

RESEARCH ARTICLE

Transparency and Global Initiatives in the Face of Natural Resource Depletion in Sub-Saharan Africa

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Abstract

This research focuses on Natural Resource Depletion in Sub-Saharan Africa, as well as ways to overcome it, with a particular focus on the role of transparency in Sub-Saharan Africa (SSA). The transparency initiative is a global initiative aimed at eradicating corruption, ensuring accountability, and assisting participating countries in developing quality budgets that will ensure a good standard of living for their citizens now and in the future. Hausman test was applied and a fixed panel regression model was specified which reveal that there is a significant relationship between GDP per capita, inflation, the EITI dummy, and the transparency indicator is established using a panel regression model. The results show that the model fits the data well and can be used to forecast future economic growth in SSA countries that participate in the EITI scheme. The fixed effect model also shows that the Transparency indicators such as voice and accountability, and corruption have a positive significant impact on the economic growth of the 10 SSA countries under consideration, indicating that transparency is a critical factor in determining good economic performance. Meanwhile, diagnostic tests such as normality test was performed, with satisfactory results, indicating that the model is very robust and reliable. Meanwhile, inflation have positive significant impact while natural resources show a negative significant influence on the economic growth of all the 10 Sub-Saharan Africa (SSA) in the EITI scheme which can be attributed to the natural economic depletion. Then, using correlation analysis, it was discovered that there is a strong link between transparency indicators (voice and accountability, corruption as well as quality of budget, and fiscal management) and economic growth. This suggests that the greater the transparency, the more natural resource constraints will be overcome, and SSA countries participating in the EITI scheme will achieve greater economic performance.

Keywords: Hausman test, Fixed effect Panel regression model, EITI, GDP Per Capita, Transparency, Correlation analysis, SSA

Background of the study

As a result of having abundant natural resources, countries' economic, political, and socioeconomic conditions deteriorate (Siegle 2008). Renewable, nonrenewable, depletable, and nondepletable resources such as hydrocarbons, natural gas, coal, minerals, and oil are also discussed in this study (all are natural resources focus of this study). The Dutch Disease was an economic phenomenon that occurred in the Netherlands during the 1960s. The discovery of natural gas in the Netherlands harmed other industries' competitiveness. The real exchange rate increased as resource revenues increased. They are unable to learn about such assets or improve their balance of payments due to the exchange rate's consistency with oil and gas revenue (Korhonen and Juurikkala 2007). The case of the Netherlands is not exceptional, as many countries with lower endowments perform far worse (Auty 2001). However, some countries have experienced growth and development. Nigeria and the

Democratic Republic of Congo are at the bottom of the list, with little being done; however, several other countries, such as Botswana, Norway, and Malaysia, perform admirably. Financial resources should play a major role in both growth and escaping the development trap, while resources should provide the funding needed to succeed in moving out of the development trap (Collier 2007). Malaysia, Indonesia, and Thailand have demonstrated that economic growth and development can be achieved even in countries with abundant natural resources. The success of these countries shows that reversing or preventing the resource curse is possible. Institutional quality, according to Rodrik (1999) and Pritchett (2000), is critical for long-term growth. This is most likely due to the fact that the majority of people in resource-rich countries do not have access to such high-quality institutions? Instead, these countries are rife with corruption, increasing social inequity. Moreover, resource-rich countries share characteristics that contribute to successful economic growth and development. According to Sala and Subramanian, low development is not caused by the lack of natural resources. When institutions are taken into

account, it appears that natural resources have little impact on economic growth, according to these researchers.

Institutions play a critical role in reversing the resource curse in African countries. The resource curse literature is vast, revealing numerous avenues for investigation. Only a few resource-rich countries have managed to overcome it. The effects of the "Dutch disease," as well as extractive capital utilization, market capital flight, and capital overaccumulation, are all part of the resource-curse complex (Auty 2001). In resource-rich countries, the following three reasons apply: Bribery is more likely to affect businesses and longer-term financial resources because it is easier for business owners to invest in money-making rather than money-affecting industries and projects (Barbier 2005). Diamond-rich countries such as Sierra Leone, Liberia, and the Democratic Republic of the Congo are particularly vulnerable (Mehlum, Moene, and Torvik 2005). Mineral revenues have been used to extract rents by these governments and foreign extractive companies. Second, due to price fluctuations in natural resources, borrowing money is difficult. Because of extractive industries and commodities, non-extractive countries are at a disadvantage due to fluctuating prices. Growth has been hampered, according to Poelhe and van der Ploeg (2009), by unstable resource revenues caused by fluctuations in primary commodity prices. Besides, natural resources crowd out other economic sectors, such as human and social capital. diverting investment and innovation away from other export-oriented industries Because natural capital is one of the three major types of capital, there is a negative relationship between this type of capital and human capital (Birdsall, Pinckney, and Sabot 2000). Natural resources obstruct the allocation of education resources. Countries underinvest in education due to their wealth and abundance of resources. All of these factors contribute to the development of a dependency economy, necessitating the implementation of more domestic policy changes and policies. The domestic economy's well-being While the "resource curse" appears to be affecting a number of countries, there are also potential solutions. Barb is a wonderful person. Barbier (2005) suggests using a variety of economies while also combating currency depreciation. Halt the depletion of natural resources the second option allows countries to export their natural resources to the global market without having to worry about currency appreciation. When importing natural resources, resource-rich countries should not value them at the same initial cost; a rapid inflow of foreign currency lowers the value of the local currency.

Exchangeable medium Furthermore, when a country's currency appreciates, so does the country's international economic activity. an increase in the domestic currency's value Lowering the export price in the long run would be the best solution. One general recommendation for resource-rich countries seeking financial growth is to implement policies that promote transparency. The main goal of a global initiative is to ensure that extractive industries are transparent (EITI). In this regard, the Extractive Industries Transparency

Initiative (EIT) was founded in 2003 to fill the market gap in resource-poor countries by enforcing openness in the extractive industries. It requires all mining and oil revenue data from participating countries. The World Bank, the International Monetary Fund, the International Bank for Reconstruction and Development, and the European Investment Bank for Reconstruction and Development are all members of the EITI, which is supported by the international community. 21 African countries announced their intention to adopt the EIT for increased transparency at the end of August 2014. Natural resource revenues are currently inefficient (World Bank and Global Witness 2008). The EITI's effectiveness has yet to be demonstrated.

Significance of the study

This study focuses on resources as a constraint in Sub-Saharan African country development and ways to overcome it, with particular regard to the role of transparency in SSA. Government transparency is frequently overlooked in economic growth literature. This research looks at EITI recognizes as being important explores the relationship between economic growth and transparency for SSA countries.

In this study, I will focus on the effects the EITI initiative could have on these countries' development paths. The following research questions are studied and stated below:

- Does transparency affect the economic growth of SSA that participated in EITI?
- Does inflation affect the economic growth of SSA Countries that participated in EITI?
- Is there a difference between the economic performance of SSA countries that participate in EITI and those not participating in EITI?

To investigate these research questions, following hypotheses were set:

Research hypothesis

H1: There is a relationship between transparency and economic growth in SSA countries that participated in EITI.

H2: There is a difference in economic growth between EITI countries and non-EITI participants

H3: There is a relationship between economic growth and inflation.

Literature review

The resource curse is the most influential theoretical aspect of recent evolution discussions. According to the resource curse theory, countries with abundant natural resources have low GDP. When resources are plentiful, overall economic growth suffers. According to Sachs and Warner (1995; 2001), growth slows as natural resources become scarce. Future generations must take precedence over current concerns,

which is of critical importance (World Commission on Environment and Development 1987). Resource-rich countries face a major revenue management challenge. In order to generate revenue from natural resources, all/most SSA countries must take decisive action. Resource corruption, in addition to low revenue participation, is a barrier to growth. Although corruption occurs on a national level, it is inextricably linked to international issues, such as extractive industries. How does a resource-poor country benefit from associating with corrupt politicians like those with a severe lack of resources (Kempen and Gunthers 2008)? Economic, political, and international issues are the most pressing concerns in developing and resource-rich economies. Growth occurs when an increase in goods and services occurs as a result of domestic and international policies aimed at raising the population's standard of living. One way to describe political development is that it is characterized by an increase in the number of decision-makers and policymakers. Following that, there is a detailed discussion of economic, political, and international concerns. The non-resource competitiveness of a country suffers as a result of large resource income gains. As a result, when a country's economy is almost entirely based on manufacturing, the 'Dutch disease' is said to occur.

A non-resource sector that is growing in tandem with the natural resource sector the phrase "Dutch disease" was first used in an Economist article published in 1977, and its etymology is provided in the text. Abraham Maslow first recognized the phenomenon in the 1960s, when he noticed it in humans as well.

The discovery of natural gas in 1959 resulted in the abolition of manufacturing in the Netherlands. a reversal as a result, the gas sector lost competition, worsening the global economic balance and denying previously competitive non-oil exporting countries opportunities (Dutch Disease). As a result of rising exports, the value of the Dutch currency increased against other currencies, causing rising wages in natural gas industries to outpace those in non-natural gas industries. The second sector has been squeezed by the currency increase (Barbier 2003). In another regard, the country is seeing an increase in primary resource production, which may have an impact on the country's other sectors.

Overproduction has been going on for a while, and we are now paying the price (Gylfason 2001). This is because ferroaluminum is considered a cornerstone of the global commodity market, "prices of traded goods will be relatively stable" (Corden and Neary 1982). Human and social capital have been depleted as a result of "Dutch disease." Crowding out occurs when more money is invested in monetary assets while social/human capital is diverted. Many economic theories describe human and social capital as a resource curse. The availability of alternative resources, such as education funding, can cause crowding out, as seen frequently during times of resource scarcity.

Natural resources, for example, may result in less state and private investment in education, despite all other revenue-

increasing ideas being thwarted by spending cuts. In inheritance-rich societies, many people are joining the developing industries because when a person or a family member dies, they often leave behind substantial amounts of property. According to a number of authors, including Auty (1993), Gylfason (2001), and Barbier (2003), Dutch disease can also be found in countries with plenty of resources. Gelb also looks at non-resource tradable sectors and six oil exporting countries: Algeria, Ecuador, Indonesia, Nigeria, Trinidad and Tobago, and Venezuela. Furthermore, he points out that some countries have used their natural resources as collateral to finance their debt, resulting in a drop in the price of oil. International organizations, such as the World Bank, have followed and continued to implement such strategies for decades.

The International Monetary Fund and the United Nations Development Programmed have emphasized the importance of developing countries not jeopardizing their non-earning sectors. The resource curse is best described as exorbitant rents and widespread corruption (Auty 2001). When more restrictions are placed on the market, companies or individuals compete for surplus produced, which is not allowed by government regulation (Collier and Hoeffler 2005). Using his title for personal or private gain is a private misuse of his power (Kaufmann and Vicente 2011). has stifled the growth of money that could have been invested and is driving up the cost of borrowing.

In SSA countries, there were numerous resource and civil wars. In countries where the government has authoritarian control over resources, money cannot be used by citizens and must instead be given to the government. Furthermore, the year 2007 saw a spike in larcenasites (Wenar 2008). It has been established that resource-rich countries face development challenges. It is as common in resource-rich countries as it is in resource-poor countries (North 2005). for those who believe they are being overcharged A rent-seeking business is one that charges more than the general rate of return, regardless of how it is defined. Our goal in all of our markets is to achieve the highest possible return while also giving everyone an equal chance. As a result, rent-seeking is illegal in all states. The resulting service is rent-seeking when profit is sought by charging above market price, what has been gained or gained through unfair means, corruption. Patronage is also boosted by service fee revenue.

They bribe their supporters to keep their positions of power. A greater abundance of resources, he claims, will give a smaller group of elites a greater political and economic advantage (Auty 2001). Mining companies can use revenue from extractive resources to give preferential treatment to one person or group over another. It could be inefficient tariffs or the government favoring one producer over another at the expense of overall tax revenue. In addition, mineral wealth enables them to generate income independently (Neumayer and Dietz 2005).

Government and Transparency

Oil-rich countries were seen as a threat to economic development even in the 1970s, as their ability to develop natural resources grew. The role of governments in overall economic development is fascinating. One interesting aspect of the resource curse is the diversity of governments among resource-rich countries. When governments rely on mineral revenues for revenue, they have fewer incentives to improve institutions that promote public services and conflict avoidance. Natural resources in SSA countries have contributed to political instability (Karl 2007). Collier and Warner (1995) and Sachs and Sachs and Warner (1995) discovered a strong negative correlation between resource abundance and political stability, expanding on their work. Transparency is essential for good government. Transparent governments are more likely to be free of corruption. According to Méon and Sekkat (2005), "weak governance is accompanied by corruption," while the Open Society Institute of Southern Africa (2007) found that resource-rich SSA countries like the Congo and Malawi relied on being open to globalization for their success (FSOA, 2007). Tanzania and Zambia discovered that mineral-rich African countries are not getting as much benefit from mining companies because they are poorly governed. Due to political bribery, this case study also suggests that African mining companies benefit unfairly from excessive and unfairly provided tax breaks. They're in charge of the company. As a result, the government receives far less revenue than anticipated. Due to corrupt politicians diverting the reported funds, the amount of this revenue is even lower. Good governance is essential in resource-rich countries to avoid the resource curse (Mehlum et al. 2005). In 2009, the World Bank recommended increased transparency in the extractive industries for economic growth and long-term development (World Bank and Global Witness 2008). Furthermore, in the African region, there may be a direct link between government structure and economic development. The 2012 index, for example, ranks the performance of 48 African countries based on a variety of criteria, including security, human rights, economic health, and sustainability. This study contributes to the advancement of the literature on governmental accountability and good governance by demonstrating that the most developed countries have the least corrupt and best-run economies. In the context in which it was written: SSA may have the potential to expand in light of efforts to alleviate the natural resource curse, such as the adoption of an international transparency initiative. There is no conclusive evidence that any particular type of government lowers or raises the risk of experiencing the resource curse. From democratic governments, such as those in Mauritius, to autocratic governments, such as those in Zimbabwe. To address these issues, a clear understanding of how to translate natural resource abundance into economic development is required. One-party, multi-party, and military-ruled countries typically dominate resource-rich

countries. Although the literature on natural resources and democracy differs, with some authors claiming that a certain level of transparency and democracy is sufficient, others, such as Ross (2001), argue that more democracy will help oil production. Establishing a resource revenue fund and distribution system is one way for resource-rich countries to overcome the natural resource curse. exemplary example of a system the system's various mechanisms transfer revenue from resources to citizens' income. In the Gulf states, there are many different types of fund transfer programs: in Indonesia, resources are distributed based on community needs, while in Alaska and Kuwait, resources are distributed unconditionally. Direct welfare benefits, such as welfare, are given directly to those who qualify. Social benefits, such as child allowances, are distributed through the taxation system (Gelb and Grasmann 2009). In many African countries, it has yet to be proven useful. Measured, quantified, and estimated for a global agreement, countries like Chad and Botswana may appear to be suitable, but more research is needed to determine what policies will be most effective in achieving it. Belarus is the smallest of the three countries. According to Gelb and Groenmann, resource funds will not be able to solve the region's resource curse (2009). The transparency and accountability mechanisms in place in Alaska have the potential to inspire others. He claims legitimacy, but adds that it isn't a substitute for transparency. Strong institutions are mentioned in the literature on the political challenges related to the natural-resource curse as a critical factor in driving increased economic prosperity. Institutions are the fundamental norms of the economy, according to North (1990). We have formal systems, such as constitutions and taxation, as well as informal norms, such as habits and ideologies, to take into account. Historical institutional factors, such as existing organizations or economic factors, are widely acknowledged to be critical in this concept of takeoff. norms that are both reasonable and useful, such as Citizens' and non-government organizations (CNGOs) are also important to the development of extractive economies, particularly in post-conflict situations where these economies are emerging. The success of these businesses is also influenced by the international political and economic arenas. The following sections provide information on the role of resource-rich countries in the domestic economy.

International Challenges

Extractive industries should be held accountable for lower overall growth and development in resource-rich countries. Governments that promote growth and have transparent payment systems have a better track record of managing resource revenues. Though it is the responsibility of resource-rich governments to ensure that their resources are properly utilized, developed countries and international extractive companies are critical to their success. In other words, developed countries can encourage extractive industries to be more accountable. Governments can also demand that

clandestine bank accounts in developed countries, as well as those in resource-rich countries, be closed. Countries can use policies that reduce the incidence of conflict and war in resource-rich countries to promote good governance. Almost all SSA countries spend money earned from natural resources on armaments purchased from countries that have advanced further in their development. The elimination of this pollution cycle will have a significant impact on these countries' economic growth potential. According to Stiglitz (2005), developed countries, resource-rich countries, and extractive companies will be viewed as a blessing or a curse, respectively.

China in Sub-Saharan Africa

As commodity prices rise, it is increasingly critical to avoid the resource curse. Resource-hungry countries such as China and India, predicted to follow economic growth, are anticipated to have a rising demand for natural resources in the future. Resource-rich SSA countries, in SSA countries are facing increasing pressure to develop a transparent resource discovery process. In recent years, more African countries have been added to the ranks of the principal mineral and oil exporter countries; however, the demand for resources has continued to rise and prices have been on the rise. Ghana, Uganda, Mauritania, South Sudan, Mozambique, Liberia, and Kenya have all started or completed drilling/exploration efforts to begin production in the last few years. A transparent system and institute of governance have become increasingly important for international extractive industries to work with China in SSA. A number of actors have found employment in SSA countries due to a lack of transparency. China and other emerging markets have strengthened their trade relations with SSA countries. China has recently become one of the world's largest users of natural resources. Maintaining its economic growth will become more difficult in the coming years (Brautigam 2010). While the continent of Africa is wary of international economic dealings due to colonialism, China is taking advantage of this by learning the language and providing soft loans. Without dealing with the question of transparency, it has positioned itself as the primary source of foreign imports (Michel and Beuret 2008). Assistance from China is the most apparent in the form of resources. The Chinese have received drilling rights in Angola, Nigeria, and Sudan. Countries such as Chad, Gabon, Mauritania, the Democratic Republic of Congo, and Ethiopia have signed exploration and extraction agreements with China. The People's Republic of China has also invested in mineral extractive industries in countries like Zambia, the Democratic Republic of the Congo, Cameroon, Equatorial Guinea, and Mozambique. China's trade with Africa has grown from \$10.6 billion in 2000 to \$75.5 billion over the last decade. The worst place you could give your young is someone is your own flesh and blood, or the worse way to give your young is to give your own flesh and blood. China is somewhat known for being non-transparent in their contractual

agreements, especially in the countries where they operate. This opacity helps political leaders to cash in on-in on the resources (Brautigam 2011). Because China places less value on transparency, it is somewhat able to amass wealth, and it may even encourage corruption. the country's foreign policy is that of non-interference in domestic affairs as long as African governments are riddled with corruption, the true effects of China's involvement will remain unclear. such international bodies such as the World Bank view China's growing involvement in Africa as a positive development, whereas other countries, such as the United States, fear that this will lead to long-term trouble for resource-rich countries like it those countries in Sub-Saharan Africa who don't practice sustainable natural resource management. International laws and regulations play a vital role when there is a lack of good governance. Transparency is especially common in resource-rich African countries where there is a great deal of corruption to contend with. While other countries are dealing with similar problems, the situation in SSA is far more difficult. An assumption is that if corruption and rent-seeking are eliminated, the economies of these countries will develop and grow. all agree that serious measures are required to deal with the problem of inequity in global resources (Humphreys et al. 2007). In many countries, fighting corruption at home remains a difficult task. Despite the fact that nearly all extractive firms involved in corruption are foreign and based in developed countries, international law enforcement has only received the minimum attention. Many people all over the world are outraged by the lack of legal institutions that keep watchful eye on public funds. Several initiatives have emerged to hold extractive companies and national governments more accountable. Among the more well-known international and regional initiatives is the Global Reporting Initiative's publication of Publish What You Pay, the Kimberley Process, and the OECD guidelines on Multinational Enterprises. The EITI is the most positively evaluated transparency-enhancing initiative, according to the literature on promoting transparency. More than 46 resource-rich countries are currently implementing the EITI.

Review of Extractive Industries Transparency Initiative (EITI)

The EITI was established in 2003 to fill a gap in international law regarding extractive industries operating in resource-dependent countries and to assist governments in ensuring greater transparency in these industries. Countries around the world must publish all of their mining and oil revenue figures to be eligible to participate. The World Bank, the International Monetary Fund, the International Bank for Reconstruction and Development, and the European Investment Bank for Reconstruction and Development are all members of the EITI, which is supported by the international community. The EITI aims to improve efficiency by verifying and fully disclosing payments and government

revenues made by oil and mining companies. The goal of this project is to put an end to the current financial exploitation of natural resources (World Bank and Global Witness 2008). When everything is in order, the company will keep track of two types of transparency: the first, between producers and the government, and the second, the government's accountability to its citizens (EITI 2005). The EITI adheres to the following principles:

We agree that long-term economic growth is inextricably linked to prudent natural resource management; natural resources contribute to long-term development, but mismanagement can have a negative impact on both.

We affirm that it is the responsibility of sovereign governments to manage natural resources in the interests of their citizens' well-being.

The costs of resource extraction are paid in the form of revenues over time and are price sensitive.

The public's ability to better participate in public debates about feasible long-term plans, make more informed decisions, and provide better options for financing long-term goals could all benefit from a historical record of government revenues and expenditures over time.

In the extractive industries, we emphasize the importance of governmental and corporate transparency, and we call for increased public financial monitoring and reporting.

We recognize that greater transparency must be balanced with strict adherence to contracts and laws in order to avoid fraudulent claims.

We recognize the unique advantages that increased financial transparency provides for both domestic and international investment.

We believe in the principle and practice of equitable tax/expenditure distribution to ensure that all citizens are well-served.

We're committed to promoting high levels of transparency and accountability in both the government and the private sector.

To achieve our objectives, we need a consistent and practical approach to the disclosure of key attribute information. Simple to achieve and simple to carry out the public should be informed about all extractive industries operating in a given country (EITI 2003).

For countries, this opportunity provides benefits such as increased investor confidence, a stronger commitment to good governance, and greater political stability (EITI 2005). EITs were created to address the issue of natural resource dependency, with the long-term goal of improving governance and exposing the risks involved (Kolstad and Wiig 2007). Azerbaijan, the Central African Republic, Mauritania, Mali, the Mongols, Peru, and Niger are among the fourteen countries that have made EIT compliance official. Albania, Guinea, The Republic of the Congo, Cameroon, Congo-Kinshasa, Indonesia, Iraq, Madagascar, and Sierra Leone have also been awarded this title (EITI 2012). Twenty countries have formally expressed their desire to participate in this initiative and have begun the

EITI compliance process at various stages. Promoting initiatives like EIT, on the other hand, would be free. Tax audits promote transparency and help to prevent public funds from being misappropriated. Citizens in the vast majority of SSA countries have no idea how much money is generated from natural resources or how it is spent. Hidden bank accounts in developing countries are frequently used to fuel corruption. Although resource reserves may fluctuate, no attempt is made to calculate revenue stolen by government officials. By auditing funds and increasing transparency, it is possible to increase the flow of money towards economic development. This claim will be put to the test to see if EIT has had an impact on the economy of a resource-rich SSA country. The following are some of the economic and political factors that contribute to the natural resource curse: Unemployment is common in resource-rich areas due to insufficient employment and high commodity price volatility (Stiglitz 2012). A resource-rich country's political and institutional resources have a significant impact on its resource wealth, and the government is usually corrupt. Resource-rich countries must strive to develop transparency and laws that redistribute resources (information) to their citizens, according to "institutional theory," which examines "the processes by which schemes, rules, norms, and practices are established as legitimate guidelines for behavior" (Scott 2001).

Methodology

Panel egression model is fitted to established relationship between dependent variable which is GDP Per Capita per each of the SSA countries in EITI scheme and independent variables used to established the fitted Panel regression model includes Inflation for each of the SSA countries supported by EITI, EITI dummy (1 for yes), natural resources (which includes renewable, non-renewable, depletable and non-depletable) and Indicators of transparency, which are defined shortly, are voice and accountability, corruption, quality of budget, and fiscal management. Each of these is used as a variable of transparency in this study. *Voice and accountability* indicates citizens' opportunities to exercise political rights, such as political rights, and the extent to which civil liberties are granted, and to their media, which is a scale developed by World Governance personal gain gained through abuse of authority calculated according to the CPI-published parameters believe that there is a correlation between corruption in the public sector and natural resource shortages in the economy (Torvik 2002; Robinson, Torvik, and Verdier 2006). The CPI (although imperfect) is more widely used as an overall measure. World Bank Worldwide Governance Indicators Ten countries are participants in the EITI, while another ten are not.

Method of data analysis

The method of data analysis used in this research work is the descriptive statistics, fixed effect model, random effect

model, Hausman technique, correlation analysis and Independent t test. In order to test the hypotheses concerning the relationship between the dependent and independent variables, STATA 16 software was used.

Model specification

The formulated hypothesis will be tested using the functional description of the model, which is:

$$\text{GDP Per Capita} = f(I, \text{QB}, \text{VA}, \text{EITI}, \text{C}, \text{NR}).$$

Econometrically, the panel regression models can be expressed as:

In panel data analysis, there is often a challenge which estimator is best suited to the model. Is that a fixed effect or a random effect? The generalized model for panel data is $Y_{it} = a_i + BX_{it} + U_{it}$. The null hypothesis assumes that a_i has no relationship with the explanatory factors. That is, a_i is independent of the model's explanatory variable, as opposed to the alternative hypothesis that a_i is connected with the independent variable, and this frequently generates confusion among researchers about which model or estimator to use. So, when the null hypothesis is rejected, you conduct the analysis with fixed effect, according to the Hausman test.

Decision rule: Reject the null hypothesis if $P < \alpha$ and do not reject if otherwise. Where α is the significant level (1%, 5%, 10% respectively)?

$$\text{GDP Per Capita}_{it} = \beta_0 + \beta_1 \text{Inflation}_{it-1} + \beta_2 \text{QB}_{it} + \beta_3 \text{VA}_{it} + \beta_4 \text{EITI}_{it} + \beta_5 \text{C}_{it} + \beta_6 \text{NR}_{it} + \varepsilon_{it}$$

The dependent variable which is GDP Per Capita per each of the SSA countries in EITI scheme while the independent variables are Inflation for each of the SSA countries supported by EITI, EITI dummy (1 for yes), natural resources (which includes renewable, non-renewable, depletable and non-depletable) and Indicators of transparency, which are defined shortly, are voice and accountability, corruption, quality of budget, and fiscal management

Besides, there is need for normality test that reveal the satisfaction of the model assumptions to ensure that ordinary least square panel model applied is fit and robust.

Where, I = Inflation, QB = Quality of budget and fiscal management, VA = Voice and accountability, EITI = Of the twenty countries in the study, ten are SSA countries that are implementing EITI and another ten SSA countries that do not participate in the EITI scheme (dummy), C = Corruption and NR = Natural resources while ε_{it} is the error term (Allison and Paul, 1999)

Independent sample T test is applied to examine the difference in economic growth of SSA countries that participate in EITI and those that does not participate in EITI scheme.

Table 1: EITI Countries and Non-EITI Countries

EITI Countries	Non-EITI Countries
Burkina Faso	Angola
Ghana	Botswana
Liberia	Equatorial Guinea
Mali	Gabon
Mozambique	Guinea Bissau
Niger	Namibia
Nigeria	Sao Tome and Principe
Tanzania	South Africa
Togo	Sudan
Zambia	Zimbabwe

Source: Extractive Industries Transparency Initiative (EITI, 2016)

Correlation analysis was also carried out to measure the strength of association between the variables of interest in this study. Pearson correlation was adopted to test the significance of the correlation among GDP Per Capita per each of the SSA countries in EITI scheme, Inflation for each of the SSA countries supported by EITI, EITI dummy (1 for yes), natural resources (which includes renewable, non-renewable, depletable and non-depletable) and Indicators of transparency, which are defined shortly, are voice and accountability, corruption, quality of budget, and fiscal management.

Besides, independent t test is also adopted to examine the difference in economic growth between EITI countries and non-EITI participants. Independent t test is applied to test for difference between two independent variables on a dependent variable. The two independent variables here are EITI countries and non-EITI participants while the dependent variable is the economic growth. STATA software will also be used to do this.

Data collected is the annual data from 2001 to 2020 for each of the SSA countries in EITI scheme that participated in EITI scheme which make 200 observations being considered under this study and it is extracted from databank.worldbank.org which is the site of world development indicators.

Results and Interpretation

The data analysis was done using Stata 16.0 and results are discussed below to answer the following research questions and hypothesis.

Research questions:

- Does transparency affect the economic growth of SSA that participated in EITI?
- Does inflation affect the economic growth of SSA Countries that participated in EITI?

- Is there a difference between the economic growth of SSA countries that participate in EITI and those not participating in EITI?

Research hypothesis

H1: There is a relationship between transparency and economic growth in SSA countries that participated in EITI.

H2: There is a difference in economic growth between EITI countries and non-EITI participants

H3: There is a relationship between economic growth and inflation.

Table 2: Descriptive statistics

Variables	N	Mean	SD	Min	Max
Inflation	200	73.63	11.56	26	93
QB	200	53.94	10.77	14	70
Corruption	200	63.47	11.37	31	121
VA	200	12.11	4.54	3	62
GDPPERCapita	200	86.44	14.84	39	133
Natural Resources	200	11.02	2.66	5	15

Source: Author's computation using Stata software

Table 2 shows that on the average inflation is about 74% of the 200 observations, quality of budget and fiscal management is about 54% on average, corruption practices is about 63% on average, voice and accountability is about 12% on average, natural resources is about 11% on the average and GDP Per capita is about 86% on the average. However, the natural resources have the least variability due to its lowest standard deviation value of about 2.6 and GDP Per Capita has the greatest variability due to its highest standard deviation value of about 86.4.

Hausman test

The Hausman test ($P < 0.01$) which indicate that the model is statistically significant as we can see in the appendix 2 and this indicate that the fixed effect regression model would be used to run the analysis of this work.

Table 3: Fixed effects regression

GDPPERCapita	Coefficient estimate	Test statistic	P-value
Inflation	0.397	4.64	0.000
QB	0.096	0.94	0.348
VA	0.544	3.46	0.001
EITI	-0.962	-0.10	0.918
Corruption	0.414	4.41	0.000

Natural Resources	-0.551	-1.90	0.058
Constant	25.680	3.47	0.001
Overall P-value	0.0000		

Where asterisks *** ** and * are 10%, 5% and 1% significant level respectively

Source: Author's computation using Stata software

Table 3 reveals that the overall fixed effect regression model ($P < 0.01$) indicate that the model is statistically significant at 1% level and this follows that the model is a good fit for the data and can be used for future prediction of GDP Per capita for the 10 Sub-Saharan countries that participated in EITI scheme.

Inflation ($\beta = 0.397$, $P = .000$), Corruption ($\beta = 0.414$, $P = .000$), Voice and accountability (VA) ($\beta = 0.544$, $P = .001$), and Natural resources ($\beta = -0.551$, $P = .058$). This tells us that transparency indicator is statistically significant at 1% level for corruption and VA while Inflation is statistically significant at 1% level while the natural resources is statistically significant at 10% level. This follows that inflation, and transparency indicators have positive significant impact on economic growth of Sub-Saharan countries that participated in EITI scheme while the natural resources show a negative significant influence on the economic growth which can be attributed to the natural resource's depletion. This answer the research questions that transparency affects the economic growth of SSA that participated in EITI and inflation also affect the economic growth of SSA Countries that participated in EITI.

In order to ensure that we have a valid and robust fixed effect regression model, the normality diagnostic is very necessary.

Table 4: Normality test

Variable	N	P-value
Inflation	200	0.848
QB	200	0.815
Corruption	200	0.837
VA	200	0.525
GDPPERCapita	200	0.879
Natural Resources	200	0.114

Source: Author's computation using Stata software

The data was not satisfy but was corrected using Shapiro-Wilk log-normal as a corrective measure to the violation of the normality assumption and we can see that the data is normally distributed as the $P > 0.05$ for all the data observations and this satisfy the normality assumption which makes the model very robust.

Independent t test

We can see from the appendix 2 that the independent t test $P > 0.05$ for both one tail and two tail test which tells us that we cannot reject the null hypothesis and this follows that there is no difference in economic growth between EITI countries

and non-EITI participants. This also answer the research question that there is no significant difference in the economic growth between countries that participated in EITI and countries that does not participate in EITI scheme.

Correlation analysis

In appendix 2, the asterisk * indicate that the relationship between inflation and Economic growth of SSA countries that participated in EITI scheme is statistically significant at 1% level. In the same vain, the asterisk * indicate that the relationship between transparency indicator (QB, Corruption and VA) and Economic growth of SSA countries that participated in EITI scheme is statistically significant at 1% significant level. And this support the research hypothesis that there is sufficient evidence to conclude that there is a relationship between economic growth and inflation. It also supports that there is a relationship between transparency and economic growth in SSA (Sub-Saharan) countries that participated in EITI. The correlation coefficient also indicates a positive correlation or relationship between them.

Conclusion

The study had two goals: to look into transparency, which is one of the most commonly prescribed remedies for overcoming the natural resource curse, and to see if an international voluntary initiative has an impact on SSA participants' economic growth. Although transparency is an important feature of a good institution, it is not the only factor that transforms and ignites resource-rich countries' economies development. According to the fitted fixed effect regression, transparency has a statistically significant impact on the economic growth of the ten resource SSA countries under consideration, confirming the literature that transparent governments are more likely to be free of corruption. "Weak governance is accompanied by corruption," according to Méon and Sekkat (2005), while the Open Society Institute of Southern Africa (2007) discovered that resource-rich SSA countries like the Congo and Malawi rely on being open to globalization for their success (FSOA, 2007). Natural resources, on the other hand, have no significant impact on economic growth. This is consistent with Sachs and Warner's (1995; 2001) findings that growth slows as natural resources become scarce. The descriptive statistics also show that natural resources account for about 11% of total resources, implying that scarce natural resources lead to lower economic growth. Furthermore, there is a strong link between transparency and economic growth, which simply means that countries that participate in global transparency initiatives will have high-quality budgets, be free of corruption, have good accountability, and have a strong economic performance that will guaranteed her citizens a good standard of living both now and in the future.

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Appendix

Appendix 1: Stata Do files

```

tsset Countries Years, yearly

xtreg GDPPER Capita Inflation QB VA EITI Corruption
Natural resources, fe

estimates store fixed

xtreg GDPPER Capita Inflation QB VA EITI Corruption
Natural resources, re

estimates store random

Hausman fixed random

pwwcorr GDPPERCapita Inflation QB Corruption VA Natural
resources, star(1)

ttest GDPPERCapita, by(EITI)

Appendix 2: Table of results

Stata Commands and Output

```

. hausman fixed random

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
Inflation	.3971914	.4186824	-.021491	.032045
QB	.09589	.2038163	-.1079263	.0571917
VA	.5441647	.6073752	-.0632106	.0508153
EITI	-.9623378	3.072648	-4.034986	9.198795
Corruption	.4144543	.44334	-.0288856	.0346184
Naturalres~s	-.5509973	-.3843049	-.1666924	.1512514

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)
 = 17.33
 Prob>chi2 = 0.0081

Fixed-effects (within) regression Number of obs = 200
 Group variable: Countries Number of groups = 20

R-sq: Obs per group:
 within = 0.5145 min = 10
 between = 0.8416 avg = 10.0
 overall = 0.6204 max = 10

corr(u_i, Xb) = 0.3132 F(6,174) = 30.73
 Prob > F = 0.0000

GDPPERCapita	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Inflation	.3971914	.0855334	4.64	0.000	.228375	.5660079
QB	.09589	.1018107	0.94	0.348	-.105053	.296833
VA	.5441647	.1572821	3.46	0.001	.2337384	.854591
EITI	-.9623378	9.292242	-0.10	0.918	-19.30236	17.37768
Corruption	.4144543	.0938912	4.41	0.000	.2291421	.5997666
Naturalresources	-.5509973	.2892831	-1.90	0.058	-1.121953	.0199583
_cons	25.67981	7.409314	3.47	0.001	11.05611	40.30351
sigma_u	4.3875762					
sigma_e	8.7546212					
rho	.20075063	(fraction of variance due to u_i)				

Random-effects GLS regression Number of obs = 200
 Group variable: Countries Number of groups = 20

R-sq: Obs per group:
 within = 0.5103 min = 10
 between = 0.9268 avg = 10.0
 overall = 0.6477 max = 10

corr(u_i, X) = 0 (assumed) Wald chi2(6) = 354.84
 Prob > chi2 = 0.0000

GDPPERCapita	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Inflation	.4186824	.0793037	5.28	0.000	.2632501	.5741148
QB	.2038163	.0842291	2.42	0.016	.0387303	.3689023
VA	.6073752	.1488471	4.08	0.000	.3156403	.8991102
EITI	3.072648	1.314505	2.34	0.019	.496266	5.64903
Corruption	.44334	.0872761	5.08	0.000	.2722819	.614398
Naturalresources	-.3843049	.2465923	-1.56	0.119	-.8676169	.099007
_cons	11.84371	4.827551	2.45	0.014	2.381886	21.30554
sigma_u	0					
sigma_e	8.7546212					
rho	0	(fraction of variance due to u_i)				

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	101	85.12871	1.546421	15.54134	82.06066	88.19677
1	99	87.78788	1.411096	14.04023	84.9876	90.58815
combined	200	86.445	1.049352	14.84008	84.37572	88.51428
diff		-2.659166	2.0956		-6.791725	1.473393

diff = mean(0) - mean(1) t = -1.2689
H0: diff = 0 degrees of freedom = 198

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.1030 Pr(|T| > |t|) = 0.2060 Pr(T > t) = 0.8970

	GDPPER~a	Inflat~n	QB	Corrup~n	VA	Natura~s
GDPPERCapita	1.0000					
Inflation	0.6906*	1.0000				
QB	0.6338*	0.6086*	1.0000			
Corruption	0.7207*	0.6850*	0.6837*	1.0000		
VA	0.4152*	0.2890*	0.2981*	0.3006*	1.0000	
Naturalres~s	0.0381	0.0809	0.0531	0.0916	0.1059	1.0000