FOREIGN DIRECT INVESTMENT AND ENVIRONMENTAL POLLUTION IN SELECTED COUNTRIES IN AFRICA: DOES LEVEL OF GOVERNANCE MATTER?

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ABSTRACT
This study was undertaken to examine the effect of FDI on environmental pollution in selected countries with weak and strong governance structures in Africa. Ten countries were chosen from each category, while the time series variants is from 1990 to 2020. Bai and Ng Unit Root and CIPS Unit Root test were used for the panel unit root test. Westerlund Panel co-integration technique was used to examine the long run relationship among the variables. Feasible generalized least square (FGLS) was used to estimate the effect of FDI on environmental pollution in each group of countries. The result implies that the effect of FDI inflows is positive and significant in countries with governance structures, but it is insignificant in countries with strong governance structures. This implies that the pollution hypothesis is valid. In order words, it confirms that the pollution hypothesis holds in Africa. More so, the effect of FDI inflows on environmental pollution is higher in countries with weak governance structures than it is in countries with strong governance structures. It is recommended that African countries with weak governance structure should implement strong laws that will help regulate the acclivities of multinationals in their various countries.

Keywords: FDI, Pollution, FGLS, Governance, PHH, Africa, Environment
JEL Classification: F21, Q53, O13

1. INTRODUCTION
One of the most significant types of international capital flows is foreign direct investment (Dinh Su, & Phuc Nguyen, 2022; El-Rasheed &Abdullah, 2022). According to Adamu and Nggada (2024), FDI has been a significant driver of economic growth in developing nations in recent times. Most nations, particularly developing economies, have embraced foreign direct investment (FDI) as a key driver of growth. FDI inflows to Africa increased from $2,845 million in 1990 to $82,196 million in 2021 (United Nations Conference on Trade and Development (UNCTAD), 2023). However, despite its benefits, the potential harm to the environment from FDI is a significant and frequently brought up concern. One of the reasons for this is because although FDI inflows have increased, they have remained concentrated in the resource extraction industry (Adamu & Naiad, 2024). The implication of this is that the environmental cost could outweigh the economic benefits of the increased FDI inflows.

Nevertheless, higher FDI might not always translate into higher levels of pollution in the host nations. In developing nations, FDI may bring advanced and efficient production methods to replace the existing outdated and more polluting production methods.Overtime,this results in lowering pollution in the host countries(Ali et al., 2020; Soto, 2024).One important factor that could be responsible for this is the level of governance in different countries (Kaushal et al., 2024). Bildirici (2022) argues that one of the key elements influencing pollution levels is governance, which is achieved by upholding property rights and having a robust legal system. According to Zayyana and Kwara (2024), the relationship between FDI and pollution depends on the ability of a country to enforce rules and regulations on the activities of FDI in the host countries. It is widely accepted that inadequate regulatory frameworks, excessive bureaucracy,

and slack law enforcement encourage environmental damage (Bardi, & Hfaiedh, 2021; Yameogo, et al., 2021; Hakimi & Hamdi, 2020). According to Achuo and Ojong (2024), FDI often flows into nations with weak governance, which are typified by weak or non-existent environmental rules. This is known as pollution havens hypothesis (PHH) (Zayyana and Kwara, 2024),

The pollution havens hypothesis is at the forefront of the discussion on foreign direct investment and the environment (Mert & Caglar, 2020). In essence, the PHH predicts that FDI will relocate their operations to less developed nations in order to benefit from weak environmental restrictions. Additionally, countries might purposefully lower their environmental laws in order to draw in more investment. This implies that nations with less stringent environmental laws can draw multinational companies that produce a lot of pollution from countries with more stringent laws. Similarly, multinational companies looking to lower the costs of complying with environmental laws may decide to relocate to countries with weak environmental governance. The environmental laws in many African nations are either weak or not properly implemented (Baajike et al., 2022). Hence, there are issues with pollution since foreign investors are not subjected to strict environmental regulations, thereby leading to more pollution. For instance, carbon dioxide (CO2) emissions from industrial operations in Sub-Saharan Africa rose from 23.6232 metric tons (MT) in 1970 to 71.6857 MT in 2022 (World Bank, 2023)

In light of this, this study examines the effects of FDI on environmental pollution in selected African nations with various levels of governance structure.The study contributes to existing studies by separating selected countries in Africa into countries with weak governance structure and countries with strong governance structure. This allows for the comparison of the effects of FDI on pollution in the two groups of countries. The rest of the study is organized as follows: the next section provides the review of existing literature; the methodology is covered in the third section; this is followed by the results and ddiscussions section, while the study ends with the cconclusion and ppolicy recommendations.

2. LITERATURE REVIEW

2.1 Theoretical Literature

Pollution Haven Hypothesis and Pollution Halo Hypothesis

The two competing theories that have dominated the literature on the relationship between FDI and pollution in recent times are the Pollution Halo Hypothesis and the Pollution Haven Hypothesis. According to Singhania and Saini (2021), the Pollution Halo Hypothesis can be traced to the work of Dean (1992) which postulates that FDI can improve environmental outcomes by transferring efficient technologies and better practices to the host countries. It argues that multinational corporations (MNCs) frequently bring with them modern production methods, managerial experience, and environmental standards that surpass those in the host countries, particularly in developing nations. It focuses on a positive assessment of FDI's environmental impact based on the technical spillover effect that FDI brings. According to Dean (1992), multinational corporations frequently enforce stricter environmental standards, even in countries with lax rules, in order to preserve their reputations around the world. This raises the possibility of "positive spillover effects," in which domestic businesses follow suit in order to remain competitive. Several studies have elucidated the beneficial "Halo" effect of foreign direct investment on the environment (Balla and Lokonon, 2024; Bagchi and Sahu, 2024; Boso et al., 2024).

On the other hand, the Pollution Haven Hypothesis is traced to the ground-breaking studies of Copeland and Taylor (1995) and Chichilnisky (1994), which offered fundamental understandings of the interplay among foreign investment, environmental regulation, and trade.

It argues that FDI flows from developed countries to the developing ones frequently in order to take advantage of the weak environmental laws in developing countries, raising pollution levels in the host nations. It contends that by using obsolete and non-eco-friendly technologies, FDI dramatically raises carbon emissions in host countries. In order words, ppolluting companies are forced to relocate to less regulated developing countries by the strict environmental rules in developed countries, resulting in the creation of "pollution havens." The cost savings from the host countries' low enforcement of environmental regulations are what motivated this relocation. The pollution haven hypothesis has drawn criticism for oversimplifying the reasons for FDI, especially for neglecting factors such as political stability, labor costs, and market size (Gill et al., 2018).

2.2 Empirical Literature

Different views exist on the relationship between pollution and FDI inflows in the literature. Studies such as (Khan, & Ozturk, 2020; Ahmad et al., 2020; Fan, & Hao, 2020; Udemba, 2020; Omri & Hadj, 2020; Abdo, *et.al*., 2020; Guzel & Okumus, 2020; Marques & Caetano, 2020; Banerjee & Murshed, 2020; Nadeem et al., 2020; Mahadevan & Sun, 2020; Ashraf et al., 2020; Cheng et al., 2020; Bulus & Koc, 2021; Sabir et al., 2020; Opoku & Boachie, 2020; Essandoh et al., 2020; Sarkodie et al., 2020; Muhammad et al., 2021; Farooq, 2022; Abbas et al., 2021) found that FDI leads to increase in environmental pollution.

Specifically, according to Fan & Hao (2020), Ahmad et al. (2020), and Khan & Ozturk (2020), FDI inflows frequently result in higher levels of environmental degradation. These results are consistent with the pollution haven hypothesis, which holds that FDI tends to flow into nations with relatively loose environmental rules, increasing pollution levels in the process. Similarly, studies by Udemba (2020), Omri & Hadj (2020), and Abdo et al. (2020) indicate that the pursuit of FDI-driven economic growth might occasionally take precedence over environmental considerations, leading to increased emissions and environmental deterioration. This trend is frequently observed in developing nations where economic gains is given precedence over strict environmental regulations.

These findings are supported by studies such as Guzel & Okumus (2020) and Marques & Caetano (2020), which emphasizes that although foreign direct investment (FDI) promotes economic growth, it can also result in higher carbon emissions and other pollutants, especially in areas where environmental laws are not well enforced. Additionally, Banerjee & Murshed (2020),Nadeem et al.(2020), and Mahadevan & Sun (2020) discovered that the kinds of sectors that draw FDI have a significant influence on the environmental impact. For example, FDI in manufacturing or resource-intensive industries is frequently associated with greater pollution levels than FDI in high-tech or service industries. Furthermore, the studies by Ashraf et al. (2020), Cheng et al. (2020), and Bulus & Koc (2021) suggest that the environmental effects of FDI might differ depending on host-country attributes including governance quality, technological uptake, and regulatory frameworks. The Pollution Haven Hypothesis (PHH) is also empirically supported by Bekun et al. (2023), Achuo & Ojong (2024), Campos-Romero et al. (2024), and Padhan & Bhat (2024).They emphasized that the competition to draw FDI frequently results in the relaxation of environmental regulations, which exacerbates pollution levels.They conclude that nations may disregard strict environmental restrictions in favour of economic growth through foreign direct investment. By showing that foreign direct investment frequently results in environmental deterioration in host nations with weak governance, they offer evidence in favour of the Pollution Haven Hypothesis, suggesting that PHH is a reflection of governance and policy decisions rather than an inevitable consequence of FDI.

On the other hand, studies such as (Wang & Luo, 2020; Demena & Afesorgbor, 2020; Hao et al., 2020; Zhang et al., 2020; Xie & Sun, 2020) found evidence that FDI improves

environmental quality. According to Wang and Luo (2020), FDI inflows have the potential to spur the adoption of cleaner industrial methods and technical developments. FDI frequently provide cutting-edge, eco-friendly technologies that help lower pollution. This lends credence to the Pollution Halo Hypothesis rather than the Pollution Haven Hypothesis. According to Zhang et al. (2020), foreign direct investment (FDI) can support sustainable practices and lessen emissions intensity in urban industrial sectors where foreign investors operate. Also, Xie and Sun (2020) argues that when foreign investors follow international environmental principles, FDI encourages green innovation and forces local businesses to adopt cleaner technology, Also, Ali and Wang (2024) provide evidence that FDI enhance environmental quality by transferring cleaner technologies, cutting-edge procedures, and more stringent corporate environmental requirements. They conclude that in countries with moderate to strict regulatory frameworks, environmental quality often improves as a result of foreign investors frequently adopting better environmental standards than domestic companies. Xu et al., (2021) provides conflicting evidence on the relationship between environmental quality and foreign direct investment. The study contends that FDI causes environmental degradation in environment with weak regulations, such developing nations, since investors try to cut costs by putting polluting operations in areas with weak regulations. However, they argued that by bringing cleaner technologies and best practices, FDI can enhance the environment in places like developed nations with strict governance and rules.

3. METHODOLOGY

3.1 Theoretical Framework

The Pollution Haven Hypothesis, which holds that FDI increases pollution in the host nation, serves as the theoretical foundation for this study. This is due to the fact that FDI frequently introduces sectors that produce a lot of pollution to nations with weak environmental laws, which results in a positive relationship between FDI and pollution. Hence, a positive sign is expected in the relationship between FDI and pollution.

3.2 Model Specification

This section includes a discussion of the model's specifications, data types and sources, and the study's analytical techniques. The model that was used for the analysis is specified in equation 1

$$\text{POLLUCO2}_{it} = \alpha_1 + \beta_1 \text{FDIV}_{it} + \beta_2 \text{INFLATO}_{\ it} + \beta_3 \text{EXPOT}_{it} + \beta_4 \text{DOMESTIC}_{it} + \in_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where POLLUCO2 is CO2 emission, measured as log of CO2 emissions in kilotons (kt), FDIV is net foreign direct investment inflows, measured as Foreign direct investment, net inflows (% of GDP), INFLATO is inflation, measured as the natural log of consumer price index, EXPOT is export of goods and services, measured as log of exports of goods and services (constant 2010 US$), DOMESTIC is size of domestic market, measured as log of GDP per capita (constant 2010 US$).

Table 1: Variable Description

Variables	Description	Signs
POLLUCO2	CO2 emissions in kilotons (kt),	
FDIV	Foreign direct investment, net inflows (% of GDP),	Positive
INFLATO	inflation, measured as the natural log of consumer price index	Positive
EXPOT	Exports of goods and services (constant 2010 US$)	Positive
DOMESTIC	Size of domestic market, measured as GDP per capita (constant 2010 US$).	Positive

Source: Computed by the Author

Mo Ibrahim Foundation (2020) was used to separate the selected African countries into countries with weak governance structure (Ten African nations with the least governance index) and countries with strong governance structure (Ten countries with highest good governance index rankings). The model in equation 1 was used for the analysis for the two countries groupings. Panel data including time series ranging from 1990 to 2020, were used. The data were sourced from World Bank (2023).

3.3 Estimation Techniques

The estimation techniques include testing for multicollinearity in the model. Variance inflation factor and the tolerance factor test were used for this. This was followed by Heteroskedasticity and serial correlation tests. The serial correlation test was conducted using the Wooldridge test for autocorrelation, and the groupwise heteroskedasticity test was used to examine the model's heteroskedasticity test. Bai and Ng unit root and Cross-Sectionally Augmented IPS (CIPS) unit root test were used to test for unit root tests in the model. The slope homogeneity test was done using Pesaran and Yamagata (2008) slope homogeneity test, while Pesaran (2004) cross sectional dependence test was used for the cross sectional dependence test in the model. Westerlund panel co-integration test was used for testing the presence of co-integration among the variables in the model, while feasible generalized least square (FGLS) was used as the main panel estimator.

4. RESULTS AND DISCUSSION OF FINDINGS

4.1 Variance Inflation and Tolerance Factor Test of Multicollinearity

Table 2 shows that for both countries with weak governance structure and countries with strong governance structure, the highest VIF is 2.21 which is below 5, while the lowest tolerance factor is 0.45 which is higher than 0.25. By implication, there is no reason to expect any problem of multicollinearity in the models.

Table 2: Variance Inflation and Tolerance Test of Multicollinearity

	Countries with Weak governance structure		Countries with Strong Governance Structure	
Variable	VIF	Tolerance Factor	VIF	Tolerance Factor
DOMESTIC	1.45	0.688456	2.21	0.452658
EXPOT	1.45	0.689280	2.08	0.479833
INFLATO	1.04	0.962649	1.44	0.695404
FDIV	1.04	0.963294	1.08	0.924862

Source: Computed by the Author

4.2 Testing for Heteroskedasticity and Serial Correlation

Table 3 shows the results of the heteroskedasticity and serial correlation tests**.** The probability values of the two tests are lower than 1%. This implies that the null hypothesis of homoskedasticity and no serial correlation are rejected for the two tests and in the two classes of countries.

Table 3: Testing for Heteroskedasticity and Serial Correlation

	Countries with Weak Governance Structure		Countries with Strong Governance Structure	
Modified Wald statistic for heteroskedasticity	chi2 (10)	Prob>chi2	chi2 (10)	Prob>chi2
	858.13***	0.0000	11388.99***	0.0000
Wooldridge test for autocorrelation	F(1, 9)	Prob > F	F(1, 9)	Prob > F
	45.158***	0.0001	199.640***	0.0000

Source: Computed by the Author

N.B: *, **, and * indicates significance at 1%, 5%, and 10% respectively**

4.3 Testing for Slope Homogeneity

Similarly, Table 4 shows the result of the slope homogeneity test. The test is based on the null hypothesis of no heterogeneous slope in the model. The significant values of the test in both countries groupings shows that the null hypothesis in both cases is rejected. This indicates that the panel models are heterogeneous.

Table 4: Slope Homogeneity

	Countries with Weak Governance Structure		**Countries with Strong Governance Structure**	
	Delta	p-value	Delta	p-value
	13.948***	0.000	16.822 ***	0.000
adj	. 15.532 ***	0.000	18.732 ***	0.000

Source: Computed by the Author

N.B: *, **, and * indicates significance at 1%, 5%, and 10% respectively**

4.4 Testing for Cross-sectional Dependence

Testing for cross-sectional dependence is necessary because it helps to show the direction of the analysis in term of the method of the analysis. Table 5 shows the results of Pesaran(2004) cross-sectional dependence test. The null hypothesis is rejected when the tests was carried out for the two countries groupings. This is because the probability values for the test are less than 0.05 in the two countries groupings, implying the rejection of the null hypothesis. The implication of the presence of cross-sectional dependence is that only second generation panel unit root test can be used. Similarly, only panel estimators that takes into consideration the problem of cross-sectional dependence can be used.

Table 5: Result of Pesaran (2004) CD-Test for Cross-Sectional Dependence

Variable	**Countries with Strong Governance Structure**		**Countries with Weak Governance Structure**	
	CD-test	p-value	CD-test	p-value
POLLUCO2	.364	0.716	24.215***	0.000
FDIV	2.837 ***	0.005	13.845 ***	0.000
INFLATO	35.944 ***	0.000	31.645 ***	0.000
DOMESTIC	2.371**	0.018	33.822 ***	0.000
EXPOT	5.032 ***	0.000	3.838 ***	0.000

Source: Computed by the Author

N.B: *, **, and * indicates significance at 1%, 5%, and 10% respectively**

4.5 Testing for Unit Root Presence

Given the results of the cross sectional dependence test, Bai and Ng (2010) unit root and CIPS test proposed by Pesaran (2007) were used. Both tests are based on the null assumption of unit root in the series.

4.6 Panel Unit Root Test for countries with strong Governance Structure

Table 6 shows that when the tests were carried out in the level forms of the series, the null hypothesis could not be rejected because the p-value for each variable exceeds 5%. This implies that the series contain unit root. Hence, the variables were differenced once, and the tests were performed on the differenced form of the variables. The two tests indicate that the values of the p-value are below 5%. Hence, it is concluded that the series are all I (1)

Table 6: Panel Unit Root Test for countries with strong Governance Structure

	Bai and Ng Unit Root			
	At Level		First Difference	
	ADF T-Stat	Prob	ADF T-Stat	Prob
POLLUCO2	-1.8726	0.3382	-4.43236***	0.0003
FDIV	-2.0738	0.2582	-3.7379***	0.0035
INFLATO	-0.0299	0.9508	-4.87031***	0.0000
EXPOT	-1.7408	0.4059	-5.7017***	0.0000
DOMESTIC	-0.8647	0.7986	-6.8439***	0.000
	CIPS Unit Root Test			
	At Level		First Difference	
	CIPS	Prob	CIPS	Prob
POLLUCO2	2.06884	0.10	-3.1001**	0.01
FDIV	-2.2706	0.10	-5.2498**	0.01
INFLATO	-2.2250	0.10	-8.6648**	0.01
EXPOT	-2.1346	0.10	-5.6412**	0.01
DOMESTIC	-2.0158	0.10	-3.6594**	0.01

Source: Computed by the Author

N.B: *, **, and * indicates significance at 1%, 5%, and 10% respectively**

4.7 Panel Unit Root Test for countries with Weak Governance Structure

Table 7 shows that when the tests were carried out in the level form of the series, the null hypothesis could not be rejected because the p-value for each of the variables, except in the case of FDIV, exceeds 5%. This implies that the series contain unit root, except FDIV which does not contain unit root. Hence, the variables, except FDIV, were differenced once, and the tests were performed on the differenced form of the variables. The two tests indicate that the values of the p-value for each variable is below 5%. Hence, it is concluded that the series, except FDIV are I(1) while FDIV is I(0)

Table 7: Panel Unit Root Test for countries with Weak Governance Structure

	Bai and Ng Unit Root			
	At Level		First Difference	
	ADF T-Stat	Prob	ADF T-Stat	Prob
POLLUCO2	-1.1849	0.6713	-4.7062***	0.0000
FDIV	-5.2571***	0.0000		
INFLATO	3.4344	0.9999	-4.0875***	0.0000
EXPOT	-0.4308	0.9001	-5.5501***	0.0000
DOMESTIC	-2.3171	0.1623	-5.8723***	0.0000
	CIPS Unit Root Test			
	At Level		First Difference	
	CIPS	Prob	CIPS	Prob
POLLUCO2	-1.4592	0.10	-3.3982**	0.01
FDIV	-3.45094	0.01		
INFLATO	0.10483	0.10	-3.6585**	0.01
EXPOT	-1.7394	0.10	-2.8246**	0.01
DOMESTIC	1.4590	0.10	-4.3281**	0.01

Source: Computed by the Author

N.B: *, **, and * indicates significance at 1%, 5%, and 10% respectively**

4.8 Testing for Co-integration

Given the results of the unit root test, testing for co-integration is imperative. Hence, this study adopts the use of Westerlund panel co-integration technique. Similarly, the result of the cross-sectional dependence indicates that that the usual Westerlund panel co-integration technique cannot be used. Hence, the modification that was suggested by Levin, Lin and Chu (2002) to first generation panel co-integration techniques to capture the problem of cross-sectional dependence was adopted to the Westerlund panel co-integration technique. The result is presented in Table 8. The null hypothesis is that there is no co-integration. The result shows that the probability values for the tests in both groups of countries are less than 0.05. This indicates that the variables are co-integrated.

Table 8 Westerlund Panel Cointegration Test with Cross-sectional Dependence

	Countries with weak Governance Structure		**Countries with strong Governance Structure**	
	Statistic	p-value	Statistic	p-value
Variance ratio	-2.1130 **	0.0173	1.6494 **	0.0495
	Cross-sectional means removed			

Source: Computed by the Author

N.B: *, **, and * indicates significance at 1%, 5%, and 10% respectively**

4.9 Effect of FDI Inflows on Pollution

Given the results of the slope heterogeneity, cross-sectional dependence, and the presence of heteroskedasticity and serial correlation in the panel, with unit root test showing that none of the series is integrated beyond order one, it is paramount to choose a panel estimator that takes into account the peculiarity of the preliminary results. Hence, the feasible generalized least square (FGLS) was used. This is because of its ability to be robust in the presence of heteroskedasticity, serial correlation, and cross-sectional dependence.

4.9.1 Effect of FDI Inflows on Pollution in Countries with Weak Governance Structure

Table 9 shows the results of the FGLS. It indicates that in countries with weak governance structure, there is a positive relationship between the log of CO2 emission, which is used as the proxy of environmental pollution and log of FDI net inflows, implying that there is a positive relationship between FDI net inflows and environmental pollution. A 1% increase in FDI inflows is associated with an increase of 0.04% increase in environmental pollution. The result is significant at 5%. This relationship supports the pollution haven hypothesis, which holds that FDI frequently seeks nations with weak environmental regulations, leading to increased emissions or resource exploitation. Also, the result implies that the log of CPI has a negative relationship with the log of CO2 emission, but the result is not significant. The relationship between the log of GDP per capita which was used as proxy for domestic market size is positive and significant at 1%. This indicates that as the size of domestic market increases, environmental pollution increases by 1.3%. The relationship between export and environmental pollution is not significant

4.9.2 Effect of FDI Inflows on Pollution in Countries with Strong governance structure

In the second panel of Table 9, the result indicates that there is a positive, but insignificant relationship between FDI inflows and CO2 emission. This implies that although there may be a tendency for FDI to be associated with higher levels of pollution in countries with strong governance structure, the strong governance systems in these nations mitigate its effects on the environment. Effective governance upholds environmental regulations, guarantees adherence, and encourages sustainable business practices among international investors. Because of this, the beneficial effect is weak and statistically negligible, suggesting that governance serves as a check on FDI's ability to substantially worsen the environment. The effect of domestic market size on log of CO2 is positive and significant at 1%. This indicates that an increase on domestic market by 1% leads to an increase of 0.8% increase in pollution. The results of other control variables are not significant.

Table 9: Effect of FDI Inflows on Pollution

Dependent Variable : POLLUCO2					
Countries with weak Governance Structure					
Variables	Coefficient	Std. Err.	z	P>z	.95% Conf. Interval]
FDIV	.0427463**	.018622	2.30	0.022	.0062479 .0792447
INFLATO	-.0240215	.0334391	-0.72	0.473	-.0895609 .0415178
DOMESTIC	1.313001**	.0461569	28.45	0.000	1.222535 1.403467
EXPOT	-.0056018	.0288974	-0.19	0.846	-.0622397 .0510361
Constant	-10.42653**	.3562006	-29.27	0.000	-11.12467 -9.728386
Wald chi2(4)	896.76***		Prob > chi2		0.0000
Countries with Strong Governance Structure					
FDIV	.0104488	.0117077	0.89	0.372	-.0124978 .0333955
INFLATO	.0538344	.0422184	1.28	0.202	-.0289122 .136581
DOMESTIC	.8602165***	.0663524	12.96	0.000	.7301681 .9902649
EXPOT	.0515098	.0386025	1.33	0.182	-.0241498 .1271694
Constant	-7.047994***	.5018535	-14.04	0.000	-8.031609 -6.064379
Wald chi2(4)	206.03***		Prob > chi2		0.0000

Source: Computed by the Author

N.B: *, **, and * indicates significance at 1%, 5%, and 10% respectively**

4.10. Discussion of Results

This study was carried out to examine the validity of the pollution haven hypothesis in Africa. The pollution haven hypothesis argued that FDI flows to countries with weak environmental law, thereby increasing pollution in such countries. The result implies that the effect of FDI inflows is positive and significant in countries with weak governance structure, but it is insignificant in countries with strong **governance** structure. This is in line with the findings of Achuo, and Ojong (2024), Marques and Caetano (2020), Banerjee and Murshed (2020), Forson (2024), and Uche et al., (2024). The findings, however, contrast those of Yilanci et al., (2023) and Destek, et al., (2024) which find a negative relationship between FDI and environmental pollution. This implies that the pollution hypothesis is valid. In order words, it confirms that the pollution hypothesis holds in Africa. More so, the effect of FDI inflows on environmental pollution is higher in countries with weak governance structure than it is in countries with strong governance structure.

5. CONCLUSION AND POLICY RECOMMENDATIONS.

This study was undertaken to examine the effect of FDI on environmental pollution in some selected countries in Africa. The result implies that the effect of FDI inflows is positive and significant in countries with weak governance structure, but it is insignificant in countries with strong governance structure. More so, the effect of FDI inflows on environmental pollution is higher in countries with weak governance structure than it is in countries with strong rule of law, Hence, this study concludes that the effect of FDI on environmental pollution is not the same across counties, and that governance structure of a country plays important role in the effect of FDI on pollution in the host country. It is recommended that African countries with weak governance structure should implement strong laws that will help regulate the acclivities of multinationals in their various countries. This could involve enhancing the effectiveness of government organizations in charge of environmental policy oversight and embarking on anti-corruption campaigns. They can also put in place laws that target pollution-heavy industries. This would ensure that businesses contribute to environmental sustainability by enforcing tighter environmental standards and penalizing non-compliance. Also, African countries can establish a monitoring system to keep tabs on the adherence of multinational companies to environmental regulations through a thorough environmental impact assessments, particularly in industries with high pollution rates.

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