

# Natural Resource Rents, Chinese Financing and Sustainable Economic Growth nexus in sub-Saharan Africa

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Academic editor: Kapoguzov E. | Received 30 December 2024 | Accepted 18 April 2025 | Published 18 August 2025

**Citation:** Sambiri, B.B., Mutai, N.C., & Osisiogu, O. (2025). Natural Resource Rents, Chinese Financing and Sustainable Economic Growth nexus in sub-Saharan Africa. *BRICS Journal of Economics*, 6(3), 63–85. <https://doi.org/10.3897/brics-econ.6.e145573>

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## Abstract

Sub-Saharan Africa (SSA) has abundant natural resources and attracts substantial investment, especially from China, but sustainable growth remains limited. This study examines the persistent disconnect between resource wealth, foreign financing, and long-term economic performance in the region. Using 20 years of panel data from 31 SSA countries, we estimate seven econometric models — including fixed effects, dynamic panels, and instrumental variables (IV) — to assess the long-run impact of natural resource rents, Chinese investment, trade flows and foreign direct investment (FDI) on GDP growth.

Exports are consistently associated with stronger economic growth. By contrast, Chinese investment does not show a robust effect across specifications. Natural resource rents have a weak or no correlation with growth, but become significant in the IV model, suggesting that their impact is mediated by institutional quality. Imports are negatively or insignificantly associated with growth until endogeneity is addressed, after which their effect turns positive indicating the importance of trade efficiency. FDI consistently correlates with lower growth, pointing to problems such as capital flight or extractive investment practices.

This study challenges the assumption that Chinese finance and resource abundance are driving development in SSA. The findings highlight the critical role of effective governance, transparent resource management, and coherent trade and investment policies. Policymakers need to align external finance and natural resource use with institutional reforms to promote sustainable growth.

**Keywords**

Chinese Financing, Natural Resource Rents, Panel Data Analysis, Sustainable Economic Growth, sub-Saharan Africa

**JEL:** F00, F40, F63.

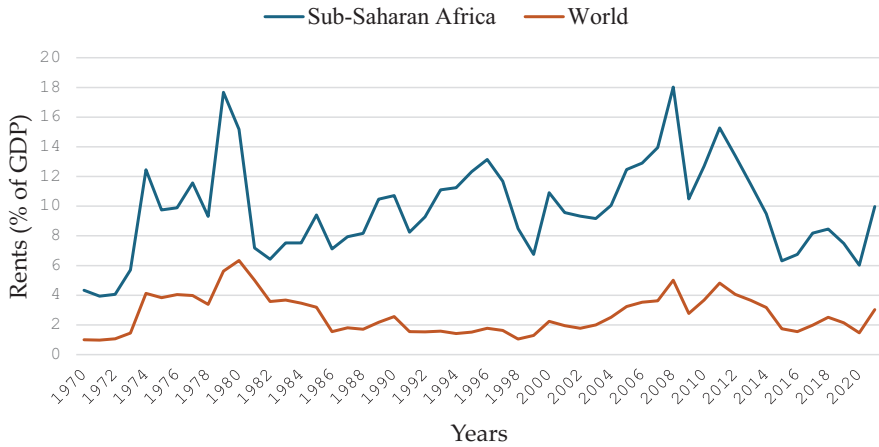
**1. Introduction**

The interplay between Chinese financing and natural resource rents in Africa has important implications for the continent's long-term economic development (Guan, Kirikkaleli, Bibi, & Zhang, 2020). Over the past two decades, China has emerged as a major financial partner in Africa, channelling substantial funds into infrastructure, energy, and mining sectors (Kalu & Aniche, 2020). This influx of Chinese capital has sparked considerable debate, particularly regarding its long-term sustainability and broader economic impact on resource-rich African nations (Gao et al., 2023).

Africa, with its vast natural resources accounting for approximately 30% of the world's mineral reserves, 8% of global natural gas, and 12% of global oil reserves occupies a strategic position in the global economy. The continent also holds the world's largest deposits of critical minerals such as cobalt, diamonds, platinum, and uranium, along with significant reserves of gold, chromium, and platinum (United Nations Environment Programme [UNEP], 2017). These abundant resources have made Africa a magnet for FDI, particularly from China. However, heavy reliance on natural resource extraction as a primary economic driver presents substantial risks. Chief among these is the "resource curse," a paradox whereby countries rich in natural resources often experience slower economic growth, exacerbated by market volatility, governance challenges, and over-dependence on a single sector (Guan et al., 2020; Kaplinsky, Hughes, & Moran, 2007).

Figure 1 shows the revenue from natural resources, such as oil, minerals and natural gas, as a percentage of GDP, highlighting each region's economic reliance on these resources. In sub-Saharan Africa, the data reveals significant fluctuation over the years. Resource rents have risen and fallen sharply, with notable peaks in 1979 (18.5%), 2008 (18.0%), and 2011 (15.3%). These peaks indicate periods when natural resources substantially contributed to the region's GDP, underscoring high dependency on the oil, mining, and gas sectors. By contrast, the years such as 1970 and 2020, with resource rents of 3.7% and 6.0% respectively, reflect a decline in the economic contribution of natural resources, possibly due to diversification efforts or lower global commodity prices. Overall, the data underscore Sub-Saharan Africa's economic reliance on natural resources, with resource rents often exceeding 10% of GDP. The recent downward trend may suggest either successful diversification efforts or continued vulnerability to volatile global prices.

Globally, natural resource rents as a percentage of GDP are much lower, indicating less dependence on natural resources worldwide. The data show global peaks in 1979 (5.8%) and 2011 (4.8%), but most of the time the global average remains under



**Figure 1.** An overview of natural resource rents as a percentage of GDP for both sub-Saharan Africa and the world from 1970 to 2021. *Source:* World Bank Development Indicators.

6% throughout the period. Particularly from 2015 to 2020, the global resource rents were consistently declining to between 1.5% and 2.5% of GDP. This suggests that while resource extraction has an impact on the global economy, it is not as significant as it is in SSA.

The stark contrast between the rents in SSA and their global average highlights the region's vulnerability to the "resource curse," where a country's heavy reliance on natural resources can hinder economic stability and sustainable growth. Sub-Saharan Africa's resource rents fluctuate sharply, often mirroring global price trends but with a more pronounced impact on the region's economy. This heavy dependency makes the region particularly susceptible to shifts in global commodity prices, which directly affect its GDP and economic stability.

Chinese investment has provided critical capital for development and infrastructure improvements in sub-Saharan Africa, but it also raises concerns about debt sustainability, environmental degradation, and equitable distribution of economic benefits (Mutai et al., 2024). The relationship between natural resource rents and Chinese financing is indeed crucial to the region's economic trajectory, as its resource-rich countries increasingly rely on Chinese loans for large-scale infrastructure projects, often using natural resources as collateral (Acheampong, Osei, & Appiah, 2023). Over-reliance on volatile resource markets and accumulation of external debt can undermine the very growth these investments seek to promote, exacerbating environmental and social challenges. The link between natural resource rents, Chinese financing, and sustainable economic growth in sub-Saharan Africa should therefore be examined in the broader context of governance and institutional effectiveness (Asiamah, Adu, & Owusu, 2022). Effective management of resource revenues and borrowed funds is essential for these financial inflows to support inclusive and sustainable development. Weak governance, corruption, and lack of transparency often lead to misallocation

of resources, reducing the benefits of both Chinese financing and natural resource wealth (Dreher, Fuchs, & Nunnenkamp, 2018). To fully benefit from natural resources and external financing, sub-Saharan African countries need to prioritize institutional strengthening, implement sound fiscal policies, and invest in economic diversification and environmental sustainability. This approach will help mitigate the risks associated with resource dependency and external debt, paving the way for a more resilient and sustainable economic future in the region.

Despite the substantial influx of Chinese financing into sub-Saharan Africa's resource-rich economies, a critical gap remains in understanding the long-term sustainability and broader implications of this financial relationship for the region's economic development. While the Chinese capital has undoubtedly accelerated infrastructure development and sectoral growth, reliance on natural resources as collateral may exacerbate the "resource curse": market volatility, governance challenges, and overdependence on a single sector can hinder economic growth. (De Freitas, 2023).

The primary objective of this study is to explore the complex interplay between Chinese financing and natural resource rents in sub-Saharan Africa, and how this relationship influences economic sustainability, governance, and institutional

**Table 1.** Hypotheses Framework

Hypothesis	Explanation
<b>Resource Curse Hypothesis</b>	Suggests that economies heavily dependent on natural resource wealth may experience slower growth due to poor governance, misallocation of resources, and economic volatility (Sachs & Warner, 2001). Rather than supporting development, resource wealth can lead to inefficiency, corruption and weaker institutional quality. (Auty, 1994).
<b>Chinese Investment and Growth Hypothesis</b>	Examines whether Chinese financing contributes to economic growth. Chinese investments provide infrastructure and capital but their effectiveness depends on governance, sector allocation, and the nature of the projects (Brautigam, 2009). The hypothesis questions whether such investments can drive sustainable development on their own. (Dollar, 2016).
<b>Governance-Dependent Resource Utilization Hypothesis</b>	Argues that the developmental benefits of natural resource wealth are not automatic but depend on the quality of governance. Effective institutions and transparent policies determine whether resource endowments lead to sustainable growth or exacerbate inefficiencies and inequality (Mehlum, Moene & Torvik, 2006; Collier & Goderis, 2007). This hypothesis emphasizes the mediating role of governance in translating resource wealth into development outcomes.
<b>Trade-Led Growth Hypothesis</b>	Proposes that exports are a key driver of economic expansion. Countries that focus on export-oriented strategies tend to have higher productivity, foreign exchange earnings and industrialization (Frankel & Romer, 1999). The hypothesis also considers the negative impact of excessive import dependence on domestic production (Rodrik, 2017).
<b>FDI Paradox Hypothesis</b>	Challenges the conventional belief that FDI always stimulates growth. In certain contexts, especially in extractive industries, FDI may contribute to capital flight, weak domestic linkages, and economic instability instead of fostering long-term development (Alfaro, 2003; Asiedu, 2006).

effectiveness (based on the hypotheses in Table 1). This research is particularly important as it aims to assess whether current economic strategies, driven by external financing and resource exploitation, are in line with long-term sustainable development goals. It emphasizes the need for stronger governance, economic diversification, and responsible resource management in the region.

## **2. Literature review**

This section provides an overview of the theoretical and empirical literature on the issues under consideration. It also identifies the research gap to be filled by the study.

### **2.1. Theoretical Framework**

#### **2.1.1. Resource curse theory and its relevance to Chinese financing**

The resource curse theory (RCT) suggests that economies rich in natural resources often experience slower growth owing to economic distortions, governance challenges, and susceptibility to commodity price volatility (Auty, 1994; Sachs & Warner, 2001). While the theory provides a foundational framework for analysing sub-Saharan Africa's reliance on resource rents, it does not fully account for the role of external financing, particularly from China, in shaping economic outcomes. This study extends the RCT by examining whether Chinese financing exacerbates or mitigates resource-related economic vulnerabilities.

Unlike traditional Western loans, which normally come with strict governance and transparency conditions, Chinese financing is often structured as resource-backed loans, where African governments pledge future resource revenues as collateral (Brautigam & Tang, 2014; Zajontz, 2023). This financing model has the potential to accelerate infrastructure development but may also entrench the resource curse by deepening debt burdens and reinforcing dependence on resource exports. In theory, if the Chinese money is used effectively to fund economic diversification - that is, investment in manufacturing and technology - then it will be possible to break the cycle of resource dependency. If, however, it mainly facilitates extractive activities with minimal value added, it may increase economic volatility and fiscal instability.

This paper critically engages with RCT by analyzing the extent to which Chinese financing contributes to sustainable growth beyond the extractive sector. The findings challenge the conventional assumption that resource-backed lending automatically leads to economic expansion, showing instead that its impact is contingent on governance structures, fiscal policies and the ability of African states to negotiate favourable terms. The study thus refines the RCT by showing that external financing

mechanisms can either exacerbate or mitigate resource-related economic challenges, depending on the conditions under which they are deployed.

### **2.1.2. Dependency Theory and the New Dynamics of China-Africa Relations**

The Dependency Theory (DT) posits that developing economies remain structurally dependent on wealthier nations owing to historical patterns of resource extraction and unequal trade relations (Prebisch, 1950; Frank, 1967). Traditionally, this framework has been applied to the North-South economic relations, where African countries export raw materials and import high-value manufactured goods, reinforcing the cycles of underdevelopment (Rodney, 1972; Cardoso & Faletto, 1979). However, the rise of China as a dominant economic partner in Africa calls for a reassessment of DT in the light of changing global power dynamics.

Chinese financing presents a paradox within the DT framework. On the one hand, China's investments in infrastructure, energy and mining mirror historical patterns of extractive engagement, where African nations remain primary suppliers of raw materials with limited capacity for industrialization (Alden, 2017). This dynamic is in line with DT's core argument that resource-rich but structurally weak economies remain dependent on external actors for capital and market access. On the other hand, unlike Western aid and loans, Chinese funding is often packaged with infrastructure development and technology transfer, which in theory could promote greater economic self-sufficiency (Kaplinsky, 2013; Were, 2018).

This study extends DT by assessing whether Chinese financing represents a new form of dependency or a viable alternative development pathway. Empirical findings show that while the Chinese capital has facilitated infrastructure expansion, it has not significantly contributed to economic diversification. Continued reliance on resource-backed loans and the resulting trade imbalances suggest that African economies remain vulnerable to external financial pressures, raising concerns about long-term sovereignty over resource wealth. The study also identifies cases where Chinese investments have supported industrialization, albeit to a limited extent.

By critically re-examining the DT through the lens of Chinese financing, this paper provides a deeper perspective on Africa's economic positioning in the global economy. It highlights the need for African governments to renegotiate the terms of Chinese engagement, ensuring that investments are aligned with long-term developmental goals rather than reinforcing patterns of external dependence.

### **2.1.3. Bridging Theoretical Gaps**

Both the RCT and DT offer new insights into Africa's economic challenges, but neither fully captures the complexities created by Chinese financing. This study contributes to the theoretical discourse by demonstrating that external financing, particularly from China, can either reinforce or challenge traditional dependency structures and

resource-related economic constraints, depending on governance quality, investment allocation, and policy frameworks. The findings underscore the need for African economies to use external capital strategically to ensure that foreign investments drive diversification and long-term economic resilience rather than perpetuating dependence on extractive industries.

## 2.2. Empirical review

The link between natural resource rents, Chinese financing, and sustainable economic growth in sub-Saharan Africa has received increasing scholarly attention because of China's growing role in the region. This relationship is central to understanding the broader implications of China's economic engagement and its potential influence on the long-term development prospects of the sub-Saharan African countries, particularly those rich in natural resources. China's involvement in large-scale infrastructure projects, often financed by loans backed by natural resource contracts, has caused both optimism and concern about the prospects for economic diversification, governance, and long-term sustainability.

A definitive study in this area is Brautigam's (2011) exploration of China's strategic engagement in Africa, particularly its focus on securing access to natural resources through financing agreements. Brautigam's research highlights the critical role that Chinese investment has played in funding major infrastructure projects, such as transport networks and energy development, which have driven economic growth across the continent. At the same time, Brautigam is concerned about the long-term consequences of this funding model. While Chinese investment has helped short-term development, it has also increased dependence on commodity exports and contributed to debt accumulation, raising questions about the sustainability of growth in the face of volatile commodity prices and rising debt burdens. Brautigam's conclusions highlight the challenges that sub-Saharan African countries face in harnessing their resource wealth for sustainable development, rather than falling into a resource-dependent trap.

Building on this foundation, Kaplinsky (2013) examines the impact of China's growing demand for African resources on the continent's economic structure. The study shows that while Chinese financing provides essential capital for development, it also reinforces Africa's role as a primary exporter of raw materials. Although such exports contribute to immediate economic growth, they can perpetuate the continent's dependence on volatile commodity markets and limit its ability to diversify. This is in line with the broader RCT, which suggests that resource-rich economies can become trapped in a cycle of extractive industries and external financing that fails to lead to diversified, sustainable economic development (Sachs & Warner, 2001). Kaplinsky's research warns that if Chinese investment continues to focus on extractive industries, it could stifle the development of other productive sectors - such as manufacturing and services - that are critical for long-term growth.

Zajontz (2023) further explores the socio-economic consequences of Chinese resource-for-infrastructure deals, focusing on the environmental, social, and governance challenges linked to these agreements. The author notes, that Chinese financing has significantly improved infrastructure for transport, energy, telecommunications and some other sectors. These benefits, however, often come with substantial environmental and social costs. Large-scale infrastructure projects may lead to environmental degradation, displacement of communities, and exacerbation of social inequalities. It also raises concerns about the transparency of Chinese deals, pointing out that the lack of clear regulatory frameworks and governance mechanisms often leads to corruption, resource mismanagement, and unequal distribution of benefits. All this can undermine the sustainability of investment-led growth and increase the region's dependence on external actors for development.

The role of governance and institutional quality in mediating the impact of natural resource rents and Chinese financing on economic growth has been the focus of recent empirical studies. Asongu and Ssozi (2016) investigate how institutional frameworks influence the effectiveness of Chinese loans in fostering sustainable growth in Sub-Saharan Africa. Their findings suggest that countries with robust, transparent institutions and effective governance are better placed to use the Chinese money to support long-term development goals. Conversely, countries with weaker institutional frameworks are more likely to experience the negative effects of external funding, such as corruption, inefficiency, and resource misallocation. This work highlights the critical role of institutional quality in determining whether Chinese lending contributes to productive investments and sustainable growth or perpetuates cycles of debt and dependency.

Alden (2017) offers another perspective by examining the strategic aspects of Chinese financing in Africa, with an emphasis on the long-term implications for development. Alden's research points to the doubled-edged nature of Chinese investment: while it facilitates rapid infrastructure development and economic growth, it also introduces risks that could undermine the sustainability of these gains. One of the main risks is the potential mismanagement of resource rents, leading to economic instability. Alden advocates for greater economic diversification and stronger fiscal policies to mitigate the risks and ensure that resource-backed funding contributes to long-term prosperity rather than exacerbating dependency on raw material exports.

A more recent study by Dreher et al. (2021) examines the impact of Chinese financing on economic growth in several sub-Saharan African countries. The authors find that the effect of Chinese loans on economic growth varies significantly depending on how the loans are structured and used. In countries where Chinese financing has been directed towards infrastructure development that supports broader economic activity, such as transport, energy or manufacturing, the impact on growth has been more positive. However, in cases where loans were mainly directed to extractive sectors or poorly managed, the benefits were less pronounced and countries experienced

rising debt without significant long-term economic transformation. Dreher et al. (2021) warn that without careful management and strategic planning, Chinese loans may exacerbate the region's existing economic vulnerabilities rather than fostering resilient, diversified economies.

The empirical literature on the nexus between natural resource rents, Chinese financing, and sustainable economic growth in Sub-Saharan Africa presents a nuanced picture. Most authors agree that the Chinese money has played a crucial role in coping with infrastructure deficits and stimulating economic growth in the region, although the sustainability of this growth remains uncertain. The literature consistently highlights that governance quality, institutional strength, and economic diversification largely determine whether Chinese financing contributes to sustainable, long-term development or reinforces patterns of dependency and vulnerability to global commodity price fluctuations.

### 2.2.1. Research Gap

In the previous research on the linkages between natural resource rents, Chinese financing, and sustainable economic growth in Sub-Saharan Africa, significant gaps remain in understanding their long-term implications for the region's development. Much of the existing literature focuses on the short-term impacts, such as infrastructure development and immediate growth driven by the Chinese financing. However, the broader consequences for sustainable development, economic diversification, institutional quality and governance are underexplored. In particular, there is little empirical research on how Chinese financing secured through resource rents influences the structural transformation of economies, especially beyond the extractive sectors, and on its long-term effects on economic diversification. Studies examining the role of governance and institutional quality often consider these factors in isolation, overlooking the interplay between governance, Chinese loans and resource rents and its impact on long-term sustainability. Another gap is in the research that links Chinese financing to the risks of the "resource curse" and economic dependency. Much of the literature treats these phenomena separately, but their intersection could exacerbate Africa's vulnerability to global commodity price fluctuations and debt crises. The environmental and social impacts of Chinese investment, particularly on local communities and sustainability of resource extraction, have not been sufficiently addressed. To bridge these gaps and design strategies for the appropriate use of resource wealth and external finance, it is necessary to carry out comprehensive research into the relationships between the factors that can impede or promote sustainable economic development in Sub-Saharan Africa.

## 3. Data and methods

### 3.1. Data

This study employs a panel data methodology to investigate the influence of various factors, namely Chinese financing, natural resource rents, imports, FDI, and exports, on the growth (GDP) of African countries. The analysis is carried out using several econometric models. This approach enables a nuanced examination of the relationships between the variables and their joint impact on economic performance across the region. The research is based on 20 years of panel data, covering a comprehensive range of economic indicators from a number of reputable sources. The dataset, drawn primarily from the World Bank's Development Indicators, provides consistent and comprehensive information on the key variables, such as GDP, economic growth, trade flows and natural resource rents, ensuring a reliable basis for analysis.

#### Econometrics models

This section introduces econometric models used in the analysis. The key variables are defined as follows:  $GDP_{it}$ : GDP of country  $i$  at time  $t$ ,  $Chinese\ Financing_{it}$ : Chinese financing of country  $i$  at time  $t$ ,  $Natural\ Rents_{it}$ : Natural resource rents of country  $i$  at time  $t$ ,  $Imports_{it}$ : Imports of country  $i$  at time  $t$ ,  $FDI_{it}$ : FDI of country  $i$  at time  $t$ ,  $Exports_{it}$ : Exports of country  $i$  at time  $t$ ,  $Inflation_{it}$ : Inflation values for country  $i$  at time  $t$ .

$$\ln(GDP_{it}) = \beta_0 + \beta_1 \ln(Chinese\ Financing_{it}) + \beta_2 \ln(Natural\ Rents_{it}) + \beta_3 \ln(Imports_{it}) + \beta_4 \ln(FDI_{it}) + \beta_5 \ln(Exports_{it}) + \mu_i + \varepsilon_{it} \quad (1)$$

Equation (2) examines how natural resource rents moderate the relationship between Chinese financing and GDP by including an interaction term:

$$\ln(GDP_{it}) = \beta_0 + \beta_1 \ln(Chinese\ Financing_{it}) + \beta_2 \ln(Natural\ Rents_{it}) + \beta_3 \ln(Chinese\ Financing_{it} \times Natural\ Rents_{it}) + \beta_4 \ln(Imports_{it}) + \beta_5 \ln(FDI_{it}) + \beta_6 \ln(Exports_{it}) + \mu_i + \varepsilon_{it} \quad (2)$$

Equation (3) incorporates inflation to control for other influences on GDP:

$$\ln(GDP_{it}) = \beta_0 + \beta_1 \ln(Chinese\ Financing_{it}) + \beta_2 \ln(Natural\ Rents_{it}) + \beta_3 \ln(Imports_{it}) + \beta_4 \ln(FDI_{it}) + \beta_5 \ln(Exports_{it}) + \beta_6 \ln(Inflation_{it}) + \mu_i + \varepsilon_{it} \quad (3)$$

Equation (4) includes lagged GDP to account for economic persistence:

$$\ln(GDP_{it}) = \beta_0 + \beta_1 \ln(GDP_{it-1}) + \beta_2 \ln(Chinese\ Financing_{it}) + \beta_3 \ln(Natural\ Rents_{it}) + \beta_4 \ln(Chinese\ Financing_{it} \times Natural\ Rents_{it}) + \beta_5 \ln(Imports_{it}) + \beta_6 \ln(FDI_{it}) + \beta_7 \ln(Exports_{it}) + \mu_i + \varepsilon_{it} \quad (4)$$

Equation (5) controls for time-invariant country-specific characteristics.

$$\ln(GDP_{it}) = \beta_1 \ln(\text{Chinese Financing}_{it}) + \beta_2 \ln(\text{Natural Rents}_{it}) + \beta_3 \ln(\text{Imports}_{it}) + \beta_4 \ln(\text{FDI}_{it}) + \beta_5 \ln(\text{Exports}_{it}) + \beta_6 \ln(\text{Inflation}_{it}) + \alpha_i + \gamma_t + \varepsilon_{it} \tag{5}$$

Equation (6) assumes that country-specific effects are random and uncorrelated with the independent variables:

$$\ln(GDP_{it}) = \beta_1 \ln(\text{Chinese Financing}_{it}) + \beta_2 \ln(\text{Natural Rents}_{it}) + \beta_3 \ln(\text{Imports}_{it}) + \beta_4 \ln(\text{FDI}_{it}) + \beta_5 \ln(\text{Exports}_{it}) + \beta_6 \ln(\text{Inflation}_{it}) + \mu_i + \gamma_t + \varepsilon_{it} \tag{6}$$

If *Chinese Financing<sub>it</sub>* is endogenous, an instrumental variable (*Z<sub>it</sub>*) is needed. The two-stage least squares (2SLS) estimation is as follows:

First Stage:

$$\ln(\text{Chinese Financing}_{it}) = \beta_0 + \beta_1 Z_{it} + \beta_2 \ln(\text{Natural Rents}_{it}) + \beta_3 \ln(\text{Imports}_{it}) + \beta_4 \ln(\text{FDI}_{it}) + \beta_5 \ln(\text{Exports}_{it}) + \beta_6 \ln(\text{Inflation}_{it}) + \alpha_i + \gamma_t + v_{it} \tag{7}$$

Second Stage:

$$\ln(GDP_{it}) = \beta_1 \hat{y}_i \ln(\text{Chinese Financing}_{it}) + \beta_2 \ln(\text{Natural Rents}_{it}) + \beta_3 \ln(\text{Imports}_{it}) + \beta_4 \ln(\text{FDI}_{it}) + \beta_5 \ln(\text{Exports}_{it}) + \beta_6 \ln(\text{Inflation}_{it}) + \alpha_i + \gamma_t + \varepsilon_{it} \tag{8}$$

where *Z<sub>it</sub>* is an instrument and  $\hat{y}_i \ln(\text{Chinese Financing}_{it})$  is the predicted value from the first stage.

## 4. Results

This section shows how Chinese financing and natural resource rents influence sustainable economic growth in SSA. The results are obtained from several econometric models, using two decades of panel data.

Table 2 shows that Chinese financing has a slightly positive coefficient (0.08710, p=0.2726) but is not statistically significant, suggesting that it does not have a definitive

**Table 2.** Basic panel model

Coefficients	Estimate	Std. Error	t-value	Pr(> t )
Chinese Financing	0.08710	0.07930	1.0990	0.2726
Natural Rents	-7.5657	19.1666	-0.3947	0.6933
Imports	-24.442	14.0745	-1.7366	0.0834
FDI	-44.252	18.6842	-2.3685	0.0184
Exports	42.4781	17.1181	2.48150	0.0136

impact on economic expansion in sub-Saharan Africa. Meanwhile, natural resource rents have a negative coefficient ( $-7.5657$ ,  $p=0.6933$ ) but remain statistically insignificant, giving insufficient evidence to confirm a resource curse effect. Imports have a negative coefficient ( $-24.442$ ,  $p=0.0834$ ) and are close to statistical significance ( $p=0.0834$ ), indicating that high import dependence could undermine domestic productive capacity and trade balance stability. By contrast, FDI has a negative and statistically significant coefficient ( $-44.252$ ,  $p=0.0184$ ), which challenges the conventional view that foreign investment always stimulates growth; it probably means that investment concentrated in extractive activities does not promote long-term development. Finally, exports ( $42.4781$ ,  $p=0.0136$ ) show a strong and positive relationship with economic growth, suggesting the importance of export-led strategies. These results emphasize the need for policy interventions that channel Chinese financing into productive sectors, encourage value-added FDI, manage trade balances effectively and expand export capabilities to support sustainable economic growth.

In Table 3, Chinese financing has a marginally positive coefficient ( $0.1412$ ,  $p=0.53877$ ) but high p-value ( $0.5388$ ), indicating no statistically significant effect on economic

**Table 3.** Interaction panel model

Coefficients	Estimate	Std. Error	t-value	Pr(> t )
Chinese Financing	0.141191	0.229463	0.6153	0.53877
Natural Rents	-6.820139	19.4213	-0.3512	0.72568
Chinese Financing Natural Rents	-0.002809	0.01118	-0.2512	0.80178
Imports	-24.59425	14.1070	-1.7434	0.08218
FDI	-44.66342	18.7814	-2.3781	0.01796
Exports	42.83109	17.1994	2.4903	0.01325

growth. Natural resource rents carry a negative coefficient ( $-6.8201$ ,  $p=0.7257$ ), yet their high p-value also points to a lack of significance, suggesting that resource wealth alone does not inherently drive sustainable development. Similarly, the interaction between Chinese financing and resource rents ( $-0.0028$ ,  $p=0.8018$ ) is insignificant, indicating no robust conditional effect in resource-rich contexts. Regarding the trade variables, imports ( $-24.5943$ ,  $p=0.0822$ ) have a negative impact on economic growth that borders on statistical significance. FDI ( $-44.6634$ ,  $p=0.0180$ ) is both negative and significant, reinforcing concerns that foreign investment, particularly in extractive sectors, may not foster long-term economic progress but instead contribute to capital flight. By contrast, exports ( $42.8311$ ,  $p=0.0133$ ) have a strong, positive, and significant effect, underscoring the importance of export-led strategies for productivity gains, foreign exchange earnings, and industrial advancement.

Table 4 shows that Chinese financing has a slightly positive effect on economic growth ( $0.1158$ ,  $p=0.6201$ ) but its high p-value renders the relationship statistically

**Table 4.** Panel model with additional variables

Coefficients	Estimate	Std. Error	t-value	Pr(> t )
Chinese Financing	0.1158011	0.2333544	0.4962	0.62006
Natural Rents	-10.738834	20.466421	-0.5247	0.60015
Chinese Financing Natura Rents	-0.0018971	0.0113634	-0.1669	0.86752
Imports	-32.876716	15.507286	-2.1201	0.03478
FDI	-41.946259	19.572117	-2.1432	0.03286
Exports	46.4518362	18.108947	2.56510	0.01077
Inflation	-2.1153033	2.9361091	-0.72040	0.47178

insignificant. This suggests that Chinese financing alone does not substantially drive economic expansion. Natural resource rents are negatively associated with growth (-10.7388,  $p=0.6002$ ), yet their high  $p$ -value implies no significant impact, reinforcing the resource curse hypothesis, where resource dependence may fail to support sustainable development. The interaction term between Chinese financing and resource rents (-0.0019,  $p=0.8675$ ) is also insignificant, suggesting that external financing is not particularly effective in resource-rich environments, probably because of governance and institutional constraints. Among the trade variables, imports have a significant negative impact on growth (-32.8767,  $p=0.0348$ ), implying that heavy reliance on foreign goods may inhibit domestic industrial progress. In contrast, exports show a strong positive influence on GDP (46.4518,  $p=0.0108$ ), highlighting the importance of export-led strategies for economic expansion. FDI negatively affects growth (-41.9463,  $p=0.0329$ ), suggesting that foreign capital, particularly in extractive industries, may lead to capital outflows rather than contribute to broad-based industrial development. These findings underscore the need for policies that enhance export competitiveness, reduce import dependency, and channel foreign investment into productive sectors. Strengthening governance frameworks is also critical to maximizing the benefits of both Chinese financing and sub-Saharan countries' natural resource wealth, ultimately supporting more sustainable and inclusive economic growth.

According to the dynamic panel model data presented in Table 5, the lagged GDP coefficient (0.4519,  $p=0.0000$ ) is highly significant, indicating that past economic

**Table 5.** Dynamic panel model data

Coefficients	Estimate	Std. Error	t-value	Pr(> t )
Lag (GDP, 1)	0.4518547	0.0387172	11.670	0.0000
Chinese Financing	0.1986547	0.1943334	1.0222	0.3074
Natural Rents	18.029721	16.542538	1.0899	0.2765
Chinese Financing Natural Rents	-0.0081224	0.0095136	-0.8538	0.3938
Imports	-17.520772	11.927168	-1.4690	0.1428
FDI	-19.593564	16.037628	-1.2217	0.2227
Exports	31.0608607	14.574240	2.13120	0.0338

performance strongly influences future growth. Chinese financing (0.1987,  $p=0.3074$ ) has a small positive but statistically insignificant impact, suggesting it does not independently drive economic expansion. Natural resource rents (18.0297,  $p=0.2765$ ) and their interaction with Chinese financing (-0.0081,  $p=0.3938$ ) show no significant effect, supporting the resource curse hypothesis. Among the trade variables, imports (-17.5208,  $p=0.1428$ ) demonstrate a negative but insignificant effect on growth, and FDI (-19.5936,  $p=0.2227$ ) is also negative and insignificant, hinting that foreign investment focused on extractive industries may not foster sustainable development. Exports (31.0609,  $p=0.0338$ ), however, have a positive and significant impact, underscoring the value of export-led strategies. These findings highlight the importance of sound governance in improving resource management, strategic foreign investment policies and export competitiveness. By minimizing import dependency and directing FDI toward productive sectors such as manufacturing and technology, policymakers can better cultivate sustainable, long-term economic growth.

According to the fixed effects model (Table 6), which accounts for unobserved country-level characteristics, Chinese financing has a small positive coefficient (0.0646,

**Table 6.** Fixed Effects Model

	Estimate	Std.	Error	t-value	Pr(> t )
Chinese Financing	0.064589	0.079332	0.8142	0.416125	
Natural Rents	26.31518	13.553607	1.9416	0.053021	.
Imports	-6.48878	12.164288	-0.5334	0.594087	
FDI	-59.0215	17.845508	-3.3074	0.001043	**

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

$p=0.4161$ ) but remains statistically insignificant. This is in line with previous findings, suggesting that such external funding alone does not drive economic growth. Natural resource rents have a relatively large coefficient (26.3152,  $p=0.0530$ ) but are only weakly significant at the 10% level. This means that, although resource wealth can contribute to growth, it is not consistently reliable, which supports certain aspects of the resource curse hypothesis. Imports (-6.4888,  $p=0.5941$ ) show a negative but insignificant effect, making their overall role in growth inconclusive. FDI is negative and highly significant (-59.0215,  $p=0.0010$ ), suggesting that, particularly in extractive sectors, it may do more harm than good by crowding out domestic investment. The model highlights the importance of targeted investment strategies, improved governance of natural resources, and a focus on productive and export-oriented sectors to foster long-term sustainable development.

Under the assumptions of the random effects model (Table 7), which posits that unobserved country-specific effects are uncorrelated with the independent variables,

**Table 7.** Random Effects Model

	Estimate	Std. Error	z-value	Pr(> z )	
(Intercept)	2164.071544	597.491717	3.621900	0.000292	***
Chinese Financing	0.066940	0.079055	0.846800	0.397134	
Natural Rents	33.008950	12.821780	2.574400	0.010040	*
Imports	-2.491169	11.733397	-0.212300	0.831862	
FDI	-58.357169	17.650474	-3.306300	0.000946	***

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

the intercept is highly significant (2164.07,  $p=0.0003$ ). This indicates considerable baseline differences across countries that are not captured by the included factors. Chinese financing (0.0669,  $p=0.3971$ ) remains positive but statistically insignificant, in line with the previous models, which suggest that it is not a major driver of economic expansion. By contrast, natural resource rents (33.0090,  $p=0.0100$ ) are positive and significant at the 1% level—stronger than in earlier specifications—implying that resource wealth can bolster growth when managed effectively. Imports (-2.4912,  $p=0.8319$ ) show a negative but highly insignificant effect, leaving the link between imports and GDP inconclusive. Finally, FDI (-58.3572,  $p=0.0009$ ) is negative and highly significant, reinforcing previous findings that FDI, especially in extractive sectors, may not contribute to broad-based development but even undermine long-term economic performance.

According to Table 8, the Instrumental Variable model addresses the potential endogeneity between Chinese financing and GDP by isolating Chinese financing’s true

**Table 8.** Instrumental Variable Model

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-92.75345	465.28463	-0.199	0.8421	
Chinese Financing	-0.05711	0.12485	-0.457	0.6476	
Natural Rents	73.57013	11.42961	6.437	0.0000	***
Imports	50.30657	12.45159	4.04	0.0000	***
FDI	-58.8031	25.34684	-2.32	0.0209	*

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

effect when it might be influenced by GDP or omitted variables. The intercept is (-92.75,  $p = 0.8421$ ), which is statistically insignificant, indicating no clear baseline level of GDP once endogeneity is controlled for. Chinese financing registers at (-0.0571,  $p=0.6476$ ), suggesting a negative but insignificant effect on GDP when factoring in endogeneity; this is in line with earlier results showing that external financing alone does not reliably spur growth. By contrast, natural resource rents, estimated at (73.5701,  $p=0.0000$ ), are

highly significant and positively associated with GDP, highlighting the substantial potential gains from well-managed resource sectors, although the risk of a resource curse remains in poorly governed contexts. Imports, measured at (50.3066,  $p=0.0000$ ), also turn positive and significant under the IV specification, diverging from previous models in which they were insignificant or even negative. This implies that access to global markets, including critical inputs, technology, or raw materials, can bolster domestic production and growth once endogeneity is taken into account. At the same time, Foreign Direct Investment (FDI) remains negative and significant, at (-58.8031,  $p=0.0209$ ), reflecting the notion that certain types of foreign capital—especially in extractive industries—may not yield broad-based economic benefits. Overall, Chinese financing continues to show an insignificant relationship with growth, resource wealth emerges as a strong economic driver if managed effectively, imports appear to be crucial for stimulating productive capacity, and FDI's negative impact reinforces the importance of channelling foreign capital into sectors that nurture sustainable and inclusive growth.

## 5. Discussion

The results of this study provide critical insights into the complex interactions between natural resource wealth, foreign investment, trade dynamics, and economic growth in Sub-Saharan Africa (SSA). By employing multiple econometric models, including an instrumental variable (IV) approach, the study uncovers nuanced relationships that challenge conventional assumptions about economic development in resource-rich economies. The results largely confirm the importance of governance quality in determining the effectiveness of natural resource rents, while also highlighting the limited direct impact of Chinese financing on economic growth. This section discusses the resource curse hypotheses.

### 5.1. Resource Curse Hypothesis

The resource curse hypothesis suggests that natural resource rents do not contribute to economic growth but may impede it in case of inefficient governance. This study evaluates the hypothesis by analyzing the relationship between natural resource rents and GDP growth; it uses several econometric models and emphasizes the role of governance quality as a mediating factor. The findings mean that while resource rents have a weak or conditional correlation with economic growth, their effectiveness is significantly influenced by governance structures. These results support the resource curse theory, which posits that resource-rich economies often experience lower long-term growth because of rent-seeking behavior, weak institutions and economic mismanagement (Sachs & Warner, 2001). The null hypothesis is not rejected, reinforcing the need for strong institutional frameworks to effectively harness resource wealth. The analysis shows mixed effects: while resource rents sometimes appear to

be negatively associated with economic growth, more robust specifications, such as the random effects and instrumental variable models, suggest a positive, significant effect. This ambivalence resonates with the broader “resource curse” debate. Some researchers (Collier & Hoeffler, 2005; Epo & Nochi Faha, 2020) argue that resource dependence can undermine sustainable development through rent-seeking and institutional deterioration. Others contend that sound macroeconomic policies, and transparent governance can harness resource wealth for growth. In both cases, whether natural resources contribute positively or negatively to economic expansion depends on governance mechanisms, institutional capacity, and broader socio-political stability (Narh, 2023).

## 5.2. Chinese Investment and Growth Hypothesis

This hypothesis tests whether Chinese financial inflows materially contribute to economic growth in SSA. Employing multiple econometric specifications, the study has found that Chinese financing does not exhibit a statistically significant effect on GDP growth across all model variations. This result challenges conventional assumptions about the developmental benefits of Chinese investment in SSA. Consequently, the null hypothesis is rejected, indicating that Chinese investment does not inherently promote economic expansion in the region. These findings are consistent with recent studies suggesting that Chinese financing exerts a marginal, statistically insignificant impact on economic growth in Africa. For example, Brautigam (2010) observes that although China’s lending commitments to infrastructure projects in Africa have grown substantially, their measurable impact on aggregate economic performance remain modest. Similarly, Ehizuelen (2021) argues that Chinese financial flows often prioritize infrastructure deals with limited local linkages, thereby offering few immediate benefits for domestic industries. However, contrasting studies such as Shan (2018) show that China’s investment in technology-intensive sectors—particularly renewable energy and telecommunications—have led to significant productivity gains in some SSA countries. Osabutey (2019) also highlights Chinese financing in targeted manufacturing industries that contributed to job creation and technology transfer in Ghana, suggesting that strategic allocation of these investments can yield tangible economic benefits.

## 5.3. Governance-Dependent Resource Utilization Hypothesis

This hypothesis asserts that the impact of natural resources on economic growth depends on governance quality. Using an instrumental variable (IV) approach, the study shows that resource rents can become significant determinants of economic performance only when governance quality is explicitly considered. This finding is consistent with existing research that emphasizes the role of strong institutions in mitigating the negative effects of resource dependence (Mehlum et al., 2006; Acemoglu & Robinson, 2012). In particular, Mehlum et al. (2006) argue that in economies with

weak governance structures, resource rents can lead to rent-seeking behaviours and economic stagnation, whereas in well-governed states, resource wealth can be used for productive investment and growth. Similarly, Acemoglu and Robinson (2012) highlight that resource-abundant countries with inclusive institutions are more likely to achieve sustained development. At the same time, some studies challenge the notion that governance is the primary determinant of resource wealth effectiveness.

For instance, Brunnschweiler & Bulte (2008) contend that the resource curse is not necessarily a function of poor governance but rather an issue of economic mismanagement and structural economic weaknesses. Their analysis suggests that resource rents may still contribute to growth if macroeconomic policies, such as fiscal discipline and exchange rate management, are properly implemented. Likewise, Poelhekke & van der Ploeg (2013) emphasize that external factors, such as commodity price volatility and global demand fluctuations, can influence resource wealth outcomes regardless of governance quality. However, this paper reinforces the argument that institutional strength mediates the economic benefits of resource wealth. The positive and significant impact of resource rents in governance-adjusted models supports the view that governance mechanisms play a crucial role in transforming natural resource wealth into sustainable economic development (Collier & Hoeffler, 2005). Thus, the null hypothesis is not rejected, highlighting the need for effective governance policies to harness resource wealth for long-term growth.

#### 5.4. Trade-Led Growth Hypothesis

This hypothesis proposes that exports have a positive influence on economic growth, while the effects of imports, initially negative, become positive once endogeneity is taken into account. The study provides robust empirical evidence supporting this proposition, demonstrating that exports consistently enhance GDP growth. Moreover, while imports are initially negligible or negative, they have a positive impact when endogeneity is given consideration. These findings support the classical trade theory and confirm that well-structured trade policies make a significant contribution to economic performance.

Therefore, the null hypothesis is not rejected. The study's findings are consistent with research that highlights export diversification as a crucial driver of African economic growth (World Bank, 2022). Sarin, Mahapatra, and Sood (2022) emphasize that manufacturing exports generate substantial productivity gains, while Gollin (2023) notes that higher-value agricultural exports, such as horticulture, contribute to rural income growth. Regarding imports, the analysis produces mixed results. While most models indicate either a negative or statistically insignificant impact, the IV model suggests that imports can be beneficial under specific conditions, particularly when they involve capital goods and technology. This is in line with broader arguments that the developmental role of imports depends on their composition and integration within industrial strategies (UNECA, 2023). The findings of this study provide critical insights into the complex interactions between natural resource wealth, foreign investment,

trade dynamics, and economic growth in SSA. By employing multiple econometric models, including the IV approach, the study uncovers nuanced relationships that challenge conventional assumptions about economic development in resource-rich economies. The results largely reinforce the importance of governance quality in determining the effectiveness of natural resource rents, while also highlighting the limited direct impact of Chinese financing on economic growth.

### 5.5. FDI Paradox Hypothesis

Mainstream economic theories suggest that FDI should positively contribute to economic growth by bringing in capital, technology, and managerial expertise (Borensztein, De Gregorio, & Lee, 1998). The present study, however, challenges this assumption by finding that FDI in SSA is consistently detrimental to growth. This outcome raises concerns about capital flight, exploitative investment practices, and weak regulatory frameworks that may prevent FDI from yielding positive developmental outcomes. Given that FDI fails to produce the expected growth effects, the null hypothesis is not rejected, supporting the argument that uncontrolled foreign investment can do more harm than good in weak institutional environments. Several recent studies support this observation. Carmody & Murphy (2024), argue that much of Africa's FDI is enclave-oriented, focusing on extractive sectors with minimal linkages to the broader economy. Similarly, Ndikumana & Verick (2008) highlight the risks of capital flight and profit repatriation, which may offset short-term job creation benefits. However, some studies for example Okafor, Piesse & Webster (2017) contend that FDI can spur industrialization and technology transfer in well-regulated economies, illustrating the importance of policy frameworks in determining FDI's economic impact.

## 6. Conclusion

This article empirically evaluates the key drivers of economic growth in SSA, focusing on natural resource rents, FDI, trade, and Chinese financing. We find that resource wealth can support growth, but only when institutional governance is strong. Poor governance, characterized by opacity and rent-seeking, undermines the potential benefits of resource endowments, so policy reforms aimed at strengthening institutions and regulatory oversight are critical to translating resource rents into sustainable development outcomes.

FDI has generally had adverse effects in SSA, largely owing to capital flight, weak domestic linkages, and extractive investment strategies. To counter this, governments should implement policies enforcing local content requirements, mandating technology transfer, and aligning foreign investments with national industrial goals. Without such measures, FDI may entrench structural dependency rather than promote economic transformation.

Chinese financing yields mixed results. While it has facilitated infrastructure development, its economic impact remains limited outside extractive sectors. To ensure developmental relevance, financial arrangements should be restructured to promote local value addition, industrial linkages, and knowledge transfer. SSA governments must play a proactive role in aligning such financing with long-term growth priorities.

Trade consistently contributes to economic growth, particularly through export-oriented strategies and market diversification. Countries with competitive and diversified export portfolios tend to perform better. Accordingly, trade policy should promote product sophistication, logistical efficiency, and deeper integration into global value chains. Import structures must be reoriented to favour capital and intermediate goods over non-essential consumer imports.

The study highlights governance as a central condition for converting natural resource wealth and foreign capital into inclusive, sustainable growth. Strong institutions, coherent investment strategies and targeted trade policies are essential for mitigating structural vulnerabilities and supporting economic transformation.

A key limitation of this study is its reliance on the national-level aggregate data, which may obscure sector-specific or subnational dynamics. Future research should investigate the differential sectoral impacts of Chinese financing, the role of governance in shaping FDI outcomes, and the long-term effects of trade liberalization and regional integration. Disaggregated and longitudinal data should contribute to more precise policy guidance.

## References

- Acemoglu, D., & Robinson, J. (2012). Institutions, political economy and growth. *Nobel prize 2012 presentations*.
- Acheampong, A. O., Dzator, J., Abunyewah, M., Erdiaw-Kwasie, M. O., & Opoku, E. E. O. (2023). Sub-Saharan Africa's tragedy: Resource curse, democracy, and income inequality. *Social Indicators Research*, 168(1), 471–509. <https://doi.org/10.1007/s11205-023-03137-2>
- Alden, C. (2017). China and Africa. In *Routledge handbook of African politics* (pp. 414–425). Routledge.
- Alfaro, L. (2003). Foreign direct investment and growth: Does the sector matter. *Harvard Business School*, (2003), 1–31.
- Asiamah, O., Agyei, S. K., Bossman, A., Agyei, E. A., Asucam, J., & Arku-Asare, M. (2022). Natural resource dependence and institutional quality: Evidence from Sub-Saharan Africa. *Resources Policy*, (79), 102967. <https://doi.org/10.1016/j.resourpol.2022.102967>
- Asiedu, E. (2006). Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions, and Political Instability. *The World Economy*, 29(1), 63–77. <https://doi.org/10.1111/j.1467-9701.2006.00758.x>
- Asongu, S., & Ssozi, J. (2016). Sino-African relations: Some solutions and strategies to the policy syndromes. *Journal of African Business*, 17(1), 33–51. <https://doi.org/10.1080/15228916.2015.1089614>
- Auty, R. M. (1994). The resource curse thesis: Minerals in Bolivian development, 1970–90. *Singapore Journal of Tropical Geography*, 15(2), 95–111. <https://doi.org/10.1111/j.1467-9493.1994.tb00055.x>

- Brautigam, D. (2009). *The dragon's gift: the real story of China in Africa*. Oxford University Press.
- Brautigam, D. (2010). China, Africa and the international aid architecture. *African Development Bank Group Working Paper, (107)*, 290-323.
- Brautigam, D. (2011). *The dragon's gift: The real story of China in Africa*. Oxford University Press.
- Brautigam, D., & Tang, X. (2014). Going Global in Groups: Structural Transformation and China's Special Economic Zones Overseas. *World Development, (63)*, 78–91. <https://doi.org/10.1016/j.worlddev.2013.10.010>
- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign direct investment affect economic growth? *Journal of international Economics, 45(1)*, 115-135. [https://doi.org/10.1016/S0022-1996\(97\)00033-0](https://doi.org/10.1016/S0022-1996(97)00033-0)
- Brunnschweiler, C. N., & Bulte, E. H. (2008). The resource curse revisited and revised: A tale of paradoxes and red herrings. *Journal of environmental economics and management, 55(3)*, 248-264.
- Cardoso, F. H., & Faletto, E. (1979). *Dependency and Development in Latin America*. University of California Press.
- Carmody, P., & Murphy, J. T. (2024). Development theories, perspectives, and debates with a focus on Africa. In *Handbook of African Economic Development* (pp. 14-29). Edward Elgar Publishing.
- Collier, P., & Hoeffler, A. (2005). Resource rents, governance, and conflict. *Journal of conflict resolution, 49(4)*, 625-633.
- Collier, P., & Goderis, B. (2007). *Commodity Prices, Growth, and the Natural Resource Curse: Reconciling a Conundrum*. CSAE (University of Oxford).
- Dollar, D. (2016). China's engagement with Africa. *From natural resources to human resources*.
- De Freitas, M. V. (2023). The Impact of Chinese Investments in Africa: Neocolonialism or Cooperation? *Policy Brief, (30)*. <https://www.gavroche-thailande.com/wp-content/uploads/2023/08/Chinafrique-.pdf>
- Dreher, A., Fuchs, A., Parks, B., Strange, A. M., & Tierney, M. J. (2018). Apples and dragon fruits: The determinants of aid and other forms of state financing from China to Africa. *International Studies Quarterly, 62(1)*, 182–194 <https://doi.org/10.1093/isq/sqx052>
- Dreher, A., Fuchs, A., Parks, B., Strange, A., & Tierney, M. J. (2021). Aid, China, and growth: Evidence from a new global development finance dataset. *American Economic Journal: Economic Policy, 13(2)*, 135–174. <https://dx.doi.org/10.1257/pol.20180631>
- Epo, B. N., & Nochi Faha, D. R. (2020). Natural resources, institutional quality, and economic growth: An African tale. *The European Journal of Development Research, 32(1)*, 99-128.
- Ehizuelen, M. M. O. (2021). China's Infrastructure Financing and the Role of Infrastructure in Awakening African Economies. *Journal of Comparative Asian Development (JCAD), 18(2)*, 1-25.
- Frank, A. G. (1967). *Capitalism and Underdevelopment in Latin America*. Monthly Review Press.
- Frankel, J. A., & Romer, D. (1999). Does Trade Cause Growth? *The American Economic Review, 89(3)*, 379–399. <https://doi.10.1257/aer.89.3.379>
- Gao, Y., Murshed, M., Ozturk, I., Saqib, N., Siddik, A. B., & Alam, M. M. (2023). Can financing technological development programs mitigate mineral resource consumption-related environmental problems faced by Sub-Saharan African nations? *Resources Policy, 87*, 104343.
- Gollin, D. (2023). Agricultural productivity and structural transformation: Evidence and questions for African development. *Oxford Development Studies, 51(4)*, 375-396.

- Guan, J., Kirikkaleli, D., Bibi, A., & Zhang, W. (2020). Natural resources rents nexus with financial development in the presence of globalization: Is the “resource curse” exist or myth? *Resources Policy*, (66), 101641. <https://doi.org/10.1016/j.resourpol.2020.101641>
- Kalu, K., & Aniche, E. T. (2020). China-Africa economic relation: A double-edged sword for Africa. *African Journal of Economic and Sustainable Development*, 7(4), 374–390. <https://doi.org/10.1504/AJESD.2020.106827>
- Kaplinsky, R. (2013). What contribution can China make to inclusive growth in sub-Saharan Africa? *Development and Change*, 44(6), 1295-1316. <https://doi.org/10.1111/dech.12059>
- Kaplinsky, R., D. McCormick & M. Morris (2007) The impact of China on sub-Saharan Africa. Working paper series, 291. Brighton: IDS.
- Mehlum, H., Moene, K., & Torvik, R. (2006). Institutions and the resource curse. *The Economic Journal*, 116(508), 1–20. <https://doi.org/10.1111/j.1468-0297.2006.01045.x>
- Mutai, N. C., Cuong, N. M., Dervishaj, V., Kiarie, J. W., Misango, P., Ibeh, L., Popoola, O. M., & Lallmahamood, M. (2024). Examining the sustainability of African debt owed to China in the context of debt-trap diplomacy. *Scientific African*, (24), e02164. <https://doi.org/10.1016/j.sciaf.2024.e02164>
- Narh, J. (2023). The resource curse and the role of institutions revisited. *Environment, Development and Sustainability*, 1-21.
- Ndikumana, L., & Verick, S. (2008). The Linkages Between FDI and Domestic Investment: Unravelling the Developmental Impact of Foreign Investment in Sub-Saharan Africa. *Development Policy Review*, 26(6), 713–726. <https://doi.org/10.1111/j.1467-7679.2008.00430.x>
- Okafor, G., Piesse, J., & Webster, A. (2017). FDI determinants in least recipient regions: The case of sub-Saharan Africa and MENA. *African Development Review*, 29(4), 589-600.
- Osabutey, E. L., & Jackson, T. (2019). The impact on development of technology and knowledge transfer in Chinese MNEs in sub-Saharan Africa: The Ghanaian case. *Technological Forecasting and Social Change*, (148), 119725.
- Poelhekke, S., & van der Ploeg, F. (2013). Do natural resources attract non-recourse FDI? *The Review of Economics and Statistics*, 95(3), 1046–1065. <http://www.jstor.org/stable/43554811>
- Prebisch, R. (1950). *The Economic Development of Latin America and its Principal Problems*. United Nations.
- Rodrik, D. (2017). Populism and the economics of globalization. *National Bureau of Economic Research Working Paper Series*, No. 23559. <https://doi.org/10.3386/w23559>
- Rodney, W. (1972). *How Europe Underdeveloped Africa*. Bogle-L'Ouverture Publications.
- Sachs, J. D., & Warner, A. M. (2001). The curse of natural resources. *European Economic Review*, 45(4–6), 827–838. [https://doi.org/10.1016/S0014-2921\(01\)00125-8](https://doi.org/10.1016/S0014-2921(01)00125-8)
- Shan, S., Jia, Y., Zheng, X., & Xu, X. (2018). Assessing relationship and contribution of China’s technological entrepreneurship to socio-economic development. *Technological Forecasting and Social Change*, (135), 83–90.
- Sarin, V., Mahapatra, S. K., & Sood, N. (2022). Export diversification and economic growth: A review and future research agenda. *Journal of Public Affairs*, 22(3), e2524.
- UNEP, U. (2017, October 25). Our work in Africa. UNEP - UN Environment Programme. <http://www.unep.org/regions/africa/our-work-africa>

- United Nations Economic Commission for Africa (UNECA). (2023). *FDI and Industrial Development in Africa: Addressing Structural Bottlenecks*. UNECA Report.
- Were, M. (2018). Differential Effects of Trade on Economic Growth and Investment: A Cross-Country Empirical Investigation. *Journal of African Trade*, 5(1–2), 1–15. <https://doi.org/10.1016/j.joat.2015.08.002>
- World Bank. (2022). *African Economic Outlook: Navigating Global Shocks and Promoting Resilience*. World Bank Publications.
- Zajontz, T. (2023). *The political economy of China's infrastructure development in Africa: Capital, state agency, debt*. Springer International Publishing.