JÖNKÖPING UNIVERSITY
International Business School

IMF Aid in Africa

The impact of IMF aid disbursements on Corruption:

Panel Data Estimation Analysis

Master Thesis in Economics

Title: IMF Aid in Africa

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Abstract

In an era where combating corruption remains a critical challenge for most African economies, this study delves into the intricate relationship between IMF foreign aid and corruption levels in Africa. By conducting a comprehensive analysis utilizing data from multiple African countries, this study investigates the impact of IMF aid disbursements on corruption, employing panel data (fixed effect) estimation analysis as the primary methodology. The findings reveal that IMF aid disbursement does not have a statistically significant relationship with corruption. These findings not only offer valuable insights for policymakers and international organizations striving to combat corruption in African nations but also highlights the role IMF aid disbursements plays on corruption.

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1. Introduction

Corruption, defined as the misuse of public office for private gain (Svensson, 2005), remains a pervasive issue in many African countries and undermines economic development and erodes public trust in government institutions (Elliot, 1997). Despite 30 years of being at the forefront of the International Monetary Fund's (IMF) policy-based lending, Africa has not significantly advanced toward attaining economic growth. (Stone, 2004). Prior research suggests that participating in IMF programs reduces growth and redistributes income away from the poor and towards the wealthy (Stone, 2004). This is also consistent with Alesina & Weder (2002), who claim that financial assistance does not often reach the needy in developing countries, but instead is wasted in inefficient public consumption. The wasteful spending of public funds can be traced to corruption, which has been known to cause inefficiencies in many areas including government spending (Enste et al., 2017). Lending institutions such as the IMF have been found to be at the source of these wasted expenditures.

A joint Economic Committee conducted by American congressman Jim Saxton began an examination into the link between IMF financing and corruption. The committee discovered that foreign assistance, however well-intentioned, can promote the very conditions for fostering corruption (Saxton, 1999). According to Saxton's research, which was conducted for presentation to the American Congress, excessive government expenditure contributes to the entrenchment of a corrupt elite and delays efforts to combat the practice. In addition, Professor Jeffrey Winters of Northwestern University asserted in May 2004 that the World Bank, an organization affiliated with the IMF, had contributed to the theft of about $100 billion in loan payments meant for development (Moyo, 2009). This sum represents the money that was allegedly mismanaged and lost to corruption in recipient countries. In an exclusive investigation by Transparency International (2020) on the disbursement of COVID-19 funds in four African countries through the IMF, there was reported evidence of significant corruption and related irregularities. The report highlighted over a thousand cases of corruption related to the disbursement of Covid-19 grants and aid intended primarily to alleviate economic hardship caused by the pandemic. This included the profound economic dislocations resulting in significant disruptions of the chains of production and distribution as well as high cost of living.

Given the long-standing connection between corruption and the IMF as well as the high incidence of corruption in the area, the goal of this study is to examine how IMF aid has affected corruption in Africa. The study will utilize current data to investigate this relationship. Previous studies (d'Agostino et al., 2016; Anoruo et Braha, 2005; Mauro, 1995) that demonstrate how corruption impedes economic progress, also highlight the importance of finding the role financial institutions play in corruption.

This study primarily focuses on the African continent due to the persistent and significant obstacle of corruption in several of its countries. Despite receiving an estimated $702 billion in foreign aid between 2001 and 2020, as reported by the OECD in 2021, Africa continues to be the least developed continent in the world, a point emphasized by Wale-Oshinowo et al. (2022). In addition, the human development index still places African nations in the lowest category, and the World Bank's 2020 report estimates that more than 400 million Africans are living in poverty today, making Africa the world's poorest continent. These statistics indicate that despite the resources that have been made available, financial mismanagement is still widespread within the African continent. Furthermore, the corruption perception index (CPI), a measure of corruption (scores vary from 1 to 10, with a score of 10 signifying the absence of all corruption) indicates that the average level of corruption in 48 African nations over the past 20 years has not changed significantly. In 2000, the average CPI for Africa was 3.14; in 2012,

3.26; and in 2022, 3.19. In comparison, Europe's corruption perception index in 2000 was 5.2 and in 2022, 5.9, a 13% improvement in corruption compared to a meager 1.2% improvement for Africa between the years 2000 and 2022. These findings demonstrate the enduring presence of corruption in several African nations and how it persists as a problem even after several decades.

While there are many underlying factors that contribute to corruption, it is important to investigate how foreign aid affects corruption. This is to ensure that resources provided by international lending organizations do not adversely affect recipient economies. Gaining insights into the correlation between foreign aid and corruption can assist the IMF in making better-informed lending decisions and offer valuable guidance to decision-makers in ensuring that aid reaches its intended beneficiaries and achieves the desired results. Additionally, comprehending the role of foreign aid in corruption could assist policymakers, lenders, and researchers in identifying methods to prevent or

alleviate the negative effects of corruption on loan programs that aim to foster development in Africa.

In this study, the empirical data on each country's finances was gathered from the IMF database, which keeps a record of each financial transaction conducted with member countries since its creation. Fixed effect regression was the method employed during this research to analyze the effect of IMF aid on corruption within the African continent. The control variables in this model are democracy and literacy rate. Data on corruption, democracy, and literacy rates were provided by the transparency organization, Polity IV, and the World Bank database, respectively. The research findings demonstrate a consistent trend: as the total aid disbursed by the IMF increases, corruption levels tend to decrease. Additionally, the results suggest that countries that did not receive any form of assistance from the IMF had a more favorable corruption score compared to countries that received aid, regardless of the amount received.

Upon its conclusion, this study will contribute to the existing research literature regarding the impact of foreign aid on corruption in Africa. While a few studies, such as those conducted by Mohamed et al. (2015) and Asongu (2012), have explored this subject, the available literature on the topic remains limited. By investigating the relationship between IMF disbursements and corruption in Africa, this paper aims to offer valuable insights that can guide future research endeavors.

The subsequent sections of the paper are structured as follows: Section 2 delves into the historical context of the International Monetary Fund (IMF), Section 3 provides a comprehensive review of existing literature, Section 4 discusses the methodology employed in this study, Section 5 presents the obtained results, Section 6 focuses on the ensuing discussion, and finally, Section 7 concludes the paper.

2. Background

The IMF is a well-known organization that has been in existence since 1944. The organization was originally established with the aim of providing financial assistance to countries facing economic challenges in order to promote economic stability and growth (Vreeland, 2003). The IMF's financial obligations, which were initially limited to providing fixed exchange rate regimes, overseeing the international financial system, and providing short-term balance of payment assistance, has now expanded to providing a wide range of services and funds to countries in financial distress. The IMF presently

has 190 member countries that contribute to the organization's assets via membership fees (Vreeland, 2003). This membership subscription is a quota given to each nation based on its wealth, and this membership quota decides a country's voting power; therefore, the more funds' nations contribute, the more power they gain. According to IMF's website as of January 28th, 2023, the United States has the largest percentage of voting rights, with 17% of the vote, while Pakistan, the Republic of Congo, and Nigeria have the least voting rights of 0.43%, 0.03%, and 0.52%, respectively (Vreeland, 2003). Lending money to a member nation must commence with that country requesting financial assistance from the IMF. Following the request, IMF staff and government officials in the country evaluate the country's financial situation and requirements before reaching an agreement on an economic policy plan. The IMF staff then creates a report and offers a recommendation to the 24-member executive board, which considers the advantages and disadvantages before approving or refusing the loan. The fundamental conditions included in each loan deal vary depending on the country's financial requirements and present economic state. Although original structural criteria did not include anticorruption initiatives, the IMF incorporated anti-corruption rules into IMF loan programs in following years. (Vreeland, 2003).

According to Vreeland (2003), anti-corruption policies were initially introduced in 1997 after the negative impacts of inadequate governance and corruption on economic growth and stability were observed within IMF aid recipient countries. Furthermore, an additional framework for strengthened governance engagement was introduced in 2018 to enhance and uphold the central anti-corruption policies as outlined in the initial policy. The original anti-corruption policy emphasized openness, accountability, and effective public sector management. In contrast, the updated policy places greater emphasis on state functions that have a significant impact on economic activity. These include fiscal governance, financial sector oversight, central bank governance, market regulation, the rule of law, and Anti-Money Laundering and Combatting the Financing of Terrorism (AML/CFT) (Vreeland, 2003). Despite the IMF's effort to enhance loan efficiency through revised policies, Africa's total external debt has surged more than fivefold from 2000 to 2020, reaching $696 billion (Vines et al., 2022). There are several reasons behind this substantial increase in Africa's foreign debt. Apart from natural disasters and conflicts, one of the primary factors contributing to this growing debt is the mismanagement of funds. As stated by Benfratello et al. (2017), mismanagement of funds results in the diversion of public funds from their intended purposes and stands as

a major contributor to Africa's significant level of indebtedness (Benfratello et al., 2017).

Over the last twenty years, Africa has witnessed widespread mismanagement of funds and corruption, leading to the notoriety of many African leaders for mishandling state resources. The World Bank's governance indicator, which assesses the quality of governance, scored Africa at 35.2 out of 100 in 2007 and 41.1 out of 100 in 2020. Compared to Europe's score of 73.5 in 2020, it is safe to classify Africa as having poor quality of governance. This poor governance is shown in several corrupt occurrences involving African authorities. In 2008, Zambian former president Frederick Chiluba was charged with theft and the laundering of $50 million from the nation's coffers within his term from 1991 to 2001 to help fund his lavish spending (Smith, 2009). In Mozambique, an ex-president's son and ten others were jailed for corruption. The 11 were found guilty and sentenced on charges related to a $2 billion "hidden debt" scandal after state-owned companies in the impoverished country illicitly borrowed $2 billion in 2013 and 2014 from international banks to buy a tuna-fishing fleet and surveillance vessels (Al Jazeera, 2022). Such corruption cases are not alien to Africa, with the majority of Africans (58%) claiming that corruption has increased over the past years (Pring, 2015). This is particularly the case in South Africa, where more than four-in-five citizens (83%) say they have seen corruption rise recently (Pring, 2015), and in Nigeria, where about 30.2% of Nigerians who contacted a Nigerian public official paid a bribe (Adeye, 2020). The instances shown above demonstrate the broad presence of corruption in Africa, as well as how, if effective precautions are not implemented, additional aid may be lost to corruption. Despite being aware of the prevalent corruption, the IMF continues to be a committed creditor to Africa, extending loans totaling more than $47 billion over a 15year period. The distribution of these funds across this timeframe is illustrated in Figure 1, which indicates that Egypt has been the primary recipient of IMF assistance by obtaining a total of $14 billion within this 15-year duration. The second and third highest aid recipients are Angola and South Africa, having obtained $4 billion and $3 billion respectively. The illustration also suggests a reasonably equitable distribution of IMF funds across the four regions of Africa: East, West, North, and South

Map 1: Distribution of Payments across Africa

Total Payments (2006-2021)

Total Payments ($)

0 ⬛ 14,397,310,000
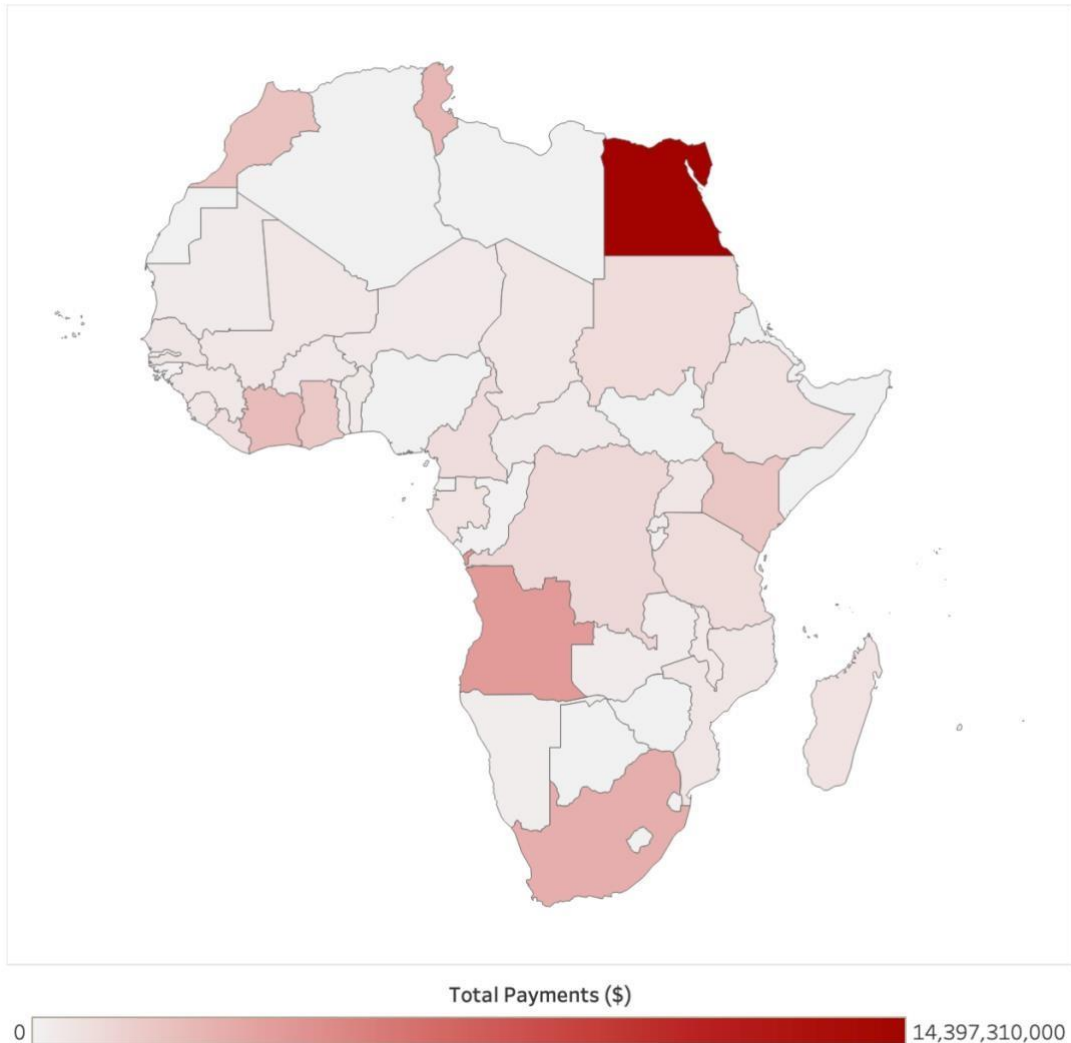
3. Theory

The inflow of money into a country has various implications. Primarily, it indicates a rise in the government's budget, resulting in increased government expenditures. Government spending can have dual purposes – it can either be used to efficiently serve the public interests or exploited for dishonest motives. The exploitation of public funds involves their improper diversion for personal gains. When a substantial amount of money is involved, the risk of misusing these resources rises significantly, as the greater financial pool creates more opportunities for theft and misappropriation. Nevertheless, it is important to note that this situation is not applicable in all cases, as it primarily relates to countries that have weak institutional frameworks and insufficient governance

standards in place. In such countries, the likelihood of improper utilization of funds becomes more prominent. These assertions are supported by studies such as Suleiman & Karim (2015), Wijayati et al. (2015), and Dreher et al. (2009), which demonstrates how corruption tends to increase in the presence of weak institutions and governance. Kumssa and Mbeche (2004) add weight to this argument by stressing that corruption, insufficient rule of law, and mismanagement play a role in undermining a nation's governance. In countries where institutions and governance are weak, corruption can thrive due to the absence of effective accountability mechanisms. In such circumstances, the lack of accountability presents an opportunity for the exploitation of public funds. The opportunist characteristics by people in power is referred to as rent seeking behavior by Saxton (1999). According to RoseAckerman & Coolidge (1995), rent seeking is the effort to acquire access to or to have control over opportunities for earning monopoly profits. Within the setting of a government office, a government official may use his or her position to obtain economic benefits beyond what they would be able to achieve without their official position. According to Saxton (1999), the existence of foreign aid promotes the practice of rent seeking behavior, which is also in line with the results of Goel and Nelson's research (Lambsdorff, 1999) that showed a link between an upsurge in government spending and the occurrence of rent-seeking activities and corrupt practices. Additionally, Deacon and Rode's (2015) informal observations from Venezuela and Nigeria support the idea that natural resource abundance can lead to rent-seeking by the ruling class. It is worth mentioning that while a rise in the inflow of financial resources can lead to rent-seeking behavior, poor institutional structures and low-quality governance play a crucial role in making it possible and sustainable. As noted by Rose-Ackerman and Coolidge (1995), contemporary economic studies on rent-seeking have emphasized the need for policies and institutional changes that can reduce the harm caused by the practice. Implementing these changes to curb rent-seeking behavior would not only be advantageous in reducing financial loss but also beneficial for enhancing a nation's governance. According to Kumssa and Mbeche (2004), weak and inefficient institutions resulting from inadequate rule of law enforcement, corruption, mismanagement, lack of a robust civil society, and political interference have weakened the governance of the nation. Taking into consideration how rent-seeking behavior blossoms in the presence of abundant of resources, the hypothesis for this paper would be that an increase in foreign aid to African nations would result in a higher incidence of corruption.

4. Literature Review

In recent years, several important studies have explored the impact of foreign aid on corruption. These studies vary in scale from broad analyses across developing countries globally to more focused studies solely on African countries. The studies also employ different research methods, including but not limited to OLS regression and quantile regression, to assess the association between foreign aid and corruption. Overall, the general results on the impact of foreign aid on corruption has been inconclusive, with various results finding statistically significant positive, negative and insignificant results. There have been studies that have shown that foreign aid has a positive relationship with corruption, this positive relationship implies that as aid increases, the corruption score of the country increases and this depicts a decrease in the corruption levels. Studies such as Okada & Samreth (2012) and Mohammed et al. (2015) presented similar findings, which shows a positive correlation between foreign aid and corruption. In Okada & Samreth (2012), this result was shown to have a greater effect in developing countries with lower levels of corruption., while Mohammed et al. (2015) revealed that foreign aid had a stronger influence in countries with higher levels of corruption. It is also important to note that both studies had distinct samples. Okada & Samreth examined 120 developing countries, while Mohammed et al. focused on 42 Sub-Saharan countries. The variations in the selection of countries, both in terms of the types and number of countries involved, could potentially account for the disparities observed in the relationship between foreign aid and differentials in the degrees of corruption. Both studies incorporated the study of multilateral, bilateral, and total aid. In Okada & Samreth, multilateral aid (assistance from high-income countries through organizations such as the United Nations and World Bank) was found to have a reduction impact on corruption, bilateral aid (a state managed assistance through which a government directly transfers money or other assets to a recipient country) from France, the UK, and the US had no significant effect, while Japan was found to have a significant positive effect. Multilateral and bilateral aid in the sub-Saharan study by Mohammed et al. were both found to be statistically insignificant. In addition to similar results, both studies used a statistical approach called quantile regression, originally developed by Koenker and Bassett (1978), to analyze how foreign aid affects corruption.

Several studies have also revealed a negative correlation between foreign aid and corruption, not just in Africa but also in various countries across Asia and around the world. This negative correlation implies that as aid increases, the corruption score of a country decrease, consequently indicating a rise in the corruption levels within a country. One standout researcher who through his academic contributions, has shown this negative relationship is Simplice Asongu, an economist from Cameroon. Asongu's three publications on foreign aid's effect on corruption in Africa specifically showcases the negative correlation between foreign aid and corruption. What sets his work apart from others is that it focuses exclusively on African countries. Asongu, a PhD holder from Oxford Brookes University, holds positions at the African Governance and Development Institute in Cameroon and serves as an adjunct professor at renowned institutions like the University of Cape Town, Covenant University, and the University of Ghana (Simplice Asongu | UNESCO Inclusive Policy Lab, n.d.). These positions held by Asongu enhances the credibility and validity of his academic contribution to the African continent, since he is well versed about governance and development within the African continent.

Asongu's first article concerning aid and corruption in Africa, titled "On the Effect of Foreign Aid on Corruption" (Asongu, 2012), aimed to challenge the findings of Okada and Samreth (2012), who argued that foreign aid reduces corruption. Asongu employed panel data estimation techniques and concluded that foreign aid, in fact, tends to increase corruption. He emphasized that the results obtained by Okada and Samreth, based on a study of 120 developing countries, should not be indiscriminately applied to the African continent. Asongu successfully substantiated his argument by utilizing updated data from 52 African countries, spanning the years 1996 to 2010. Another article, which focuses on foreign aid and corruption, is titled "On the channels of foreign aid to corruption" by Simplice Asongu and Mohamed Jellal (2013). The purpose of this article was to extend the debate on the shortcomings of modeling corruption as a direct effect of development assistance. This debate stemmed from previous articles by Okada & Samreth (2012) and Asongu (2012), Asongu & Jellal aimed to extend this debate by assessing the channels of foreign aid to corruption in 53 African countries for the period 1996-2010. According to Asongu, it is critical to examine the role of the channel via which aid is spread since failure to do so may be misleading in terms of policy implications because it does not account for methods through which development assistance is channeled. The purpose of this study is to allow for the improvisation of

policies which may or not work depending on a specific way aid is channeled, it thus increases the efficiency of policies aimed in combating how foreign aid impacts corruption. Asongu and Jellal's study follows a similar methodology and data from Asongu (2012). The main findings established were as follows: foreign aid channeled through the government increases corruption and foreign aid channeled via private sector decreases corruption. This study shows that the effect of corruption could either be positive or negative depending on the transmission channel. Simplice Asongu's third study concerning foreign aid and corruption was coauthored with Jacinta Nwachukwu and is titled "Foreign aid and Governance in Africa" (Asongu & Nwachukwu, 2016). The aim of this paper was to extend the debate of foreign aid and institutions by providing more insights on the aid-institutions nexus previously discussed in several publications. Emphasis was placed on three governance dynamics, namely: political governance, economic Governance and institutional governance. Concerning institutional governance (corruption-control and rule of law), the study showed that development assistance deteriorates institutional governance. Although this study does not confirm Asongu's (2012) stance on the aid-corruption nexus, it does indicate that foreign aid negatively affects the rule of law and corruption control. In essence, Asongu's body of work on the relationship between foreign aid and corruption in Africa reveals foreign aid does not only contribute to higher levels of corruption in African nations, it also weakens the rule of law and efforts to control corruption. Asongu's research further suggests that when aid is directed towards government consumption expenditure, it leads to an increase in corruption. On the other hand, when aid is channeled through private investment and supported by domestic tax efforts, it has the potential to reduce corruption.

Apart from Simplice Asongu, there have been various researchers who have found a negative correlation between foreign aid and corruption in their studies. Despite the inclusion of countries beyond Africa and across different continents, the findings from the various studies remain pertinent to the discourse on corruption in Africa. This is because they not only demonstrate the relevance of this issue to countries outside Africa but also underscore the potential universality of the connection between foreign aid and corruption. For instance, studies such as Wen et al. (2021) and Ali et al. (2019) conducted a comprehensive study across Asia and consistently found a similar pattern. Their findings show that the negative correlation between foreign aid and corruption is not limited to Africa alone, but rather extends to the Asian continent, per current

research. Wen et al. (2021) sampled 49 economies in Asia for the years 2001-2019, employing the panel FMOLS (Fully Modified Ordinary Least Square) test to estimate the assumption that foreign aid can hamper governance situations. The findings revealed that foreign aid deteriorates governance situations. These findings are in accordance with Ali et al.'s (2019) study, which only used selected Asian countries (Pakistan, India, Sri Lanka and Bangladesh) for the years 2000 to 2014 and found that foreign aid decreased the CPI scores (10=less corrupt & 0=more corrupt) of the selected countries.

Furthermore, there are studies conducted by authors that included a global perspective in their studies. These studies contain countries from different continents rather than focusing on a specific continent. For example, the studies conducted by Alesina and Weder (2002) and Andersen et al. (2020) both discovered a negative correlation between aid disbursements and corruption. Alesina and Weder employed a historical dataset covering the years 1984 to 1995. Their approach involved surveying private institutions in 84 different countries to assess levels of corruption. This approach differs from other studies that employed the CPI as a corruption gauge, this is because the CPI doesn't solely rely on business surveys but also includes assessments from country analysts, as highlighted by Lambsdorff (2007). Andersen et al. (2020) on the other hand conducted their research focusing on 22 nations highly dependent on aid. Their study revealed that when aid disbursements were made to these countries, there was a noticeable surge in bank deposits in offshore financial centers recognized for bank secrecy and private wealth management, while other financial centers did not show such patterns. The study also found an implied leakage rate of 7% and this is the percentage of aid that does not reach its intended recipient but rather leaks away due to corruption.

As depicted in Table *1*, prior research on the impact of aid on corruption has revealed mixed findings, with some studies showing a positive or negative correlation. Krasniqi and Demujaj's (2021) study was the only standalone research that found insignificant results. From Table 1 it is evident that the studies that deployed a quantile regression were able to attain positive relationships between foreign aid and corruption, while every other studies, apart from Krasniqi and Demukaj (2021), that deployed an ordinary least square regression attained a negative relationship between foreign aid and corruption. Quantile regression, which is an extension of Ordinary Least Squares (OLS), diverges from OLS by offering a more comprehensive statistical approach in real-world research. It provides the opportunity to explore how covariate effects impact the location, the location, scale and potentially the shape of the conditional response

distribution (Alexander et al., 2011). From the prior studies, there was no other distinct pattern witnessed that could help explain why a few studies displayed a positive correlation, while a majority displayed a negative correlation.

Table 1: Literature Review

Research Paper	Countries	Time Period	Estimation Method	Results
Okada & Samreth, 2012	120 Developing Countries	1995 to 2009	Quantile Regression	Positive Relationship
Mohammed et al., 2015	42 Sub-Saharan Countries	2000 to 2010	Quantile Regression	Positive Relationship
Asongu, 2012	52 African Countries	1996 to 2010	Panel OLS	Negative Relationship
Krasniq & Demukaj, 2021	122 Developing Countries	2005 to 2017	Two-Stage Least Squares	Positive Relationship (Insignificant)
Ali et al., 2019	4 Asian Countries	2000 - 2014	PDOLS & FMOLS	Negative Relationship
Alesina & Weder, 2002	84 Countries	1984 - 1995	Panel OLS	Negative Relationship
Asongu & Nwachukwu (2016)	52 African Countries	1996 - 2010	Two-Stage Least Squares	Negative Relationship
Wen et al., 2021	49 Asian Countries	2001-2019	Panel FMOLS	Negative Relationship

Asongu & Jellal, 2013	53 African Countries	1996-2010	Two-Stage Least Squares	Negative Relationship
Andersen et al., 2020	22 aid-dependent Countries	1977 - 2010	Linear Regression	Negative Relationship

5. Methodology

5.1. Data

This study would include 46 African countries throughout a 15-year period, from 2006 to 2021. Zimbabwe, Eritrea, Libya, Mauritius, Botswana, and Algeria would not be included in this study since they have opted not to be IMF members and hence are ineligible to receive IMF loans. Somalia would also be omitted due to a lack of information on its corruption index. To track corruption, the Corruption Perception Index (CPI) is used as the dependent variable. The CPI ranks 180 countries and territories around the world by their perceived levels of public sector corruption, scoring on a scale of 0 (highly corrupt) to 10 (very clean) (Corruption Perception Index, 2022). In order to determine the CPI scores for each country, the CPI not only utilizes surveys of business, but also assessments from country analysts. This comprehensive approach involves a total of 13 different sources, as explained by Lambsdorff (2007). According to Lambsdorff (2007), "The rationale behind combining these various data sources is to minimize the impact of any individual source's potential inaccuracies or biases. By including multiple sources, the CPI aims to reduce the likelihood of misrepresenting a country's corruption levels, thereby enhancing the overall reliability of the index". The independent variables in this research consist of the annual disbursement of funds and a binary variable indicating whether a country received funds for that particular year. These data points are obtained from the IMF database. By analyzing these independent variables, the study aims to ascertain the impact of aid disbursement on corruption and how the presence of aid disbursements also influences corruption within the dataset. Additionally, five controlled variables will be incorporated in this study to account for external factors that may influence the dependent variable. The first controlled variable is a variable that shows if a nation has a democratic or dictatorship system, with 10 representing a democratic system and -10 representing an autocratic system. An

autocratic system is a form of government in which one person has total powers with few to no limitations; with these powers, the government is free to make decisions with little to no criticism or objection, whereas in a democratic government, every decision is scrutinized and closely watched by the public, civil society organizations and the opposition parties. According to Jung (2022), countries that have autocratic regimes and weak institutions are more likely to experience corruption, while nations with stronger democratic institutions tend to have lower levels of corruption. The second control variable is the education rate, this variable would control for the effect of education rate on corruption, as it has been shown to impact corruption. In their study on 53 African nations, Asongu & Nwachukwu (2015) discovered that lifelong learning, described as information gained during primary, secondary, and tertiary education, has a negative impact on corruption. In a different study, Frost's (2021) quantitative findings indicate that people with lesser levels of education are more likely to experience a higher need for corruption. This is due to the fact that people with lower levels of education may lack the resources necessary to avoid corruption; these resources may include time, money, networks, and expertise (Frozen, 2021). The third control variable is Government spending. Studies such as Dzhumashev (2013) illustrate that government spending gives rise to corruption, the more resources available to government expenditure, the higher rent seeking within a country's government. The fourth control variable is the government integrity index, which measures how susceptible a country's governance is to corruption. Governments with low integrity are more likely to engage in malpractices, while high integrity governments are known to be trustworthy and reliable. The final controlled factor involves economic freedom. Economic freedom involves a comprehensive assessment of a nation's individual freedom level, considering a variety of factors. This assessment incorporates not just government spending and integrity but also integrates 9 additional economic indicators to compute a country's economic freedom. Instead of using the other 9 indicators individually, the composite economic freedom score is employed due to data limitations in some sample countries. The 12 metrics constituting the economic freedom score are categorized into four main domains: rule of law, government size, regulatory efficiency, and open markets. Previous research indicates that these distinct categories indeed impact corruption. For instance, Kotera et al. (2012) found that an increase in government size could decrease corruption when democracy levels are high, but the opposite effect emerges when democracy levels are low. Damania et al. (2004) demonstrated that countries with fewer

regulatory constraints often witness higher corruption levels. Concerning the rule of law category, various studies (Yeh, 2011; Frye et al., 2010; Croix & Delavallade, 2011) have highlighted the promotion of corruption in settings with weak legal frameworks. Neeman (2013) also discovered that corruption is negatively influenced in open economies, whereas closed economies show no apparent relationship."

    Table 2 below shows a descriptive analysis of the variables, which entails the averages, the quartiles, minimum and maximum of the various variables used. From the table, the sample countries over the 15-year period are shown to have an average -0.27 polity IV score, which translates to a political regime that falls in between a fully democratic and a fully autocratic system). This tells us that the political system within the chosen countries are mixed between the two main political systems. The Corruption Perception Index (CPI) also shows a consistently low score of 3.03 over the 15 years, indicating a high level of corruption among the sample countries.

Table 2: Descriptive Analysis

Variables	Mean	Std. Dev.	Min	Max
Payments	64,319,442	295,017,438	0	4,642,700,000
CPI	3.10	1.01	1.10	7.00
Polity IV	0.2541	5.87	-10	10
Literacy Rate	61.86	19.58	22.00	96.00
Dummy	0.4973	0.5003	0	1
Government Integrity	29.64	9.15	9.80	67.90
Government Spending	74.88	16.38	0	97.18
Economic Freedom	41.19	12.08	20	70

    Analyzing the heterogeneity of the dependent variable (CPI) and the independent variable (IMF disbursements), Figure *1* below depicts the timeline of the Corruption Perception Index (CPI). From 2006 to 2011, the CPI exhibits a gradual increase, followed by a sudden surge, which then remains constant for the rest of the period under study. The spike in CPI during the 2011-2012 period can be attributed to several corruption scandals, such as the arrest of former Nigerian governor James Ibori on charges of money laundering and fraud (Tran, 2012), as well as the Zimbabwe diamond scandal where billions of dollars worth of diamonds were allegedly stolen from the Marange diamond fields (Smith, 2012).
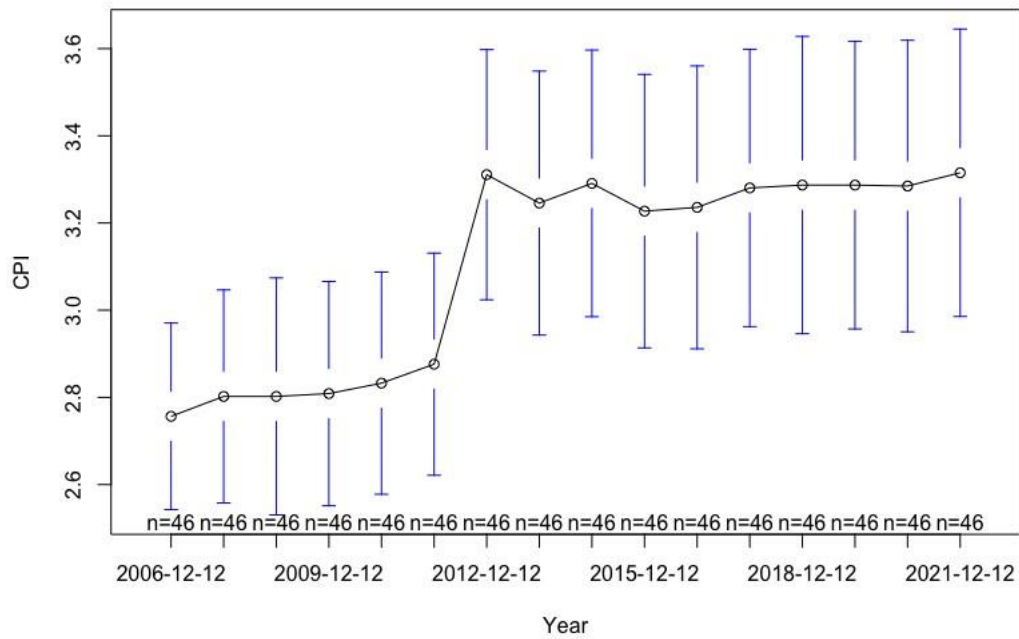
Figure 1: Heterogeneity across time (CPI)

Figure 2 below shows the heterogeneity over time for IMF disbursements. It indicates that the amount disbursed varies from year to year, with a few dips and highs. The year 2020 saw the highest average amount of IMF funds disbursed, likely due to the financial impacts of the COVID-19 pandemic, which left many countries in dire financial states and in need of aid to revive and sustain their economies.

Figure 2: Heterogeneity across time (IMF Disbursement)
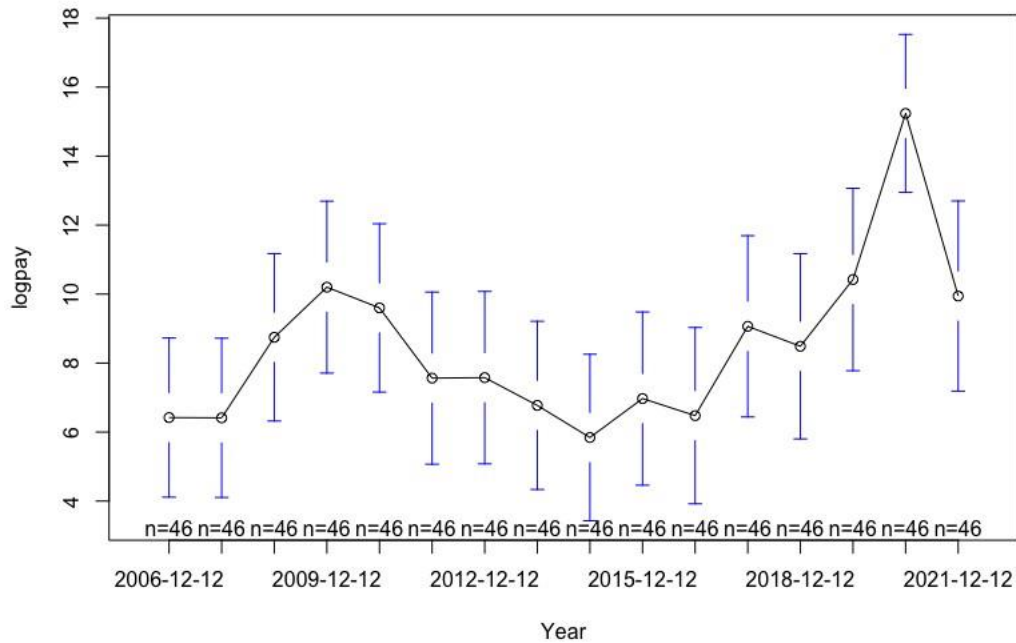
5.2. Model

In order to investigate the relationship between IMF funds disbursement and corruption in a country, this paper plans to conduct a panel data estimation analysis similar to Asongu (2012) and Krasniq & Dumukai (2021). Panel data estimation involves performing regression analysis on data that includes both time series observations and multiple individuals (Zulfikar et al., 2018). Hence, panel data observations encompass at least two dimensions: a cross-sectional dimension and a time series dimension (Hsiao, 2006).

The combination of time series and cross-sectional data in panel data analysis offers advantages in terms of data quality and quantity that cannot be achieved by considering only one of these dimensions (Yaffee, 2003). By employing panel data regression, this regression technique enables the incorporation of individual effects and time effects, which can be either fixed or random. This comprehensive approach fully captures the variation present in the dataset (Gonzalez et al., 2017). Additionally, Hsiao (2006) mentions the benefits of panel data regression, including more accurate inference of model parameters, greater capacity for capturing the complexity of human behavior compared to single cross-sectional or time series data, and simplification of computational and statistical inference.

While there are three different types of panel regression models - the constant efficient (pooled regression) model, fixed effect model, and random model - the fixed

effect model will be utilized for this study. Utilizing the Lagrange Multiplier and Hausman tests, it became evident that the fixed effects model proved to be the most suitable and effective choice in comparison to both the pooled and random models. The fixed effects model addresses unobserved disparities among individuals by considering them as a collection of constant parameters that can be directly estimated or partially extracted from the estimation equations (Allison, 2009). When unobserved differences are treated as fixed parameters, it implies that the independent variable(s) has a fixed or constant relationship with the response variable across all observations. In this study, using Nigeria as an example, once a coefficient estimate, which represents the relationship between the independent and dependent variable is calculated, it is assumed that this relationship remains constant over the subsequent years. This assumption is also applied to each country included in our sample. As previously mentioned, fixed models have a major advantage because they allow for the control of the effects of unobserved variables by allowing them to be associated with the observed variables. The advantage listed above helps differentiate fixed models from random models and pooled regression, which assume no correlation between unobserved and observed variables. When there are unobserved confounding variables, it can lead to biased estimates of causal effects (Allison, 2009). Since unobserved confounding variables are common in social science research, it is recommended that fixed models be a standard tool in modern social science research (Allison, 2009). Best & Wolf (2014) also state that because group specific fixed effects wipe out all group-specific unobserved heterogeneity, fixed effect models only require the assumption of no unit-specified unobserved heterogeneity and thus makes fixed effects models attractive for social researchers in undertaking casual analysis.

That being stated, the equational form of the fixed effect models would be:

Model 1: $CPI\_\{it\} = \beta_0 + \beta_1 * \text{IMF Loan Disbursement}\_\{it\} + \beta_2 * \text{Literacy Rate}\_\{it\} + \beta_3 * \text{Polity IV}\_\{it\} + \beta_4 * \text{Government Integrity}\_\{it\} + \beta_5 * \text{Govenrment Spending}\_\{it\} + \beta_5 * \text{Economic Freedom}\_\{it\} + \alpha\_i + \varepsilon\_\{it\}$

Model 2: $CPI\_\{it\} = \gamma_0 + \gamma_1 * \text{Presence of IMF Loan Disbursement}\_\{it\} + \gamma_2 * \text{Literacy Rate}\_\{it\} + \gamma_3 * \text{Polity IV}\_\{it\} + \gamma_4 * \text{Government Integrity}\_\{it\} + \gamma_5 * \text{Govenrment Spending}\_\{it\} + \gamma_5 * \text{Economic Freedom}\_\{it\} \; \alpha\_i + \nu\_\{it\}$

In the first equation:

- **IMF Loan Disbursement_{it}** represents the IMF loan disbursement for country I in time period t.
- **CPI_{it}** is the corruption perception level for country i in time period t.
- **Literacy Rate_{it}** stands for the literacy rate for country i in time period t.
- **Polity IV_{it}** refers to the Polity IV score for country i in time period t.
- Government Integrity_{it} refers to the government integrity index for country I in time period t
- Government Spending_{it} refers to the government spending index for country I in time period t
- Economic Freedom_{it} refers to the economic freedom index for country I in time period t
- **α_i** represents the country fixed effects.
- **ε_{it}** is the error term.

In the second equation:
- **Presence of IMF Loan Disbursement_{it}** indicates the presence (binary) of IMF loan disbursement for country i in time period t.
- Other variables have the same meanings as in Model 1.

Allison (2009) outlines the necessary data requirements for utilizing a fixed effect model. The first prerequisite is that the dependent variable must be measured for each individual on at least two occasions, and these measurements should be directly comparable in terms of their significance and measurement unit. The second requirement is that the predictor variables of interest should demonstrate variations across multiple occasions for a significant portion of the sample. In this study, both the dependent variable (CPI) and the predictor variables (IMF disbursement) have been measured for each individual unit on at least two occasions, and the predictor variables have shown changes in value across multiple occasions for a substantial portion of the dataset. This indicates that the data prerequisites have been satisfied.

When using a fixed effect model under panel data estimations, there are a few limitations associated with such estimations. One of the main limitations as highlighted by Okada & Samreth (2012) claims that previous research based on OLS, instrumental variables and panel estimations are limited, as they only estimate the parameters of interest at the mean evaluation by a conditional distribution of the independent variable. Mohammed et al. (2015) explains how this disadvantage restricts research agendas. He claims that in situations where dependent variables affect parameters of the explained variables other than the mean, panel estimation would be insufficient. Allison (2009) also emphasizes several drawbacks associated with employing the fixed effect model. One of the limitations Allison points out is that fixed effect models are unable to provide estimates for variables that remain constant over time. Additionally, Allison discusses

how fixed effect estimates can exhibit significantly larger standard errors compared to random effect estimates, resulting in higher p-values and wider confidence intervals. The reason for this is that random effects estimates incorporate information from both within-individual and between-individual variations, whereas fixed effects solely utilize within-individual differences. Consequently, if independent variables vary substantially across individuals but display minimal variation over time within each individual, the estimates obtained from fixed effects will be highly imprecise.

6. Results

6.1.Main Findings

Table 3 and 4 below present the findings of two fixed effect models, which examines the relationship between the Corruption Perception Index (CPI) and the independent variables: IMF loan disbursements and a dummy variable indicating the presence of IMF loan disbursements. The results from the two models indicates that neither the total IMF aid disbursement nor the presence of IMF aid has any type of statistically significant effect on the corruption perception index of the sample countries. This conclusion was derived after both independent variables showed a p-Value greater than that the alpha value of 0.05. From these results, IMF aid disbursement has been shown not have any influence on the corruption perception Index within the African continent. To ensure the reliability and stability of the research findings presented in this paper, a robustness check was conducted.

Table 3: CPI ~ IMF total disbursements

	Coefficients	Standard Error	T-Value	P-Value
Fixed Model				
Intercept				
Total Aid Disbursements (Log)	0.0015	0.0019	0.8166	0.414461

Literacy Rate	0.0110 ***	0.0025	4.3861	1.336e-05
Polity IV	-0.0066	0.0133	-0.4954	0.620504
Government Integrity	0.0364***	0.0014	0.1295	<2.2e-16
Government Spending	0.0001	0.0030	11.8925	0.897008
Economic Freedom	-0.0103***	-3.2283	0.0013	0.001305
Total Sum of Squares: 125.55				
R-Squared: 0.2365				
Adj. R-Squared: 0.1796				
F-Statistics: 35.3232***				
Note: * is Insignificant at 0.05 alpha level, *** means the value is significant at 0.05 alpha.				

Table 4: CPI~ IMF disbursement (Dummy)

	Coefficients	Standard Error	T-Value	P-Value
Fixed Model				
Intercept				
Presence of IMF Aid (Dummy)	0.0078	0.0336	0.2336	0.815335
Literacy Rate***	0.0110	0.0025	0.5076	1.36e-05
Polity IV	-0.0067	0.0133	4.3820	0.611879
Government Integrity***	0.03632924	0.0030	11.8530	< 2.2e-16
Government Spending	0.0002	0.0014	0.1352	0.892470
Economic Freedom***	-0.0103	0.0031	-3.2422	0.001244
Total Sum of Squares: 125.55				
R-Squared: 0.2358				
Adj. R-Squared: 0.1789				
F-Statistics: 35.1897***				
Note: * is Insignificant at 0.05 alpha level, *** means the value is significant at 0.05 alpha.				

6.2.Robustness Check

This robustness check involves examining two additional factors: IMF credit outstanding and net official development assistance (NODA) and official aid received, also known as total aid. The use of total aid is to investigate if the IMF's effect on aid is isolated or other types of aid have similar effects on corruption. Additionally, the use of IMF total credit outstanding serves as an alternative to IMF aid disbursement. IMF credit outstanding measures how much each country owes the IMF. This value is due to accumulations in aid disbursement and interest fees from previous and current loan amounts. Unlike IMF aid disbursement, IMF credit outstanding calculates how much each country has borrowed and has been able to pay off since joining the organization. In contrast, NODA represents the total assistance provided to a country by various entities, including the IMF, other lending organizations, and partner countries. This assessment of financial assistance holds significance within the robustness analysis, as it also examines whether the impact of IMF aid on corruption corresponds to the effects observed from total aid on corruption.

Utilizing the same dataset and methodology, within the framework of a fixed effect model, the analysis revealed that IMF credit balance exerted an insignificant effect on the CPI. This finding was consistent when exploring the relationship between the existence of IMF credit balances and corruption. These results go on to further show how IMF aid has no effect on the corruption perception index within the African continent. In the second validation phase, aimed at exploring whether the outcomes obtained from IMF aid held true for other forms of assistance, the analysis identified a statistically significant adverse influence of total aid on corruption. This outcome indicates that the overall aid provided across the African region was linked to a decrease in the Corruption Perception Index (CPI). With each incremental increase in aid allocation to countries, the CPI demonstrated a decline of (-0.06825913). Detailed results from both robustness examinations are outlined in the appendix, presented in Table A1 and Table A2.

7. Conclusion

This thesis aimed to examine the influence of IMF loans on corruption in African nations. Given the prevalence of corruption in many African countries and the significant role of the IMF as a lending institution in Africa, it is crucial to understand whether IMF aid contribute to corruption in the region. By utilizing a fixed effect model, the study's principal findings indicates that IMF aid disbursements has no statistically significant effect on corruption.

These results were also found in a robustness check which used a different measure of IMF aid disbursement. This different measure was IMF credit balance. The robustness check showed that IMF credit balances, has no relationship with corruption within the African continent. A second robustness check utilized total foreign aid rather than IMF aid and within this analysis, an increase in aid was shown to increase corruption in African countries. The discrepancies in results between IMF and total aid, can possibly be traced to structural policies implemented within IMF loan programs. Feldstein (2003) explains that these policies are primarily aimed at mitigating government-imposed distortions and introducing various institutional features that align with a modern market economy. Such policies include transparency and disclosure policies; poverty reduction and social safety-net policies; corporate governance policies (including anti-corruption measures). These policies are not meant to decrease corruption, but are a preventive instrument against corruption (Easterly, 2005). Their purpose is to safeguard against the occurrence of corruption stemming from the loans. Given that IMF aid has been structured not to influence corruption but to function as a preventive strategy, this could elucidate the observed absence of a statistically significant relationship. Another inconsistency between the outcomes of IMF aid and total aid could be clarified by considering the overall investment in Africa. The significant amount of loans encompassed within the total aid variable could have played a role in identifying a statistically meaningful link with corruption, while the comparatively modest IMF aid disbursements might explain the absence of statistical significance. According to Vines et al. (2022), within the time frame of (2000-2022), Africa's total debt exceeded $696 billion, with the IMF only responsible for less than $50 billion within the period (2006-2021). In order to estimate a statistically significant relationship, available IMF aid disbursement data might have to exceed a certain threshold amount, or a longer time period would be needed to accumulate enough significant values needed for the study.

Future research should consider addressing several limitations identified in this study. One limitation pertains to the control variables. Since corruption encompasses a wide range of factors, beyond education and democracy, it is crucial to account for additional influences. For instance, the impact of corruption may differ between landlocked and coastal countries, resource-rich and resource-poor nations, as well as high-income and low-income countries. Unfortunately, due to limited data availability, most of these factors were not included in this research. Another limitation arises from the corruption measure that was used. The accuracy and reliability of the corruption perception index (CPI) have been subject to scrutiny in the literature, as highlighted by Allison (2021) and Budsaratragoon & Jitmaneeroj (2020). These sources emphasize that the CPI can be influenced by various factors such as cultural biases, political agendas, and respondents' perceptions. Moreover, the CPI may not fully capture the extent of corruption in countries, as it relies on subjective perceptions rather than objective measures. A third limitation relates to data availability. Obtaining data on CPI, unemployment rates, and Polity IV scores prior to 2006 was challenging, resulting in a significantly limited time period for analysis. To advance future research, it is recommended to address these limitations by incorporating additional control variables to account for diverse influences on corruption and exploring alternative corruption measures or combining multiple indicators which could provide a more comprehensive understanding. Furthermore, efforts should be made to collect data from earlier time periods to enable a broader analysis.

While the original hypothesis anticipated a potential link between IMF aid disbursement and perceived corruption, it is evident that this association did not hold true within the context of our study. Nonetheless, given the absence of existing research on the impact of IMF aid disbursement on corruption, this study contributes to the academic discourse by demonstrating the complexities inherent in understanding corruption and its multifaceted determinants. This research also provides a valuable launching point for future studies, prompting researchers to delve more deeply into understanding the role of the IMF in influencing corruption. This exploration could involve the inclusion of more countries, a longer timeframe, the incorporation of additional control variables, different measures of IMF influence, and alternative approaches to gauging corruption.

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9. Appendix

App Table 1: IMF Credit Outstanding ~ CPI

	Coefficients	Standard Error	T-value	P-value
Fixed Model				
Log(Credit)	4.7674e-03	3.0922e-03	1.5417	0.1235
Literacy Rate	-5.8041e-03	1.3331e-02	-0.4354	0.6634
Polity IV	1.0650e-02***	2.5321e-03	4.2061	2.944e-05
Economic Freedom	-1.0318e-02***	3.1880e-03	-3.2367	0.0012
Government Integrity	3.6141e-02***	3.0553e-03	11.8290	<2.2e-16
Government Spending	6.1732e-05	1.4993e-03	0.0412	0.9671
Total Sum of Squares: 125.55				
R-Squared: 0.23846				
Adj. R-Squared: 0.18168				
F-Statistics: 35.6962***				
Note: * is Insignificant at 0.05 alpha level, *** means the value is significant at 0.05.				

App Table 2: IMF Credit Outstanding (Dummy) ~ CPI

	Coefficients	Standard Error	T-value	P-value
Fixed Model				
Log(Credit)	0.03092355	0.05999400	0.5154	0.60641
Literacy Rate	-0.00649101	0.01335090	-0.4862	0.62699
Polity IV	0.01098539***	0.00252558	4.3497	1.571e-05
Economic freedom	-0.01040322***	0.00319384	-3.2573	0.00118
Government Integrity	0.03626947***	0.00305870	11.8578	< 2.2e-16

Government Spending	0.00016888***	0.00150032	0.1126	0.91041
Total Sum of Squares: 125.55				
R-Squared: 0.23611				
Adj. R-Squared: 0.17915				
F-Statistics: 35.2358***				
Note: * is Insignificant at 0.05 alpha level, *** means the value is significant at 0.05.				

App Table 3: NODA ~ CPI

	Coefficients	Standard Error	T-value	P-value
Fixed Model				
Log(Credit)	-0.0682***	0.0130	-5.2470	2.064e-07
Literacy Rate	0.01121***	0.0024	4.5304	6.947e-06
Polity IV	-0.0066	0.0130	-0.5065	0.6126
Economic Freedom	-0.0108	0.0031	-3.4779	0.0005
Economic Integrity	0.0371	0.0030	12.3550	<2.2e-16
Government Spending	-0.0002	0.0014	-0.1648	0.8691
Total Sum of Squares: 125.55				
Adj. R-Squared: 0.2653				
Adj. R-Squared: 0.2106				
F-Statistics: 41.1823 ***				
Note: * is Insignificant at 0.05 alpha level, *** means the value is significant at 0.05.				