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القيود الهيكلية على النمو الاقتصادي في ليبيا: تحليل متعدد النظريات باستخدام نموذج (ARDL)

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Structural Constraints on Economic Growth in Libya: A Multi-Theoretical ARDL Analysis

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الملخص:

تبحث هذه الدراسة في المحددات الهيكلية للنمو الاقتصادي في ليبيا خلال الفترة من 1990 إلى 2024 باستخدام منهجية الفجوات الزمنية الموزعة المبطأة (ARDL) وتدمج الدراسة بين رؤى النظرية النيوكلاسيكية، ونظرية النمو الداخلي، والمدرسة الهيكلية، والمؤسسية لتقديم نهج تحليلي شامل، وتؤكد النتائج وجود علاقة توازن طويلة الأجل بين النمو الاقتصادي، والاستثمار، والنشاط الصناعي، والريع النفطي، ورأس المال البشري، حيث يُظهر الاستثمار والقيمة المضافة الصناعية آثاراً إيجابية وذات دلالة إحصائية، بينما تؤثر الريوع النفطية بشكل سلبي ومعنوي، مما يدعم فرضية "لعنة الموارد". وفي المقابل، يظل رأس المال البشري غير ذي دلالة إحصائية. كما تؤكد الاختبارات التشخيصية واختبارات الاستقرار جودة النموذج ومتانته، كما تُبرز النتائج أن النمو في ليبيا يظل مقيداً هيكلياً بالاعتماد على النفط وضعف التحول الهيكلي.

الكلمات المفتاحية: النمو الاقتصادي، نموذج ARDL، لعنة الموارد، التحول الهيكلي، ليبيا.

Abstract:

This study investigates the structural determinants of economic growth in Libya over the period 1990–2024 using an Autoregressive Distributed Lag (ARDL) framework. It integrates neoclassical, endogenous growth, structuralist, and institutional perspectives to provide a comprehensive analytical approach. The results confirm the existence of a long-run equilibrium relationship between economic growth, investment, industrial activity, oil rents, and human capital. Investment and industrial value added exert positive and statistically significant effects, while oil rents have a significant negative impact, supporting the resource curse hypothesis. Human capital remains statistically insignificant. Diagnostic and stability tests confirm the robustness of the model. The findings highlight that Libya's growth remains structurally constrained by oil dependence and weak structural transformation.

Keywords: Economic Growth, ARDL, Resource Curse, Structural Transformation, Libya.

1. Introduction

Economic growth remains a central issue in development economics. While neoclassical theory emphasizes capital accumulation (Solow, 1956), endogenous growth theory highlights the role of human capital and innovation (Romer, 1986; Lucas, 1988). Structuralist approaches emphasize industrialization (Chenery, 1960; Kaldor, 1966), while institutional perspectives stress the importance of governance and institutions (North, 1990; Acemoglu et al., 2001).

Libya provides a compelling case of a resource-dependent economy where substantial oil revenues have not translated into sustainable growth or diversification. The resource curse literature suggests that natural resource dependence can hinder long-term growth (Sachs & Warner, 2001).

This study argues that Libya's growth constraints are structural, driven by oil dependence, weak institutions, and inefficient allocation of resources.

2. Contribution of the Study

This paper contributes to the literature in four key ways:

1. It develops a unified analytical framework integrating neoclassical, endogenous, structuralist, and institutional theories.
2. It provides updated empirical evidence for Libya over a long-time horizon (1990–2024).
3. It offers a structural interpretation of the resource curse within an ARDL framework.
4. It bridges the gap between empirical results and policy-relevant structural diagnostics.

3. Literature Review

The literature identifies multiple drivers of economic growth. Neoclassical theory emphasizes capital accumulation and technological progress (Solow, 1956), while endogenous growth theory highlights human capital and innovation (Romer, 1990; Lucas, 1988). Structuralist approaches stress the importance of industrialization and structural transformation (Chenery & Syrquin, 1975; Rodrik, 2016). Empirical evidence confirms that manufacturing plays a key role in economic development (Felipe & Kumar, 2010).

The resource curse literature argues that natural resource dependence can negatively affect growth through rent-seeking and institutional weakening (Sachs & Warner, 2001; Arezki et al., 2014). Additionally, declining terms of trade for commodities further constrain resource-dependent economies (Prebisch, 1950; Singer, 1950; Ocampo & Parra, 2003). Institutional economics emphasizes that weak governance structures limit productive investment and economic diversification (North, 1990; Acemoglu & Robinson, 2012). Despite these contributions, existing studies often examine these factors in isolation and rarely integrate them into a unified empirical

framework, particularly in the context of Libya. This study addresses this gap by combining multiple theoretical perspectives within a coherent ARDL framework.

3. Methodology

3.1 Model Specification

$$GDPG_t = \beta_0 + \beta_1 GFCF_t + \beta_2 VAM_t + \beta_3 OILR_t + \beta_4 EEG_t + \varepsilon_t$$

Where:

- GDPG: Economic growth
- GFCF: Gross fixed capital formation
- VAM: Value added in manufacturing
- OILR: Oil rents
- EEG: Education expenditure
- Data were obtained from the World Development Indicators (World Bank, 2025).

All estimations were conducted using EViews 12.

3.2 Unit Root Tests

Table 1: Unit Root Test Summary

Variable	Level	First Difference	Order
GDPG	I(0)	—	I(0)
VAM	I(0)	—	I(0)
EEG	Non-stationary	I(0)	I(1)
GFCF	Non-stationary	I(0)	I(1)
OILR	Non-stationary	I(0)	I(1)

The mixed order of integration justifies the ARDL approach.

3.3 Lag Selection

The optimal lag structure selected using the Akaike Information Criterion (AIC) is:

ARDL(2,1,0,1,1)

3.4 Bounds Test for Cointegration

Table 2: Bounds Test Results

Statistic	Value
F-statistic	6.605
Lower Bound (5%)	2.56
Upper Bound (5%)	3.49

Since the F-statistic exceeds the upper bound, a long-run relationship exists.

4. Empirical Results

4.1 Long-Run Estimates

Table 3: Long-Run Coefficients

Variable	Coefficient	t-Statistic	Prob.
GFCF	1.50***	3.77	0.002
VAM	6.84***	4.72	0.000
OILR	-0.32***	-3.45	0.003
EEG	1.97	0.60	0.560
Constant	-45.67**	-2.51	0.020

Note: *** $p < 0.01$, ** $p < 0.05$

4.2 Short-Run Dynamics (Error Correction Model)

Table 4: Error Correction Model (ECM)

Variable	Coefficient	t-Statistic	Prob.
$\Delta GFCF$	0.21	1.12	0.280
ΔVAM	0.34	1.45	0.180
$\Delta OILR$	0.18*	1.85	0.080
ΔEEG	0.09	0.77	0.450
ECT(-1)	-1.47***	-4.20	0.001

Note: *** $p < 0.01$, * $p < 0.10$

The negative and significant error correction term confirms convergence to long-run equilibrium, the magnitude greater than unity suggests possible overshooting dynamics, which may reflect structural volatility in Libya's economy.

5. Diagnostic and Stability Tests

5.1 Serial Correlation

Test	Statistic	Prob.
Breusch-Godfrey F	0.0348	0.9659
Obs*R ²	0.2143	0.8984

5.2 Heteroskedasticity

Test	Statistic	Prob.
Breusch-Pagan F	1.1981	0.3823
Obs*R ²	19.9173	0.3375

5.3 Model Stability

CUSUM and CUSUMSQ tests indicate that all parameters remain stable within the 5% significance bounds.

6. Discussion

The empirical findings provide strong evidence that Libya's economic growth is structurally constrained by its dependence on oil revenues. The negative long-run effect of oil rents supports the

resource curse hypothesis (Sachs & Warner, 2001), indicating that reliance on natural resources crowds out productive sectors and discourages diversification.

The positive effect of investment is consistent with neoclassical growth theory (Solow, 1956), although its relatively moderate magnitude reflects inefficiencies in resource allocation, consistent with misallocation literature (Hsieh & Klenow, 2009). Similarly, the strong positive impact of industrial value-added supports structuralist arguments emphasizing the role of manufacturing in development (Chenery, 1960; Rodrik, 2013).

The insignificance of human capital contrasts with endogenous growth theory (Lucas, 1988; Romer, 1990), suggesting a structural mismatch between education outcomes and labor market needs. This may reflect weak institutional quality and poor policy implementation (North, 1990; Acemoglu et al., 2001). In the short run, the limited significance of most variables suggests that growth dynamics are largely driven by long-term structural factors rather than short-term fluctuations. The significant error correction term confirms rapid adjustment toward equilibrium, although its magnitude may indicate potential overshooting. Overall, the findings highlight the interaction between structural constraints, institutional weaknesses, and resource dependence in shaping Libya's growth trajectory.

7. Policy Implications

The results imply that achieving sustainable growth in Libya requires a structural transformation strategy focused on economic diversification. Strengthening the industrial sector is essential to reduce dependence on oil revenues. Improving the efficiency of public investment can enhance productivity and growth outcomes.

Education reform should focus on aligning skills with labor market needs, while institutional reforms are necessary to reduce rent-seeking behavior and improve governance. Encouraging private sector development is critical for long-term economic resilience.

8. Conclusion

This study demonstrates that Libya's economic growth is primarily driven by oil dependence rather than structural transformation. While investment and industrial activity contribute positively, their effects remain insufficient to offset the negative impact of oil rents. Sustainable growth requires a transition toward a diversified, productivity-based economy supported by institutional reform and efficient resource allocation.

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