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BANKS, PRIVATE SECTOR, RESOURCE ENDOWMENT, AND INDUSTRIAL DIVERSIFICATION IN NIGERIA

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ABSTRACT

This study investigates how the financial system, particularly bank-private sector interactions, can mitigate the resource curse in Nigeria. The analysis explores how these interactions promote structural transformation towards a more diversified and productive economy, utilizing data from 1970 to 2024. An Autoregressive Distributed Lag (ARDL) model is employed to analyze the relationships between resource dependence, bank-private sector interactions, and industrial structure. The findings reveal that resource dependence hinders industrial transformation away from resource-intensive sectors like mining and energy. However, increased bank credit to the private sector significantly promotes this transformation, particularly towards the manufacturing sector. This suggests that a stronger financial system can channel resources away from resource-dependent activities and propel growth in higher-value sectors. The study concludes that deepening bank-real sector interactions offers a crucial policy tool to tackle the resource curse in Nigeria. By facilitating credit flow to productive sectors through an ARDL-based analysis, the financial system can enable a shift towards a more diversified and resilient economy.

Keywords: Banks, private sector, resource endowment, industrial diversification, and Nigeria

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1. Introduction

The passage highlights the shift in understanding regarding the relationship between natural resource abundance and economic development in developing countries, particularly focusing on Nigeria. Previously, it was believed that abundant natural resources would propel industrialization and economic growth, similar to the experiences of industrialized nations like Australia and the United States. However, recent studies (e.g., Jason, 2025; Mohamed and Yusuf, 2025) have challenged this notion, identifying a phenomenon known as the "resource curse," which entails slower growth and poorer economic performance in resource-rich countries. One explanation for this curse is the "Dutch Disease" syndrome, which suggests that a dominant natural resource sector can hinder the development of other industries by monopolizing resources (Abdelkawy, 2024; Nadabo and Salisu, 2025).

Nigeria serves as a notable case study in this context, with its heavy reliance on fossil fuels, particularly oil, coal, and natural gas, which contribute significantly to the economy (Pandey, Kumar, and Joshi, 2024). However, this dependence has led to various economic, social, and institutional challenges. The essay evaluates Nigeria's economy in the context of the resource curse, particularly examining how it has led to a structural imbalance, with the economy overly reliant on the natural resource sector. The industrial structure of Nigeria has evolved in a skewed manner, with the dominance of resource-based industries and a neglect of more technologically advanced sectors. Despite some fluctuations, the share of value added by tertiary industries (such as services) has not shown consistent growth, hindering the country's progress towards diversification and technological advancement. This skewed development pattern is exacerbated by the lack of spillover effects and productive linkages between industries, stifling innovation and technology diffusion (Joshia, Singh, Lyzhova, Choriev, Sattarova, and Kholmurodov, 2024)

To address this issue, structural transformation is deemed essential for diversifying Nigeria's economy and breaking free from the resource curse. This transformation involves reallocating production factors from low-productivity sectors to more efficient and high-productivity sectors, facilitated by the optimal coordination of resources. The role of banks in this process is crucial, as they can redirect financial resources from unproductive sectors, such as fossil fuel industries, to more productive areas of the economy. By facilitating the flow of credit to productive sectors, banks can help catalyse industrial transformation and economic diversification (Joshia et al., 2024). However, existing empirical literature on the resource curse often focuses on the manufacturing sector and overlooks the role of the services sector in industrial transformation. Similarly, limited attention has been given to the role of the financial sector, particularly banks, in shaping output composition and facilitating structural transformation in resource-dependent economies like Nigeria.

To address these gaps, the paper proposes a re-examination of the resource curse hypothesis in Nigeria, considering industrial structure transformation and the role of bank-real sector interactions. By incorporating these factors into the analysis, the study aims to provide a more comprehensive understanding of the dynamics driving economic diversification and escaping the resource curse. It contributes to the literature by shedding light on the combined impact of natural resource rents on industrial structure transformation and the role of the financial sector in facilitating this process. To address the concerns raised above, the paper strives to report critical issues as;

Research Questions:

- a) How does economic dependence on fossils fuel sector significantly affect the industrial structure in Nigeria?
- b) To what extent does the banks' real sector interaction significantly affect the industrial structure in Nigeria?
- c) Does GDP per capita have any significant effect on industrial structure in Nigeria?

Objectives of the Study:

Specifically, the paper is intended to:

- a) Investigate whether economic dependence on fossils fuel sector has any significant effect on the industrial structure in Nigeria.
- b) Evaluate the extent to which banks' real sector interaction has any significant effect on the industrial structure in Nigeria.
- c) Examine if GDP per capita has a significant impact on the industrial structure in Nigeria.

2. Literature Review

2.1 Theoretical Literature

This paper relies heavily on the resource-based theory, as propounded by Wernerfelt (1984) and further refined by Barney (1991, 1986). The theory posits that there exists a sustainable competitive advantage for firms through controlling, leveraging, and acquiring heterogeneous resources and capabilities, which are valuable and non-substitutable. However, this theory was later put forward by Penrose (2009), who developed an effective model in the management of firms' resources, diversification strategies, and a liable opportunity for production processes. According to Penrose (2009), the theory provides an insight into a firm as a coordinated bundle of resources in order to achieve the goals of the firm. The main focus of the

resource-based theory was to solve the issue of an internally-driven approach through relying on internal firms' resources, as opposed to externally driven approaches to consider the execution or failure of leveraging firms' economic activities (Kozlenkova, Samaha & Palmatier, 2014). The theory assumes that the bundles of resources owned by firms are different from each other, which is the assumption of heterogeneity of resources (Helfat & Peteraf, 2003). It further assumes that the complexities of trading resources across firms may generate persistence in modifications in resources curse. This theory concludes that firms' source of resources can be internal (e.g., logistics, brand management, low-cost processes, and others) or external (e.g., role of supplier, customer demand, technological change, etc.).

2.2 Conceptual Literature

Structural transformation refers to the long-term shift in the composition of economic activity across sectors (Neuss, 2019). Traditionally, this involved a movement from agriculture (primary) to industry (secondary), followed by services (tertiary) (Clark, 1940; Kuznets, 1971). However, Sen (2019) argues this pattern may not hold for developing countries, where resources might move directly from agriculture to services. Several studies explore the influence of natural resource dependence on structural transformation (Wu et al., 2021). The resource curse hypothesis suggests that dependence on natural resources can hinder economic diversification (Milen & Goujon, 2022). This is often modeled using the D-disease framework (Wu et al., 2021). Economic diversification is a key strategy to counter the resource curse (Chang et al., 2021). This involves expanding the productive capacity of non-resource sectors. Chang et al. (2021) propose deepening linkages between the natural resource sector and other parts of the economy, leveraging resource rents for growth in other sectors. Conceptually, industrial diversification refers to an economic behaviour where multiple industries with relatively low substitutability or complementarity in technical services come together within a certain geographical space range (Kim, 2012). It is simply broadening industries to accommodate other industrial engagements for production. Financial development, through institutions and markets, shapes economic activity (Folarin, 2019). It can facilitate resource reallocation by mobilizing savings and creating credit (Xu & Tan, 2020).

2.3 Empirical Literature

Empirical papers on this area of study seem scanty, and few available ones have a divergent outcome. For instance, Akinyemi (2025) provided strong empirical evidence that international diversification strategy negatively impacts corporate profitability and firm valuation for the Nigerian banks using Driscoll-Kraay Standard Error (DKSE) and the Feasible Generalized Least Squares (FGLS) on whether international diversification strategies and resource intensity have explanatory power for the financial performance of the select listed Nigerian banks. Furthermore, None and None (2025) conducted a study on the relationship

among bank profitability, asset quality, and income diversification and documented that there is a negative association between Non-Performing Assets (NPA) and Return on Assets (ROA) using a primary means of data generation within the periods 2020-21 to 2024-25. Also, Joshia et.al. (2024) submitted that the resource curse is not synchronizing in less developed economies than that of rich ones. This can potentially skew the industrial structure by directing resources from resource sectors to fund productive investment in services (Xu & Tan, 2020). The findings of Wang & Wang (2021) from China support this, showing financial development strengthens the shift from industry to services. A recent study by Muhammad and Yusuf (2025) on revisiting the resource curse hypothesis in Nigeria documented that natural wealth fails to translate into sustainable development, and financial development emerges as a key driver of economic performance, whereas trade liberalization and poorly managed capital investments pose short-term challenges.

However, the impact of financial development on structural transformation in SSA appears mixed. Alagidede et al. (2020) found that financial development increases activity across all sectors, but with limited effects on secondary industries. Similarly, Itaman and Awopegba (2021) found a negative impact on manufacturing output in Nigeria. However, Asiamah et al. (2022) and Nkemgha et al. (2022) highlight the negative impact of resource dependence on manufacturing and services growth in SSA, suggesting that financial development's potential is limited by resource dependence. The literature on drivers of structural transformation in SSA is evolving, with recent studies by Asiamah et al. (2022), Nkemgha et al. (2022), Alagidede et al. (2020), and Itaman and Awopegba (2021) providing valuable insights. Future research could disaggregate the secondary sector to differentiate between resource-extraction and growth-promoting manufacturing, offering a more nuanced understanding of structural transformation paths in resource-rich economies. Finally, findings of Maria and Hussain (2026) reveal that private sector banks validate higher profitability efficiency than public sector banks, which only exhibit higher marketability efficiency in India using panel data of 15 private and 12 public sector listed banks and data envelopment analysis from 2005 to 2024.

3. Methodology

Baseline model

This study formulates the following model:

$$\Delta \ln IND_t = \alpha_0 + \alpha_1 \Delta \ln \sum FFR_t + \alpha_2 \Delta \ln \sum BR_t + \alpha_n \Delta \sum X_t + e_t \quad (1)$$

Where "ln" in Eq.(1) shows that the variables are expressed in their natural logarithmic form. DSD represents measures of industrial structure dynamics; FFR represents economic dependence on fossil fuel sectors, while BR is a measure of banks-real sector interactions. α_0 , the intercept of the model, and e , the

error term. X denotes that equation (1) can be expanded to account for the impact of other factors. Specifically, per capita income and economic globalization are included as further drivers of DSD. Taking these additional factors into account, Eq. (1) is modified as follows:

$$\Delta \ln IND_t = \alpha_0 + \alpha_1 \Delta \ln \sum FFR_t + \alpha_2 \Delta \ln \sum BR_t + \alpha_3 \Delta \sum Pgdp_t + \alpha_4 \Delta \sum Ecg_t + e_t \quad (2)$$

In Eq. (2), $Pgdp$ and Ecg stand for per capita income and economic globalization, respectively.

Definition of variables and Data sources

Data description and sources

The data span is from 1970 to 2024, selected on the basis of data availability. A summary description of the sources of the data is given in Panel A of Table 1, while some descriptive statistics are provided in Panel B.

Table 1: Definition of Variables and Data Sources

Variables	Definition	Data Sources
Panel A: List of Variables and Data Sources		
IND	Industry (including construction), value added (% of GDP)	World Development Indicators (WDI) Database, World Bank, 2025
SEV	Services, value added (% of GDP)	WDI Database, World Bank, 2025
STR	Ratio of SEV to IND	computed using data from the WDI Database, World Bank, 2025
FFR	Combined rents from Oil and natural gas	WDI Database, World Bank, 2025
BR	Bank credit to the private sector	Global Financial Development Database, World Bank, 2025
Pgdp	GDP per capita (constant 2015 US\$)	WDI, World Bank, 2025
Ecg	Index of Economic Globalization (KOFecGI)	Gygli et al. (2019) compiled by KOF Swiss Economic Institute

Source: Authors' compilation, 2026

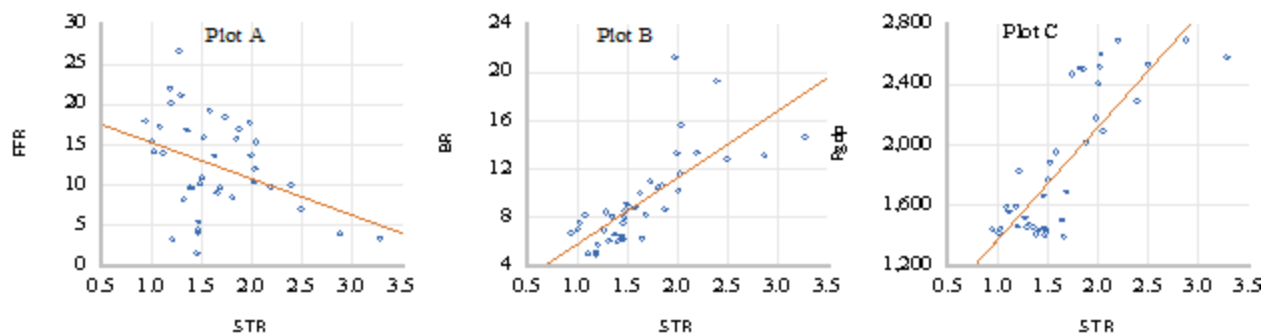


Figure 1. Scatter plots of the linear association between the key variable of interest

4. Results and Discussion

4.1 Result:

Unit Root Tests

The results show that all the variables are integrated after first differencing $I(1)$. Also reported from the tests are structural break dates arising from innovation and additive shocks.

Table 2: Unit root tests

	Level form I(0)		First Difference I(1)		Result
	t-Statistic	Break Date	t-Statistic	Break Date	
Panel A: Augmented Dickey-Fuller (ADF) test					
lnIND	-2.195		-5.502***		I(1)
lnSEV	-1.437		-5.017***		I(1)
lnSTR	-1.699		-5.305***		I(1)
lnRSTR	-1.859		-5.408***		I(1)
lnFFR	-3.108**		-6.669***		I(0)
lnPgdp	0.187		-3.874***		I(1)
lnBR	-1.776		-5.539***		I(1)
lnIRS	-2.017		-4.495***		I(1)
lnEcg	-2.720*		-5.967***		I(0)
Panel B: Modified ADF test with one structural break point : Innovative Outlier					
lnIND	-4.062	2000	-6.948***	2016	I(1) with a break
lnSEV	-3.678	2001	-5.855***	1998	I(1) with a break
lnSTR	-3.664	1999	-5.790***	2016	I(1) with a break
lnRSTR	-3.368	2001	-5.690***	2015	I(1) with a break
lnFFR	-3.398	1983	-7.665***	1989	I(1) with a break
lnPgdp	-3.770	2001	-4.546**	2002	I(1) with a break

lnBR	-3.790	2001	-6.285***	2007	I(1) with a break
lnIRS	-5.887***	1987	-8.569***	1985	I(0) with a break
lnEcg	-3.534	1985	-8.095***	1995	I(1) with a break

Panel C: Modified ADF test with one structural break point: Additive Outlier

lnIND	-4.154	2000	-7.367***	2015	I(1) with a break
lnSEV	-3.734	2001	-6.005***	1998	I(1) with a break
lnSTR	-3.595	1999	-6.203***	2016	I(1) with a break
lnRSTR	-3.300	2001	-5.837***	2002	I(1) with a break
lnFFR	-3.741	1983	-8.557***	1988	I(1) with a break
lnPgdp	-2.775	2002	-4.503**	2001	I(1) with a break
lnBR	-3.640	2001	-6.371***	2007	I(1) with a break
lnIRS	-5.962***	1987	-8.658***	1985	I(0) with a break
lnEcg	-3.988	1992	-8.239***	1995	I(1) with a break

Note: *, ** and *** indicate rejection of H_0 at 1%, 5% and 1% levels respectively;

Source: Authors' estimate, 2026

Co-integration Tests

The results of the co-integration tests are summarized in Table 3. A close examination of the BH test statistics reported in Panel A reveals that EG, JOH, BA, and BO, and the two Fisher-type statistics (EG-JOH and EG-JOH-BA-BO) exceed the critical value at 5% significance level. These results provide strong statistical evidence that the variables converge in the long run. Further co-integration tests are implemented using the ARDL-bounds technique. The selected ARDL models for the empirical specifications are reported in Panel B. The critical values (CV) and approximate p-values are from Kripfganz and Schneider (2020), both providing the basis for testing the rejection or otherwise of the null hypotheses of no cointegration. Clearly, the computed F-statistics and t-statistics are greater than the upper CV at 5% significance level or below. Specifically, the approximate p-values indicate that the null hypothesis of no cointegration is rejected at 1% significance level for the first model specification (DSD = IND), at 5% significance level for the second model specification (DSD = SEV), and at 1% significance level for the third model specification (DSD = STR). Thus, the results of both the BH and ARDL-bounds

tests confirm the existence of a long-run relationship between industry structure indicators, fossil energy rent, banks-to-private sector credit, and economic globalization in Nigeria.

Table 3: Co-integration tests

Cointegration tests		DSD = IND		DSD = SEV		DSD = STR	
		Test-Stat	P-Val	Test-Stat	P-Val	Test-Stat	P-Val
Panel A: Bayer-Hanck test							
Underlying Tests:		Test-Stat	P-Val	Test-Stat	P-Val	Test-Stat	P-Val
Engle-Granger		- 5.048***	0.007	-4.793**	0.015	-4.876**	0.012
Johansen		34.088**	0.046	34.569**	0.040	37.936**	0.015
Banerjee		- 5.212***	0.001	- 5.693***	0.000	-5.639***	0.000
Boswijk		27.702** *	0.004	33.595** *	0.001	31.903** *	0.001
Fisher Type test statistics [5% critical value]							
EG-JOH:		16.251**	[10.576]	14.819**	[10.576]	17.269**	[10.576]
EG-JOH-BA-BO		40.796** *	[20.143]	45.879** *	[20.143]	47.308** *	[20.143]
Panel B: Robustness Check using ARDL-bounds test							
Selected Model		ARDL(2, 0, 0, 1, 1)		ARDL(2, 2, 0, 3, 3)		ARDL(2, 2, 0, 0, 1)	
Structural Break Date (TBrk)		2000		2001		1999	
F-Statistic		9.526***		5.624 **		5.519**	
t-Statistic		-6.202***		-4.929**		-5.421***	
Kripfganz and Schneider (2018) critical values and approximate p-values							
		I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
10% critical values	F-Stat	2.434	3.519	2.390	3.637	2.425	3.535
	t-State	-2.526	-3.639	-2.454	-3.580	-2.514	-3.629
5% critical values	F-Stat	2.940	4.174	2.922	4.363	2.934	4.199
	t-State	-2.888	-4.064	-2.840	-4.037	-2.880	-4.059
1% critical values	F-Stat	4.170	5.752	4.249	6.159	4.175	5.807
	t-State	-3.633	-4.931	-3.640	-4.984	-3.632	-4.937

Approximate P-values	F-test	0.000	0.000	0.002	0.016	0.002	0.013
	t-test	0.000	0.001	0.001	0.011	0.000	0.004

Note: ** and *** indicate rejection of the null hypothesis of no cointegration at 5% and 1% levels of statistical significance, respectively; Lower bounds are denoted by I(0); Upper bounds are denoted by I(1);

Source: Authors' estimate, 2026

Long-run parameter estimates

The results in Panel A of Table 4 explain DSD based on the output value of the industry sector (i.e., DSD = lnIND). The sign and statistical properties of the coefficient of lnFFR indicate that fossil energy resources have a significant positive long-run effect that increases the output value of the industry sectors by 0.105%-0.285% for a 1% increase in derived rents. This is a clear indication of a resource-based path to industrialization. The impact of banks-real sector interactions is not the same. The coefficient of lnBR is negative and significant, with the estimates indicating that a 1% increase in the depth of banks-real sector interactions generates a 0.158%-0.203% decrease in IND in the long-run. An earlier study by Itaman and Awopegba (2021) reported a similar effect on manufacturing output value in Nigeria. As emphasized by Itaman and Awopegba (2021), the deviation from the expectation that banks-real sector interactions will facilitate the industrialization process is an indication of the crowding-out effect of the dominant fossil energy sector on other economic sectors in Nigeria. The coefficient of lnPgdp, as well, indicates a statistically negative relationship between economic growth and the tradable industry sector output, with additional insight that a 1% increase in per capita GDP explains a 0.240%-0.282% decrease in IND in the long-run.

Table 4:.Long-run – Sectoral analysis

Variables	Panel A: DSD = lnIND				Panel B: DSD = lnSEV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	FMOLS	DOLS	CCR	ARDL	FMOLS	DOLS	CCR	ARDL
lnFFR	0.105*** (0.012) [8.602]	0.285*** (0.034) [8.294]	0.105*** (0.017) [6.033]	0.165*** (0.046) [3.612]	- 0.058*** [4.149]	- 0.128*** [7.344]	-0.052** (0.025) [-2.047]	-0.055* (0.031) [-1.769]
lnBR	- 0.203*** (0.026)	-0.158** (0.076)	- 0.201*** (0.030)	-0.181** (0.075)	0.057** (0.029)	0.101*** (0.039)	0.103** (0.052)	0.107** (0.048)

	[-7.925]	[-2.076]	[-6.612]	[-2.433]	[1.969]	[2.602]	[1.996]	[2.232]
lnPgdp	- 0.279***	-0.240**	- 0.282***	-0.259**	0.319***	0.342***	0.326***	0.353***
	(0.034)	(0.101)	(0.037)	(0.107)	(0.038)	(0.051)	(0.067)	(0.072)
	[-8.296]	[-2.381]	[-7.559]	[-2.420]	[8.346]	[6.676]	[4.865]	[4.928]
lnEcg	- 0.351***	- 0.498***	- 0.351***	-0.322	- 0.206***	- 0.321***	-0.278**	- 0.556***
	(0.066)	(0.145)	(0.074)	(0.199)	(0.075)	(0.074)	(0.133)	(0.149)
	[-5.346]	[-3.432]	[-4.754]	[-1.615]	[-2.759]	[-4.348]	[-2.101]	[-3.728]
Constant	6.971***	6.682***	6.988***	6.517***	2.218***	2.540***	2.320***	3.149***
	(0.306)	(0.875)	(0.341)	(0.882)	(0.348)	(0.445)	(0.638)	(0.689)
	[22.810]	[7.633]	[20.504]	[7.386]	[6.377]	[5.707]	[3.634]	[4.568]
R-squared	0.776	0.948	0.737	0.710	0.615	0.952	0.802	0.811

Standard errors in (); t-statistics []; *** p<0.01, ** p<0.05, * p<0.1 denote statistical significance at 1%, 5% and 10% levels, respectively

Source: Authors' estimate, 2026

The results in Panel B of Table 4 explain DSD based on the output value of the services sector (i.e., DSD = lnSEV). The sign and statistical properties of the coefficient of lnFFR indicate that fossil energy resources have a significant negative effect on the output value of the services sector. Considering the size of the coefficient estimates, a 1% increase in derived rents reduces SEV by 0.052%-0.128% in the long-run. This confirms the crowding-out effect of natural resources on other productive sectors in the economy. The impact of banks-real sector interactions on SEV is different. The coefficient of lnBR is positive and significant, with the estimates indicating that a 1% increase in the depth of banks-real sector interactions generates a 0.057%-0.103% increase in SEV in the long-run. The coefficient of lnPgdp, as well, indicates a statistically significant positive relationship between per capita GDP and the output of the services sector, with the size of the coefficient estimates indicating that a 1% increase in per capita GDP explains a 0.319%-0.342% increase in SEV in the long-run. This finding is not surprising. As highlighted by Sen (2019), the emergence of digital technologies has transformed the services sector into an important source of productivity growth. Taking a comparative look at the estimates in Panel A and Panel B of Table 4, it is clear that deepening banks-real sector interactions will be vital in reallocating resources from the resource-dependent industry sector to the more growth-enhancing services sector. This policy strategy could be vital for tackling the resource curse symptoms.

The results in Table 4 explain DSD using the ratio of IND to SEV to track the evolution of industrial structure transformation towards a service-based economy (DSD = lnSTR). The coefficient of lnFFR is negative and statistically significant at 1% level, irrespective of the estimation technique employed. Based on the size, a 1% increase in FFR reduces STR by a 0.163%-0.413% in the long-run. This clearly indicates that natural resources inhibit industrial structural transformation towards the more growth-enhancing services sector in Nigeria. Similar empirical evidence was documented by Amiri et al. (2019) for a selection of 28 natural resource-dependent countries.

Table 5:Long-run – Structural shift from industry to services

Variables	Dependent Variable: DSD = lnSTR			
	(1) FMOLS	(2) DOLS	(3) CCR	(4) ARDL
lnFFR	-0.163*** (0.022) [-7.365]	-0.413*** (0.032) [-12.729]	-0.167*** (0.031) [-5.396]	-0.223*** (0.059) [-3.773]
lnBR	0.261*** (0.047) [5.601]	0.258*** (0.072) [3.597]	0.250*** (0.056) [4.510]	0.286*** (0.094) [3.048]
lnPgdp	0.596*** (0.061) [9.773]	0.582*** (0.095) [6.112]	0.607*** (0.067) [9.015]	0.605*** (0.121) [5.017]
lnEcg	0.141 (0.119) [1.182]	0.177 (0.137) [1.293]	0.155 (0.134) [1.157]	0.122 (0.286) [0.427]
Constant	-4.729*** (0.555) [-8.516]	-4.143*** (0.827) [-5.008]	-4.826*** (0.619) [-7.795]	-4.628*** (1.139) [-4.064]
R-squared	0.824	0.968	0.774	0.755

Standard errors in (); t-statistics []; *** p<0.01, ** p<0.05, * p<0.1 denote statistical significance at 1%, 5% and 10% levels, respectively

Source: Authors' estimate, 2026

Short-run parameter estimates

The short-run and error correction (ECM) estimates are summarized in Table 6. A key interesting aspect of the estimates is that they align with the results from the long-run analysis (see Table 5). A 1% increase in FFR results in 0.171% decrease in the shift from IND to SEV in the short-run. On the other hand, a 1% increase in BR reduces IND by 0.146% and increases SEV by 0.079, deepening the shift from IND to SEV by 0.237% in the short-run. Also, Pgdp is negatively related to IND and positively related to SEV, resulting in a 0.501% increase in the shift from IND to SEV for a 1% increase in Pgdp in the short-run. The estimates for TBrk suggest that a time break in the data series provides no statistically significant explanation for changes in industrial structure dynamics. The coefficient of the lagged error correction term, $ECM(-1)$, assumes the theoretically expected negative sign in all the model specifications and is statistically significant at 1% level. Specifically, the coefficient estimates indicate that approximately 80.7%, 74.4%, 40% and 82.7% of the disequilibrium in the short-run are corrected annually in models IND, SEV, and STR, respectively. These estimates corroborate the results from the bounds test, which further reinstate the existence of a long-run relationship between industrial structure dynamics and the explanatory variables of interest in the case of Nigeria.

Table 6: Short-run and ECM estimates

	(1)			(2)			(3)		
	DSD = lnIND			DSD = lnSEV			DSD = lnSTR		
Variables	Coef.	Std. Err	t-Stat	Coef	Std. Err	t-Stat	Coef	Std. Err	t-Stat
$\Delta \ln IND(-1)$	0.238*	(0.130)	[1.839]						
$\Delta \ln SEV(-1)$				0.354**	(0.125)	[2.831]			
$\Delta \ln STR(-1)$							0.476***	(0.140)	[3.407]
$\Delta \ln FFR$	0.133***	(0.032)	[4.092]	-0.030	(0.018)	[-1.672]	-0.171***	(0.040)	[-4.288]
$\Delta \ln FFR(-1)$				0.041*	(0.021)	[1.985]	0.115**	(0.041)	[2.775]
$\Delta \ln BR$	-0.146**	(0.060)	[-2.458]	0.079**	(0.032)	[2.495]	0.237***	(0.076)	[3.123]
$\Delta \ln Pgdp$	-1.020***	(0.331)	[-3.078]	-0.272	(0.256)	[-1.065]	0.501***	(0.152)	[3.290]
$\Delta \ln Pgdp(-1)$				0.060	(0.210)	[0.286]			
$\Delta \ln Pgdp(-2)$				0.440*	(0.215)	[2.045]			

$\Delta \ln \text{EcG}$	-0.493**	(0.201)	[-2.457]	0.005	(0.122)	[0.044]	0.565**	(0.266)	[2.119]
$\Delta \ln \text{EcG}(-1)$				0.236*	(0.135)	[1.748]			
$\Delta \ln \text{EcG}(-2)$				0.165	(0.117)	[1.410]			
TBrk	0.048	(0.076)	[0.636]	0.105**	(0.046)	[2.268]	-0.068	(0.109)	[-0.625]
ECM(-1)	-0.807***	(0.130)	[-6.202]	0.744***	(0.151)	[-4.929]	-0.827***	(0.153)	[-5.421]

*** p<0.01, ** p<0.05, * p<0.1 denote statistical significance at 1%, 5% and 10% levels, respectively

Diagnostic tests

To check the appropriateness of the estimated results, some diagnostic tests are performed. The outcomes of these tests are presented in Table 7. The residual diagnostic tests show that all the estimated ARDL models are free from heteroscedasticity and serial correlation concerns as revealed by the non-significance of the probability values of the Breusch-Godfrey LM Test and ARCH tests, respectively. Similarly, the residual terms for all the estimated models are normally distributed as suggested by the probability values of the Jarque-Bera test. The outcomes of the Ramsey RESET test confirm that all the ARDL specifications are well-specified. The plots of the structural break adjusted Cumulative Sum (CUSUM) and Cumulative Sum of Square (CUSUMSQ) tests for models IND, SEV, and STR, respectively. It is evident from the figures that all the plots lie within the 5% critical bounds, suggesting that the estimated parameters associated with all the ARDL specifications are stable and hence do not suffer from structural instability. Overall, the ARDL model specifications pass all the diagnostic tests, validating the reliability of the parameter estimates for informed policy decisions in Nigeria.

Table 7: Diagnostic test results

Tests	DSD = lnIND		DSD = lnSEV		DSD = lnSTR	
	Stat	P-value	Stat	P-value	Stat	P-value
Panel C: Residual Diagnostic tests						
Jarque-Bera Normality test	1.963	0.375	1.180	0.554	1.685	0.431
Breusch-Godfrey Serial Correlation LM test	0.742	0.389	0.268	0.605	1.319	0.251
Heteroskedasticity test Breusch-Pagan-Godfrey	0.345	0.923	0.580	0.858	0.181	0.996

Panel D: Stability Diagnostic tests

Ramsey RESET test	1,646	0.211	0.159	0.695	0.260	0.614
Cumulative Sum test (CUSUM)	Stable (Fig.*)		Stable (Fig.*)		Stable (Fig.*)	
Cumulative Sum of Square (CUSUMSQ)	Stable (Fig.*)		Stable (Fig.*)		Stable (Fig.*)	

Source: Authors' estimate, 2026

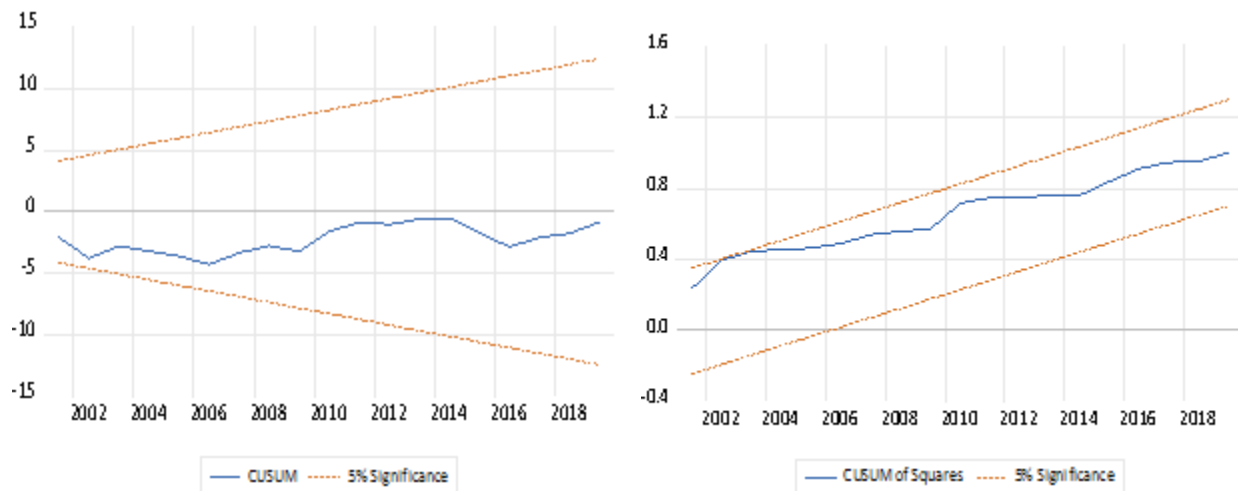
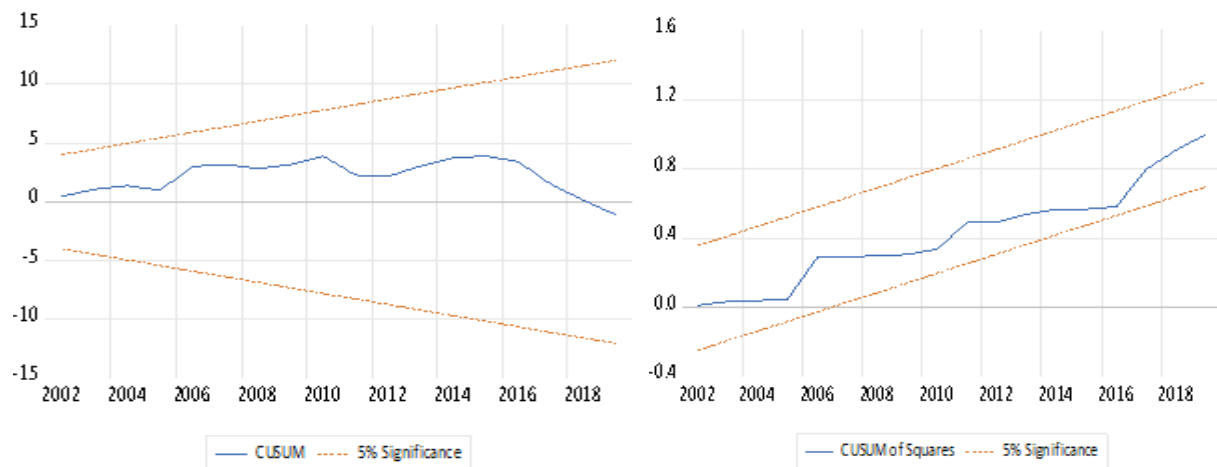


Figure 2. CUSUM and SUSUMSQ Stability tests (DSD = lnIND)



Figure***. CUSUM and SUSUMSQ Stability tests (DSD = lnSEV)

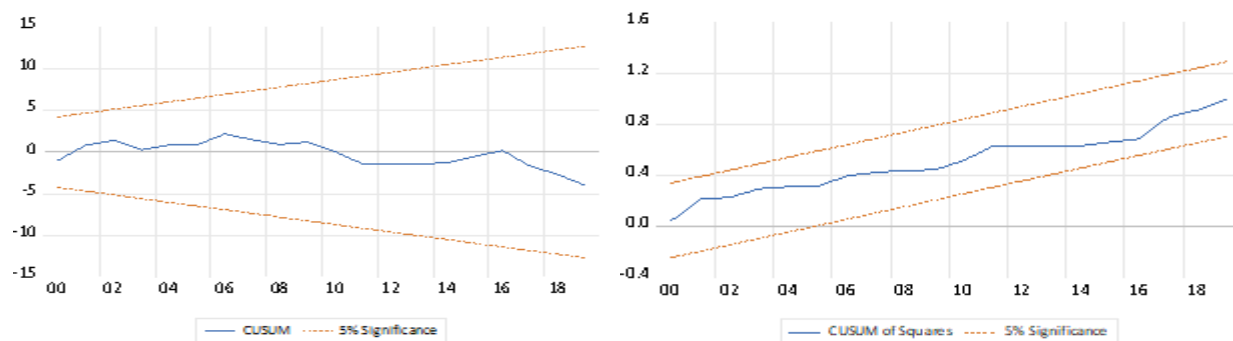


Figure 3. CUSUM and SUSUMSQ Stability tests (DSD = lnSTR)

Robustness test – long-run and short-run parameter estimates

Two further empirical steps are carried out to ensure the robustness of the findings. First, a different path to structural transformation in which productive resources go from agriculture and traditional industry sectors (mining, construction, and utilities - oil, gas, and water) to services is defined. This correlates with the observed structural transformation path in most developing economies (Sen, 2019). Second, banks-real sector interaction is defined using the spread in interest rate charged by banks on credit to the private sector and the rate paid by banks for deposits (i.e., lending rate minus deposit rate). The results in Table 8 confirm cointegration among the variables. Also, the reliability of the parameter estimates is validated using appropriate diagnostic tests. Three key conclusions can be derived from the results. First, fossil fuel rents inhibit structural transformation. Second, the negative coefficient of IRS indicates that structural transformation away from resource-based industrialization is weakened once the spread in interest rate is increased. Conversely, a decrease in the IRS stimulates real sector activity, strengthening a structural shift away from resource-based industrialization. This is similar to the positive structural transformation effect of bank credit to the private sector reported in Table 5. Third, a positive relationship is confirmed in the nexus between per capita GDP and structural shift away from resource-based industrialization. Overall, the estimates in Table 8 confirm that the empirical results of the benchmark regression model specifications are robust.

Table 8: Robustness tests

Long-run estimates				Short-run estimates & ECM			
Variables	Coef.	Std. Err	t-Stat	Variables	Coef.	Std. Err	t-Stat
lnFFR	-0.159**	(0.060)	[-2.661]	$\Delta \ln RSTR(-1)$	0.461***	(0.123)	[3.747]

InIRS	-0.136***	(0.039)	[- 3.517]	$\Delta \ln \text{FFR}$	- 0.145***	(0.042)	[- 3.483]
InPgdp	0.608***	(0.095)	[6.425]	$\Delta \ln \text{FFR}(-1)$	0.118***	(0.037)	[3.171]
InEcgr	-0.092	(0.285)	[- 0.322]	$\Delta \ln \text{IRS}$	-0.062*	(0.034)	[- 1.815]
Constant	-3.407***	(1.071)	[- 3.180]	$\Delta \ln \text{IRS}$	0.054	(0.033)	[1.626]
				$\Delta \ln \text{Pgdp}$	- 1.111***	(0.390)	[- 2.852]
R-squared	0.776			$\Delta \ln \text{Ecgr}$	0.240	(0.233)	[1.033]
ARDL-bounds test				Brk	0.142	(0.089)	[1.609]
Selected Model	ARDL(2,2,2,1, 1)						
Structural Break Date (TBrk)	2001			ECM(-1)	- 0.771***	(0.123)	[- 6.287]
F-Statistic	7.712***						
t-Statistic	-6.287***						

Kripfganz and Schneider (2018) critical values and approximate p-values

	1% critical values		Approximate P-values	
	I(0)	I(1)	I(0)	I(1)
F-Stat	4.190	5.969	0.000	0.002
t-State	-3.630	-4.954	0.000	0.001

Approximate P-values

Diagnostic tests results	Stat	P-value
Jarque-Bera Normality test	1.916	0.384
Breusch-Godfrey Serial Correlation LM test	0.119	0.730
Heteroskedasticity test Breusch-Pagan-Godfrey	1.187	0.347
Ramsey RESET test	0.828	0.451
CUSUM & CUSUMSQ	Stable (see Fig. ***)	

Note: Brk *****8; *** indicate rejection of the null hypothesis of no cointegration at 1% level of statistical significance

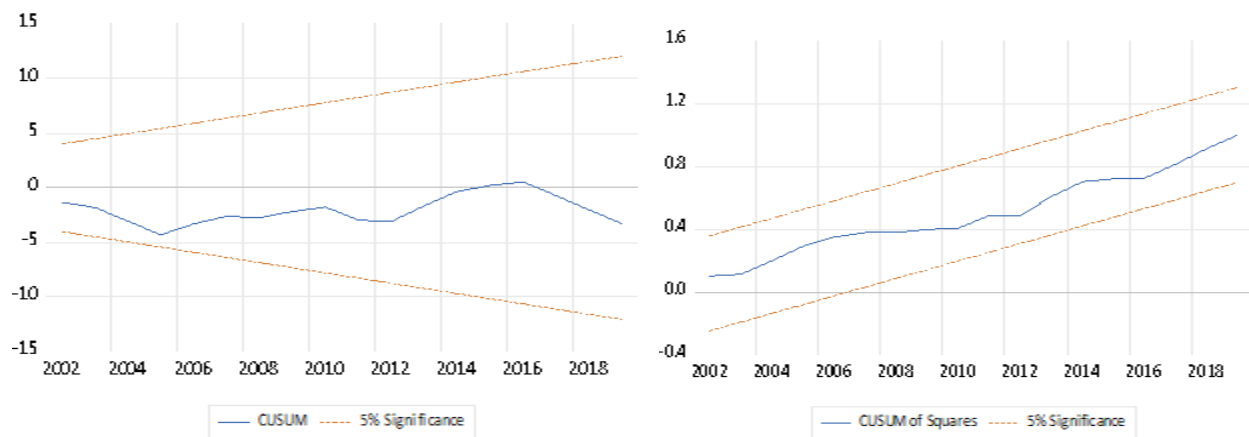


Fig. 4: Robustness test

4.2 Discussion of findings

It is not unclear to state that the various findings of this study align with the specific objectives of the paper. The coefficient of $\ln \text{Pgdp}$ indicates a statistically positive relationship between per capita GDP and structural transformation to services (STR). Based on the estimates, a 1% increase in per capita GDP explains a 0.582%-0.607% increase in STR in the long-run. This indicates that structural shift to services may not necessarily imply premature termination of the industrialization process as suggested by many studies in the literature (see, for e.g., Pasaribu, 2020). This component of the findings contradicts the growth-enhancing role of the tradable industry sector as documented by Opoku and Yan (2019) for a selection of African countries. The results in Panel A rather support the resource curse hypothesis. The fact that IND depends significantly on FFR, while other variables, including Pgdp , are negatively related to IND, indicates that the tradable industry sector transmits the curse of natural resources, weakening the capacity of other productive sectors of the economy. With the emergence of digital technologies, services have become tradable, proving similar features of manufacturing-led industrialization that enabled scale, innovation, and spill-over effects in now-industrialized countries (Sen, 2019; Witt and Gross, 2020). The statistically insignificant coefficient of $\ln \text{Ec}$ across the estimation techniques indicates that economic globalization may not deepen structural transformation in Nigeria. Thus, tackling economic issues induced by reliance on natural resources may have to rely on domestic policy channels, such as the depth of the domestic credit market.

It can also be observed that the coefficient of $\ln \text{BR}$ is positive and significant, with the estimates indicating that a 1% increase in bank credit to the private sector generates a 0.250%-0.286% increase in STR in the long-run. Similar finding has been reported for the Chinese economy by Jiang et al. (2020) and Wang and Wang (2021). Taking a comparative look at the long-path parameter estimates across the sectors, it is clear

that BR tackles the resources curse through at least two paths: (i) by diminishing the dominance of the resource-reliant industry sector, and (ii) by catalyzing the expansion of aggregate output through value additions in services. By implication, deepening banks-real sector interactions skews the composition of the industrial structure towards the more productive and growth-enhancing services sector (Xu and Tan, 2020).

5. Conclusion and Recommendation

5.1 Conclusion

As efforts intensify to lessen dependence on natural resources, this study used data from 1970 to 2024 to examine how banks-real sector interactions adjust industrial structure composition from the resource-reliant industry sector to the more growth-enhancing tertiary sector. The following steps were taken to aid empirical investigation. First, co-integration tests were carried out, relying on the Bayer-Hanck and the ARDL-bounds testing techniques. These tests showed that the variables exhibit a long-run equilibrium relationship over the sample period. Second, three co-integration regression techniques (DOLS, FMOLS, and CCR) were estimated. To ensure robustness, the parameter estimates were re-estimated using the ARDL technique, validating the reliability and stability of the parameter estimates using appropriate diagnostic tests. The regression analyses provide the following interesting results:

- Industry sector output has a negative relationship with per capita GDP and a positive relationship with services sector output, leading to a positive effect on structural shift away from the resource-reliant industry sector.
- Fossil fuel rents have a positive relationship with industry sector output and a negative relationship with services sector output, leading to a negative effect on structural shift away from the resource-reliant industry sector.
- Banks-real sector interaction through the credit channel has a negative relationship with industry sector output and a positive relationship with services sector output, leading to a positive effect on structural shift to the growth-enhancing services sector. Through the interest rate channel, a decrease in the cost of credit stimulates real sector activity, strengthening the structural shift away from resource-based industrialization.

5.2 Recommendations

Based on the findings from this paper, it is in the interest of the paper that there should be a synergy between public and private sector investment initiatives, which must be imperiled to severe cost-benefit analyses, timely implementation of policy options schedules, and enhancement of project management capacities to ensure capital formation and a desirable industrial diversification in Nigeria.

REFERENCES

- Abdelkawy, A. (2024). Natural resources, economic shocks, and growth dynamics in GCC countries: A dynamic GMM approach. *Economic Change and Restructuring*, 57(2), 289–312.
- Akinyemi, J. O. O. (2025). International diversification strategy, resource intensity, and financial performance of listed banks in Nigeria. *Journal of Cogent Business and Management*, 12(1): 1 – 29.
- Alagidede, I. P., Ibrahim, M., & Sare, Y. A. (2020). Structural transformation in the presence of trade and financial integration in sub-Saharan Africa. *Central Bank Review*, 20(1), 21-31.
- Asiamah, O., Agyei, S. K., Ahmed, B., & Agyei, E. A. (2022). Natural resource dependence and the Dutch disease: Evidence from Sub-Saharan Africa. *Resources Policy*, 79, 103042.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17 (1): 99 – 120.
- Barney, J.B. (2014). How marketing scholars might help address issues in resource-based theory. *Journal of the Academy of Marketing Science*, 42 (1), 24-26.
- Chang, K. F., Lin, J. X., & Lin, S. M. (2021). Revisiting the Dutch disease thesis from the perspective of value-added trade. *Resources Policy*, 72, 102103.
- Clark, C. (1940). The Conditions of Economic Progress. London, UK: Macmillan
- Folarin, O. E. (2019). Financial reforms and industrialization: evidence from Nigeria. *Journal of Social and Economic Development*, 21(1), 166-189.
- Helfat, C.E. & Peteraf, M.A. (2003). The dynamic resource-based view: capability lifecycles. *Strategic Management Journal*, 24 (10), 997-1010.
- Itaman, R. E., & Awopegba, O. E. (2021). Finance, oil rent, and premature deindustrialization in Nigeria. *Structural Change and Economic Dynamics*, 59, 149-161.
- Jason, F. (2025). Resource curse: Economic impacts and real-World examples. *Investopedia*
- Joshia, L., Singh, G., Lyzhova, A., Choriev, R., Sattarova, E., & Kholmurodov, S. (2024). From resource curse to resource wealth: Energy and economic transformation for sustainable development. *E3S Web of Conferences*, 574, 01002.
- Kim, J. (2012). Endogenous Vehicle-Type Choices in a Monocentric City. *Journal of Regional Science in Urban Economics*, 42(1): 749 – 760.
- Kozlenkova, I.V., Samaha, S.A. & Palmatier, R.W. (2014). Resource-based theory in marketing. *Journal of the Academy of Marketing Science*, 42 (1), 1-21.
- Kuznets, S. (1971). 8. Notes on stage of economic growth as a system determinant. In *Comparison of economic systems* (pp. 243-268). University of California Press.
- Maria, M. B. & Hussain, F. (2026). Profitability and marketability efficiency dimension of banking performance: private versus public banks in India. *Journal of Economic and Administrative Sciences*, 12 (3): 1 – 21.
- Mien, E., & Goujon, M. (2022). 40 Years of Dutch Disease Literature: Lessons for Developing Countries. *Comparative Economic Studies*, 64(3), 351-383.
- Mohammed, M. A. & Yusuf, S. N. (2025). Revisiting the Resource Curse Hypothesis in Nigeria: The Roles of Financial Development, Natural Resources and Trade Openness, *International Journal of Applied Economics, Accounting and Management*, 3 (3):219-236.
- Nadabo, Y. S., & Salisu, S. M. (2025). Testing the validity of EKC hypothesis using CO2 emissions and ecological footprint in Nigeria: The role of financial development. *Energy Economics Letters*, 12(1), 17-33.
- Nkemgha, G., Engone Mve, S., Balouki Mikala, H., & Tékam, H. (2022). Linking natural resource dependence and industrialization in sub-Saharan African countries. *International Review of Applied Economics*, 36(2), 245-263.

- None, M. K. & None, C. B. (2025). A study on the relationship among bank profitability, asset quality, and income diversification: Reference to Indian banks. *Journal of Marketing & Social Research*, 2(10), 281-284.
- Pandey, P., Kumar, A., & Joshi, M. (2024). Financial development and growth nexus in South Asia: Empirical evidence using dynamic panel techniques. *Economic Change and Restructuring*, 57(1), 21-45.
- Penrose, E.T. (2009). The theory of the growth of the firm. *Oxford University Press*.
- Sen, K. (2019). Structural transformation around the world: Patterns and drivers. *Asian Development Review*, 36(2), 1-31.
- Wang, X., & Wang, Q. (2021). Research on the impact of green finance on the upgrading of China's regional industrial structure from the perspective of sustainable development. *Resources Policy*, 74, 102436.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Journal of Strategic Management*, 5(2): 171-180
- Wu, L., Sun, L., Qi, P., Ren, X., & Sun, X. (2021). Energy endowment, industrial structure upgrading, and CO2 emissions in China: Revisiting the resource curse in the context of carbon emissions. *Resources Policy*, 74, 102329.
- Xu, L., & Tan, J. (2020). Financial development, industrial structure, and natural resource utilization efficiency in China. *Resources Policy*, 66, 101642.