Nwosa, Philip Ifeakachukwu

Article

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Foreign Direct Investment in Nigeria:
Its Role and Importance in Industrial Sector Growth

Philip Ifeakachukwu Nwosa[1]

Abstract: This study examined the role of foreign direct investment in industrial sector growth in Nigeria for the period spanning 1970 to 2016. Examining this issue is pertinent owing to the need to transform the Nigerian economy from an oil dependent economy to an industrialized economy. The study utilized the error correction modelling technique and the result of the study showed that foreign direct investment had negative and significant impact on industrial sector growth in Nigeria. The study concluded that the role of foreign direct investment in the growth of the Nigerian industrial sector had been harmful rather than enhancing it. Thus, the study recommended the need for the Federal government to shift her focus and policy directives from the oil sector to the industrial sector as this will attract the attention of foreign investors into the industrial sector. Also, there is the need for improve strategies to enhance the competitiveness of Nigerian industrial sector in attracting foreign direct investment.

Keywords: foreign direct Investment; industrialization; error correction model; Nigeria

JEL Classification: F21; L60

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1. Introduction

The need to transform the Nigerian economy from an agro-mono-product economy into an industrialized country has been the focus of successive government since the attainment of independence in 1960 till date. In spite of the various industrial plans initiated by the successive government, the economy is still dominated by the oil sector while the contribution of the industrial sector (less crude petroleum and natural gas sub-sector) to real gross domestic product for most of the years has not only been minimal as evident in figure 1 below but has also nose-dived from 1982 when it peaked at 12.14% to 6.65% in 2010 before rising to 10.1% in 2014 and declining to 9.4% in 2016. The unimpressive share of the industrial sector to the real gross domestic product undoubtedly accounted for less than 4 percent of contribution of the industrial sector to export revenue. (NIRP, 2014) Beside the dismal performance of the industrial sector, the sector is also beset with numerous bottlenecks such as accounting for more than 50 percent of the country's import burden; lack of modernized technological equipments; unavailable skilled human resources needed to guarantee competitiveness in the sector; poor infrastructural equipments and lack of finance. (especially long term finance) (NIRP, 2014; Ubi et al., 2012)

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[1] Federal University Oye-Ekiti, Faculty of Social Sciences, Department of Economics, Nigeria, Corresponding author: philip.nwosa@fuoye.edu.ng.

The lack or perhaps shortage in investment (finance) has been observed as a long standing impediment to the growth of industrial sector. The insufficient level of government investment in the sector have further put a limit to the extent to which government can provide the required output-enhancing facilities to promote the industrial sector. Recognizing the impediment posed by the lack of investment and the pressing need to fill this gap and stimulate long term industrial growth, have largely resulted in embracing foreign capital inflows as an injection into the investment stream of the country to propel industrial growth by complementing domestic savings. Besides, foreign direct investment provides access to modern technology and managerial skills, which are pertinent to the growth of the industrial sector. (Over, 1975)
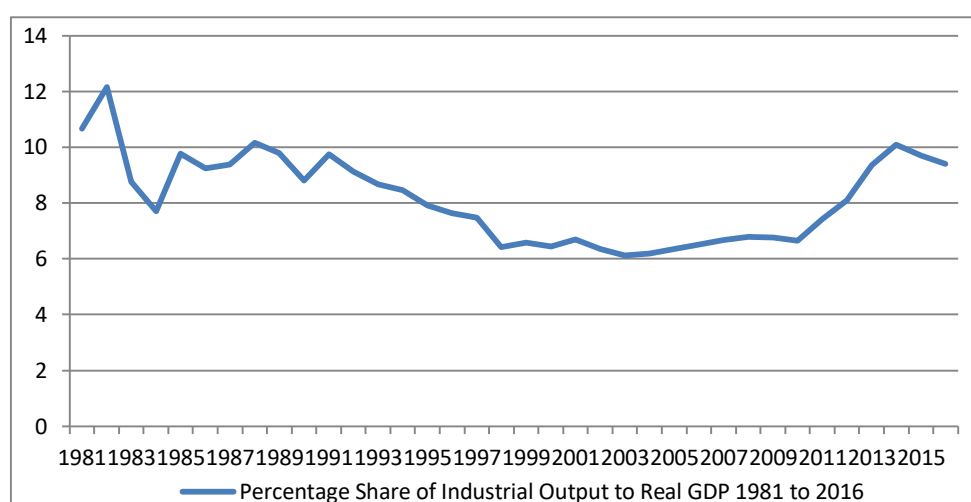

Figure 1. Percentage Share of Industrial Output to Real GDP

Although the Nigerian economy has been a beneficiary of the foreign direct investment inflows since the 1970's, it is not clear if such inflows have had any influence on the industrial development of the country. This issue is even more worrisome owing to the lack of empirical literature on the relationship between foreign direct investment and industrial development in Nigeria. Most of the previous studies have focused on the extent to which foreign direct investment influenced economic growth but the findings of such studies can best be described as inconclusive.[1] Still, studies such as Okoli and Agu (2015) and Adejumo (2013) only examined the impact of foreign direct investment on manufacturing output - a sub-sector of the industrial sector.

The current drive for a strong industrial development is premised on the need to diversify the Nigerian economy and reduce her overly dependence on the oil sector. A robust industrial sector is pivotal to mass employment, improved skills and better wages leading to reduction in poverty and income inequalities, and providing the foundation for long run sustainable economic growth that is less susceptible to external shocks. (NIRP, 2014) Also, industrial development has strong effects (linkages) with other sectors of the economy (such as the agricultural sector and the service sectors) and positively influences macroeconomic fundamentals such as inflation, exchange rate, foreign exchange earnings

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[1] See (Chigbu et al., 2015; Umoh et al., 2012; Chatterjee & Turnosky, 2005; Griffin & Enos, 1970).

and balance of payment position among others. Thus, the role of foreign direct investment in the achievement of industrial growth makes this issue worth examining.

Drawing from the above this study seeks to address the research questions "what is the role of foreign direct investment in the growth of the industrial sector in Nigeria for the period 1970 to 2016. In addition to the introduction, section two discussed the literature review while the research method is discussed in section three. Results and findings are discussed in section four while section five discussed the conclusion and policy recommendations arising from the findings of the study.

2. Literature Review

With respect to related literatures Akpan and Eweke (2017) examined impact of Foreign Direct Investment (FDI) and industrial sector performance on economic growth in Nigeria over the period 1981 to 2015. The study employed the Impulse Response Functions (IRFs) and Variance Decomposition (VDC) techniques within a Vector Autoregressive (VAR) framework. The result of the study showed bidirectional causality between FDI and industrial sector output, GDP and industrial sector output while a unidirectional causality was observed from FDI to GDP. The result of the VAR estimate showed that FDI had significant and positive impact on GDP while industrial sector output had significant and positive impact on GDP. The impulse response functions result showed that GDP exhibited negative response to shocks in FDI up to the 3rd period, while the effect was positive from the 4th period henceforth. GDP also exhibited a negative response to shocks in industrial sector output throughout the period observed. The variance decomposition analysis further revealed that GDP was mainly driven by shocks in FDI, with industrial sector output contributing very little. Based on the finding of the study it was recommended that social and economic infrastructure be improved to lessen the burden of industrialist and eventually lower the cost of doing business which in turn would attract FDI inflow into Nigeria.

Adegboye, Ojo and Ogunrinola (2016) examined the relationship between foreign direct investment and industrial performance in selected African countries over the period 1996 to 2015. The study employed pooled ordinary least square technique and fixed effect least-square dummy variable model. The result of the study showed that foreign direct investment had significant impact on industrial performance in Africa. The study recommended the need for government to put in place policies capable of enhancing the performance of domestic industries. Samal and Raju (2016) examined the relationship between foreign direct investment and manufacturing output growth in India over the period 1995 to 2014. The result of the study showed that Trade, GDP, reserves GDP, exchange rate, are the main determinants of FDI in India.

Okoli and Agu (2015) examined the impact of foreign direct investment on the performance of the manufacturing firms in Nigeria over the period 1970 to 2013. The study employed both the Ordinary Least Square and the Vector Error Correction Modelling techniques. The findings of the study indicated that foreign direct investment had negative and significant effect on the performance of manufacturing firms in Nigeria. Thus, the study recommended the need for government actions to be geared towards strategically maintaining and sustaining policies that help encourage FDI inflows especially in the long

run as well as promoting an efficient and enabling macroeconomic environment on which manufacturing firms can thrive.

Obasi (2015) appraised foreign direct investment policies in Nigeria the findings of the study showed that during the period of indigenisation policy, inward foreign direct investment in the Nigerian was low due to the stringent measure on foreign investors. It also observed that the inability of import substitution industrialisation to develop domestic technology has a serious implication on industrialisation in Nigeria. Umer and Alam (2013) examined impact of trade openness and foreign direct investment (FDI) on industrial sector growth in Pakistan over the period 1965 to 2011. The study employed Johansen and Juselius co-integration technique and Vector Error Correction Mechanism approach to estimate both short run and long run relationship among the variables. The results of the study revealed that foreign direct investment and real gross domestic product had positive and significant impact on industrial sector growth while trade openness and inflation had negative impact on industrial sector growth in Pakistan. Further, the study found that real effective exchange rate had insignificant impact on industrial sector growth in long-run while the lagged value of own industrial sector, foreign direct investment, real effective exchange rate and real gross domestic product had positive and significant impact on industrial sector growth in short run. Also, inflation and trade openness had insignificant impact on industrial output growth in Pakistan in the short run. The error correction term confirmed the long-run relationship among all independent variables.

Adejumo (2013) examined the relationship between foreign direct investment and the value added to the manufacturing industry in Nigeria for the period 1970 to 2009. Using the autoregressive lag distribution technique, the study observed that foreign direct investments had a negative effect on the manufacturing sub-sector in Nigeria in the long run. Chandran and Krishan (2008) examined the relationship between Foreign Direct Investment (FDI) and manufacturing growth over the period 1970 to 2003. The study employed autoregressive distributed lag (ARDL) technique and the result of the study found that FDI had significant impact on manufacturing growth both in the short run and in the long run. Hence, the study recommended the need for strategies to enhance the competitiveness of Malaysian manufacturing sectors in the world of intense competition for FDI especially among the Asian economies like China and other ASEAN members. From the above reviewed literature, it was observed that related indigenous literatures (Okoli & Agu, 2015; Adejumo, 2013) only focused on the manufacturing sector which is a sub-sector of the industrial sector.

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3. Methodology

3.1. Theoretical Framework/Model Specification

This study employed the endogenous growth theory for its theoretical framework. The endogenous growth model emphasized influence of foreign capital through externalities on output growth, which is explored through the production function. Thus, considering a simple intensive form of AK production function where output is a linear function of the aggregate capital stock:

$$Y = AK^{\alpha} \qquad\qquad\qquad (1)$$

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Y_t is output (industrial output), A is technological level (production efficiency) which is a positive constant and K is volume of capital stock. According to Lucas (1988), K (capital stock) is decomposed into human capital $\left(K_H{}^{\beta}\right)$ and physical capital $\left(K_P{}^{\phi}\right)$. Equation (1) becomes:

$$Y = AK_H^{\beta}K_P^{\phi} \qquad (2)$$

where β and ϕ are the elasticities of the human capital and physical capital respectively. As noted above, endogenous growth theory emphasized the positive influence of capital inflows on output growth. Thus, incorporating capital inflows (foreign direct investment *(FDI))* into equation (2) becomes:

$$Y = AK_H^{\beta}K_P^{\phi}FDI^{\varphi} \qquad (3)$$

where ϕ is the elasticity of foreign direct investment *(FDI)*.

Taking logarithms of equation (3) and introducing Z into equation (3), the following production function is observed:

$$\ln Y = \ln A + \beta \ln K_H + \phi K_P + \varphi \ln FDI + \ln Z + \varepsilon \qquad (4)$$

Z in equation (4) above denotes other macroeconomic variable (financial development (FD) and inflation rate *(*INF*))*. Several studies have noted that these macroeconomic variables have significant influence on output growth.[1] Thus, equation (4) is written as:

$$\ln Y_t = \delta_0 + \delta_1 \ln K_{tH} + \delta_2 \ln K_{tP} + \delta_3 \ln FDI_t + \delta_4 FD_t + \delta_5 IFR_t + \varepsilon_t \qquad (5)$$

From equation (5) *(Y)* is industrial output (idp), $\left(K_H\right)$ is human capital (lab), $\left(k_P\right)$ is capital stock *(cps)*, *FDI* is foreign direct investment, *FD* is financial development and *IFR* is inflation rate. Thus, equation (5) is re-written as:

$$\ln idp_t = \delta_0 + \delta_1 \ln lab_t + \delta_2 \ln cps_t + \delta_3 \ln fdi_t + \delta_4 fd_t + \delta_5 ifr_t + \varepsilon_t \qquad (6)$$

Thus, equation (6) is the estimating model for examining the impact of foreign direct investment on industrialization in Nigeria.

3.2. Data Measurement and Sources

Industrialization (*idp*) is measured by the industrial output (that is the share of industrial output in real gross domestic product less crude petroleum and natural gas sub-sector); human capital (*lab*) is proxy by labour force; capital stock (*cps*) is measured by gross fixed capital formation; foreign direct investment (*fdi*) measured by the annual aggregate net inflow on direct investment in Nigeria; financial development (*fd*) is measured by the ratio of credit to the private sector to real gross domestic product and inflation rate (*ifr*) is measured by the annual inflation rate. Data on industrial output, foreign direct investment, capital stock, financial development and inflation rate were obtained from the various volumes of Central Bank of Nigeria (CBN) Statistical bulletin while data on labour force is obtained from World Development Indicator (WDI).

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[1] See (Lee & Wong, 2005; Javid & Qayyum, 2011).

4. Results and Findings

4.1 Descriptive Statistics, Unit Root and Co-integration Estimate

The descriptive statistics of variables presented in 1 below, showed that the averages of the variables are 7.57, 18.46 and 10.64 for industrial production (*lidp*), labour force (*llab*) and capital stock (*lcps*) respectively while the average values of foreign direct investment (*lfdi*), financial development (*fd*) and inflation rate (*ifr*) were 9.53, 22.06 and 18.55 respectively. The standard deviation showed that inflation rate (16.79) was the most volatile variable in the time series while labour force (0.35) was the least volatile variable. The skewness statistic showed that industrial production (*lidp*), labour force (*llab*) and foreign direct investment (*lfdi*) were negatively skewed while capital stock (*lcps*), financial development (*fd*) and inflation rate (*ifr*) were positively skewed. The kurtosis statistics showed that labour force (*llab*), foreign direct investment (*lfdi*) and financial development (*fd*) were platykurtic, suggesting that their distributions were flat relative to normal distribution while industrial production (*lidp*), capital stock (*lcps*) and inflation rate were leptokurtic, suggesting that their distributions are peaked relative to normal distribution. Finally, the Jarque-Bera statistic rejected the null hypothesis of normal distribution for capital stock (*lcps*) and inflation rate (*ifr*) while the Jarque-Bera statistic accepted the null hypothesis of normal distribution for the remaining variables at five percent critical value.

Table 1. Descriptive Statistics

Variables	*lidp*	*llab*	*lcps*	*lfdi*	*fd*	*ifr*
Mean	7.572	18.456	10.636	9.529	22.061	18.551
Std. Dev.	0.669	0.353	2.064	3.436	6.507	16.792
Skewness	-0.471	-0.091	1.277	-0.084	0.589	1.658
Kurtosis	3.869	1.810	5.073	1.368	2.771	4.842
Jarque-Bera	3.219	2.839	21.184	5.273	2.818	28.173
Probability	0.200	0.242	0.000	0.072	0.244	0.000
Observations	47	47	47	47	47	47

Source: Author, 2018 using e-views 9

The unit root estimate was based on the Augmented Dickey Fuller (ADF) test and the result of the test is presented in table 2 below. From the table, it was observed that all the variables were integrated of order one, suggesting that the variables were I(1) series.

Table 2. Unit Root Test

Augmented Dickey Fuller (ADF) Test			
Variables	Level	1st Difference	Status
lidp	1.3328	-4.8019*	I(1)
llab	-2.0747	-7.1644*	I(1)
lcps	-0.5958	-6.8895*	I(1)
lfdi	-0.7434	-9.4300*	I(1)
fd	-2.6406	-6.6406*	I(1)
ifr	-0.2358	-3.5869*	I(1)
Critical Values	Level	1st Difference	
1%	-3.5812	-3.5847	
5%	-2.9266	-2.9281	
10%	-2.6014	-2.6022	

*Source: Author's computation 2018, using e-views 9. * indicates 1% significance level*

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The study employed the Johansen co-integration test to examine the co-integration among variables. From the co-integration estimate presented on table 3, it was observed that the null hypothesis of no co-integration for r=0, r≤1 and r≤2 were rejected by the trace test because the statistic values were greater than the critical values while the null hypothesis of no co-integration for r≤3 was not rejected by the trace test because the statistic value was less than the critical value, suggesting the existence of three co-integrating equations. The Maximum-Eigen test on the other hand indicated that the null hypothesis of no co-integration for r=0 was rejected because the statistic value was greater than the critical value while the null hypothesis of no co-integration for r≤1 was accepted because the statistic value was less than the critical value, suggesting the existence of one co-integrating equation. Thus, the co-integrating estimates from the trace and maximum Eigen statistic confirmed the existence of a long run relationship among the variables.

Table 3. Summary of the Co-integration Estimate

Trace Test				Maximum Eigen value Test			
Null	Alternative	Statistics	0.05 Critical values	Null	Alternative	Statistics	0.05 Critical values
r=0	r≥1	137.498	95.754	r=0	r=1	57.226	40.078
r≤1	r≥2	80.272	69.819	r≤1	r=2	28.961	33.877
r≤ 2	r≥3	51.311	47.856	r≤2	r=3	23.665	27.584
r≤ 3	r≥4	27.646	29.797	r≤3	r=4	15.574	21.132

Source: Author's computation 2018, using e-views 9. * indicates 1% significance level

4.2. Regression Estimate

Sequel to the existence of co-integration among the variables, this study examined the relationship between foreign direct investment and industrialization in Nigeria using the error correction modelling technique. The result from the estimate presented in table 4 showed that labour force (*llab*) had positive and significant influence on industrial output in Nigeria while foreign direct investment (*lfdi*) had negative and significant impact on industrial output in Nigeria. In addition to the above, the regression estimate showed that capital stock (*lcps*), financial development (*fd*) and inflation rate (*ifr*) all had insignificant impact on industrial output growth in Nigeria.

The positive impact of labour force on industrial output is in line with theoretical expectation and showed that the increase in labour force contributed positively to industrial output in Nigeria. The negative relationship between foreign direct investment and industrial output showed that the foreign direct investment had retarded the growth of the industrial sector rather than enhancing it. This may be attributed to the presence of the oil sector which has attracted most of the inflow of foreign investment into the country. Also, literatures have noted that foreign direct investment may retard industrial output growth in the host country.[1]

The error correction term (ecm-term) from the estimate showed that its coefficient was correctly signed (negative) (-0.4489) and statistically significant. The coefficient estimate of the error correction term of -0.4489 implied that the model corrects its short-run disequilibrium by 44.89 percent speed of adjustment in order to return to the long-run equilibrium. In addition, the negative sign of the error correction term indicates a backward movement towards equilibrium.

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[1] See (Ndikumana, 2003; Alfaro, Chanda, Kalimli-ozcan & Sayek, 2001; Adelegan, 2000).

Table 4. Estimate on Impact of Foreign Direct Investment on Industrialization in Nigeria

Variable	Coefficient	Std. Error	t-Statistic
llab	3.9995	1.3794	2.8995*
lcps	0.0545	0.0621	0.8765
lfdi	-0.3023	0.1220	-2.4784**
fd	-0.0190	0.0121	-1.5610
ifr	0.0017	0.0037	0.4712
c	-63.5538	23.6531	-2.6869**
ecm-term	-0.4489	0.1263	-3.5540*

*Source: Author 2018. * and ** indicate 1% and 5% per cent significance level respectively*

The robustness of the regression estimate is shown by conducting stability tests (cumulative sum (CUSUM) and cumulative sum of squares (CUSUMsq) on the residuals. The stability tests clearly presented in Figures 2a and 2b indicated that the parameters of the models did not suffer from any structural instability over the period of study. Also, the stability tests also indicated that the model is correctly specified. This is because the plots of both the CUSUM and CUSUMsq were to a large extent within the bounded line of five percent significant level.
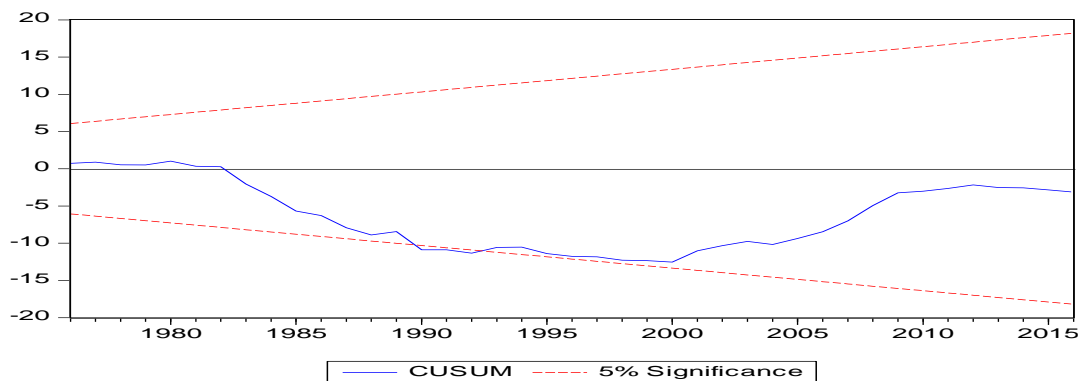

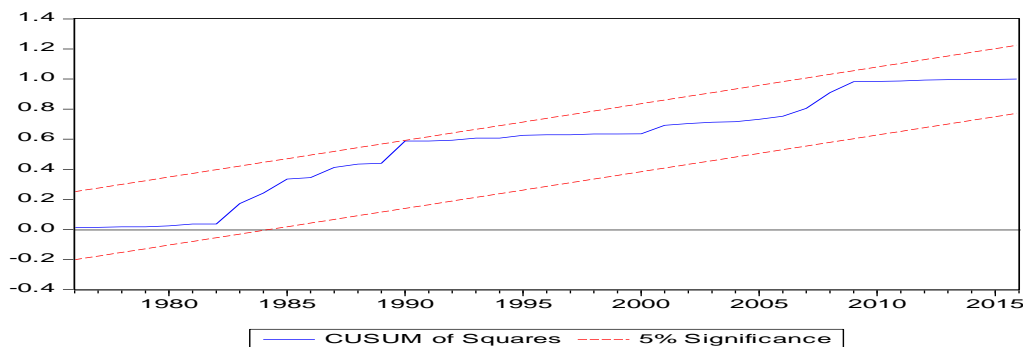**Figure 2a. Cumulative Sum of Recursive Residuals**

Figure 2b. Cum. Sum of Sq. of Recursive Residuals

5. Conclusion and Policy Recommendations

This study explored the role of foreign direct investment in the growth of the industrial sector in Nigeria for the period spanning 1970 to 2016. Employing the error correction modelling technique the result of

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the study showed that foreign direct investment negatively and significantly affected industrialization in Nigeria. Thus, the study concluded that the inflow of foreign direct investment over the years into the Nigerian economy had retarded industrial sector growth rather than enhancing it. Based on the findings, the study recommended the need for government to shift her focus and policy directives from the oil sector to the industrial sector as this will attract the attention of foreign investors into the industrial sector. Also, there is the need for government to provide production enhancing facilities (stable power supply, good roads, improve financial system, improve legal and social operating environment among others) to ease and enhance industrial production in Nigeria. Finally, there is the need for improve strategies to enhance the competitiveness of Nigerian industrial sector in attracting foreign direct investment.

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