Daniel Chibueze Onyejiuwa

Exchange Rate Fluctuations, Interest Rate Instability and Manufacturing Sector Output in Nigeria (1986 – 2017)

Doktorarbeit / Dissertation

Bibliografische Information der Deutschen Nationalbibliothek:

Die Deutsche Bibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.dnb.de/ abrufbar.

Impressum:

Copyright © 2019 GRIN Verlag
ISBN: 9783346253262

Dieses Buch bei GRIN:

https://www.grin.com/document/931923

Daniel Chibueze Onyejiuwa

Exchange Rate Fluctuations, Interest Rate Instability and Manufacturing Sector Output in Nigeria (1986 – 2017)

GRIN Verlag

EXCHANGE RATE FLUCTUATIONS, INTEREST RATE INSTABILITY AND MANUFACTURING SECTOR OUTPUT IN NIGERIA (1986 – 2017)

BY

DANIEL CHIBUEZE ONYEJIUWA

SSP15/16/H/1075

B.Sc. (Economics), Uturu
M.Sc. (Economics), Ife

A Ph.D RESEARCH THESIS WRITTEN IN THE FACULTY OF SOCIAL SCIENCES AND SUBMITTED TO THE POSTGRADUATE COLLEGE, OBAFEMI AWOLOWO UNIVERSITY, ILE-IFE, NIGERIA, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN ECONOMICS

2019

Dedication

To all researchers who painstakingly contribute to knowledge

ACKNOWLEDGEMENTS

My deep appreciation goes to Almighty God, all thanks and praises be to Him for the grace, strength, wisdom and journey mercies during the course of this study.

My special appreciation goes to my supervisor, Prof. B. A. Folorunso. His academic excellence was all I needed to bring out the best out of little. He was there, every second that counted, to correct, proof-read, direct, teach, and add the professional touch that made this study worthwhile. He did not only painstakingly supervise this research, he mentored me in all aspect of life. I equally extend my special thanks to my co-supervisor, Dr. O. E. Falade, who was always there to correct, guide and redirect my steps on the study. I am very grateful.

My unreserved appreciation goes to the Head of Department, Prof. T. O. Akinbobola, who provided all the needed assistance that made the difference during the course of my programme. I would not fail to acknowledge great teachers of all times that gave me sound tutelage, to making me a better person: Professor J. O. Olusi (rtd), Professor S. I. Oladeji, Professor R. O. Soetan, Professor A. E. Akinlo, Professor A. A. Adebayo, Professor P. A. Olomola and Dr. R. A. Ajisafe, Dr, R. O. Olayeni. I also extend my profound gratitude to Dr. A. G. Aremo, Dr. A. A. Adegboye, Dr. D. Olayungbo and Dr. A. V. Adejumo for their academic supports they gave me unconditionally. I thank them all for their educative impact in my life.

The support of my darling wife was so enormous that there was no amount of words to qualify virtues and steadfastness she showed during the period of this programme. My little Ds, daddy's pets, Delight, Divine, Daniella, Daniel (Jnr) and David. They are a delight to look at for inspiration and strengths and they beautified every moment I invested in this study. The joy of my livelihood goes to my parents,

Pastor and Deaconess I. C. Onyejiuwa, who gave me all the qualities I possessed and the factor of success of which I will ever be grateful. Their encouragements, wise counsels and prayers to carry on was so overwhelming. My appreciation also goes to my siblings for the supports they gave to me in different dimensions.

My profound gratitude to my mentor, Elder (Dr.) Bisi Ogunjobi (OON); his deserving qualities which are scarce as diamond and I tapped from. My profound appreciation goes to the Vice-chancellor of Samuel Adegboyega University, Ogwa, Professor, B. E. Aigbokhan, for his unreserved impact in my life. His underlining educative impact is indelible. Also, I extend my appreciation to the Dean, College of Management and Social Sciences, Samuel Adegboyega University, Professor J. U. Idialu, for the unflinching support given to me. I also thank Rev. K. Ola, Dr. Akpati and Mrs. M. Adegboye, for their depth proof-reading and corrections made on this work. I also appreciate my dear colleagues and friends at Samuel Adegboyega University.

I owe special thanks to my course mates Dr. J. T. Dada, Dr. C. O. Olaniyi, Dr. N. O. Oladujoye, Dr. S. A. Ibitowa, Dr. I. O. Bankefa, Mr. O. Adesanya and Mr. E. Awoleye, who all contributed to the success of this study. I thank the non-academic staff in the department, Mr. S. A. Afe, Mr. O. Oni, Mrs. E. Fasanu, Mrs. O. Olasupo, Mrs. R. N. Ukaegbu, Mr. O. D. Famakinde and Mr. O. A. Amure, for their contributions towards the success of my programme. I extend my appreciation to Miss Rachel Fagboyo and Mr. Akinola Afolabi for their invaluable contributions. To all my friends, loved ones, class mates and colleagues who, in one way or the other, assisted me during the course of this study, I appreciate them all.

ONYEJIUWA Daniel Chibueze

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Abstract

The study appraised different interest rate policies, exchange rate regimes and manufacturing sector in Nigeria from 1986 to 2017 and determined the effect of interest rate and exchange rate interaction on manufacturing sector output. It investigated the dynamic effects of exchange rate fluctuations and interest rate instability on manufacturing sector output, examined the response of manufacturing sector output to shocks from exchange rate fluctuations and interest rate instability. It also determined the threshold levels of exchange rate and interest rate that will spur manufacturing sector output in Nigeria. These were with a view to examining the relationship among exchange rate fluctuations, interest rate instability and manufacturing sector output in Nigeria.

The study used secondary data. Annual data from 1986 to 2017 on manufacturing sector output, exchange rate, interest rates, gross fixed capital formation, credit to manufacturing sector, real GDP per capita, agricultural sector output, construction sector output, trade sector output, service sector output, tax revenue, inflation rate and trade openness were obtained from the Central Bank of Nigeria Statistical Bulletin of various years and World Development Indicators of various years, published by World Bank. The data collected were analysed using tables, graphs, Fully Modified Ordinary Least Square estimator, Autoregressive Distributed Lag model, Vector Autoregressive model and Sarel Threshold model to achieve the stated objectives.

The resuts from the appriasal showed that exchange rate exhibited a high degree of fluctuations (mean = -4.40) and revealed a high interest rate instability (mean = -3.11) as a result of inconsistencies in exchange rate and interest rate policies adopted by the monetary authority. These inconsistencies in exchange rate and interest rate policies resulted in the low and unstable manufacturing sector output contribution to real GDP. The results showed a positive effect of interest rate and exchnage rate interaction ($t = 4.01$; $p < 0.05$) on manufacturing sector output. This indicated that there exist a strong effect of exchange rate, through the channel of interest rate, on manufacturing sector output. The results also showed a negative effect of exchange rate fluctuations ($t = -2.55$; $p < 0.05$) and interest rate instability ($t = -2.89$; $p < 0.05$) on manufacturing sector output. The results imply that exchange rate fluctuations and interest rate instability exert negative influence on manufacturing sector output. The results of manufacturing sector output response to shocks from exchange rate fluctuations showed an instant positive value of 11% at first period and increased to 13.01% at the end period, while the response of manufacturing sector output to the interest rate instabilty showed a negative movement of -8.34% at the first period and further declined to -13.93% at the end period. These results indicated that manufacturing sector responds positively to shocks from fluctuations in exchange rate and negatively to interest rate instability. Furthermore, the results revealed ₦154.40 to $1 ($t = -214.61$; $p < 0.05$) as the exchange rate threshold and 23.65% ($t = -6.58$; $p < 0.05$) as the interest rate threshold. These strongly suggested that the indicative threshold values for exchange rate and interest rate that would be detrimental for Nigerian manufacturing sector if exceeded.

The study concluded that exchange rate fluctuations and interest rate instabilty dampened manufacturing sector output in Nigeria.

Key Words: Exchange rate, interest rate, manufacturing, fluctuations and instability

CHAPTER ONE

INTRODUCTION

1.1. Background to the Study

The manufacturing sector is a vital catalyst for economic growth in many developed and developing countries and has huge benefits that are essential for economic growth and transformation (Szirmai, 2012; Odior, 2013; Chete, Adeoti, Adeyinka, & Ogundele, 2014; Onakoya, Ogundajo, & Johnson, 2017). An increase in the share of manufacturing sector output in total output has the possibility and capability to increase GDP growth and contract growth volatility (Enu, Hagan, & Attah-Obeng, 2013). The manufacturing sector has also been seen as a leading sector in most advanced countries in many aspects. Some of these aspects are ways for increasing manufacturing output to substitute imports and contribute to export growth, promoting the growth in private investments, generating foreign exchange earnings, increasing employment and widening efficient and effective integration among various sectors in the economy (Charles, 2012).

The Verdoorn's and Kaldor's laws confirmed the strong contribution of the manufacturing sector to developing countries' economy (Verdoorn, 1949; Kaldor (1975). The basic deduction from their laws is that an increase in manufacturing sector labour productivity and the productivity-enhancing innovations technologies employed in the sector lead to greater proportion in economies of scale and technical progress than any other sector (Szirmai, 2009; Arnold, Javorcik, & Mattoo, 2011; Thirlwall, 2013; Onakoya, 2018). Szirmai (2012) believed that the emergence of manufacturing sector as a major activity

in many developing countries has shaped and structured the fundamental aspect of the economic growth and development.

Industrial development, through significant growth in manufacturing sector, can be traced back at the technological breakthrough by applying the techniques of steam power to textile production in Great Britain (Szirmai, 2012). This development was later referred to as industrial revolution in Great Britain, which evolved over time from science, technology and innovation development. With the emergence of modern manufacturing and the structure of the world economy, economic welfare experienced dramatic changes. As Szirmai (2012) put it "industrialisation became synonymous with economic development, wealth maximisation, political power, technological leadership and international dominance". Experiences of countries such as: China, Brazil, South Korea, Singapore and Malaysia have proven that over the past five decades industrialisation has played critical role in transforming many less developing countries to middle-income countries. Notably, one of the main conditions to indicate that a country is industrialised is when about 75% of the industrial output arises in the manufacturing sub-sector of the industrial sector (Ojo, 2002).

Eze and Ogiji (2013), Chete, Adeoti, Adeyinka and Ogundele (2014) and Onakoya (2018) observed that Nigerian economy is under-industrialised and its capacity utilisation is also low. Over the years the sector also has become more dependent on the foreign sector for import of non-labour factor input in its production, which is greatly affected by fluctuations in exchange rate. In the quest to import therefore, any shock from external forces could lead to undesirable outcome in the manufacturing sector, and also has the capacity to impact negatively on economic growth. It is also important to note that Nigerian manufacturing sector has been stagnated and negligible over the years because of over-dependence on oil and poor

performance of the agricultural sector which could have served as a source of raw materials input for the manufacturing sector (Onyejiuwa, 2016). The sector also has been relatively low in its output share to the GDP since pre Structural Adjustment Program (SAP) era and continued to record low value also during post SAP era.

The component of GDP during the past 31 post SAP years in Nigeria is presented in Table 1.1. The table shows the dominance of agriculture and oil and gas, which are classified as the primary sector. In 1986, the manufacturing sector recorded relatively low value of 9.01% share to GDP compared to agriculture, oil and gas, trade and services sectors contributions to real GDP. Manufacturing sector output's contribution to GDP continued to fall to 7.55% in 1996, and slightly decreased again to 6.60% in 2001. Due to reforms and industrial policies that translated to improvement in the innovations in manufacturing sector especially in the economic reform agenda between 1999 and 2007 particularly within the framework of the National Economic Empowerment and Development Strategy (NEEDS), the value of manufacturing sector contribution to GDP improved (Chete, Adeoti, Adeyinka, & Ogundele, 2013).

In 2011, the value of manufacturing output share to the GDP increased to 7.33% and further increased significantly to 9.28 in 2016 but marginally dropped to 9.18 in 2017. In spite of the little improvements, the sector still recorded lower contribution to GDP than most of the main sectors. In 2017, the growth of the sector recessed with a negative value of -1.03% which was better than the previous year's level of -2.78% (CBN, 2017). The data also showed that from 1986 to 2001, more than half of Nigeria's output were generated by the primary sector, while trade and services took over the dominance from thence till 2017.

TABLE 1.1: Sectoral Contributions to Real GDP in Nigeria from 1986 to 2017

Sector	1986	1991	1996	2001	2006	2011	2016	2017
A. Primary Sector	**51.50**	**51.34**	**51.86**	**50.30**	**47.83**	**38.41**	**32.93**	**33.88**
1. Agriculture	19.60	18.70	19.52	19.89	25.56	23.35	24.45	28.08
2. Oil and Gas	31.67	32.42	32.26	30.33	22.19	14.95	8.35	8.67
3. Solid Minerals	0.23	0.21	0.08	0.09	0.08	0.10	0.13	0.13
B. Secondary Sector	**11.22**	**11.92**	**10.09**	**9.49**	**8.89**	**10.49**	**12.99**	**12.90**
1. Manufacturing	9.01	9.53	7.55	6.60	6.44	7.33	9.28	9.18
2. Construction	2.20	2.40	2.54	2.90	2.45	3.16	3.71	3.71
C. Trade and Services Sector	**37.28**	**36.74**	**38.04**	**40.20**	**43.28**	**51.10**	**54.09**	**53.23**
1. Trade	11.74	11.94	11.60	10.85	13.81	16.76	17.18	16.86
2. Services	25.54	24.80	26.44	29.35	29.47	34.34	36.91	36.36

Source: CBN Statistical Bulletin of various years.

Many studies showed that poor performance of macroeconomic variables, infrastructure and disarticulation among sectors, especially between agriculture and manufacturing, are major factors that might have accounted for the low contributions of manufacturing sector output contribution to real GDP (Ake, 1981; Manufacturers Association of Nigeria, 2015; Odior, 2013; Onakoya *el at.,* 2017; Onakoya, 2018). Others supported that economic policies are major hindrance to the growth of the manufacturing sector (Charles, 2012; Eze & Ogiji, 2013). This has made Nigerian Federal government over the years to introduce national development plans, industrial policies, initiatives, monetary and fiscal measures and sectoral developments to enhance the manufacturing sector (Chete, *et al*., 2014).

These plans, policies and initiatives included different periods of effective control and management of the exchange rate market among other policies and plans such as Nigeria Economic Empowerment Development Strategy (NEEDS), national industrial policy, privatisation policy, the creation of industrial estates in various cities in the country, establishment of Bank of Industry to provide cheap loans to Small and Medium Scale Enterprises and the national export strategy to improve competitiveness in the foreign market and create job**.** In addition, special policy measures directed towards supporting local (small-scale) industries in the manufacturing sector were also implemented. Road construction, rehabilitation of the railways, and other improvement in social amenities and social welfare packages towards alleviating poverty were other policy measures that were initiated to improve manufacturing sector in Nigeria. [Manufacturing Association of Nigeria, (MAN) 2015].

Considering the efforts of the government at different levels of governance and various National Development Plans targeted to improving the industrial sector, especially the manufacturing sector, one would expect the policies and programmes to

yield positive results in increasing manufacturing sector output. However, when comparing Nigeria to Malaysia and South Africa, which they were at the same level of economic development with Nigeria in the 1960s and the early 1970s, in terms of manufacturing sector share to GDP from 1986 to 2016 (Ekpo, 2005), the fact showed a contrary expectation. Averagely, Malaysia showed 60.4%, and South Africa made 19.3% while Nigeria recorded 7.9% [World Development Indicators (WDI), 2017]. Although, Malaysia and South Africa may not have the same economic plan or system with Nigeria, the economy of each of the countries in the past showed that they were classified as developing or middle income countries like Nigeria. But over time, they have shown considerable stages of economic improvements.

The manufacturing sector's performance remained almost the same with barely no improvements. The sector began to increase again in 2010 but the growth rates were relatively low when compared to that of South Africa, Malaysia and most developing countries. Specifically, Malaysian manufacturing sector contribution to its GDP showed a great improvement over the years from 44.46% between the first five years (1986 to 1990) and later improved massively within the next decade 53.78% in 1990. This improvement continued to increase to 78.38% between 1996 and 2000, and later dropped marginally to 62.9% in the last five years. Although, South Africa manufacturing sector contributions to its GDP is comparably lower than Malaysia’s, it is higher than that of Nigeria (WDI, 2017).

More importantly, the realisation of viable and developed manufacturing sector depends largely on the performance of macroeconomic factors. Odior (2013) and MAN (2015) argued along this line that manufacturing sector in Nigeria seems to be at the crossroad with fluctuations in exchange rate, high cost of borrowing (interest rate), unstable price in the markets and balance of payment difficulties. These are some of

macroeconomic issues that can affect the growth in the manufacturing sector. In the face of conflict in achieving stable prices, exchange rate control and growth in the economy, the Central Bank of Nigeria (CBN) has maintained a high monetary policy rate of 14%, cash reserve ratio of 25% and liquidity ratio of 30% (Monetary Policy Committee, 2016) since 2016. The CBN based its decision on incomplete fiscal reforms which raise risk and uncertainty, and reducing interest rate and other banking rates which will spur credit growth in all sectors that may likely put pressure on price level and foreign exchange market (Monetary Policy Committee, 2016). The interest hedging by CBN can moderate inflation and also attract foreign investments into the country through capital inflow. The CBN was of the view that in the past, the reduction in monetary rates could only stimulate consumption and investment spending, rather than deploying the available liquidity to provide credit to agriculture and manufacturing sectors. For instance, the increase in the monetary policy rate (MPR) value of 11% in 2013 to 14% in 2016 led to an increase in the cost of borrowing for manufacturing activities (Monetary Policy Committee, 2016).

Recently, the CBN held the MPR at 14% to pursue a tightening of liquidity in their Monetary Policy Committee (MPC) meeting held on 22nd November, 2018. The decision was to curb the threat of rising inflation by foreseeing injection from the fiscal authority. The CBN argue that reducing the rate could reverse the gains of lowered importation (which invariably will increase the cost of intermediate and capital goods) in the face of high exchange rate, and support moderate growth in sectors (Monetary Policy Committee, 2017). This position was earlier highlighted by Dash (2004) who held the view that the high interest rate would reduce the inflationary expectations and prevent the vicious cycle of inflation and exchange rate depreciation. However, the fact that Nigeria is under-industrialised, the benefit of high interest rate might not translate

to high inflow of capital, which has been the argument of Mundell Fleming theoretical point of view.

These issues of uncertainty and instability in interest rate posed serious challenges to the manufacturing sector. Nwokoro (2017) posited that interest rate is the cost of credit. More so, interest rate is the channel that the financial sector linked with the manufacturing sector. From the borrowing angle, lending rate, which is referred to as cost of loanable fund, have negative relationship with investment in the sector. When lending rates are high, private investment are discouraged and vice versa. The implication is a high monetary policy rate and interbank rate can lead to high lending rates which in turn contract investment in the manufacturing sector (Acha & Acha, 2011). Therefore, a situation where manufacturing firms pay double digit lending rate in their loans and advances is not profitable and friendly (MAN, 2015).

The stabilization of the rate of foreign exchange in Nigeria is very crucial in manufacturing sector output growth (Omotola, 2016). Most of the inputs of manufacturing sector production are imported and any fluctuations in the foreign exchange, the cost of these inputs will be very difficult to determine their cost function, especially in the short-run. Similarly, the devaluation of the Naira, its consistent depreciation, the closure of the Real Dutch Auction System (RDAS) and Weighted Dutch Auction System (WDAS) foreign exchange cause the import bills for raw-materials to increase over the period as manufacturers were forced to purchase their foreign exchange needs at the Inter-Bank and parallel markets (MAN, 2015). Moreover, some manufacturing companies who had earlier drew letters of credit from international financial institutions at a more favourable exchange rate before any new policy was implemented and as the letters mature, they are likely to repay them at a higher exchange rate because of likelihood of Naira depreciation. As a result, the challenges of exchange

rate fluctuations affect macro-economic management, and changes in the rate of exchange rate have huge implications on real output, for a country's Balance of Payments equilibrium attainment and its income distribution and economic growth in general. By implications, records have shown that exchange rate has been depreciating over the years. The persistent depreciation has also been identified in Obadan (2001 and 2002), Folorunso (2000) and Aigbokhan (1991).

As indicated in Table 1.2, between 1985 and 1990, Naira average exchange rate was ₦5.20 to USD dollar with a percentage (%) change of 61.90%. Within five years average, the value at which Naira exchange to USD Dollar increased from ₦18.61 to ₦52.09 between 1996 and 2000. This showed a % change of 24.92% and 66.75% respectively. The depreciation became worrisome between 1995 and 2000 with the highest % change, coupled with the high interest rate of 22.85 in the same year and meagre value manufacturing sector contribution to GDP of 6.82 leading to the worst recession in five years average with a value of -3.9. The exchange rate recorded a high depreciating value of ₦179.49 to 1$ and interest rate of 25.11 between 2011 and 2016. The situation worsens in 2017 with exchange rate and interest rate of ₦305.79 and 30.68 respectively (CBN, 2017). From Table 1.2, the % change showed the level at which depreciation of Naira in relative to US dollar fluctuates. Likewise, the interest rate (maximum lending rate) showed an unstable value during the period. From 1986 to 1990, the interest rate revealed an average value of 20.22% and later rose to 25.98% on average between 1991 and 1995. The five-year average witnessed a reduction in interest rate from 1996 to 2010, and upsurge to 25.11% between 2011 and 2016. Before the end of 2017, the interest rate stood at 30.68%. The manufacturing sector output % contribution to real GDP disclosed an average value of 9.27% within 1986 to 1990. This later dropped to 8.65% between 1991 and 1995. The value of the extent manufacturing

sector contributes to real GDP continued to drop from 1996 to 2005, and later gained momentum by increasing to 6.59% between 2006 and 2010. The value maintained an increase from thence and stood at 9.18 in 2017 (CBN, 2017). These fluctuations and instabilities in exchange rate and interest rate respectively might be due to inconsistencies in monetary policies (Osmond, Egbulonu, & Emerenini, 2015; Onakoya, Ogundajo, & Johnson, 2017).

Comparing these data with Malaysia and South Africa situation, it showed that these developing countries have a considerable strong exchange rate and low interest rate. Malaysian exchange rate in respect to USA Dollar was L129.32 between 1986 and 1990, and appreciated to L118.99 in the following five years. The appreciating trend in Malaysia exchange rate improved to L98.58 between 2011 and 2016. Malaysia lending rate showed a declining rate from 9.34% between 1986 and 1990 to 4.70% in the last five years. South Africa also showed a significant improvement in exchange rate and interest over the years. Their foreign exchange via USA Dollars appreciated from R111.89 within 1986 and 1990 to R85.62 between 2011 and 2016 (WDI, 2017).

TABLE 1.2: Exchange Rate, Interest Rate and Manufacturing Sector in Nigeria:

5 Year Average (1986 to 2017)

5-year Average	Exchang e rate ($)	Exchange rate % change	Lending (Max) rate	Lending (Max) rate % change	% of Manufacturing to GDP	Manufacturing contribution to GDP % Change
1986-1990	5.20	61.90	20.22	21.23	9.27	-0.77
1991-1995	18.61	24.92	25.98	-0.41	8.65	-1.81
1996-2000	52.09	66.75	22.85	2.06	6.82	-3.9
2001-2005	125.58	5.36	22.94	0.18	6.26	-0.20
2006-2010	134.45	3.18	20.18	3.29	6.59	0.89
2011-2016	179.00	9.74	25.11	3.28	8.88	6.22
2017	305.79	20.63	30.68	12.42	9.18	-1.03

Source: Central Bank of Nigeria Bulletin, 2017 growth rates for exchange rate, interest rate and manufacturing sector contribution to Real GDP is calculated from 2016 and 2017 data.