World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

THE RELATIONSHIP BETWEEN OIL REVENUES AND REAL NON – OIL GROSS DOMESTIC PRODUCT CONSIDERING FINANCIAL DEVELOPMENT IN IRAQ FOR THE PERIOD 1998_2023

Obaida Amer Khudhair
Samarra University, College of Administration and Economics, Department of Economics
obaida.am.kh@uosamarra.edu.iq

Article history:

Received: 30th November 2025
Accepted: 28th December 2025

Abstract:

The research aims to test the impact of the oil rent on the non-oil economic development in Iraq and also examine the mediating role of the financial development as a threshold variable of the same correlation. To gauge financial development of the Iraqi economy three indicators are chosen and one of them is a ratio of credit to the private sector, another ratio of liquidity to the GDP and last ratio of bank credit to the GDP. One of these indicators was carried out in the form of the Principal Component Analysis (PCA) to prevent the problem of the collinearity and inabilities of one indicator. A long Solow neoclassical growth model that included the index was included in the model which is a financial development and the variables of oil resources. The tests on the time series of 1998192023 data sets involved the stationarity and cointegration tests and threshold regression model. A series of diagnostic test was also addressed to make sure that the results were valid. The estimation was done in EViews and Stata. The results indicated that the economic time series variables of Iraq have non-stationary and stationary components of the time period between 19982023 since some of the variables are stationary at the level like LnYIRAQ or LnFDIRAQ, and stationary after initial differentiation like LnYIRAQ or LnFDIRAQ. In the four approximated threshold regression models, to find out the impacts of the various financial development indicators there is no significant effects observed on both the capital and the labor variable in relation to the non- oil growth which is an indication that Iraq is very much organized in its reliance on oil and that institutions are weak. This was the same case with oil rent, but the effect was not significant and was statistically positive (with the exception of the third model) at the lower levels of financial development. Conversely in cases where the financial development was high then the effect of oil rent was turned to the negative side and in certain models the effect was of great magnitude (especially in the third and fourth models). Diagnostic tests that included residual tests, Portmanteau tests and CUSUM tests were used to observe the stability of the models and good fit with an exception of the fourth model where the heteroscedasticity was experiencing. This was abolished with high standard errors that also added to the negative impact of the oil rent. Overall, the results indicate that the increase of the negative impacts such as the resource curse and Dutch disease cannot be avoided even in the modern situation when the financial indicators exceed the quantitative limits unless the quality and efficiency of resources allocation in the form of an institution is improved.

Keywords: oil Revenues, Real Non – Oil Gross Domestic Product, Considering Financial Development, Quantile Regression, Iraq Economy

INTRODUCTION

On the one hand, because of resource endowment of the state, rents can loosen fiscal and external restrictions, on the other hand, structural change stimuli can be discouraged, on the other, it is in the congestion of the tradables, and a fortification of institutional weaknesses, as witnessed on both sides [1, 2]. The classical economies that transform this paradox into a paradise are oil exporters. Where universal dominance of the hydrocarbon receipts in the funds mix and

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

the quality and depth of domestic financial interposes the growth effect of oil-rents [3 -5]. The example is Iraq: decades of war, sanctions, the reconstruction process, and the instability of the prices of the commodities have resulted in the economy that has a large oil industry and the relative lack of the non-oil industry. Existence of catalytic (or inhibitory) rents by non-oil growth has its meaning on the macro-financial environment and the limits of financial environment where the financial development shifts the direction (or intensity) of rents-growth relationship [3, 6].

Of course, it is important to start with the classical growth theory. Solow model assumes steady-state income to be correlated with savings, population growth, and depreciation as well as exogenous technological development, and transitional dynamism with capital deepening and to long-run growth to total factor productivity (TFP) [7]. Nonetheless, the model wisely neglects the manner in which windfall revenues are transformed into savings, investment and technology; extensions The policy and institutional mechanisms involved in converting windfall revenues into growth through the prism of TFP or efficiency convertible capital allocation [8, 9] are nonetheless silent. The empirical findings on state-dependence are effects of capital and labor on growth determined by the level of development, the capital structure (physical or human) and the capacity of the financial sector to promote saving and sieve out projects [10, 11]. These are nonlinear interactions to the exporters of oil: below a certain depth of financial structure rents may be tempted to loosen binding liquidity conditions and to open non-oil activity, above certain degree they may give way to actual pressures on exchange rates, procyclical credit expansions, or rent-seeking behaviour that results in the flight of resources to non-productive activities [2, 3].

No pieced off theoretical curiosities are regime dependence and nonlinearity. The threshold regression will offer a rigorous testing methodology of whether a regressor effect is different when a mediator, of which one, which can be observed on the current case, financial development, crosses a significant threshold [12]. Its application in energy and environmental economics, shocks in the time of pandemic and in general, documentation of the economic associations susceptible to severe fragmentations, which are not reflected in linear models [6, 13]. The panel threshold models of financial development in the resource curse suggested that the so called resource curse could be relieved or improved by investment of the resource-based liquidity in tradable, innovation-intensive investment or speculative and non-tradable activities [2]. Such thresholds must be calculated in the case of Iraq where an oil rents de-crowding out is required to determine such thresholds as the most crucial in government revenues and oil exports [14, 15].

The input of the financial world to it is a multidimensional one. Confidence, intermediation cost and credit cycles which convey volatility of oil-prices to the non-oil economy depend on banking soundness [4]. The dynamics of inflation and the real interest rates are determined by the monetary policy and financial depth and in turn lead to the state of the decisions of real investment by the people [16, 17]. The predictability of the exchange rates and uncertainty are affecting the expectations and portfolios allotment across the tradable and the safe assets; therefore, one of the primary instruments of the macro-financial observation in the resource affluent circumstances is the derivatives of the time-series forecasts of ARMA/ARIMA [18, 19]. Simultaneously, it is financial inclusion or rather access to credit lines by households and small and medium enterprises (SMEs) that determines transformation of oil-driven. investment in business and places of work [20] that are not oil related. The recent findings in CFA zone and South Africa indicate that market capitalization, institutional quality and bank-market complementarity are also applicable in finance-growth-jobs nexus and hence the institutional thresholds can be generalized in all regions [21, 22]. Similar to Ethiopia, there is similarity that both inflation and exchange rates and unemployment are involved in growth as well as this again indicates that macro-financial environments mediate payoff of resource revenues [23]. The micro cultural aspect of entrepreneurship can either enhance or reduce the transmission of growth of rents at the macro-level in Iraq where business is regulated and business regulations control business development among SMEs and family business with delicate and volatile environment [24].

Even the formulation of plausible, summary measures of financial development is even non trivially, measurementally speaking. The individual proxies of the kind of the private-sector credit/GDP, liquidity (M2)/GDP or bank credit/GDP have varying sides of the data and they are all noisy and at the same time they can all be collinear. PCA is a conceptualized application of data to a data aggregation of positively correlated measures into a composite index that measures the greatest extent of variance, under the requirements of orthogonality [25]. Through the presence of multicollinearity in the financial ratios, the dimensionality is reduced, identification is enhanced and threshold estimation is made easier by capitalizing on the PCA-based indices to create a scalar mediator that can summarize a large number of market signals [25]. In 1998-2023, the banking system and liquidity situation in Iraq is heterogeneous, and that is why a PCA based index and canonical ratios will increase the level of comparability in addition to the level of robustness. There are other reasons to anticipate threshold behavior of rent-growth linkages that are found in policy literature. An increase in the cost of oil can fund the necessary infrastructure, offer a way of levelling out social investment and create the tradable sector in shallow or weak banking systems, in deeper but under supervision banking systems can exploit the liquidity to finance credit boom in non-tradables, in current-account imbalances and increase the real exchange

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

rate, as is characteristic of Dutch disease [2, 3]. The banking soundness and prudential policy then is insurance of that the transitory rents are transformed into a permanent gain in productivity [4]. Similarly, the government spending constitution will also predetermine the marginal product of capital: where oil subsidizes education and infrastructure the multiplier will large; where subsidies are given to the current transfers or to subsidies that are unproductive the multiplier may be low or sometimes even negative [5].

This can be complemented by the trade openness whereby failure of the real exchange rates can be penalized and the non-oil export markets can be compensated as has been the case since the year 2003 in Iraq [15]. It is also complicated with green growth, diversification and resilience (the greater developmental agenda).

Renewable energy transition practices in Latin America contribute to bringing the fact that where financial structuring is set in a way that facilitates innovation, long-run finance and risk-sharing, the same may re-condition a more sustainable growth path [26]. Even though the sectoral environment may be dissimilar, these experiences may substantiate the finding that the nexus of finance development may be ultimately reached when the measures of governance, regulation and policy credibility, depth measures would have radically different results [22]. Not a mainstream macroeconomics, however, systems approaches also address the co-evolution of economic and ecological equilibrium, which also have to be considered when encouraging diversification policies among the oil exporters which to some extent should not disregard the environmental constraints and equilibrium conditions in the long run [27]. The monetary policy effect on growth and uncertainty shocks adds to the existing literature on the significance of strong institutions and countercyclical structures, which is known to be required in the economies in which macro uncertainty is actualized as is the case with Iran, the implication being that policy space is the one that moves to Iraq [28].

Here within this conceptualization our empirical strategy executes the use of time-series methods of structural discontinuities and nonlinearities. In the former, the diagnosis order of integration is first made on the standard unit-root tests, which known to confound in the very weak macro series the resources dependent economies I(0) and I (1) processes [18]. According to the properties of integration, the cointegration tests are used to reveal the long run equilibrium of non-oil output, oil rents and financial development but the ARMA/ARIMA models are utilized in the checking of robustness and also in forecasting.

Conditional growth dynamics in the auxiliary variables (e.g. inflation or exchange rates) [16, 19]. The type of the identification is the one-threshold regressions a la Hansen, where the slope of oil rent is changing, when the financial indicator crosses an endogenously determined γ, and consequently, directly tests the presence of the oil as a blessing or a curse of finance [2, 12]. In all of this, as is observed due to the presence of threshold effects in energy intensity as well as pollution response to shocks that are also zones of adjustment costs and capacity constraints, the same econometric design would perfectly fit the Iraqi case [6, 13].

We contribute to Iraq triple the amount. The first one is the growth of the non-oil relative to the aggregate GDP since the former places the dependent variable on the diversification goal of interest to the policy makers. The oil rent to non-hydrocarbon economy - manufacturing, agriculture and services which in most cases has a high employment and innovation multiplier is isolated in this design [3, 14]. Second, we consider financial development as a standard ratio vector, and a composite (PCA) that reduces the error of measurement and collinearity in response to depth indicators [25]. Third, we model our analysis as a Solow-type of growth in which the high capital and labor controls, but the two marginal effects (deliberately as the elasticity of oil-rent) are conditional on financial regime follow the findings that the relative weight of the two factors varies with stage of development [7, 8, 10]. By such analysis of a kind we should be able to solve the historical dilemma in the contribution of oil rents to convert convergence (by fixing capital shortage) or divergence (by undermining productivity and tradables), and whether or not the solution of such a problem needs institutional institutional and financial crossing.

The related literature is that of intersection. It is recorded in literature concerning financial inclusion in Africa that financial accounts, credit and payment infrastructure can diminish poverty and inequality and increase growth- which in oil exporters can step in to mediate the process of the transfer of hydrocarbon revenues to SMEs and households or to insiders [20]. The South African example demonstrates that a capitalization of the stock-markets and the creation of jobs can co-evolve under the condition that does not establish the significance of the depth of the markets to the depth of the banking sector [21]. The CFA zone solely exhibits conditional association of finance and growth which forms the institutional quality thus warranting our focus as opposed to governance as a latent threshold that interrelates with measured financial depth [22]. The covariates of the growth very important on the macro level are the joint dynamics of the inflation rates, exchange rates and unemployment, the recent evidence of Granger-causality of Ethiopia indicates [23]. The simultaneous, concurrent composition of public expenditures, also has influence on development of very applicable industries in the oil rich, reconstruction states [5]. Such strings are turned to one and common end all quantitative increase of liquidity or credit is useless; the institutional process of dispensing credit is complete.

The next theme that can be read is that of country-specific studies of the non oil economic state in Iraq. The non-oil

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

government revenue study shows that the policy goals and policy limits coincide in the oil cycles that the fiscal diversification policy lacks space against the countercyclical policy, improves the procyclicality, and the quality of the public investment is poisoned, all the antecedent factors to the growth effect of rents [14]. The year 2003 has been the year of mediating between the exchange- rate movements and security shocks and the dynamics of trade integration should have been focused on the need to have the control over the external conditions in the process of interpreting oil-rent coefficients [15]. In the meantime, the transformation of the credit shocks into firm entry, survival and scaling is conditional with the culture and managerial backgrounds of the SMEs like leadership norms, risk attitudes and informality [24]. In a word, Iraq story is not heading anywhere, it is a deal between the institutions where oil, finance, policy and enterprise ecology are in a mutually conditioning rapport to each other.

Finally, we contextualized the study in the progressive policies. This shift in the world towards a green form of energy is a sign that in the future the demand of oil will become less predictable as more voices are raised on the significance of transforming rents into productivity-enhancing properties in the present [26]. A working ecological system- effective ecological.

places a limit on the necessity of investment decision-making and financial control in favour of tradables, innovation and human capital against consumption booms [9, 27]. Thresholds Threshold identification This is a convenient diagnostic tool: once the elasticity of the oil-rent non-oil production is negative, at some level of financial depth, the reforms must be aborted in favor of the quantitative growth of a qualitative increase of the finance-complement, instead of finance-subjugate, diversification [2, 6, 12]. Macroprudential calibration can be performed by policy dashboards and time-series forecasting tools in case of commodity shocks [18, 19, 25].

In general, this article integrates a Solow-type of growth model with Hansen-type threshold regression to establish the issue of nonlinearity of relationship between oil rents and non-oil growth in Iraq or not, regime-dependent and the primacy-of-governance overriding macro-financial, institutional and policy literatures.

Methodology

Financial Development using Principal Component Analysis (PCA).

The level of financial development of Iraq economy is one of the most important steps in this research. A composite index of financial development was created using three key variables that are typically used in a similar empirical study: The share in the total sum of money granted to the private sector in comparison to gross domestic product (GDP), regarding the extent to which the firms and households can tap the financial resources of the banking structure and used as one of the key parameters of measuring the financial depth.

Liquidity (M2)/GDP ratio which is used to gauge monetary expansion and availability of liquid assets in economy. This ratio is used to show the financial system capacity to save and invest the savings in productive investment.

The credit by the banking system to the GDP ratio that does not just reflect the intermediation role of the financial institutions but also reflects the extent to which the real sector of the economy is being supported by the financial institutions.

Even though each of these indicators has its meaning, using them independently leads to the issue of multicollinearity and low interpretability level. To give an example, an increase in liquidity in given years may not be a true indication of financial development since some of the augmentation in liquidity may be as a result of budget deficit or other external shocks. In this way, inaccurate results may be obtained when using single indicators.

As an attempt to address this challenge, the Principal Component Analysis (PCA) was incorporated into the present study. PCA is one of the most common and the best multivariate statistical techniques that have widely been applied in economic and financial research in a bid to formulate composite measures. The overall idea of the PCA is to simplify a group of variables that are correlated to smaller disconnected items explaining the highest amount of variation in the data. This method, in its turn, allows constructing the index that would not only include data representing all three selected variables but also take into account their relationship with each other and removes the problem of collinearity (Jolliffe and Cadima, 2016).

In a typical use of PCA as a tool of exploratory data analysis, an assumption is that there are p numeric variables in a dataset of n units (or individuals). These measurements are p-dimensional vectors of length n, denoted by X_1, …, X_p and so on, or an n × p data matrix X, the i-th column of which is the observation. vector of the j-th variable, i.e., x j. In the objective, the aim is to locate a linear combination of the matrix X columns that maximizes the linear combination. These linear combinations are put to be written as:

$Xa = \Sigma_{(j=1)}^{p} (a_j x_j)$ (1)

where a is a vector of coefficients (a_1, a_2, …, a_p).

Taking the derivative with respect to vector a and setting it equal to zero gives the following eigenvalue equation: $Sa - \lambda a = 0 \Leftrightarrow Sa = \lambda a$ (5)

The eigenvectors in equation (5) remain valid when they are multiplied by the negative number and thus, it is the

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

relative magnitudes of the loadings, and the presence of the signs that matters and not the absolute magnitudes.
PCA of the study implementation was performed in the following steps, firstly, three variables were converted to a covariance matrix, secondly, components were extracted using eigenvalue and eigenvector decomposition, thirdly, using the Kaiser criterion (Eigenvalue > 1) and the scree plot. The composite index of financial development was taken to be the first extracted component that contained the highest proportion of common variables. The importance of such index is that it has a plus since the weighting of the variables is mathematically and statistically calculated rather than arbitrarily or subjectively.

Empirical Model of the Study

As the theoretical basis of the research model explains, it is possible to exploit economic growth theory and Solow neoclassical growth model specifically, which will be applied to the variables of growth and roles of financial development and natural resources.
The Solow model was found to be an extreme response to the HarrodDomar development theory based on which capital and labor were not replaceable and the system was getting cemented through the natural instability. Solow proposed the concept of interchangeability of labor and capital and therefore interrupted the issue of the knife-edge instability (G.C., 2020). Because of it, Solow model provides a context of examination of concomitant impacts of capital, labor and technology on the economic growth in the long run. It also cannot be impregnable to other extensions and changes like acquisition of human resource, financial growth, development of endogenous technology and the changing demographic and patterns of investment (Samambet, 2024).
The three crucial inputs that Solow growth model is engaged in include, capital (K), labor (L), and technology (A). The kind of production activity that is applicable in the present study is the Cobb-Douglas where the scale is expected to remain stable relative to the effective capital and the labor. Constant returns to scale implies that doubling of capital and effective labour will imply doubling the total production. The property ensures that the change that occurs in the inputs is in turn offset by a similar change in the output and that is why the marginal effects of individual input are easily explained in the economic growth (Solow, 1956). The production function may take the following form:

$$Y = F(K, A\,L) = K^{\alpha} (A\,L)^{(1-\alpha)} \quad (13)$$

Alpha (in the above equation) is the output elasticity of capital and (1- α). A L is the short name that denotes effective labor, which has accommodated the application of technological advancement to enhance labor productivity (Den and Tach, 2024).
The capital accumulation in Solow model is a process which is governed by the following equation:

$$dK/dt = sY - \delta K \quad (16)$$

Where s is the savings rate, δ is the rate of depreciation of the capital and Y is the total output. The difference in the change in the capital stock is demonstrated to be the result of the difference between gross investment (sY) and the depreciation of the capital (δK).
In order to have the analysis more specific, the capital per unit of effective labor is formulated as k = K/(A L) and the capital dynamics are presented in the following differential equation:

$$dk/dt = s\,f(k) - (\delta + n + g)\cdot k \quad (17)$$

n is rate of population growth, and g is the technological growth rate. The intensive form of the production function divided by a unit of effective labor is the f(k). This metamorphosis is interested in efficient capital and dimensions downsizing that simplifies the analysis of the steady state.
The steady state finds its way when capital/effective labor remains constant (dk/dt = 0). In this instance, Gross investment = break-even investment:

$$s\,f(k) = (\delta + n + g)\cdot k \quad (18)$$

The production function satisfies the Inada conditions to ensure diminishing returns to capital, meaning that as $k \to 0$, the marginal product of capital approaches infinity, and as $k \to \infty$, it approaches zero: $\lim_{k\to 0} f'(k) = \infty$ and $\lim_{k\to\infty} f'(k) = 0$ (19)
The conditions guarantee the economy will be brought to a unique and unstable steady state in spite of initial conditions (Ehiakpor and Akapare, 2015; Tsolaridis, 2021). When using the CobbDouglas form of production function, the steady-state level of capital is:

$$k^* = [s / (\delta + n + g)]^{(1/(1-\alpha))} \quad (20)$$

Because financial development and natural resources play so much role in the oil dependent economies, the current model includes the direct impacts of oil resources (OR) and financial development (FD) on output:

$$Y(t) = \Omega\, OR(t)^{\gamma}\, FD(t)^{\delta}\, K(t)^{\alpha}\, L(t)^{\beta} \quad (22)$$

Where Ω is an a priori constant, and γ and δ are the elasticity of output of the oil resources and financial development,

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

respectively. The empirical expression of ε(t) would be:

$$\ln[Y(t)] = \varphi + \gamma \ln[OR(t)] + \delta \ln[FD(t)] + \alpha \ln[K(t)] + \beta \ln[L(t)] + \varepsilon(t) \quad (23)$$

where $\varphi = \ln(\Omega)$ is the constant term. The log form that is needed to provide analysis of relative effects, and allows a direct comparison of elasticities to be drawn which is customary in the study of econometric growth. The existing model follows the conceptualized version of the Hasanov et al. (2023) model that has the impact of oil rent and financial development on output through parameter A.

Statistical and Econometric Methods

The second process involved in the development of the theoretical model and conceptual framework was the process of identifying the appropriate tool econometric tools and statistical tests that would be used in answering the hypothesis and proving the models. Depending not only on the nature of the data, but also on the nature of the assumed relations and the specifics of the investigated economy, the choice of statistical instruments in the econometric study, in particular, in the research of natural resources economics and financial development.

Iraq is heavily dependent on the oil industry and the financial institutions are still in their transition period of the econometric process, thus a classical and modern combination was used in the study. This approach was aimed at avoiding issues such as spurious regression and incapacity to make consistent estimates and be capable of studying nonlinear effects of oil rents in the environment of the financial development.

In the study, time-series data was utilized in relation to the economy of Iraq during the period 1998 to 2023. It is unique and difficult to predict because the macroeconomic data has the characteristics of long-term tendencies, vulnerability to external shocks, and sensitivity.

political and economic crisis- analysis- the analysis of such information should be done after a sequence of conventional econometric procedures as discussed below.

Stationarity Tests

The most crucial step in the time-series analysis is the stationarity test of variables. Unfortunately, non-stationary variables can be confusing to estimate and confounding to regress when used in regression analysis without making any adjustments. The issue is more acutely the case with the economies, where the volatility of the oil and political shocks are high, such as the one in Iraq.

In this way, an estimate of the unit root tests of Augmented Dickey Fuller (ADF) and Phillips and Perron (PP) was previously estimated on all variables (Isiaka et al., 2021). Through the use of lagged dependent variables in the regression equation, to a significant degree, autoskeletal error term autocorrelation, and through non-parametric corrections, the ADF test, PP test, accounts to heteroskedasticity, and autocorrelation. Reliability is enhanced by the use of the two tests in determining the level of integration of the variables. The results indicated that the entire variables went to the stationary level or first difference and as a consequence, eliminated the chances of spurious regression in the principal model (Refaie and Zahirul-Haq, 2024).

Cointegration Test

The second step after identifying the order of integration was to conduct the analysis of the long term relationships or not among the variables. The assumption of cointegration implies that a specific stationary linear combination of non-stationary variables is subject to a stationary process, that is, it moves in one direction or another around some equilibrium path over time (Adebayo et al., 2014). This is a very critical property as among the main objectives of the given study is to investigate the relationship of the long-term equilibrium of oil rent, financial development and non-oil economic growth.

In this respect the cointegration tests were employed to determine the relationships of the equilibrium between the variables. Such relationships are observed to exist, which means that though in both the short run the correlation of oil rent with financial development may be different with oil shocks or with institutional changes, the long term correlation between oil rent and financial development makes the economy shift towards a normal equilibrium.

Threshold Regression Model

The threshold regression model that was first proposed by Hansen (1996) to study the nonlinear relationships is the most significant methodological concern of the provided study since in such a type of analysis it is the thresholding variable that leads to the alteration of the direction and even the magnitude of the effects (Zhou et al., 2021). The thresholds variables to be used in this study were various indicators of the financial development as ratio between the credit of the private sector and the GDP, liquidity-GDP ratio, banking credit-GDP ratio and the composite financial development index.

The rationale that saw the use of this model is that the process by which the oil rent is taming the non-oil economic growth may be subordinated to financial development. That is, it appears that, to a higher extent of financial development, the impact of oil rent on its development might not necessarily be the same, but, in fact, might be negative instead. It led to the estimation of maximum threshold points by nonlinear least squares estimation and estimation of

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

a model which was consequently achieved in two regimes which are below and above the threshold. This way, one could calculate the huge disparities the effects of the oil rent when the extent of the financial actions were spread.

Diagnostic and Validation Tests

The validity of the econometric results is anchored on the quality of diagnostic tests. In this relationship, the classical assumptions were measured using a group of diagnostic tests that would be utilized in order to establish the correct fit of the models:

Residual Analysis: Residual means, standard deviation and range were examined to determine whether there was any pattern or bias. The results showed that the average of the residuals were close to zero and the standard deviations acceptable in all the models.

Subtest: -tailed: Portmanteau Test: 3 A Test of serial correlation in residuals. The p-values were far much less than 0.05, and it rejected the hypothesis of autocorrelation, as well as it showed that the residues were of white-noise process.

Heteroskedasticity Test: F-statistic was used to test the variance of the residuals of the regimes. Homoskedasticity was determined in the first three models with the fourth model determining the heteroskedasticity. In this way, the fourth model was re-estimated and on the basis of powerful standard errors that enhanced the strength of coefficients and reduced standard errors.

Coefficient Stability Test: This was done to ascertain the stability of the parameters in 1998- 2023. The test values were also lower as compared to the critical values of all the levels of significance which means that the coefficients are not unstable and the structure is not unstable.

These diagnostic tests ensured the validity and the strength of the research findings.

All the econometric estimation was done using Eviews and Stata software. Such packages have been some of those used actively in the past in related research since they possess immense powers in time-series data as well as other advanced econometric tests. The EViews, estimation of the threshold regression model and other diagnostic tests were performed by using the Stata in this research to determine the stationarity, cointegration and residual.

Findings and Results

Empirical Results

Augmented DickeyFuller (ADF) test was used to ensure that the threshold model is statistically valid and that the estimated relationships between the variables are significant. In this test, the null hypothesis holds that the variables are non-stationary and therefore, they have a unit root. When the test value is lower (more negative than the critical value), and the p -value is lower than the level of significance (e.g., 5 percent), the null is rejected, and the variable is said to be stationary. The results of this section are shown in Table (1).

Table 1. Results of Unit Root Tests

Variable	ADF Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	MacKinnon p-value
LnYIRAQ	-3.440	-3.750	-3.000	-2.630	0.0097
LnORIRAQ	-1.929	-3.750	-3.000	-2.630	0.3186
LnKIRAQ	-1.842	-3.750	-3.000	-2.630	0.3597
LnLIRAQ	0.105	-3.750	-3.000	-2.630	0.9664
LnFD1IRAQ	-0.841	-3.750	-3.000	-2.630	0.8067
LnFD2IRAQ	-0.908	-3.750	-3.000	-2.630	0.7853
LnFD3IRAQ	-3.371	-3.750	-3.000	-2.630	0.0120
LnFDIRAQ	-7.451	-3.750	-3.000	-2.630	0.0000
DLnORIRAQ	-4.790	-3.750	-3.000	-2.630	0.0001
DLnKIRAQ	-3.990	-3.750	-3.000	-2.630	0.0015
DLnLIRAQ	-3.420	-3.750	-3.000	-2.630	0.0103
DLnFD1IRAQ	-8.917	-3.750	-3.000	-2.630	0.0000
DLnFD2IRAQ	-4.665	-3.750	-3.000	-2.630	0.0001

Based on the results in Table (1), the variable LnYIRAQ has a test statistic of -3.440, which is smaller (more negative) than the 5% critical value (-3.000), and its p-value is 0.0097, which is less than 0.01. Therefore, the null is clearly rejected, and this variable is stationary at a high level of significance (1%). By contrast, the variables LnORIRAQ, LnKIRAQ, LnLIRAQ, LnFD1IRAQ, and LnFD2IRAQ have statistics that are not smaller than the critical values, and their p-values exceed 0.05; thus, these variables are considered non-stationary at level. For

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

LnFD3IRAQ, the test statistic is -3.371, which is smaller than the 5% critical value (-3.000), and the p-value is 0.0120; therefore, this variable is stationary at the 5% level. Finally, LnFDIRAQ has a very low statistic of -7.451 and a p- value of 0.0000, indicating a very strong rejection of the null. Hence, this variable is definitively stationary with high confidence.
However, examining the test results after first differencing shows that all non-stationary variables become stationary at first difference. Nonetheless, the variable DLnKIRAN is stationary at the 10% level.

Estimation of the Threshold Regression Model
This section presents the results of estimating the threshold regression model for Iraq to examine the relationships among capital, labor, and oil rent with non-oil economic growth.
In the first model, reported in Table (2), the threshold regression is estimated using the percentage of credit granted to the private sector to gross domestic product as the financial development indicator. Using this model, the optimal threshold value is identified as 1.8843. Accordingly, the sample is divided into two regimes:
Regime 1: when LnFD1_IR < 1.8843 (low financial development).
Regime 2: when LnFD1_IR ≥ 1.8843 (high financial development).
Table (2) shows that two coefficients which are capital, and labor are not significantly important in both regimes. The fact that the capital and labour is negligent means that the conventional resource of production (capital and labour) is not in control of the economic development of non-oil states in this model. This can be either structural in the restraints, lack of technology or over control in the oil business.
As can be seen, the coefficient of oil rent does not turn out to be significant in both regimes. Regime 1 (low financial development) the value of the oil-rent coefficient is not significant and positive, which evidences the fact that in the circumstances of financial constraint, the oil resources cannot have a decisive impact on growth. Negative and insignificant value of oil-rent coefficient is associated with regime 2 (high financial development). This finding demonstrates that although the financial system is not very low, further expansion in revenues in the oil could be harmful to the non-oil expansion although not statistically significant. This can be a symptom of a resource curse phenomenon, in which the natural resources can be used to the detriment of the growth.

Table 2. Threshold Regression Estimates

Panel A. Threshold variable: percentage of credit granted to the private sector to GDP

Variable	Coefficient	Std. Error	z-Statistic	p-Value
LnK	-0.0442	0.1090	-0.41	0.685
LnL	1.6950	1.7447	0.97	0.331
LnFD1 ≤ 1.8843				
LnOR	0.2296	0.2843	0.81	0.419
Constant	0.4418	0.0400	11.06	0.000
LnFD1 > 1.8843				
LnOR	-0.2349	0.2113	-1.11	0.266
Constant	0.3761	0.0457	8.23	0.000
Threshold value	γ = 1.8843			

Panel B. Threshold variable: liquidity-to-GDP ratio

Variable	Coefficient	Std. Error	z-Statistic	p-Value
LnK	-0.0032	0.1121	-0.03	0.977
LnL	0.2829	1.7932	0.72	0.474
LnFD2 ≤ 3.8777				
LnOR	0.3065	0.3629	0.84	0.398

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

Constant	0.4524	0.0465	9.73	0.000
LnFD2 > 3.8777				
LnOR	-0.1500	0.2065	-0.73	0.468
Constant	0.3976	0.0447	8.89	0.000
Threshold value	γ = 3.8777			

Panel C. Threshold variable: ratio of bank-provided financial credit to GDP

Variable	Coefficient	Std. Error	z-Statistic	p-Value
LnK	-0.0107	0.1033	-0.10	0.917
LnL	-0.7581	1.7505	-0.43	0.665
LnFD3 ≤ 3.2174				
LnOR	0.6461	0.3149	2.05	0.040
Constant	0.4306	0.0411	10.49	0.000
LnFD3 > 3.2174				
LnOR	-0.3395	0.1940	-1.75	0.080
Constant	0.4514	0.0435	10.39	0.000
Threshold value	γ = 3.2174			

Panel D. Threshold variable: composite index

Variable	Coefficient	Std. Error	z-Statistic	p-Value
LnK	0.0676	0.1135	0.60	0.551
LnL	0.7144	1.6808	0.43	0.671
LnFD ≤ 0.6272				
LnOR	0.2133	0.2059	1.04	0.300
Constant	0.4414	0.0413	10.69	0.000
LnFD > 0.6272				
LnOR	-0.5234	0.3064	-1.71	0.088
Constant	0.4000	0.0458	8.74	0.000
Threshold value	γ = 0.6272			

In the second model, reported in Table (2), the threshold regression is estimated using the liquidity-to-GDP ratio as the financial development indicator. The estimation identifies an optimal threshold at 3.8777, based on which the sample is divided into two regimes:
Regime 1: when LnFD2_IR < 3.8777 (low financial development).
Regime 2: when LnFD2_IR ≥ 3.8777 (high financial development).
The estimations show that the coefficient of capital in either regime is also not significant in terms of the labor. Therefore, capital and labor in this model are not playing a significant role in the development of non-oil sector. This finding, perhaps, will indicate that in the frame of the data in question other factors (e.g. oil rent) are more efficient in the perspective of the growth of the non-oil sector development. It is also statistical inconsequential when the same is ascertained by a different analysis of the oil-rent coefficients in both regimes. In Regime 1, the coefficient of oil-rent is positive although the result is insignificant, which indicates that at the low levels of the finance development, there is the existence of the positive but non-material impact of the rise in oil revenues on the non-oil economic growth. This is attributed to the ineptitude in the exploitation of the oil reserves or financial constraint that is unable to convert the non-oil growth by such revenues. The coefficient of the Regime 2 of oil-rent is negative, indicating that in the high level of financial development, the impact of the increases in the oil rent on the non- oil growth is not significant, but negative. The finding can also lead to resource-curse process or Dutch disease process where the oil revenues are leaving it weak, not stronger, the non-oil sector (by overvalued real exchange rates or inefficient allocation of resources).
In the third model, reported in Table (2), the threshold regression is estimated using the ratio of financial credit provided by the banking sector to GDP as the financial development indicator. The estimation identifies an optimal threshold at 3.2174. This threshold splits the sample into two regimes:
Regime 1: when LnFD3_IR < 3.2174 (low financial development).
Regime 2: when LnFD3_IR ≥ 3.2174 (high financial development).
Capital and labor coefficients are not significant and in the estimates provided above the two are statistically insignificant. In comparison to this, when the oil-rent coefficients of the two regimes are discussed, a significant

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

difference is observed. Regime 1 (low financial development) The coefficient of oil-rent is positive at significant level of 5 %. This fact suggests that in situations where the financial situation of the economy has not been developed sufficiently, the oil reserves can be directly and positively influential on the economic development, perhaps by financing state projects or state consumption directly. Regime 2 (high financial development): oil-rent coefficient is negative in nature and comes with a significantly small percentage 10 %. As its result, such phenomenon as institutional inefficiency in allocating bank credit as a result of financial expansion or the Dutch disease could happen. Through other words, the moment the financial system is quantitatively rather than qualitatively increased, the correlation of oil rent with real growth would be positive or even negative.

Finally, the fourth model is estimated using the composite index, with results presented in Table (2). The estimation identifies an optimal threshold at 0.6272. This threshold splits the sample into two regimes:

Regime 1: when LnFD_IR < 0.6272 (low financial development).

Regime 2: when LnFD_IR ≥ 0.6272 (high financial development).

The capital and labor ratios that the two regimes use in this model are also not a major factor in non-oil economic growth. The difference in the outcomes of this model is only connected with the influence of oil rent. The coefficient of the oil-rent is also the positive value that was not significant as per Regime 1 (low financial development) and no meaningful relationship between the oil resources and the non-oil growth was obtained. The coefficient of oil-rent of regime 2 (high financial development) is negative and slightly less than the level of statistical significance of 10% level. This and other findings in the above models reveal that an increase in the financial development (at least in quantitative terms) would increase the probability of the oil rent impacts on economic growth to be negative. Its outcome can be rent-seeking behaviour in financial system or the inefficient nature of credit provision, or the Dutch disease; in this case the increasing financial activities not controlled by financial institutions do not favour non-oil production, but on the contrary, undermine it.

The four indicators of the financial development in Iraq exceed the threshold value based on the threshold regression models in 2023 as observed in the comparative Table (3). These dimensions are the credit to the private sector, liquidity, bank credit and index of composite financial development. It means that Iraq is the country of high financial development, as far as quantitative indicators are involved. The culmination of discussion which had been pursued upon the four models however that even the quantity requirement would never succeed in reaching the greatest exploitation of the oil rent. The favorable nature of the oil rent was not only unfavorable but also turned out to be the determinant in most instances in the regimes of high financial development. These results support that the natural resources are not sufficient that would ensure the efficient utilization of the natural resource by the financial maturation of the purely quantitative aspect. The point is that the detrimental outcomes of the financial maturity of Iraq are even more heroic and the nation has nothing against the institutionalizing development, funds investment through appropriate regulation and productivity. These results show that these impacts exist in the form of the curse of resource or the Dutch disease curse where natural resources kill rather than develop the country.

Table 3. Results of Comparing Threshold Values with 2023 Values

Financial Development Indicator	Threshold Value	2023 Value	Status
Credit to the private sector / GDP	1.8843	2.8451	Above threshold
Liquidity / GDP	3.8777	4.8222	Above threshold
Bank credit / GDP	3.2174	4.4940	Above threshold
Composite index	0.6272	1.1585	Above threshold

The outcome of the four threshold regression model of Iraq however unlike the Solow growth model predictions demonstrate that the capital as well as labour coefficients are not significant in either of the regimes. This kind of discovery is inconsistent with the nature of the theory by Solow who point out that accumulation capital and labour are crucial in the growth of the economy in terms of its physical aspect. Such factors as reliance on oil, the inefficiency of the resources distribution, or lack of the infrastructure that could help make the capital and labour effective could have contributed to the insignificance of these factors. The augmented Solow model is based on the assumption that there exists the possibility of exogenous existence of resources like oil rent to influence growth with the total factor productivity (TFP).

Nonetheless, the findings show that the oil-rent effect is positive but insignificant in the low-financial-development regimes (Regime 1 in all the regimes). By contrast, in the high–financial- development regimes (Regime 2 in all models), the effect of oil rent is negative. It is noteworthy that, in Models 1 and 2, the effect of oil rent is not significant in either regime; however, in Model 3, this effect is significant at the 5% level in the low regime and at the 10% level in the high regime. In addition, in Model 4, the effect of oil rent is reported as significant only in the high regime at the 10% level. These findings contradict the Solow model's predictions that exogenous resources should contribute to economic growth

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

via improvements in TFP or better resource allocation, because one would expect that even at low levels of financial development, exogenous resources such as oil rent would have a meaningful (positive or negative) effect on growth. In Model 3, the effect of oil rent in Regime 1 (low financial development) is positive and significant. This positive and meaningful effect is consistent with the Solow model's prediction that economies with low capital (often associated with low financial development) have high growth potential provided they receive positive shocks. The oil rents to the economies may act as a stimulating factor to this potential in such economies as a means of checking the primary constraint in growth, which is the absence of capital. As can be seen in Regime 2, the influence of oil rent is negative and it has exceeded the level of significance in the models 3 and 4 (composite index). Even the relational coefficient of financial development and productivity of the oil rent in Iraq has not been positive and consistent with the composite index. This can be attributed to the instability of the banking and the financial system institution in Iraq. In general, such findings may point to the fact that the Solow model assumptions are inappropriate in economic and institutional framework of Iraq. Despite the fact that the financial development has been on the rise in many aspects in a quantitative sense, the quality and efficiency of financial system in respect to institution has not been at a position where oil rent can be converted into a driver of non-oil economic development.

In order to evaluate the goodness of fit of the four threshold regression models and reject the hypothesis of the non-existence of systematic error, the residual of the regression model were examined in details. The results show that, in all the four models, the overall residual values are quite close to zero that indicates that there is no biasness of the model structures. The smallest dispersion is in the Model 3 (0.086) and this implies that with the average, the model predictions will be more accurate compared to the real data (smaller error). The model with the greatest standard deviation at 0. 095 is Model 2, and this may be deemed as weaker in its ability to fit the data (Table 4).

Table 4. Results of Residual Analysis by Model

Model	Mean	Std. Dev.	Minimum	Maximum
Model 1	-7e-10	0.092	-0.284	0.157
Model 2	-5.78e-10	0.095	-0.312	0.144
Model 3	-3.87e-10	0.086	-0.311	0.153
Model 4	-1.52e-10	0.089	-0.283	0.180

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

Table (5) results indicate that all the p-values of the lags are very small, and below 5 of all the models, which leads us to unequivocally infer that all the models possess no serial tendencies of the residuals and the residuals are white noise. These findings imply that the Portmanteau test affirms all the models where Model 3 is a common best in the elimination of the higher p-values at all the lags.

Table 5. Portmanteau (Q) Test Results

Model	Q(2)	p-value(2)	Q(3)	p-value(3)	Q(4)	p-value(4)
Model 1	1.5657	0.4571	2.2706	0.5182	2.8820	0.5778
Model 2	3.8978	0.6383	1.1786	0.7581	2.5808	0.6302
Model 3	0.2697	0.8739	0.2903	0.9618	0.6795	0.9538
Model 4	0.7723	0.6797	0.7780	0.8547	1.4760	0.8309

The stability of the coefficient of the four threshold regression models over the 1998-2023 period was determined using the Cumulative Sum of Residuals (CUSUM) test. As Table (6) can establish, the test statistics of all the four models are below 0.8732, 0.5845, 0.3240, and 0.4873, respectively, none of them are more than the critical values at the 10%, 5% and 1% confidence levels, therefore, in all four models, the null hypothesis of no changes in the coefficients is not rejected.

Overall, the results show that structural instability of coefficient of the threshold models and the stability of parameters throughout the study is not present.

Table 6. CUSUM Coefficient Stability Test Results

Model	Test Statistic	Critical Value 1%	Critical Value 5%	Critical Value 10%
Model 1	0.8732	1.1430	0.9479	0.8499
Model 2	0.5845	1.1430	0.9479	0.8499
Model 3	0.3240	1.1430	0.9479	0.8499
Model 4	0.4873	1.1430	0.9479	0.8499

The results of the heteroskedasticity test are presented in Table (7) for the four models, where the residual variances of the two regimes (Regime 1 and Regime 2) are compared using the F-statistic, and p-values are reported. This test examines whether the residual variances in the two regimes are equal. In Models 1, 2, and 3, since the p- values are well above the 0.05 significance level, the null hypothesis of homoskedasticity is not rejected in these models. By contrast, in Model 4, the p-value is below 0.05, which implies rejection of the null (homoskedasticity). Given the identification of heteroskedasticity in Model 4, the model was re-estimated using robust standard errors. The results of the fourth model with robust standard errors are presented in Table (8).

Table 7. Heteroskedasticity Test Results

Model	Variance Regime 1	Variance Regime 2	F-statistic	p-value
Model 1	0.0088	0.0200	1.008	0.978
Model 2	0.0100	0.0220	1.376	0.566
Model 3	0.0083	0.0220	1.253	0.702
Model 4	0.0076	0.0260	5.161	0.037

The output of the Model 4 robust standard errors reveals that the two regimes do not have any significant disparity in the capital, labor as well as the oil rent coefficients using the former model (the presence of robust standard errors). The standard errors of capital and labor are lower in strong model but it means that the two variables can be estimated better but, as in the above model, the coefficients of capital and labor are non-significant. The standard errors of oil rent in the two regimes are smaller than in the previous model and this implies that more accuracy in the estimation is enhanced. Further in strong model, the p-values decrease in both the regimes where the effect of oil rent is significant at 5 % level (as compared to the prior model where it was significant at 10 % level). In general, large standard errors diminish the standard errors and enhance the z-statistics of the estimated findings that enhances the accuracy of the estimates and in the case of Regime 2 raise the statistical significance of the oil-rent effect.

Table 8. Threshold Regression Estimates with Robust Standard Errors (Threshold Variable: Composite

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

Index)				
Variable	Coefficient	Std. Error	z-Statistic	p-Value
LnK	0.0676	0.1009	0.67	0.503
LnL	0.7144	0.7579	0.94	0.346
LnFD ≤ 0.6272				
LnOR	0.2133	0.1477	1.44	0.149
Constant	0.4414	0.0249	17.75	0.000
LnFD > 0.6272				
LnOR	-0.5234	0.2191	-2.39	0.017
Constant	0.4000	0.0445	8.99	0.000
Threshold value	γ = 0.6272			

DISCUSSION AND CONCLUSION

It is also an evidence to the fact that correlation between oil rentability and non-oil economic growth in Iraq is not linear and is related to the degree of financial development as the empirical results of threshold regression analysis show that. The threshold effects calculated in the four models of each of them using the various measures of financial development elevates the fact that reaching beyond the quantitative level of financial depth will not necessarily imply effective use of oil revenues to sustainable growth. The normal Solow variables of capital and labor were not significant in all its models of non-oil growth which imply that Iraq has grown excessively dependent on the oil revenues and hence distorted the productive structure of its economy and destroyed the classical growth transmission mechanism [7, 8]. This observation dispelling the supposed assumption of the neoclassical development theory that places the pivotal position to the increase in capital formation and work as the force, is highlighted. Rather, the findings show that the foreign rents rather than accruing to the internal factors are the final determinant of the Iraqi output dynamics.

The strongest empirical fact is that the oil rent coefficient has an opposite sign in low and high financial development regimes. In the less advanced phases of financial development, it was discovered that the oil rents positively and insignificantly correlate with the non-oil GDP. This concurs with the fact that in the economies where there is a low availability of finance, oil revenues could be a compensatory variable to finance non-oil areas of investment and consumption [1, 3]. Now is when oil revenues may mitigate liquidity strains and essential financing to reconstruction, infrastructures and public sector wages-is a key element that sparks off short- term demand and employment. The same has been seen in the case of Kazakhstan and other resource based economies where rents in the initial stages have the catalytic effect of diminishing the capital shortage and supplying the credit markets that are not yet developed [1, 4].

But sloping above the delimiting values of the financial development, this measure of the oil rent coefficient assumes negative values, and in certain models (in this case specifically the bank credit and the compound PCA index) also a large portion at the 10% or 5% mark. This difference suggests that in case of quantitative construction of financial system, inefficient institutions and effective intermediaries, oil revenues can have adverse impact on growth. This is what is characteristic of propositions of the resource curse and Dutch disease that excess liquidity arising due to the resource rents can result in the presence of unproductive investments, the presence of a false exchange rate as well as the crowding out of the areas of trade [2, 3]. This is especially in the case of Iraq in which an institutional modernization has not been accompanied by financial liberalization and rent distribution has been political and administrative inefficiency. Credits and liquidity ratios growths in such an environment could be manifestation of financial weakness and not economic growth, and it will augment the macroeconomic instability more than sustainable growth [4, 22].

The very fact that all the models demonstrate the insignificance of the capital and labor coefficients denotes the latent structural flaws. In the conditions of healthy growth as theorized by Solow-type models, the capital accumulation and the employment of labor should have an important part in the increasing output [7, 10]. The fact that the productive basis of Iraq is not yet much diversified to oils and shows no significant spillover effects into manufacturing or agriculture is evidence of lack of such relationships. Such interpretation is justified by the research in the emerging economies that indicates that investment efficiency is usually low in the economies where rents prevail, and capital flows tend to be concentrated on the activities with low productiveness [8, 11]. Moreover, the fact that labor cannot contribute greatly to the process of the economy growth accentuates the mismatch between the employment systems and the economic diversification. The same has been experienced with South Africa and Ethiopia whereby macroeconomic growth could not be associated with labor absorption because of the sectoral imbalances and the poor human-capital investment [16, 21].

The good outcomes are also brought about by the diagnostic tests. The residual tests and the Portmanteau tests had

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

been used in making sure that the models were not ill-specified and also ensure the residuals were not serially correlated or were not biased in any case. The CUSUM stability tests revealed that the coefficients are constant within the sample period (19982023) and it means that the results could not be the product of structural discontinuities or crisis events. The fourth model was more meaningful in the determination of the high-finance regime which warranted the accuracy of the findings with the help of the application of the robust standard errors that also identified the heteroskedasticity of the same. The trend suggests that the negative effect of oil rent at the high level of financial- development is also high when strong estimations are used which is identical to the previous study to the non-linear relationship between resource-growth [2, 6].

These results of the research are partly congruent with the empirical data of other economies that are resource-dependent. One instance is that the impact of oil rents on non-oil growth in the CIS countries was found to be moderated by financial development although it was only done in presence of good quality institutions [3]. Along the same line, the CFA nations and the sub-Saharan African nations have provided cross-country evidence that more financial depth in fact enhances volatility and not stability in growth in the absence of proper financial governance [20, 22]. The case of Iraq, thus, fits within this broader empirical consensus: quantitative indicators of the financial growth (e.g. the credit to GDP ratios) may be misleading in the instances where the qualitative component of finance e.g. the efficiency of allocating credit, risk management, and the regulatory capacity are inadequate. The meaning can be described as a reflection of the Jordanian banking system where soundness and supervision and not size were the most significant factors of stability [4].

As one can see, the exit is compared when comparison is made between the results and theoretical background of the Solow model. Solow model presumes that the investment is equivalent to savings and capital deepening will result in the long-run.

term convergence of a steady-state equilibrium [7]. The same is not true in the Iraqi case where the rents that are saved by oil is not always put to productive investment since it is not financially efficient, corrupt, and controlled by the state by credit markets [1, 3]. This leads to breakdown of the Solow transmission mechanism in which the accumulation of the capital does not translate to the growth because it is misallocated. The usage of this paradox refers to the condemnation of foreign technology by Romer in the Solow model and his demand to refer to the need to appeal to internal elements of innovation and productivity [9]. The existing data is in line with endogenous version: the presence of institutional and financial inefficiencies is a bottleneck, which prevents the potential productivity of oil-financed accumulation of capital.

The second is an outstanding fact; the estimates of thresholds that are achieved by PCA-composite indices are of a more detailed perspective than of the individual-indicator models. The methodology applied the PCA methodology in the research in line with the methodology of Jolliffe and Cadima [25], enabled the research to unite the various financial indicators in a single statistically consistent index, which represents the depth and stability. This is the most delicate composite threshold ($\gamma = 0.6272$) that was successfully used to distinguish the regimes in which the oil rent effects become negative. This aids to argue in the support of the thesis that financial development is a multidimensional construct as well as the fact that the systematic interplay of the liquidity and credit ratios and the institutional healthiness can be hidden when individual ratios are taken. The nonlinear threshold effect indicators have been more effectively determined through application of PCA-based indicators in environmental and energy economics research [6, 13].

The results of the study are also congruent with the discussions of the literature of development on institutional capacity in mediating the nexus between finance and growth in general. As the case of Africa and the Latin American countries has shown, financial deepening may lead to inequality, volatility and misallocation unless proper regulatory structures are in place [20, 26]. Iraq is not able to maintain the high concentration, political influence and inability to supervise its financial system with risk-based supervision leading to the same scenario of low institutional absorption capacity in other countries despite the quantitative growth of the financial system. This is the reason why, there is not a wondersome occasion to understand that though the financial indicators are better than the international levels, the qualitative transformation of finance into the expansion is not yet witnessed [3, 22].

The reason behind this is that the significant and positive coefficient of oil rent in the low-finance regime of the third model is in line with the capital-shortage compensation hypothesis. In this view, oil rents in the economy at the initial phases can compensate the deficiency of national savings and finance infrastructure and state investment [5, 17]. The Ethiopian and Nigerian results also show that the government expenditure and revenue on oil can be utilized in stimulating growth in investing in the productive sector [5, 23]. The example of Iraqi people shows, though, that this positive role is being eliminated very soon along with the increase of financial depth as the sphere of governance and control do not progress any more. This relationship demonstrates that the marginal payoffs of the oil rents are subject to the efficiency of the financial system in converting liquidity into productive assets- a fact that is consistent with the recent findings of the mediating role of finance in the resource-growth relationship [2, 3].

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

In general, these findings fit into the assumption that Iraq is good in terms of bills about financial development, yet of low quality. Although the values of indicators of credit-to-GDP and liquidity-to-GDP have since 2023 reached their threshold values, the negative impacts of oil rent remain prevalent in the high-finance regime, which confirms the presence of institutional inefficiencies that prevail at the cost of potential benefits. This leads to one of the points that the monetary system reforms can not be pegged on the quantitative increase, but on the improved quality of the credit allocation, the improvement of the regulatory systems and on the increase of the openness of the oil-revenue management [4, 22]. In addition to this, there is no significance of the capital and labor in. a development must have a strategy based on structural change to re-orientate the Iraqi economic doing way. diversification, human capital development and innovation [8, 9].

The current results are therefore supplementary to the already existing empirical results which quantitative financial growth minus an institutional quality does not alleviate but instead strengthens the curse of resources. They verify conceptual assumptions of the study that introduces the financial thresholds into the resource-growth models: rentals will be the substitutes of the insufficient capital beyond the critical threshold of the financial- development level, and above them they can be implemented to exterminate the resource- increasing investments [2, 6]. This concept of the case in Iraq and the issue is not to build the depth of financial but to make sure that the financial growth is accompanied by good governance, credit discipline and diversification of the industry.

It is not restricted as long as it is a comprehensive research. To begin with, the time-series analysis is available to the data of Iraq 1998-2023 when this country was at war, under sanctions and political transformations that can result in a certain structural break that cannot be utilized effectively and reflected in the model. Second, there may be a problem of quality of data, e.g., data on the non-oil GDP and the state of the financial sector may affect the quality of estimates. Third, threshold regression does not consider other mediators (institutional quality, fiscal policy and trade openness) that could have a role in the relationship between oil and development in deciding nonlinearity of one variable (financial development) based on other variables. and finally, the index of PCA is proceeding well to the right of perfecting the taking of measures, although it is more subject to the plans of selection and weighting of the variables.

The model needs to be included in future studies as the model needs to be expanded with the use of panel structure where the other economies in Middle East and North Africa which will be the oil exporters will be incorporated to the model and compare the threshold effects in different countries. Institutional-quality indicators or the governance scores and corruption indices should be added to provide more information as to the qualitative and quantitative aspects of finance as a combination. The alternative direction that the future study could take is via the mediating role of the oil rent -growth nexus via technological innovation, green finance and digital banking. Markov-switching regressions are also active models and could also be applicable to model the regime shift and policy shock in the long-run.

The policymakers need to focus on institutional fortification of the Iraqi economy instead of finance expansion. Effective regulation frameworks should be set with the assessment of the credit risks and more effective management of the oil revenues. The financial industry must also redistribute financial resources to other productive areas beyond the oil related ones such as manufacturing, agriculture and SMEs to facilitate diversification and job creation. In addition, the financial inclusion, and digitalization can be listed among the effectiveness of access to finance by underserved populations, and growth resilience and inclusiveness. Finally, fiscal and monetary agencies should co-ordinate the macroeconomic policies such that the oil rent would be converted to the long term as opposed to cyclical volatile productive capacity.

Authors' Contributions
Authors equally contributed to this article.

Ethical Considerations
Everything that was done during this research was within the confines of ethics.

Acknowledgments
Authors thank all the people who are involved in this research.

Conflict of Interest
The authors report no conflict of interest.

Funding/Financial Support
According to the authors, this article has no financial support.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

REFERENCES

1. M. Samambet, "Is natural resource wealth a boon or a bane? The impact of oil rents and foreign direct investment on economic growth in Kazakhstan," Journal of Infrastructure, Policy and Development (JIPD), vol. 8, no. 13, 2024, doi: 10.24294/jipd.v8i13.5486.
2. Z. Sun and Z. Cai, "Does Financial Development Hamper or Improve the Resource Curse? Analysis Based on the Panel Threshold Effect Model," Math. Probl Eng., pp. 1-10, 2020, doi: 10.1155/2020/4013647.
3. F. Hasanov, R. Aliyev, D. Taskin, and E. Suleymanov, "Oil Rents and Non-Oil Economic Growth in CIS Oil Exporters. The Role of Financial Development," Resource Policy, vol. 82, p. 103523, 2023, doi: 10.1016/j.resourpol.2023.103523.
4. H. A. Almahadin, T. Kaddumi, and Q. Al-Kilani, "Banking soundness-financial stability nexus: Empirical evidence from Jordan," Banks and Bank Systems, vol. 15, no. 3, pp. 218-227, 2020, doi: 10.21511/bbs.15(3).2020.19.
5. A. Adebayo, A. T. Adebusuyi, and M. A. Ishola, "An econometric analysis of impact of public expenditure on industrial growth in Nigeria," International Journal of Economics and Finance, vol. 6, no. 10, pp. 112-117, 2014, doi: 10.5539/ijef.v6n10p112.
6. J. Zhou, Z. Ma, T. Wei, and C. Li, "Threshold effect of economic growth on energy intensity-Evidence from 21 developed countries," Energies, vol. 14, no. 14, p. 4199, 2021, doi: 10.3390/en14144199.
7. R. M. Solow, "A contribution to the theory of economic growth," The Quarterly Journal of Economics, vol. 70, no. 1, pp. 65-94, 1956, doi: 10.2307/1884513.
8. T. B. Dan and N. N. Thach, "Which Solow model - homogeneous technology-, heterogeneous technology-, or human capital- augmented - best explains OECD growth? Fresh evidence from Bayesian Monte Carlo simulations," Montenegrin Journal of Economics, vol. 20, no. 2, pp. 251-265, 2024, doi: 10.14254/1800-5845/2024.20-2.20.
9. P. Romer, "Endogenous Technological Change," Journal of Political Economy, vol. 95, pp. 71-102, 1990, doi: 10.1086/261725.
10. X. Ding, Y. Huang, W. Gao, and W. Min, "A comparative study of the impacts of human capital and physical capital on building sustainable economies at different stages of economic development," Energies, vol. 14, no. 19, p. 6259, 2021, doi: 10.3390/en14196259.
11. Y. Fikri, S. Mantouzi, M. Rhalma, and S. Youssef, "Economic growth: A literature review," Revue Internationale du Chercheur,
12. vol. 5, no. 1, pp. 802-813, 2024.
13. B. E. Hansen, "Inference when a nuisance parameter is not identified under the null hypothesis," Econometrica, vol. 64, no. 2, pp. 413-430, 1996, doi: 10.2307/2171789.
14. Q. Wang and X. Wang, "Threshold effects of COVID-19-confirmed cases on change in pollutant changes: Evidence from the Chinese top ten cities," Environmental Science and Pollution Research, vol. 28, no. 39, pp. 45756-45764, 2021, doi: 10.1007/s11356-021-13980-w.
15. B. G. Habeeb and A. A. Hasan, "The impact of non-oil public revenues on non-oil GDP in Iraq for the period (2004-2021),"
16. Russian Law Journal, vol. 11, no. 12s, 2023, doi: 10.52783/rlj.v11i12s.2029.
17. J. A. Slow, "The impact of foreign trade on the numerous economic sectors in Iraq for the period (2003-2021)," Journal of University of Duhok, vol. 26, no. 2, pp. 1018-1035, 2023, doi: 10.26682/hjuod.2023.26.2.59.
18. G. Bekele, "Effects of monetary policy on inflation in Ethiopia: Using ARDL co-integration approach," Journal of Investment and Management, vol. 12, no. 1, pp. 1-11, 2023, doi: 10.11648/j.jim.20231201.11.
19. W. Munyeka, "The relationship between economic growth and inflation in the South African economy," Mediterranean Journal of Social Sciences, vol. 5, no. 15, pp. 119-129, 2014, doi: 10.5901/mjss.2014.v5n15p119.
20. Isiaka, A. Isiaka, and A. Isiaka, "Forecasting with ARMA models: A case study of the exchange rate between the US Dollar and a unit of the British Pound," International Journal of Research in Business and Social Science, vol. 10, no. 1, pp. 205- 234, 2021, doi: 10.20525/ijrbs.v10i1.1005.
21. N. A. K. Rifai and M. A. Zhahirulhaq, "Forecasting inflation in Indonesia using the autoregressive integrated moving average method," Parameter: Journal of Statistics, vol. 4, no. 1, pp. 37-45, 2024, doi: 10.22487/27765660.2024.v4.i1.17130.
22. M. I. Tabash, O. Ezekiel, A. Ahmed, A. Oladiran, Y. Elsantil, and A. I. Lawal, "Examining the linkages among financial inclusion, economic growth, poverty, and inequality reduction in Africa," Scientific African, vol. 23, p. e02096, 2024, doi: 10.1016/j.sciaf.2024.e02096.
23. A. Ngcobo, S. Zhou, and S. S. Pillay, "The Effect of Financial Market Capitalisation on Economic Growth and Unemployment in South Africa," Economies, vol. 13, no. 3, p. 57, 2025, doi: 10.3390/economies13030057.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 55, February, 2026
ISSN: 2749-3628,

24. C. Meniago, B. T. Mazorodze, and G. Mah, "Linking financial development and economic growth: do we have new evidence of the role of institutions in CFA countries?," Cogent Economics & Finance, vol. 13, no. 1, p. 2460067, 2025, doi: 10.1080/23322039.2025.2460067.
25. F. M. Alemu, "An Empirical Analysis of the Nexus between Inflation, Exchange Rate, Unemployment and Economic Growth in Ethiopia: A Granger Casualty Approach," 2025, doi: 10.1177/09750878241234254.
26. M. Ogundipe, "Culture of Small Businesses: Foundations for a Study on a Catalyst of Economic Growth," International Journal of Management & Entrepreneurship Research, vol. 7, no. 1, pp. 74-84, 2025, doi: 10.51594/ijmer.v7i1.1799.
27. T. Jolliffe and J. Cadima, "Principal component analysis: a review and recent developments," Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, vol. 374, no. 2065, p. 20150202, 2016, doi: 10.1098/rsta.2015.0202.
28. Y. K. Hwang and Á. Sánchez Díez, "Renewable energy transition and green growth nexus in Latin America," Renewable and Sustainable Energy Reviews, vol. 198, p. 114431, 2024, doi: 10.1016/j.rser.2024.114431.
29. L. Wang, "Biomechanical Perspectives on Sustainable Animal Husbandry: Dynamic Mechanisms of Economic Growth and Ecological Balance," Molecular & Cellular Biomechanics, vol. 22, no. 3, p. 1260, 2025, doi: 10.62617/mcb1260.
30. S. Sotoudehnia Karani and B. Shafi'zad Abkenar, "An Investigation of the Effect of Uncertainty on Economic Growth and Monetary Policies in Iran," Economic Growth and Development Research, 2025, doi: 10.30473/egdr.2025.73885.6971.