in international locations and markets. It involves a management process that has to take into consideration the local production market (labour and capital) and international customer necessities. International production encompasses vertical production chains extended across the countries in the region as well as distribution networks throughout the world. The major actors are corporate firms belonging to the machinery industries, including general machinery, electrical machinery, transport equipment, and precision machinery though some firms in other industries, such as textiles and garment, also develop the network. Theorists stated that International production is a value-adding activity owned or controlled, and organized by a firm outside its national boundaries. The general theory of international production proposed by John Dunning first advocated in the late 1970s, has generated considerable discussion. This work thoughtfully reassesses the paradigm and extends the analysis to Policy autonomy, their own official history of capital. Dunning's eclectic paradigm (OLI) has been the most influential framework for empirical investigation of determinants of foreign direct investment.

2.3. Empirical Review

Alabi examined the impact of real exchange rate fluctuation on Industrial Output in Nigeria. Their developed hypothesis was tested using the Ordinary Least Square method of regression analysis. Their result and findings discovered a positive bidirectional relationship between exchange rate and output in Nigeria and other resource-dependent economies. They conclude that industrial output in Nigeria can be determined by movement in real exchange rate, capital utilization ratio, technology, and available foreign exchange. Enekwe, Ordu, and Nwoha studied the effect of the exchange rate on the manufacturing sector in Nigeria over a period of 25 years (1985-2010) [7]. Data obtained from the CBN Statistical Bulletin and the Nigeria Bureau Statistics were analyzed using multiple regression analysis and descriptive analysis. The result of the analysis showed that exchange rate fluctuation has a positive and significant relationship with the manufacturing sector of Nigeria. The researchers recommended export diversification in agriculture, agro-allied industries, and agro-investment as this would improve the growth of the manufactured sector in Nigeria.

Amassona and Odeniyi examined the relationship between exchange rate variation and economic growth in Nigeria emphasizing the level of international transaction and the purchasing power of the average Nigerian [8]. The standard deviation method was used to estimate the fluctuation inherent

in the model over 43 years (1970-2013). Other economic techniques such as the multiple regression model, error correction model, Augmented Dickey-Fuller (ADF) test, and Johansen Co-integration were used to analyze the data. The result showed that the exchange rate has a positive but insignificant relationship with economic growth in the short run. The insignificant relationship was a result of monetary authorities influencing exchange rate fluctuation in Nigeria. Isibor et al, researched exchange rate management and sectoral output performance which was carried out in Nigeria, with annual data between 1981 and 2015, using OLS Regression analysis [9]. The empirical result shows that the exchange rate has a positive and significant effect on only agricultural sector and a negative effect on the manufacturing sector. Raji, in his research work, Impact of Exchange Rate on the Performance of Manufacturing Sector In Nigeria, with annual data between 2000-2018, using Ordinary Least Square empirically states that interest rate and inflation rate are statistically insignificant to explain manufacturing output while the exchange rate is statistical significance to determine manufacturing output in Nigeria [10].

2.4. Model Specification

Since the purpose of this research paper is to gain a better insight into the Exchange Rate on Manufacturing Sector's Performance in Nigeria and the effects of various independent variables on the dependent variables. Manufacturing Gross Domestic Product (MGDP) is the dependent variable while Exchange rate (ER) and inflation rate (INFL) are the independent variables. Descriptive research and Ex-Post Facto research design were adopted to obtain necessary data for the study. The secondary data were also employed for this study i.e. CBN Statistical Bulletin 2010 and Nigeria Bureau of Statistics. In carrying out this paperwork on the effects of exchange rate fluctuations on the manufacturing sector in Nigeria, we develop a compact form of our model as follows:

Mathematical Model

$$MVA_t^k = f(REER_t)$$

$$MVA_t^k = \alpha_0 + \alpha_1 REER_t \ldots\ldots\ldots (i)$$

$$IMP_t^k = f(REER_t)$$

$$IMP_t^k = \beta_0 + \beta_1 REER_t \ldots\ldots\ldots (ii)$$

$$EXP_t^k = f(REER_t)$$

$$EXP_t^k = \vartheta_0 + \vartheta_1 REER_t \ldots\ldots\ldots (iii)$$

Econometric Specification

Model for Manufacturing Output

$$\Delta MVA_t^k = \omega_0 + \omega_1 MVA_{t-1}^k + \omega_2 REER_{t-1} + \sum_{i=1}^{m-1} \tau_3 MVA_{t-i}^k + \sum_{j=0}^{n-1} \tau_4 REER_{t-j} + \varepsilon_t \ldots. (iv)$$

Model for Import Inputs

$$\Delta IMP_t^k = \emptyset_0 + \emptyset_1 IMP_{t-1}^k + \emptyset_2 REER_{t-1} + \sum_{i=1}^{m-1} \theta_3 IMP_{t-i}^k + \sum_{j=0}^{n-1} \theta_4 REER_{t-j} + \varepsilon_t \ldots. (v)$$

Model for Exported Outputs

$$\Delta EXP\,{}_{t}^{k} = \gamma_0 + \gamma_1 EXP\,{}_{t-1}^{k} + \gamma_2 REER_{t-1} + \sum_{i=1}^{m-1} \propto_3 EXP_{t-i}^{k} + \sum_{j=0}^{n-1} \propto_4 REER_{t-j} + \varepsilon_t \ldots . (vi)$$

Where; $MVA\,{}_{t}^{k}$ represents the manufacturing, value-added of selected individual industries at time *t*,
k, denote the individual industries,
Δ is the first difference operator,
$IMP\,{}_{t}^{k}$ represents the import inputs of selected individual industries at time t,
$EXP\,{}_{t}^{k}$ represents the outputs exported of selected individual industries at time t,
REER is the real effective exchange rate?
$\omega_0 \varnothing_0 \gamma_0$ are the intercepts of the models for manufacturing value added, import inputs, and output to be exported respectively?
ε_t is the error term or stochastic term that is used to capture other variables that are not included in the model, the variance of the residual is not constant?

2.5. Estimation Techniques

The estimation procedure that was used in the research for estimating numerical models was Auto Regressive Distributive Lag if the data are said to be non-stationary, integrated at level, and the first difference. Tests to be taken before deciding to use ARDL are conducting unit root tests, the bound tests, and choosing the optimal lag length.

2.6. Discussion of Findings

This section includes descriptive statistics on exchange rates and some selected products (food and beverages, clothing and textiles, chemicals, medium and high-tech, processed agricultural products) in the manufacturing sector which includes the total value added, the value of import inputs, and value of exports of respective products. It's a numerical description of the characteristics of the various variables that will be used and analyzed in the following sections. The data summary is shown below.

Variables	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness
CHEM__V__ADDED	15.40348	15.345	18.277	13.066	1.50741	0.109074
CHEM__IM_	3.00986	3.690629	5.723965	0	2.000343	-0.191276
CHEM__EXP_	0.180825	0.109297	1.139975	0	0.249002	2.429734
CLOTH__AND_TEX__V__ ADDED	15.21532	13.887	29.733	1.068	8.947732	0.107173
CLOTH__AND_TEX__IM_	0.429831	0.457996	1.507475	0	0.413454	1.005375
CLOTH__AND_TEX___ EXP_	0.141524	0.021215	0.917554	0	0.2343	2.090612
FOOD_AND_BEV__V__ ADDED	28.9112	26.295	47.227	15.86	7.274042	0.843912
FOOD_AND_BEV__IM_	3.657822	4.010316	9.55	0	2.829152	0.455941
FOOD_AND_BEV_EXP_	1.150614	0.646242	7.642377	0	1.775325	2.317945
MED_AND_HI__ TECH_V__ADDE	22.00308	18.253	50.528	10.365	9.95724	1.528717
MED__AND_HI__TECH__ IM_	5.705402	6.500358	12.8487	0	4.357422	0.120773
MED__AND_HI__TECH_ EXP_	0.104487	0.0207	0.668129	0	0.164659	2.140612
MANUF__OUTPUT	11.14444	9.648	19.198	6.552	3.651216	0.970203
REAL_EXCHANGE_RATE	162.476	132.89	360	21.88	93.79826	0.5688
Variables	**Kurtosis**	**Jarque-Bera**	**Probability**	**Sum**	**Sum Sq. Dev.**	**Observations**
CHEM__V__ADDED	2.080256	0.930747	0.627901	385.087	54.53484	25
CHEM__IM_	1.42804	2.726461	0.255833	75.2465	96.0329	25
CHEM__EXP_	9.850852	73.48812	0	4.520631	1.488046	25
CLOTH__AND_TEX__V__ ADDED	1.846524	1.433804	0.488263	380.383	1921.486	25

CLOTH__AND_TEX__IM_	3.385004	4.365981	0.112704	10.74577	4.102655	25
CLOTH__AND_TEX___ EXP_	6.62074	31.86707	0	3.538091	1.317514	25
FOOD_AND_BEV__V__ ADDED	3.705399	3.485766	0.175015	722.78	1269.881	25
FOOD_AND_BEV__IM_	2.133874	1.647606	0.43876	91.44555	192.0984	25
FOOD_AND_BEV_EXP_	8.498982	53.88571	0	28.76535	75.64272	25
MED_AND_HI__ TECH_V__ADDE	4.836974	13.25247	0.001325	550.077	2379.519	25
MED__AND_HI__TECH__ IM_	1.639861	1.987835	0.370124	142.635	455.6911	25
MED__AND_HI__TECH_ EXP_	7.160669	37.12504	0	2.612184	0.650702	25
MANUF__OUTPUT	2.889789	3.934713	0.139826	278.611	319.9531	25
REAL_EXCHANGE_RATE	2.545242	1.563476	0.45761	4061.9	211154.7	25

Source: Eviews 10

Table 1: Summary of the Descriptive Statistics of the Exchange Rate, the Total Value Added, the Value of Import Inputs, And Exports of Selected Products

The mean, median, minimum and maximum values, kurtoisis, skewness, and Jacque-bera for both the dependent and independent variables are shown in Table 1. The export of clothing and textiles has a mean value of 0.141524, which is the lowest among the series, while the exchange rate has the highest mean value of 162.476. Like the mean, the median is a measure of central tendency that shows the value in the middle of the series that separates the higher and lower values. It's the number that splits a series in half. The standard deviation of all the variables is large, which is very far from zero; this observation shows that the values of all the variables have a wider range around their mean value. Skewness informs the distribution features of the series; it measures the direction as well as the degree of asymmetry. A normal distribution is a symmetric distribution with a value of zero, a negative value of skewness indicates that the distribution is skewed to the left i.e. left-tailed in which case the mean is less than the median, while a positive value is a right-tailed distribution. The skewness values of import inputs of chemicals are negative which means it is distribution has a left-tail, and the rest of the series exhibit the features of a right-tailed distribution as they are all having positive values greater than zero.

The values of kurtosis measure the difference between the heaviness of the tails of a distribution and a normal distribution. It also measures the peakedness and flatness of a distribution. A value near zero has a shape that is close to the normal distribution, negative values have a distribution that is considered more peaked than normal while positive values are flat than normal. The kurtosis values in the table above are all positive and far from zero which implies that they have distributions which are more peaked compared to a normal distribution. The Jacque-Bera test is a goodness-of-fit test that determines if the sample data series has kurtosis and skewness values consistent with a normal distribution. This test's results are always nonnegative, and the farther they are from zero, the less likely the sample data is to follow a normal distribution. None of the time series data had a normal distribution, as seen in the table above.

2.7. Unit Root Test

Variable	ADF Critical value @5%	T- Statistics	P-value	Decision
CHEM_VA	-2.998064	-4.825651	0.0009	I (1)
CHEM_IM	-2.998064	-3.491050	0.0178	I (1)
CHEM_EXP	-2.991878	-3.285627	0.0271	I (0)
CLTE_VA	-2.998064	-3.190284	0.0330	I (1)
CLTE_IM	-2.998064	-5.748825	0.001	I (1)
CLTE_EXP	-2.998064	-9.377635	0.0000	I (1)
FB_VA	-2.998064	-4.710921	0.0011	I (1)
FB_IM	-2.998064	-4.389881	0.0024	I (1)
FB_EXP	-2.998064	-5.459789	0.0002	I (1)

MEDH_VA	-2.998064	-3.571642	0.0149	I (1)
MEDH_IM	-2.998064	-4.414281	0.0022	I (1)
MEDH_EXP	-2.998064	-5.720879	0.0001	I (1)
MANUF_OUT	-3.644963	-4.745966	0.0057	I (1)
EXCH	-2.998064	-3.568226	0.0150	I (1)

Source: Eviews 10

Table 2

The choice criterion was based on a critical level of 5%. In this case, we reject the null hypothesis of a unit root in favor of the one-sided alternative and conclude that a stationary series has been established. The results of the tests for all variables and all the alternative models are presented in Tables 4.3 and at their levels, then for their initial differences. The results show that each of the series is non-stationary when the variables are defined in levels. The non-stationary components are removed in all cases by first differencing the series, and the null hypothesis of non-stationarity is rejected at the 5% significance level, implying that all the variables are integrated of order one I. (1).

2.8. Regression Test Results

The findings of the linear models are presented in this section. It went over the projected values for both the long- and short-run coefficients. The coefficients computed for both long-run and short-run models are shown in the tables below.

Chemicals

Cointegrating Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(REAL_EXCH_RATE) (VA)	0.001160	0.003348	0.346417	0.7325
CointEq (-1)	-0.446230	0.207181	-2.153818	0.0430
D(REAL_EXCH_RATE) (VA)	0.001160	0.003348	0.346417	0.7325
CointEq (-1)	-0.446230	0.207181	-2.153818	0.0430
D (CHEM__IM_ (-1))	-0.225587	0.338088	-0.667245	0.5136
D (CHEM__IM_ (-2))	-0.665402	0.331353	-2.008137	0.0608
D(REAL_EXCH_RATE)	-0.010001	0.005926	-1.687610	0.1097
CointEq (-1)	0.080972	0.277458	0.291837	0.7739
D(REAL_EXCH_RATE) EX	-0.003932	0.002154	-1.825145	0.0830
CointEq (-1)	-0.641074	0.199936	-3.206388	0.0044
Clothing and Textiles				
D(CLTH__TEX__V__ADD)	-0.081727	0.223579	-0.365542	0.7211
D(CLTH__TEX__V__ADD)	0.412437	0.191587	2.152738	0.0524
D(REAL_EXCH_RATE)	0.089459	0.038184	2.342824	0.0372
D (REAL_EXCH_RATE (-1))	-0.040639	0.042021	-0.967100	0.3526
D (REAL_EXCH_RATE (-2))	-0.031405	0.040359	-0.778141	0.4516
D(REAL_EXCH_RATE (-3))	0.071557	0.034233	2.090304	0.0585
CointEq (-1)	-0.115976	0.121058	-0.958016	0.3570
D(REAL_EXCH_RATE) IM	-0.005863	0.002994	-1.958541	0.0643
CointEq (-1)	-0.361572	0.173483	-2.084189	0.0502
D (CLOTH__AND_TEX___EXP (-1))	-0.466986	0.209950	-2.224270	0.0384
D(REAL_EXCHANGE_RAT)	-0.000642	0.000554	-1.158539	0.2610
CointEq (-1)	-0.351728	0.246375	-1.427610	0.1696
Food and Beverages				
D(FOOD_AND_BEV__V__ADDED (-1))	0.230043	0.328919	0.699390	0.4958
D(FOOD_AND_BEV__V__ADDED (-2))	-0.127890	0.280715	-0.455587	0.6557

D(REAL_EXCHANGE_RATE)	0.086646	0.056073	1.545224	0.1446
D (REAL_EXCHANGE_RATE (-1))	-0.243220	0.107474	-2.263060	0.0401
D (FOOD__IM_ (-1))	-0.998155	0.342820	-2.911602	0.0121
D (FOOD__IM_ (-2))	-0.960951	0.310229	-3.097554	0.0085
D (FOOD__IM_ (-3))	-0.745740	0.269582	-2.766282	0.0160
D(REAL_EXCH_RATE)	-0.053056	0.024446	-2.170348	0.0491
D (REAL_EXCH_RATE (-1))	-0.032356	0.020258	-1.597189	0.1342
CointEq (-1)	0.475824	0.254992	1.866033	0.0848
D(REAL_EXCH_RATE) EX	-0.001002	0.003298	-0.303911	0.7642
CointEq (-1)	-0.327599	0.167062	-1.960945	0.0633
Medium and High-Tech				
D(MEDHI__T_V__ADDE)	0.271524	0.121179	2.240689	0.0431
D(REAL_EXCH_RATE)	-0.106689	0.049254	-2.166107	0.0495
D (REAL_EXCH_RATE (-1))	0.074789	0.066940	1.117244	0.2841
D (REAL_EXCH_RATE (-2))	0.101439	0.059069	1.717314	0.1096
D (REAL_EXCH_RATE (-3))	-0.095766	0.055484	-1.726022	0.1080
CointEq (-1)	-0.367979	0.172131	-2.137788	0.0521
D (MEDHI_T_IM_ (-1))	-0.325704	0.316323	-1.029654	0.3185
D (MEDHI__T__IM_ (-2))	-0.603702	0.331018	-1.823770	0.0869
D(REAL_EXCH_RATE)	-0.056723	0.031140	-1.821548	0.0873
CointEq (-1)	-0.056692	0.234236	-0.242027	0.8118
D(REAL_EXCH_RATE) EX	-0.000199	0.000354	-0.561848	0.5802
CointEq (-1)	-0.504920	0.193341	-2.611551	0.0163
D (MANUF__OUTPUT (-1))	0.217036	0.244993	0.885886	0.3906
D (MANUF__OUTPUT (-2))	-0.103744	0.244573	2.468564	0.0271
D (REAL_EXCH_RATE)	-0.012338	0.010425	-1.183556	0.2563
D (REAL_EXCH_RATE (-1))	-0.036715	0.011530	-3.184292	0.0066
D (REAL_EXCH_RATE (-2))	0.013635	0.009604	1.419712	0.1776
CointEq (-1)	-0.006097	0.070723	-0.086209	0.9325

Source: Eviews 10

Table 3: Coefficient of the ARDL Model

Table 3 shows the long and short-run regression findings for the coefficient of the lagged values of the dependent and independent variables for the linear ARDL model, which assumes a symmetric impact of the variables. Using the p-value to determine the significance of the coefficients, if the p-value is larger than or equal to 0.05, the coefficient is considered non-significant and has no influence on the dependent variables. Starting with the model in which chemicals (Value added, import inputs, and exports) are the dependent variable, it can be inferred that the exchange rate has no substantial influence on the coefficient listed in the table pertaining to the production of chemicals in the short-run. This means the exchange rate has no significant effect on the production of chemicals, its import inputs, and the rate of export. Observing clothing and textiles (Value added, import inputs, and exports) as a dependent variable, it can be seen that the exchange rate has no substantial influence on the coefficient listed in the table pertaining to the production of clothing and textiles in the short-run, except for its value of exports whose p-value (0.0384) is lesser than 0.05. This means a percentage increase in the value of the exchange rate will lead to -a 46.6% decrease in the rate of exporting clothing and textiles in the short run. This means the exchange rate has a significant effect on the export of clothing and textiles.

Observing food and beverages (Value added, import inputs, and exports) as one of the dependent variables, it can be seen that the exchange rate has no substantial influence on the coefficient listed in the table pertaining to the production of food and beverages in the short-run, except for its value of import inputs whose p-value (0.0121, 0.0085, 0.0160) for the three lags are less than 0.05. This means a percentage increase in the value of exchange rate will lead to -99.6%, -96%, -74% decrease in rate of importing the inputs of food and beverages in the short run. This means exchange rate has a significant effect on the import inputs of food and beverages. Checking medium and high-tech products (Value added, import inputs, and exports) as

one of the dependent variables, it can be seen that the exchange rate has an influence on the general production of medium and high-tech products (value-added) whose p-value (0.0431) is less than 0.05. This means a percentage increase in the value of the exchange rate will lead to a 27% increase in the value-added of medium and high-tech products in the short run. This denotes that the exchange rate has a significant effect on the value added of medium and high-tech products. Checking the overall manufacturing output as a percentage of total GDP, as one of the dependent variables, it can be seen that the exchange rate is having an effect on it, whose p-value (-0.0271) is less than 0.05. This means a percentage increase in the value of the exchange rate will lead to a 10% decrease in the total manufacturing output in the short run.

3. Conclusion and Recommendation

Following the summary, it is concluded that, the exchange rate is having both positive and negative effects on the performance of the manufacturing sector as a whole. This implies that each Industry in the manufacturing sector should take advantage of the increase (depreciation)in exchange rate by exporting more final products, and making use of local raw materials so as to reduce the rate at which they import manufacturing inputs.

This research study further gives some recommendations on the possible ways to revamp the manufacturing sector to achieve its full potential and to be more efficient and productive. The following steps must be properly monitored and put into effective operation. The recommendation goes as follows:

1. Industries in the manufacturing sector should take advantage of the increase (depreciation)in the exchange rate by exporting more final products.
2. Industries should try as much as possible to make use of local raw materials for the production process so as to reduce the rate at which they import manufacturing inputs.
3. The government should try as much as possible to stabilize the exchange rate to reduce its fluctuation, which can make the import of inputs cheaper if there is a need to import any raw materials.

Data Availability

The data set collected and analyzed during the current study is available from the corresponding author on request. The corresponding authors have full access to the data in the study and take responsibility for the integrity of the data and the accuracy of the data analyzed.

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