

NATURAL RESOURCE-BASED FOREIGN DIRECT INVESTMENT

AND ECONOMIC GROWTH IN NIGERIA AND ZAMBIA:

A Comparative Longitudinal Review of
Petroleum- and Copper-Led Development



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RESOURCES



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ECONOMIC
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SUSTAINABLE
DEVELOPMENT



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NIGERIA



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COMPARATIVE
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LONG-TERM
IMPACT

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Natural Resource-Based Foreign Direct Investment and Economic Growth in Nigeria and Zambia: A Comparative Longitudinal Review of Petroleum- and Copper-Led Development

Comparative analytical research

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Abstract

This article examines how natural resource-based foreign direct investment (FDI) has shaped economic growth and broader development outcomes in Nigeria and Zambia. The comparison is analytically useful because Nigeria is predominantly associated with petroleum and natural gas investment, whereas Zambia is predominantly associated with copper and other mineral investment. The study adopts a comparative longitudinal documentary design covering the period 1995-2025. It synthesises peer-reviewed literature and evidence from international development institutions, national statistical agencies, sector regulators and extractive-industry transparency reports. Rather than treating aggregate FDI as identical to resource-based FDI or relying on a statistically weak two-country panel, the analysis triangulates sectoral investment patterns, natural-resource rents, capital formation, trade structures, human-capital conditions, institutional arrangements and observed development outcomes. The findings show that resource-based FDI has supported capital accumulation, export earnings, fiscal revenue, infrastructure and access to technology in both countries. Its contribution to sustained and inclusive growth has nevertheless been conditional and uneven. Resource rents have amplified macroeconomic opportunities but also increased exposure to commodity-price shocks, exchange-rate pressures, policy instability and rent-seeking. Gross capital formation has produced stronger developmental effects where investment has been linked to infrastructure and domestic production, while trade openness has often reinforced commodity concentration rather than diversification. Human-capital and supplier-capability constraints have limited technology diffusion and local value capture. Petroleum-based FDI in Nigeria is generally more enclave-oriented and fiscally centralised, whereas mineral-based FDI in Zambia produces somewhat broader territorial and supplier linkages but remains highly exposed to copper cycles and energy constraints. The article concludes that the policy priority should shift from attracting the largest possible volume of FDI to embedding foreign investment within domestic value chains, transparent institutions, skills development, environmental accountability and long-term diversification strategies.

Keywords: Foreign Direct Investment; Natural Resources; Economic Growth; Resource Curse; Petroleum; Copper; Nigeria; Zambia

1. Introduction

Foreign direct investment has become a central component of development strategy in economies where domestic savings, technology, infrastructure and managerial capabilities are insufficient to finance rapid structural transformation. Unlike short-term portfolio flows, FDI normally involves a lasting interest in a foreign enterprise and a degree of influence over its management. It may therefore transfer not only capital but also production systems, technical knowledge, organisational practices and access to international markets (OECD, 2008; Dunning & Lundan, 2008). These potential benefits explain why resource-rich African countries have offered fiscal incentives, investment guarantees, privatisation opportunities and sector reforms to attract multinational enterprises.

The developmental consequences of FDI, however, depend on its sectoral composition and the institutional environment into which it enters. Investment in manufacturing and knowledge-intensive services can generate dense supplier networks, learning effects and employment spillovers. By contrast, investment in oil, gas and large-scale mining is frequently capital intensive, spatially concentrated and integrated into global production networks that may have limited connections with the host economy. Resource-based FDI can raise exports, government revenue and infrastructure investment while simultaneously reinforcing commodity dependence, profit repatriation, ecological damage and political competition over rents (Auty, 1993; Sachs & Warner, 2001; van der Ploeg, 2011). The appropriate question is therefore not whether FDI is inherently beneficial or harmful, but under what conditions resource-seeking investment is transformed into sustained productive capacity and inclusive development.

Nigeria and Zambia provide a useful comparison. Nigeria possesses major petroleum and natural-gas resources and has hosted multinational oil companies for decades. Zambia is a mineral economy in which copper mining has attracted large foreign investors since the privatisation and liberalisation programmes of the 1990s. In both cases, extractive industries have contributed substantially to exports and foreign

exchange. Yet both economies have remained vulnerable to commodity cycles, weak domestic value addition, infrastructure constraints and uneven social outcomes. The contrast between petroleum-based and mineral-based investment permits closer examination of how the physical properties of resources, production technologies, fiscal regimes and domestic institutions shape the FDI-growth relationship.

1.1 Problem statement and research gap

A large empirical literature reports a positive relationship between FDI and economic growth, particularly where host countries possess adequate human capital, financial development and institutional quality (Borensztein et al., 1998; Alfaro et al., 2004). Other studies show that natural-resource abundance can attract FDI while simultaneously weakening incentives for diversification and institutional reform (Asiedu, 2006; Mehlum et al., 2006). Three gaps remain important. First, many studies use aggregate FDI even when the theoretical argument concerns extractive-sector investment. This creates a measurement problem because aggregate inflows may include telecommunications, finance, construction and services. Second, studies often apply pooled panel models to countries whose resource sectors and institutions are structurally different, thereby obscuring sector-specific mechanisms. Third, relatively little comparative work directly contrasts petroleum-led Nigeria with copper-led Zambia while jointly examining resource rents, domestic capital formation, trade openness, human capital and policy responses.

The earlier version of this study attempted to estimate a conventional two-country panel model. Such an approach is difficult to defend because panel unit-root, cointegration and fixed-effects procedures are not reliable when the cross-sectional dimension consists of only two countries and when a harmonised annual series for sector-specific resource FDI is unavailable. The present article therefore adopts a transparent comparative longitudinal design. It does not claim causal econometric estimates. Instead, it triangulates official indicators, sector evidence and peer-reviewed research to identify the mechanisms through which resource-based FDI has supported or constrained growth in each country.

1.2 General objective

To examine the relationship between natural resource-based foreign direct investment and economic growth in Nigeria and Zambia.

1.3 Specific objectives

1. To examine the effect of natural resource-based foreign direct investment on economic growth in Nigeria and Zambia.
2. To investigate the influence of natural resource rents on economic growth in Nigeria and Zambia.
3. To assess the contribution of gross capital formation to economic growth in Nigeria and Zambia.
4. To examine the roles of trade openness and human capital development in promoting economic growth in Nigeria and Zambia.
5. To compare the developmental effects of petroleum-based foreign direct investment in Nigeria with mineral-based foreign direct investment in Zambia.
6. To formulate policy recommendations for enhancing the developmental benefits of natural resource-based foreign direct investment in Nigeria and Zambia.

1.4 Research questions

1. What effect does natural resource-based foreign direct investment have on economic growth in Nigeria and Zambia?
2. How do natural resource rents influence economic growth in Nigeria and Zambia?

3. To what extent does gross capital formation contribute to economic growth in Nigeria and Zambia?
4. What roles do trade openness and human capital development play in promoting economic growth in Nigeria and Zambia?
5. How do the developmental effects of petroleum-based foreign direct investment in Nigeria differ from those of mineral-based foreign direct investment in Zambia?
6. What policy measures can enhance the developmental benefits of natural resource-based foreign direct investment in Nigeria and Zambia?

1.5 Contribution of the study

The article makes four contributions. It distinguishes resource-based FDI from aggregate FDI and explicitly acknowledges the limitations of sectoral data. It integrates three theoretical perspectives that are often used separately: the Eclectic Paradigm explains why firms enter resource sectors; Endogenous Growth Theory explains possible productivity and knowledge effects; and Resource Curse Theory explains why those effects may fail to spread through the economy. It provides a structured comparison of petroleum and copper investment rather than treating extractive sectors as homogeneous. Finally, it converts the findings into a policy framework focused on domestic value capture, institutional credibility, skills and environmental sustainability.

2. Conceptual and Theoretical Framework

2.1 Natural resource-based foreign direct investment

Natural resource-based FDI refers to cross-border investment whose primary motive is to obtain access to, extract, process, transport or market natural resources. It includes investment in exploration, production, mine development, oilfields, processing facilities, pipelines, terminals and related infrastructure. Under Dunning's typology, it is principally resource-seeking FDI, although individual projects may also contain efficiency-seeking or strategic-asset motives (Dunning & Lundan, 2008). The concept should not be equated automatically with total FDI inflows. In Nigeria, non-oil investment in banking, telecommunications, construction and services is significant; in Zambia, FDI also enters agriculture, energy and manufacturing. The present study therefore uses the term resource-based FDI only where sector evidence connects investment to petroleum, gas, copper or other minerals.

2.2 Economic growth and broader development outcomes

Economic growth is conventionally measured by changes in real gross domestic product or real GDP per capita. For resource-based investment, however, aggregate output can increase without equivalent improvements in employment, productivity outside the extractive sector or household welfare. The analysis therefore distinguishes growth from structural transformation. The latter requires productive linkages, domestic value addition, technological learning, diversification, stable public revenue and environmentally sustainable use of natural capital. This distinction is necessary because an extractive project can add substantially to GDP while functioning as an enclave with limited domestic spillovers.

2.3 Eclectic Paradigm (OLI)

The Eclectic Paradigm explains international production through ownership, location and internalisation advantages. Multinational petroleum and mining companies possess ownership advantages in finance, technology, engineering, risk management and access to markets. Nigeria and Zambia offer location advantages through hydrocarbon and mineral deposits, while internalisation allows firms to retain control

over proprietary technologies, project coordination and global marketing. The paradigm is useful for explaining why resource-rich countries attract FDI, but it does not by itself establish that host-country development will follow. Location advantages may attract capital even when institutions, skills and domestic supplier systems are weak.

2.4 Endogenous Growth Theory

Endogenous Growth Theory emphasises investment in knowledge, human capital, innovation and productive capabilities as sources of sustained growth (Romer, 1990). FDI can contribute through demonstration effects, employee mobility, supplier upgrading, management practices and access to international production networks. These spillovers depend on absorptive capacity. Domestic firms must possess sufficient finance, skills, technology and quality standards to interact with multinational enterprises. In extractive industries, the theory predicts stronger gains where foreign projects deliberately develop local suppliers, research partnerships, technical education and downstream industries.

2.5 Resource Curse Theory and institutional conditionality

Resource Curse Theory highlights the possibility that abundant natural resources may produce weaker long-term outcomes through commodity-price volatility, exchange-rate appreciation, rent-seeking, conflict, fiscal pro-cyclicality and neglect of other tradable sectors (Auty, 1993; Sachs & Warner, 2001). Later work shows that the quality of institutions is central: resource wealth is more likely to support development where public institutions constrain rent capture, stabilise expenditure, enforce contracts and invest revenues in productive assets (Mehlum et al., 2006; van der Ploeg, 2011). The relevant mechanism is therefore conditional. Resource-based FDI can finance growth, but the conversion of rents into development depends on governance and policy choices.

2.6 Integrated analytical framework

The integrated framework treats resource-based FDI as an external source of capital and technology whose effects are transmitted through capital formation, infrastructure, trade, fiscal revenue, human capital and domestic linkages. Institutional quality, policy consistency and macroeconomic stability moderate these channels. The same investment can generate gains through exports, technology and employment while creating costs through volatility, environmental damage, profit repatriation and rent-seeking. Figure 1 summarises this logic.

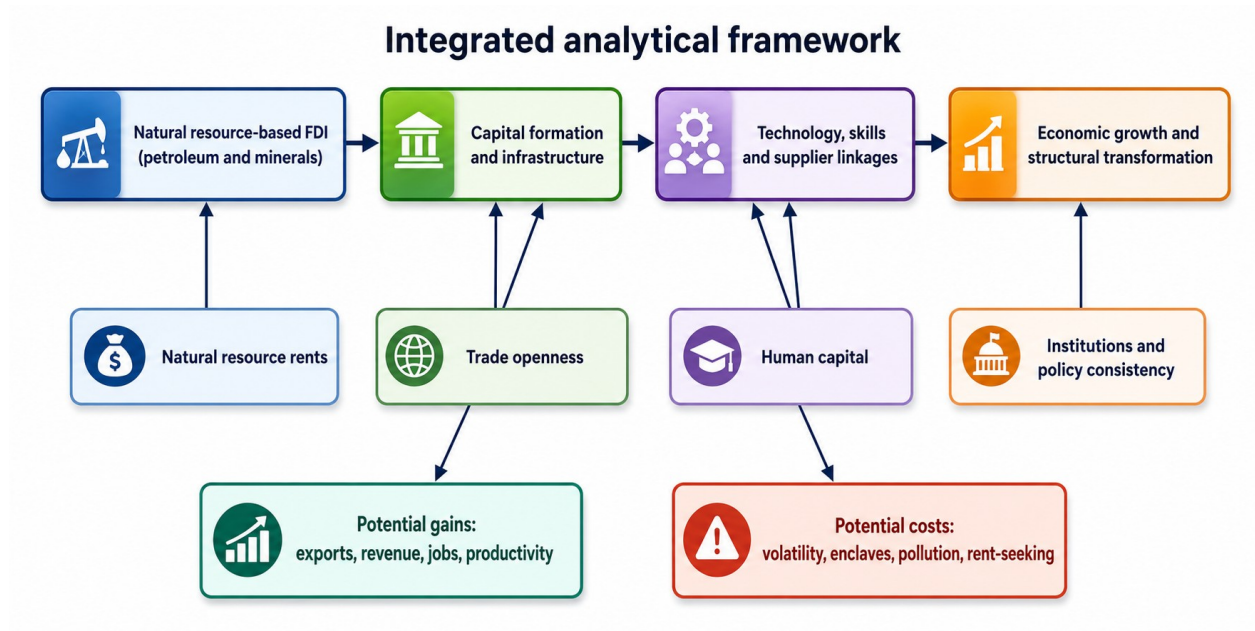


Figure 1. Integrated framework for analysing resource-based FDI and development outcomes.

3. Review of Related Literature

3.1 FDI and economic growth

The conventional argument is that FDI supplements domestic savings, raises investment, transfers technology and improves productivity. Borensztein et al. (1998) found that FDI can contribute more to growth than domestic investment when the host economy has sufficient human capital. Alfaro et al. (2004) showed that financial-market development influences whether local firms can exploit FDI-related opportunities. These findings imply that FDI is not an autonomous engine of growth. Its impact depends on complementary domestic institutions and capabilities.

African evidence is mixed. Natural resources, market size and policy conditions attract FDI, but resource-driven inflows may be less sensitive to some aspects of the general business environment because firms are drawn by immobile deposits (Asiedu, 2002, 2006). This can weaken the bargaining position of host governments or reduce incentives to improve economy-wide conditions. At the same time, technically complex extractive projects require large capital commitments and can create infrastructure that governments would struggle to finance independently.

3.2 Natural resource rents and growth

Natural resource rents represent the economic return to a resource after deducting extraction costs. They can expand fiscal space, strengthen foreign-exchange earnings and finance infrastructure or social investment. Their contribution is nevertheless unstable when revenue follows world commodity prices. Governments may expand expenditure during booms and face abrupt adjustment during downturns. If rents are not transparently collected or are used mainly for recurrent consumption, their long-term contribution to productivity remains limited. The resource-curse literature therefore stresses fiscal rules, stabilisation mechanisms, transparent contracts and investment in reproducible capital (Humphreys et al., 2007; van der Ploeg, 2011).

3.3 Gross capital formation

Gross capital formation captures additions to fixed assets and inventories. It is a direct mechanism through which FDI can affect output because mines, oilfields, processing plants, roads, power systems and logistics facilities expand productive capacity. The quality and location of investment matter as much as the amount. Capital formation confined to fenced extractive sites may increase sector output without relieving infrastructure constraints facing domestic firms. Conversely, shared power, transport, digital and water infrastructure can produce wider productivity effects. Public investment decisions determine whether resource revenue complements or merely substitutes for domestic investment.

3.4 Trade openness, export concentration and value chains

Trade openness can raise growth by expanding markets, increasing competition and improving access to intermediate goods and technology. In resource-dependent economies, however, a high trade-to-GDP ratio may reflect narrow export concentration rather than diversified integration. Nigeria exports petroleum while importing refined products, machinery and manufactured goods; Zambia exports copper and imports a large share of capital equipment and industrial inputs. Openness therefore contributes more to transformation when extractive exports are connected to refining, beneficiation, fabrication, engineering services and competitive domestic suppliers.

3.5 Human capital and absorptive capacity

The capacity to absorb technology depends on technical education, managerial competence, research systems and firm-level learning. Petroleum and mining operations require engineers, geologists, metallurgists, technicians, environmental specialists, financial professionals and sophisticated contractors. Where these capabilities are scarce, multinational enterprises import specialised labour and equipment, limiting knowledge diffusion. Local-content rules can increase participation, but rigid numerical targets without supplier finance, training and quality support may produce nominal rather than substantive localisation.

3.6 Petroleum-based and mineral-based FDI

Petroleum and hard-rock mining share several features: high sunk costs, long project lives, global price exposure and substantial environmental risk. They also differ. Oil and gas projects are often more capital intensive, generate very large fiscal flows relative to direct employment and depend on pipelines, terminals and complex contractual regimes. Copper mining employs more workers directly and can stimulate engineering, transport and local service clusters, but it is energy and water intensive and may create severe local pollution and land-use pressures. These sectoral differences influence the distribution, visibility and political management of development benefits.

3.7 Synthesis and remaining gap

The literature establishes that resource-based FDI can support growth but does not resolve how petroleum and mineral investment differ across comparable African settings. The evidence also shows that capital, rents, openness and human capital are interdependent rather than separate drivers. A country may attract large FDI inflows yet capture limited value if supplier capabilities are weak, contracts are opaque, infrastructure is enclave-specific and export structures remain undiversified. This study addresses that gap through a structured comparison of Nigeria and Zambia over a common longitudinal period.

4. Country Context

4.1 Nigeria: petroleum-led foreign investment

Nigeria is one of Africa's largest and most populous economies and possesses substantial crude-oil and natural-gas resources. Commercial petroleum production has shaped the country's fiscal and external structure since the second half of the twentieth century. Multinational enterprises have participated through joint ventures, production-sharing contracts and service arrangements, bringing capital, offshore technology, project management and access to global energy markets. The sector has generated a dominant share of merchandise export earnings in many periods and has remained central to public revenue and foreign exchange (Central Bank of Nigeria, 2024; Nigerian Upstream Petroleum Regulatory Commission, 2024).

The development record is nevertheless uneven. Oil production is concentrated in the Niger Delta and offshore areas, while national fiscal dependence spreads oil-price shocks across the economy. Theft, pipeline vandalism, environmental degradation, gas flaring, regulatory uncertainty and delayed investment have reduced output and public confidence. The Petroleum Industry Act 2021 reorganised regulation, commercialised the national oil company and introduced new fiscal and host-community arrangements. Its success depends on predictable implementation, transparent revenue administration and credible environmental enforcement (Federal Republic of Nigeria, 2021).

Nigeria also illustrates the measurement problem in resource-FDI research. Aggregate FDI includes telecommunications, banking, manufacturing and digital services, while several international oil companies have shifted from mature onshore assets towards offshore projects. An assessment of resource-based FDI must therefore look beyond total inflows to sectoral project decisions, production capacity, local-content outcomes and the management of petroleum rents.

4.2 Zambia: copper-led foreign investment

Zambia is a landlocked mineral economy whose growth, exports and foreign exchange are closely linked to copper. Liberalisation and privatisation in the 1990s transferred major mining assets to foreign investors and led to renewed capital expenditure, modernisation and production expansion. Large multinational mining companies have invested in open-pit and underground mines, concentrators, smelters and related infrastructure. Copper and associated minerals continue to dominate merchandise exports, and the global energy transition has increased strategic interest in Zambia's mineral endowment (Bank of Zambia, 2024; United States Geological Survey, 2025).

Mining investment has contributed to employment, tax revenue, transport demand, engineering services and urban development, particularly in the Copperbelt and North-Western Province. However, policy changes in mineral taxation, electricity shortages, debt stress, environmental liabilities and disputes over mine ownership have periodically weakened investor confidence and production. The sector also imports substantial machinery and specialised inputs, which limits domestic multipliers when local firms cannot meet technical, financing or scale requirements.

Zambia's principal policy challenge is to convert rising global demand for copper into broader industrial capability. Opportunities include mineral processing, cable and electrical-product manufacturing, mining services, regional logistics and linkages to renewable-energy and battery value chains. These opportunities will not materialise automatically from higher extraction. They require reliable power, consistent taxation, transparent licensing, geological information, skills and coordinated industrial policy.

Table 2. Comparative structural profile of resource-based FDI

Dimension	Nigeria	Zambia
Dominant resource sector	Crude oil and natural gas	Copper and associated minerals
Typical investment form	Joint ventures, production-sharing contracts, offshore and onshore petroleum projects	Equity investment, mine acquisition, expansion projects, processing and smelting facilities
Principal growth channels	Export earnings, fiscal revenue, foreign exchange, energy infrastructure, technical services	Export earnings, mine capital expenditure, employment, power and transport demand, engineering services
Main structural weakness	High fiscal centrality, limited direct employment, enclave tendencies and environmental damage in producing areas	Copper concentration, imported capital goods, electricity constraints and limited downstream processing
Key policy reform area	Implementation of the Petroleum Industry Act, revenue transparency, environmental remediation and gas value chains	Stable mining fiscal regime, reliable energy, local supplier upgrading, beneficiation and transparent licensing
Primary external vulnerability	Oil-price cycles, production disruptions and foreign-exchange pressures	Copper-price cycles, global investment cycles and power shortages

5. Methodology

5.1 Research design

The study uses a comparative longitudinal documentary design. Nigeria and Zambia are selected as contrasting resource-dependent cases: the first is predominantly petroleum-led and the second predominantly copper-led. The design is appropriate because the research questions concern mechanisms, institutional conditions and sectoral differences that cannot be captured adequately by a two-country panel regression. The period 1995–2025 covers Zambia's mining privatisation, multiple commodity cycles, Nigeria's democratic and petroleum-sector reforms, the global financial crisis, the 2014–2016 commodity downturn, the COVID-19 shock and the renewed strategic importance of critical minerals.

5.2 Sources and evidence selection

Evidence was drawn from peer-reviewed journal articles and books, World Development Indicators, UNCTAD investment reports, International Monetary Fund and African Development Bank publications, central-bank reports, national statistical publications, petroleum and mining regulators, investment-promotion agencies and Extractive Industries Transparency Initiative materials. Priority was given to sources that: (a) directly address Nigeria or Zambia; (b) distinguish petroleum, mining or natural-resource channels; (c) provide transparent concepts or data; and (d) were published by recognised academic or official institutions. Commentary without a verifiable evidence base was excluded from the core analysis.

5.3 Operational concepts

Because harmonised annual sector-specific FDI data are incomplete, the study does not use aggregate FDI as a direct measure of resource-based FDI. Resource-based FDI is identified through triangulation of sectoral investment reports, project activity, ownership changes, production capacity and official descriptions of investment composition. Natural-resource rents are treated as the income generated by oil, gas and minerals after extraction costs. Gross capital formation captures additions to productive assets. Trade openness is interpreted alongside export concentration, while human capital is assessed through the availability of skills, technical education and supplier capabilities. Economic growth is considered together with structural transformation, fiscal stability, employment, domestic linkages and environmental sustainability.

Table 3. Analytical constructs and evidence indicators

Construct	Working definition	Evidence used in the comparison
Resource-based FDI	Foreign investment primarily connected to exploration, extraction, processing, transport or marketing of hydrocarbons and minerals	Sector reports, project investment, ownership and production changes, FDI composition where available
Economic growth	Expansion in real output, considered together with productivity and resilience	Real GDP trends, sector contribution, export and fiscal performance, recession and recovery episodes
Natural-resource rents	Economic returns generated by petroleum, gas and minerals after extraction costs	Resource-rent indicators, fiscal and export dependence, revenue management and volatility
Gross capital formation	Additions to fixed productive assets and infrastructure	Mine and oilfield investment, processing facilities, transport, power and public investment
Trade openness	Integration into international markets, interpreted with export concentration	Trade-to-GDP evidence, export composition, imports of machinery and value-chain participation
Human capital	Skills and organisational capacity required to absorb technology and expand domestic linkages	Technical skills, local employment, training, research, supplier quality and managerial capability

5.4 Analytical procedure

The analysis proceeded in four stages. First, evidence was organised into four periods: 1995-2003, 2004-2013, 2014-2020 and 2021-2025. Second, country evidence was coded according to the six research questions. Third, within-case findings were compared to identify common and divergent mechanisms. Fourth, the findings were interpreted through the integrated theoretical framework. Triangulation was used to reduce dependence on any single indicator or institution. Where evidence differed, the article reports the direction of the disagreement rather than selecting a convenient result.

Table 4. Longitudinal periods used in the comparison

Period	Nigeria	Zambia
1995-2003	Return to civilian rule, mature petroleum dependence and early reforms	Privatisation and recapitalisation of the copper industry
2004-2013	Commodity boom, higher petroleum revenue and expanding services economy	Copper-price boom, strong mining investment and production expansion
2014-2020	Oil-price decline, recession episodes, production disruptions and COVID-19	Copper volatility, fiscal stress, policy disputes, debt default and COVID-19
2021-2025	Petroleum Industry Act implementation, exchange-rate reforms and renewed offshore interest	Debt restructuring, mining-policy reset, energy constraints and renewed critical-mineral investment

5.5 Validity, ethics and limitations

Construct validity was strengthened by separating aggregate FDI from resource-based FDI and by using multiple indicators for each research question. Reliability was supported through consistent coding categories for both countries. The study used publicly available secondary sources and did not involve human participants; ethical approval was therefore not required. The principal limitation is the absence of a complete, harmonised annual series for sector-specific resource FDI across both countries. The findings identify patterns and mechanisms but should not be interpreted as causal estimates. A future study could compile project-level investment data and estimate separate country time-series models once comparable observations are available.

6. Comparative Findings

6.1 Effect of resource-based FDI on economic growth

The evidence indicates that resource-based FDI has supported economic growth in both countries, but the effect has been episodic and conditional. In Nigeria, petroleum investment increased production capacity, exports, foreign exchange and public revenue, especially during periods of high oil prices. It also introduced complex offshore technologies and supported gas, maritime and professional services. The aggregate economy nevertheless remained exposed to production disruptions and oil-price declines. Periods of high petroleum income did not consistently translate into higher productivity in manufacturing or agriculture, partly because fiscal dependence and exchange-rate pressures transmitted oil-sector shocks to the wider economy.

In Zambia, foreign mining investment after privatisation rehabilitated assets, financed new mines and increased copper output. Mining capital expenditure supported construction, transport, engineering, local services and urban growth. The effect weakened when copper prices fell, taxation became unpredictable or electricity supply constrained production. Growth was therefore positively associated with mining investment cycles but remained vulnerable to external conditions. In both countries, the evidence supports a positive contribution to aggregate output without supporting the stronger claim that resource-based FDI automatically produces diversified or inclusive growth.

The comparison suggests that the key distinction is between direct and embedded effects. Direct effects arise from extraction, exports and fiscal receipts. Embedded effects arise when investment creates shared infrastructure, domestic suppliers, research capability and downstream production. Both countries have captured the first category more consistently than the second.

6.2 Influence of natural-resource rents

Natural-resource rents have expanded fiscal and external resources in Nigeria and Zambia, but they have also amplified volatility. Nigeria's petroleum rents have historically influenced federal revenue allocation, foreign-exchange liquidity and public expenditure. When prices and production are favourable, they improve fiscal capacity; when they decline, the government faces revenue shortfalls, currency pressure and difficult expenditure adjustments. The centralised fiscal significance of oil means that shocks are rapidly nationalised even though extraction is geographically concentrated.

Zambia's mineral rents influence export earnings, the exchange rate, tax revenue and mining-region activity. Higher copper prices can strengthen reserves and corporate profitability, yet the fiscal return depends on production, cost deductions, tax design, compliance and the timing of investment allowances. Repeated changes in the mining fiscal regime have reflected the political difficulty of balancing investment incentives with public revenue. In both countries, the developmental value of rents depends less on their existence than on transparent collection, counter-cyclical management and investment in assets that remain productive after commodity booms end.

6.3 Contribution of gross capital formation

Gross capital formation is a major channel connecting FDI to growth. Oilfields, mines, plants, power systems, roads, railways, housing and logistics increase productive capacity. Nigeria's offshore petroleum projects require high-value engineering and infrastructure, but many assets are specialised and have limited use outside the sector. The wider contribution increases where gas infrastructure supplies electricity, petrochemicals, fertiliser or industry. The failure of domestic refining capacity to match the

country's resource endowment for long periods illustrates how extraction-focused investment can coexist with downstream dependence.

In Zambia, mining investment has created physical assets and demand for transport and power. Some infrastructure supports wider economic activity, but mine-specific power and logistics can also function as enclaves. Electricity shortages demonstrate that capital formation in extraction cannot substitute for economy-wide investment in reliable generation and transmission. The evidence therefore shows that capital formation contributes most strongly when private extractive investment is coordinated with public infrastructure and domestic industrial strategy.

6.4 Roles of trade openness and human capital

Trade openness has connected Nigeria and Zambia to global commodity markets and enabled imports of advanced machinery, technology and specialised services. Its growth effect is constrained by export concentration. Nigeria remains exposed to petroleum-market conditions and imports a broad range of manufactured and capital goods. Zambia's high trade exposure is driven largely by copper and related products. In both cases, a high degree of openness does not necessarily indicate diversified competitiveness. Trade supports transformation when resource exports are linked to domestic processing, regional markets and competitive non-resource exports.

Human capital determines how much knowledge and income remain in the host economy. Both countries have developed significant professional and technical expertise, yet shortages persist in advanced engineering, project management, environmental science, geoscience, industrial maintenance and supplier quality systems. Multinational enterprises often respond by importing specialised skills and equipment. Local-content policies have increased participation in some activities, but domestic firms face finance, technology, certification and scale constraints. The combined evidence indicates that openness without absorptive capacity can increase imports and profit repatriation, while human-capital development without market access may not generate sufficient demand. The two factors must therefore be addressed together.

6.5 Petroleum-based FDI in Nigeria compared with mineral-based FDI in Zambia

Petroleum-based FDI in Nigeria is more capital intensive and more central to national fiscal politics. Large oil and gas projects generate substantial revenue and foreign exchange but relatively limited direct employment. Offshore developments may reduce some local security risks, yet they can further weaken territorial linkages with domestic communities and suppliers. Onshore operations have created severe environmental and social disputes in the Niger Delta. The sector's national importance also means that regulatory and exchange-rate uncertainty can delay very large investment decisions.

Mineral-based FDI in Zambia has a stronger physical presence in mining towns and generates more visible employment, contracting and transport demand. It can support clusters of engineering, maintenance and logistics services. However, copper mining remains capital intensive, imports major equipment and is highly dependent on reliable electricity. Environmental liabilities, resettlement, water use and mine closure create significant long-term public costs. The local visibility of mining may produce stronger expectations for community benefits and more frequent conflict over taxation, ownership and employment.

The sectors therefore differ in the distribution rather than the existence of enclave tendencies. Nigeria's enclave problem is associated with capital intensity, offshore orientation and centralised fiscal dependence. Zambia's enclave problem is associated with imported equipment, foreign marketing networks, limited beneficiation and infrastructure designed around mines. Both require deliberate policies to build domestic linkages.

6.6 Policy measures for enhancing developmental benefits

The findings support a shift from an investment-attraction model to an investment-embeddedness model. Governments should evaluate foreign projects not only by announced capital expenditure but by their expected contribution to productive linkages, technology, skills, public revenue, environmental performance and diversification. Stable and transparent rules are important, but stability should not be confused with weak regulation. The appropriate objective is predictable, enforceable and development-oriented governance.

Table 5. Summary of findings by research question

RQ	Nigeria	Zambia	Comparative conclusion
1	Petroleum FDI supports output, exports and revenue, but spillovers are constrained by volatility and enclave structures.	Mining FDI supports production, employment and services, but effects vary with copper prices, policy and power supply.	Positive contribution to growth; no automatic diversification or inclusion.
2	Oil rents expand fiscal space but transmit price and production shocks nationally.	Copper rents support exports and revenue but are sensitive to prices, tax design and compliance.	Revenue management and institutions determine long-term value.
3	Large specialised assets; wider benefits rise when gas and infrastructure serve domestic industry.	Mine investment raises capacity; wider benefits depend on shared power and transport systems.	Capital formation is most developmental when linked to economy-wide infrastructure.
4	Open petroleum trade coexists with manufactured imports; skills constraints limit localisation.	High copper-led openness coexists with imported machinery; technical and supplier gaps remain.	Trade and human capital are complementary, not independent, conditions.
5	More capital intensive, fiscally centralised and often enclave-oriented.	More territorially visible, with broader employment and supplier demand but strong energy dependence.	Sector technology and geography shape how benefits and costs are distributed.
6	Priorities: PIA implementation, gas value chains, remediation, revenue transparency and supplier development.	Priorities: stable fiscal regime, reliable power, beneficiation, local supplier finance and transparent licensing.	Move from attracting FDI volume to embedding investment in domestic capabilities and accountable institutions.

7. Discussion

7.1 Theoretical implications

The findings support the conditional interpretation of Endogenous Growth Theory. Foreign investment contributes capital and advanced technology, but knowledge spillovers do not occur automatically. They require domestic firms capable of supplying goods and services, workers capable of adopting new technologies and institutions capable of coordinating infrastructure and industrial policy. The evidence from both countries is consistent with the proposition that absorptive capacity determines whether FDI produces economy-wide productivity gains.

The findings also support the institutional version of Resource Curse Theory. Resource abundance has not prevented growth, but it has increased volatility and created incentives for fiscal dependence and rent competition. Nigeria and Zambia have both experienced periods in which resource revenue increased while diversification remained limited. This pattern is not evidence that resources are inherently a curse; it

demonstrates that the quality of revenue management, regulation and investment policy determines whether resource income is converted into reproducible capital.

The Eclectic Paradigm explains why multinational enterprises continue to invest despite domestic constraints: hydrocarbons and mineral deposits are immobile location advantages, while firms possess technology and finance that host countries require. This can create an asymmetry in which investors have strong incentives to access resources but weaker incentives to deepen domestic linkages. Governments must therefore build linkage, training, procurement and environmental obligations into credible project frameworks.

7.2 Why the two countries differ

Differences arise from resource characteristics, production technology, geography and fiscal structure. Petroleum produces large rents with low direct employment and can be transported through highly specialised infrastructure. Copper mining requires extensive land, power, water, processing and local services. Nigeria's federal revenue system makes petroleum central to national public finance, whereas Zambia's mining sector has a more direct territorial influence on mining provinces and infrastructure. These differences explain why petroleum policy debates focus strongly on revenue allocation, national oil-company governance and community environmental damage, while Zambian debates focus strongly on tax stability, ownership, electricity, mine operations and beneficiation.

7.3 Implications for development strategy

The central implication is that the volume of FDI is an incomplete policy target. A large investment can contribute little to transformation if it imports most inputs, repatriates profits, uses specialised infrastructure and leaves environmental liabilities. A smaller investment may generate stronger development effects if it trains workers, develops suppliers, uses domestic research institutions, shares infrastructure and processes resources locally. Investment policy should therefore use a quality framework that evaluates additionality, linkages, fiscal contribution, technology, resilience and sustainability.

Diversification should also be defined realistically. It does not require abandoning petroleum or copper. It requires using the capabilities, infrastructure and revenues of those sectors to develop adjacent activities. Nigeria can deepen gas processing, petrochemicals, fertiliser, engineering and energy services. Zambia can expand mining services, metal fabrication, electrical products, renewable-energy supply and regional logistics. Such strategies are more feasible than attempting to create unrelated industries without an existing capability base.

8. Conclusion

This article examined the relationship between natural resource-based FDI and economic growth in Nigeria and Zambia through a comparative longitudinal review. The evidence shows that petroleum and mining investment have contributed to output, exports, foreign exchange, public revenue, physical capital and access to technology. These contributions are real but incomplete. Neither country has consistently converted resource-based FDI into broad-based structural transformation.

Natural-resource rents have created opportunities for public investment while increasing vulnerability to commodity cycles and governance failures. Gross capital formation has produced stronger spillovers where infrastructure serves the wider economy. Trade openness has connected both countries to global markets but has often reflected narrow commodity specialisation. Human-capital and supplier constraints have limited localisation and technology diffusion. Petroleum-based investment in Nigeria is more fiscally

centralised and capital intensive, while mineral-based investment in Zambia creates broader territorial demand but remains constrained by energy, imported equipment and limited beneficiation.

The study therefore rejects both simplistic positions: resource-based FDI is neither an automatic engine of development nor an unavoidable curse. Its outcome depends on how investment is governed, connected to domestic capabilities and integrated into a long-term transformation strategy. The policy question is not merely how much FDI enters, but how much productive capacity, knowledge, public value and resilience remain after extraction.

9. Policy Recommendations

1. **Adopt FDI-quality assessment frameworks.** Investment approvals and incentives should be linked to measurable commitments on domestic procurement, skills, technology, infrastructure sharing, tax compliance, environmental performance and downstream activity.
2. **Stabilise and clarify extractive-sector rules.** Nigeria should implement the Petroleum Industry Act consistently, while Zambia should maintain a predictable mining fiscal and licensing regime. Stability should be accompanied by transparent review mechanisms and credible enforcement.
3. **Strengthen revenue transparency and counter-cyclical management.** Resource revenues should be disclosed, independently audited and managed through medium-term fiscal rules that prevent boom-time overspending and protect productive investment during downturns.
4. **Develop competitive local suppliers.** Local-content requirements should be supported by supplier-development centres, credit guarantees, certification assistance, technology partnerships and transparent procurement portals.
5. **Invest in specialised human capital.** Universities, technical colleges and industry should jointly develop programmes in engineering, geoscience, metallurgy, environmental management, automation, industrial maintenance and project finance.
6. **Build resource-adjacent industries.** Nigeria should prioritise commercially viable gas, petrochemical, fertiliser and energy-service value chains. Zambia should prioritise mining services, metal fabrication, electrical products, copper processing and regional logistics.
7. **Provide reliable shared infrastructure.** Power, transport, water and digital investments linked to extractive projects should be designed, where feasible, to serve communities and non-resource firms rather than isolated production enclaves.
8. **Enforce environmental and social accountability.** Project approval should include funded closure, remediation and community-development obligations, transparent environmental monitoring and accessible grievance mechanisms.
9. **Improve domestic revenue mobilisation beyond resources.** Broader tax systems will reduce fiscal dependence on oil and copper and allow governments to negotiate resource contracts without excessive short-term revenue pressure.
10. **Deepen regional value-chain cooperation.** Nigeria should use regional energy and industrial markets, while Zambia should leverage Southern African and African Continental Free Trade Area markets for mining inputs, processed metals and engineering services.

10. Limitations and Directions for Future Research

The study is limited by fragmented sector-specific FDI data, differences in national reporting and the difficulty of separating foreign investment from reinvested earnings, domestic ownership changes and project finance. Documentary evidence may also reflect institutional reporting priorities. The comparative design identifies mechanisms but cannot estimate a single causal coefficient for resource-based FDI.

Future research should construct a project-level database containing investment value, ownership, production, employment, procurement, taxes, environmental obligations and location. Separate country time-series studies could then test short- and long-run relationships using methods appropriate to each data-generating process. Firm-level and subnational research would also clarify whether supplier, employment and infrastructure spillovers are concentrated in particular regions or industries.

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