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THE IMPACT OF FOREIGN DIRECT INVESTMENT AND INSTITUTIONAL QUALITY ON ECONOMIC GROWTH IN NIGERIA FROM 2005 TO 2024

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ABSTRACT

The relationship between foreign direct investment and economic growth in Nigeria has attracted considerable attention over the years. The role played by foreign direct investment in economic growth in Nigeria cannot be overemphasized. Foreign direct investment is a key contributor to the economic growth in Nigeria. The specific objective of the study is to determine the correlation coefficient between Gross Domestic Product and Foreign Direct Investment, Gross Domestic Product and Institutional Quality, and Foreign Direct Investment and Institutional Quality in Nigeria from 2005 to 2024. Using Pearson correlation coefficient formula, we found that the correlation coefficient between GDP and FDI in Nigeria from 2005 to 2024 is -0.3328 showing a weak negative linear relationship, the correlation coefficient between GDP and Institutional Quality is -0.1654 showing a weak negative linear relationship, and the correlation coefficient between FDI and Institutional Quality is -0.1437 showing a weak negative linear relationship. The findings suggest that in Nigeria's context, FDI alone may not guarantee economic growth and that strengthening institutional frameworks is crucial for translating foreign investment into sustainable economic development.

Keywords: Economic Growth, Foreign Direct Investments, Institutional Quality, Spillover, Economic Development

1 INTRODUCTION

Foreign Direct Investment (FDI) is widely recognized as a catalyst for economic growth, technological advancement and institutional development especially in developing countries. One of the most fundamental economic issues that have received extensive attention in the economic literature centers on: what causes economic growth? Why do countries grow faster than others? What are the causes of disproportionate rates of growth across countries? Are factors causing differential growth rates country-specific? Attempts at answering these questions have spawned an avalanche of reasons as factors, ranging from economic, social, cultural, political and more recently, institutional reasons have been included. In Nigeria, successive governments have made reasonable efforts to push economic growth to greater heights using FDI inflows as a key strategy. Despite decades of substantial FDI inflows, Nigeria continues to grapple with weak institutional structures, pervasive corruption, low regulatory quality and less than impressive economic performance.

This paradox raises critical questions about the actual impact of FDI on Nigeria's institutional quality and broader economic growth. Foreign direct investment (FDI) is an essential factor in Nigeria's economic growth and development. The level of institutional quality for recipient economies is regarded as an important factor that can be used to attract foreign direct investment in every nation. It is evident that institutions are part of a nation's productive capability frontier. In fact, there is need for solid institutional quality so as to guarantee sustainable development and growth. The indices for control of corruption, rule of law, government effectiveness and political stability have been trending negative throughout the 21st century (World Bank, 2021). Because of Nigeria's deteriorating institutional quality, the economic growth of Nigeria has become rather precarious (Ujumadu, Okeke, Chukwuma and Nwosu, 2026; Adegboye, Osabohien, Olokoyo and Oluwatoyin, 2020b; Adegboye, Osabohien, Olokoyo and Oluwatoyin, 2020c).

In Nigeria, successive governments have made a reasonable effort to push economic growth to greater heights using FDI inflows as a key strategy. Despite decades of substantial FDI inflows, Nigeria continues to grapple with weak institutional structures, pervasive corruption, low regulatory quality and modest economic performance. This paradox raises critical questions about the actual impact of FDI on Nigeria's institutional quality and broader economic growth. Nigeria has experienced worst institutional quality over the years (Ujumadu, Okeke, Chukwuma and Nwosu, 2026; Jude and Leveuge, 2017). The indices for control of corruption, rule of law, government effectiveness and political stability have been trending negative throughout the 21st century (World Bank, 2021).

In this study, we determine the correlation coefficient between Gross Domestic Product and Foreign Direct Investment, Gross Domestic Product and Institutional Quality, and Foreign Direct Investment and Institutional Quality in Nigeria from 2005 to 2024.

2 BASIC DEFINITIONS

2.1 Institutional Quality

Institutional quality refers to the effectiveness and reliability of a country's institutions in governing and regulating its society and economy. It encompasses the strength and efficiency of legal systems, political processes, and public administration, as well as the protection of property rights and the rule of law. High institutional quality is crucial for economic development, social stability and good governance. It is one of the most important factors that boost the economic growth of any country. It is also an indicator for quality governance (Ujumadu, Okeke, Chukwuma and Nwosu, 2026; Jude and Leveuge, 2017)

2.2 Foreign Direct Investment (FDI)

It is an investment made by an organisation or an individual in one country into a business located in another country. Also, it can be defined as an ownership stake in a company, made by foreign investor, company, or government from another country. More specifically, it describes a controlling ownership of an asset in one country by an entity based in another country (Ujumadu, Okeke, Chukwuma and Nwosu, 2026; Abala, 2014).

2.3 Economic Growth

Economic growth can be defined as the improvement or increase in the inflation-adjusted market value of the goods and services produced by an economy in a financial year. It is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another (Ujumadu, Okeke, Chukwuma and Nwosu, 2026; Jude and Leveuge, 2017).

2.4 Gross Domestic Product (GDP)

It is an overall market or monetary value of all the finished goods and services produced by a country in a specific period of time. Gross domestic product (GDP) provides an economic portrait of a country, used to estimate the size of an economy and its growth rate (Ujumadu, Okeke, Chukwuma and Nwosu, 2026; Adeyeye, Theuns and Pelsier, 2017).

2.5 Economic Development

It is the process of improving a country's economic well-being and quality of life through higher incomes, better jobs, education, health, and infrastructure. Economic development goes beyond economic growth to include social progress and equity. It is simply about economic growth plus quality of life improvements (Ujumadu, Okeke, Chukwuma and Nwosu, 2026; Adeyeye, Theuns and Pelsier, 2017).

2.6 Spillover

It refers to the effect on the economy of a country from unrelated events happening in another country. For example political crisis or earthquakes in another nation can have negative or positive effects on the economy of a nation (Ujumadu, Okeke, Chukwuma and Nwosu, 2026; Moga and Xu, 2017).

2.7 Covariance

It is a statistic that shows how two variables are positively or negatively related to each other. When variables are positively related, it is called a positive covariance. Otherwise, it is negatively related. The formula for covariance of sample data is

$$\text{Cov}(x_1, x_2) = \frac{\sum_{i=1}^n (x_{1i} - \bar{x}_1)(x_{2i} - \bar{x}_2)}{n - 1} \quad (1.3)$$

where x_1 and x_2 are any two different random variables, n is the sample size, $\bar{x}_1$ is the mean of x_1 variable and $\bar{x}_2$ is the mean of x_2 variable. When $\text{Cov}(x_1, x_2) = 0$, it means that there is a total absence of correlation between x_1 and x_2 even though x_1 and x_2 are independent (Obi, 2022; Obiajulu and Ubaoji, 2017; Egbe, Odili and Ugbebor, 2000).

2.8 Correlation

Correlation is a statistic used to measure a relationship between two variables. A measure of correlation is also called correlation coefficient and it denoted by r . The value of r ranges from $-1 \leq r \leq +1$. If $r = +1$, we say that the variables are perfectly and positively correlated. If $r = -1$, we say that there is a perfect negative correlation between the variables. If $r = 0$, then, we say that there is no correlation between the variables. The formula for coefficient of linear correlation is

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

(Obi, 2022; Obiajulu and Ubaoji, 2017; Egbe, Odili and Ugbebor, 2000)

Note: Covariance and correlation examine the relationship between two variables only but from different point of view, unlike regression, no variable here is termed dependent or independent variable because the variables are interchangeable. The major weakness of covariance is that, it lacks the ability to determine the strength of any relationship but correlation determines the strength of any relationship.

3 METHODOLOGY

3.1 Modeling technique

Pearson correlation coefficient formula was used to determine the correlation coefficient between Gross Domestic Product and Foreign Direct Investment, Gross Domestic Product and Institutional Quality, and Foreign Direct Investment and Institutional Quality in Nigeria from 2005 to 2024. The formula for coefficient of linear correlation is

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

3.2 Creating database for foreign direct investment, institutional quality and economic growth in Nigeria from 2005 to 2024

- **Dependent Variable** = Economic growth or Gross Domestic Product (GDP) = y – variable
- **Independent Variable** = Foreign direct investment (FDI) = x_1 – variable and Institutional Quality = x_2 – variable

Table 1: Database for foreign direct investment, institutional quality and economic growth in Nigeria from 2005 to 2024

Year	Dependent Variable ($y - variable$)	Independent Variable ($x - variable$)	
	Gross Domestic Product (GDP) in Billion US Dollar (\$ or USD)	Foreign Direct Investment (FDI) in Billion of US Dollar (\$ or USD) $\Rightarrow (x_1 - variable)$	Institutional Quality in Billion of US Dollar (\$ or USD) $\Rightarrow (x_2 - variable)$
2005	175.67	4.98	0.456
2006	238.45	4.85	0.457
2007	278.26	6.04	0.535
2008	339.48	8.19	0.568
2009	295.01	8.56	0.664
2010	366.99	6.03	0.166
2011	414.47	8.84	0.291
2012	463.97	7.07	0.307
2013	520.12	5.56	0.364
2014	574.18	4.69	0.35
2015	493.03	3.06	0.7
2016	404.65	3.45	0.645
2017	375.75	2.41	0.764
2018	421.74	0.775	0.715
2019	474.52	2.31	0.136
2020	432.2	2.39	0.309
2021	440.83	3.31	0.38
2022	477.40	-0.187	0.396
2023	363.85	1.87	0.316
2024	487.27	1.08	0.654

- Sources of Data for Gross Domestic Product (GPD) are; National Bureau of Statistics (NBS) Annual Report 2024, Central Bank of Nigeria (CBN), World Bank Statistical Bulletin 2024, International Monetary Fund (IMF) and <https://www.macrotrends.net/global-metrics/countries/nga/nigeria/gdp-gross-domestic-product>
- Sources of Data for Foreign Direct Investment (FDI) are; National Bureau of Statistics (NBS), Foreign Direct Investment (FDI) Statistical Bulletin 2024, Central Bank of Nigeria (CBN) and <https://www.macrotrends.net/global-metrics/countries/nga/nigeria/foreign-direct-investment>
- Sources of Data for Institutional Quality are; National Bureau of Statistics (NBS), Central Bank of Nigeria (CBN), Economic and Financial Crimes Commission (EFCC) Statistical Bulletin 2024, Independent Corrupt Practices and Other Related Offences Commission (ICPC) Statistical Bulletin 2024, United Nation Development Programmes (UNDP) Annual Report 2024, Federal Ministry of Justice, Ministry of Police Affairs, United Nations Office on Drugs and Crime Annual Report 2024, National Intelligence Agency (NIA) Annual Report 2024, Nigeria Security Statistical Bulletin 2024 and Nigeria Police Force (NPF) Annual Report 2024

4 RESULTS

4.1 Correlation coefficient between “Gross Domestic Product and Foreign Direct Investment”, “Gross Domestic Product and Institutional Quality”, and “Foreign Direct Investment and Institutional Quality” in Nigeria from 2005 to 2024

Find the correlation coefficient between “Gross Domestic Product (in Billion US Dollar) and Foreign Direct Investment (in Billion US Dollar)”, “Gross Domestic Product (in Billion US Dollar) and Institutional Quality (in Billion US Dollar)”, and “Foreign Direct Investment (in Billion US Dollar) and Institutional Quality (in Billion US Dollar)” in Nigeria from 2005 to 2024 as shown in the table 1 below

Table 1: Database for foreign direct investment, institutional quality and economic growth in Nigeria from 2005 to 2024

Year	Dependent Variable ($y - variable$)	Independent Variable ($x - variable$)	
	Gross Domestic Product (GDP) in Billion US Dollar (\$ or USD)	Foreign Direct Investment (FDI) in Billion of US Dollar (\$ or USD) $\Rightarrow (x_1 - variable)$	Institutional Quality in Billion of US Dollar (\$ or USD) $\Rightarrow (x_2 - variable)$
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2010	366.99	6.03	0.166
2011	414.47	8.84	0.291
2012	463.97	7.07	0.307
2013	520.12	5.56	0.364
2014	574.18	4.69	0.35
2015	493.03	3.06	0.7
2016	404.65	3.45	0.645
2017	375.75	2.41	0.764
2018	421.74	0.775	0.715
2019	474.52	2.31	0.136
2020	432.2	2.39	0.309
2021	440.83	3.31	0.38
2022	477.40	-0.187	0.396
2023	363.85	1.87	0.316
2024	487.27	1.08	0.654

4.1.1 Solution 1

To find the correlation coefficient between Gross Domestic Product (in Billion US Dollar) and Foreign Direct Investment (in Billion US Dollar), we have

Table 2: Correlation coefficient between Gross Domestic Product (in Billion US Dollar) and Foreign Direct Investment (in Billion US Dollar)

y	x_1	y^2	x_1^2	yx_1
175.67	4.98	30859.95	24.8004	874.8366
238.45	4.85	56858.4	23.5225	1156.483
278.26	6.04	77428.63	36.4816	1680.69
339.48	8.19	115246.7	67.0761	2780.341
295.01	8.56	87030.9	73.2736	2525.286
366.99	6.03	134681.7	36.3609	2212.95
414.47	8.84	171785.4	78.1456	3663.915
463.97	7.07	215268.2	49.9849	3280.268
520.12	5.56	270524.8	30.9136	2891.867
574.18	4.69	329682.7	21.9961	2692.904
493.03	3.06	243078.6	9.3636	1508.672
404.65	3.45	163741.6	11.9025	1396.043
375.75	2.41	141188.1	5.8081	905.5575
421.74	0.775	177864.6	0.600625	326.8485
474.52	2.31	225169.2	5.3361	1096.141
432.2	2.39	186796.8	5.7121	1032.958
440.83	3.31	194331.1	10.9561	1459.147
477.4	-0.187	227910.8	0.034969	-89.2738
363.85	1.87	132386.8	3.4969	680.3995
487.27	1.08	237432.1	1.1664	526.2516
$\sum y =$ 8037.84	$\sum x_1 =$ 85.278	$\sum y^2 =$ 3419267	$\sum x_1^2 =$ 496.9327	$\sum yx_1 =$ 32602.28

The formular for coefficient of linear correlation is

$$r = \frac{n \sum yx_1 - (\sum x_1)(\sum y)}{\sqrt{(n \sum x_1^2 - (\sum x_1)^2)(n \sum y^2 - (\sum y)^2)}}$$

$$r = \frac{20(32602.28) - (85.278)(8037.84)}{\sqrt{[20(496.9327) - (85.278)^2][20(3419267) - (8037.84)^2]}}$$

$$r = \frac{652045.6 - 685450.9195}{\sqrt{(9938.654 - 7272.337284)(68385340 - 64606871.87)}}$$

$$r = \frac{-33405.3195}{\sqrt{1.007459274 \times 10^{10}}} = \frac{-33405.3195}{100372.2708}$$

$$r \simeq -0.3328$$

Thus, the correlation coefficient between Gross Domestic Product (in Billion US Dollar) and Foreign Direct Investment (in Billion US Dollar) in Nigeria from 2005 to 2024 is -0.3328

4.1.2 Solution 2

To find the correlation coefficient between Gross Domestic Product (in Billion US Dollar) and Institutional Quality (in Billion US Dollar), we have

Table 3: Correlation coefficient between Gross Domestic Product (in Billion US Dollar) and Institutional Quality (in Billion US Dollar)

y	x_2	y^2	x_2^2	yx_2
175.67	0.456	30859.95	0.207936	80.10552
238.45	0.457	56858.4	0.208849	108.9717
278.26	0.535	77428.63	0.286225	148.8691
339.48	0.568	115246.7	0.322624	192.8246
295.01	0.664	87030.9	0.440896	195.8866
366.99	0.166	134681.7	0.027556	60.92034
414.47	0.291	171785.4	0.084681	120.6108
463.97	0.307	215268.2	0.094249	142.4388
520.12	0.364	270524.8	0.132496	189.3237
574.18	0.35	329682.7	0.1225	200.963
493.03	0.7	243078.6	0.49	345.121
404.65	0.645	163741.6	0.416025	260.9993
375.75	0.764	141188.1	0.583696	287.073
421.74	0.715	177864.6	0.511225	301.5441
474.52	0.136	225169.2	0.018496	64.53472
432.2	0.309	186796.8	0.095481	133.5498
440.83	0.38	194331.1	0.1444	167.5154
477.4	0.396	227910.8	0.156816	189.0504
363.85	0.316	132386.8	0.099856	114.9766
487.27	0.654	237432.1	0.427716	318.6746
$\sum y =$ 8037.84	$\sum x_2 =$ 9.173	$\sum y^2 =$ 3419267	$\sum x_2^2 =$ 4.871723	$\sum yx_2 =$ 3627.953

The formular for coefficient of linear correlation is

$$r = \frac{n \sum yx_2 - (\sum x_2)(\sum y)}{\sqrt{(n \sum x_2^2 - (\sum x_2)^2)(n \sum y^2 - (\sum y)^2)}}$$

$$r = \frac{20(3627.953) - (9.173)(8037.84)}{\sqrt{[20(4.871723) - (9.173)^2][20(3419267 - (8037.84)^2)]}}$$

$$r = \frac{72559.06 - 73731.10632}{\sqrt{(97.43446 - 84.143929)(68385340 - 64606871.87)}}$$

$$r = \frac{-1172.04632}{\sqrt{(13.290531)(3778468.13)}} = \frac{-1172.04632}{\sqrt{50217847.81}}$$

$$r = \frac{-1172.04632}{7086.455236} = -0.1654$$

$$r \simeq -0.1654$$

Thus, the correlation coefficient between Gross Domestic Product (in Billion US Dollar) and Institutional Quality (in Billion US Dollar) in Nigeria from 2005 to 2024 is -0.1654 .

4.1.3 Solution 3

To find the correlation coefficient between Foreign Direct Investment (in Billion US Dollar) and Institutional Quality (in Billion US Dollar), we have

Table 4: Correlation coefficient between Foreign Direct Investment (in Billion US Dollar) and Institutional Quality (in Billion US Dollar)

x_1	x_2	x_1^2	x_2^2	x_1x_2
4.98	0.456	24.8004	0.207936	2.27088
4.85	0.457	23.5225	0.208849	2.21645
6.04	0.535	36.4816	0.286225	3.2314
8.19	0.568	67.0761	0.322624	4.65192
8.56	0.664	73.2736	0.440896	5.68384
6.03	0.166	36.3609	0.027556	1.00098
8.84	0.291	78.1456	0.084681	2.57244
7.07	0.307	49.9849	0.094249	2.17049
5.56	0.364	30.9136	0.132496	2.02384
4.69	0.35	21.9961	0.1225	1.6415
3.06	0.7	9.3636	0.49	2.142
3.45	0.645	11.9025	0.416025	2.22525
2.41	0.764	5.8081	0.583696	1.84124
0.775	0.715	0.600625	0.511225	0.554125
2.31	0.136	5.3361	0.018496	0.31416
2.39	0.309	5.7121	0.095481	0.73851
3.31	0.38	10.9561	0.1444	1.2578
-0.187	0.396	0.034969	0.156816	-0.07405
1.87	0.316	3.4969	0.099856	0.59092
1.08	0.654	1.1664	0.427716	0.70632
$\sum x_1 =$ 85.278	$\sum x_2 =$ 9.173	$\sum x_1^2 =$ 496.9327	$\sum x_2^2 =$ 4.871723	$\sum x_1x_2 =$ 37.76002

The formular for coefficient of linear correlation is

$$r = \frac{n \sum x_1x_2 - (\sum x_1)(\sum x_2)}{\sqrt{(n \sum x_2^2 - (\sum x_2)^2)(n \sum x_1^2 - (\sum x_1)^2)}}$$

$$r = \frac{20(37.76002) - (85.278)(9.173)}{\sqrt{[20(4.871723) - (9.173)^2][20(496.9327) - (85.278)^2]}}$$

$$r = \frac{755.2004 - 782.255094}{\sqrt{(97.43446 - 84.143929)(9938.654 - 7272.337284)}}$$

$$r = \frac{-27.054694}{\sqrt{(13.290531)(2666.316716)}} = \frac{-27.054694}{\sqrt{35436.76497}}$$

$$r = \frac{-27.054694}{188.2465537} = -0.1437$$

$$\therefore r \simeq -0.1437$$

Thus, the correlation coefficient between Foreign Direct Investment (in Billion US Dollar) and Institutional Quality (in Billion US Dollar) in Nigeria from 2005 to 2024 is -0.1437 .

5 DISCUSSION

The correlation coefficient between Gross Domestic Product (in Billion US Dollar) and Foreign Direct Investment (in Billion US Dollar) in Nigeria from 2005 to 2024 is -0.3328 and it indicates a weak negative linear relationship. As GDP increases in the dataset, FDI tends to decrease slightly, but the relationship is not strong. Also, the correlation coefficient between Gross Domestic Product (in Billion US Dollar) and Institutional Quality (in Billion US Dollar) in Nigeria from 2005 to 2024 is -0.1654 which shows a weak negative linear relationship. Lastly, the correlation coefficient between Foreign Direct Investment (in Billion US Dollar) and Institutional Quality (in Billion US Dollar) in Nigeria from 2005 to 2024 is -0.1437 which shows a weak negative linear relationship.

6 CONCLUSION

High quality institutions characterized by strong rule of law, low corruption, political stability, and efficient regulation, significantly boost economic growth and firm performance by reducing transaction costs and uncertainty. Evidence showed that nations with solid institutions boost of solid legal framework for efficient resource allocation and mobilization, which results in healthy environment for business and economic growth. In this study, we found that the correlation coefficient between Gross Domestic Product and Foreign Direct Investment in Nigeria from 2005 to 2024 is -0.3328 showing a weak negative linear relationship. As GDP increases in the dataset, FDI tends to decrease slightly, but the relationship is not strong. Also, the correlation coefficient between Gross Domestic Product and Institutional Quality in Nigeria from 2005 to 2024 is -0.1654 showing a weak negative linear relationship. Lastly, the correlation coefficient between Foreign Direct Investment and Institutional Quality in Nigeria from 2005 to 2024 is -0.1437 showing a weak negative linear relationship.

Recommendation

- FDI cannot stimulate growth without complementary factors. Therefore, Government should:
 - Increase investment in technical education, vocational training etc.
 - Mandate joint ventures and supplier development programs for all FDI projects above \$50 million to strengthen backward linkages.
- Further study should test for causality (using Granger causality) and explore interaction effects between FDI and institutional quality.
- Proper utilization of FDI to productive industries should be introduced.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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Economic situation of Nigeria.

Disclosure of conflict of interest

The authors declare no conflicts of interest regarding this manuscript.

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