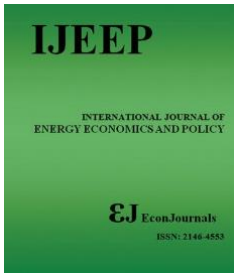

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Analyzing the Resource Curse Hypothesis in Oman: The role of Financial Development and Natural Resource through ARDL method

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ABSTRACT

This study explores the Resource Curse Hypothesis in Oman from 1990 to 2021, tackling an important question in development economics: does an abundance of natural resources impede or promote economic growth? The study also explores how financial development, trade, and urbanization influence economic performance. The analysis, using various unit root tests, confirmed that the variables are stationary, which provides a solid foundation for further modeling. The Autoregressive Distributed Lag (ARDL) bounds testing method showed a long-term cointegration relationship between the variables. The findings show that having abundant natural resources significantly boosts economic growth, thereby effectively denying the Resource Curse Hypothesis in Oman's case. Additionally, it was observed that financial development, trade, and urbanization play important roles in fostering economic growth. To strengthen the findings, various estimation techniques were used, such as Fully Modified OLS (FMOLS), Dynamic OLS (DOLS), and Canonical Cointegration Regression (CCR), all of which supported the results of the ARDL model. The results highlight the significance of utilizing natural resources and supporting factors to promote sustainable economic growth in resource-abundant countries such as Oman.

Keywords: Resource Curse Hypothesis, Financial Development, Natural Resource, ARDL, Oman
JEL Classifications: O13, G20, Q32, C22, O53

1. INTRODUCTION

According to the resource curse, the more natural resources a country has, the less economic growth, institutional deficiencies and socio-economic inequality it has (Voumik and Ridwan, 2023). Oman, a Gulf state full of wealth, offers a unique way to observe this phenomenon. The country extracts some 72% of its public revenue from oil and gas, making up 40% of GDP and over 60% of exports (World Bank, 2023). Oman is a rich country, but its economy is stagnant with budget deficits exceeding 5% of GDP in recent years and youth unemployment hovering around 11% (ILO, 2024). It is with these data that we can conclude that Oman could be well on its way to the classic hallmarks of the resource curse – dependence on hydrocarbons, weak non-oil sectors, and exposure to price instability in international energy markets (Sherif et al., 2023). This paper tests whether Oman's resource-led growth is correlated with the resource curse hypothesis by examining the effects of natural resource dependence on socio-economic performance. The review closely examines the country's progress on diversification measures under Vision 2040 and how these changes impact resource depletion and inclusive growth. It uses historical trends in Oman's HDI and Gini coefficient to estimate broader socio-economic consequences of resource dependence. A lesson learnt from countries with more resources than those with less will give Oman's position in the global resource-based development economy a better sense of its trajectory. This work

aims to connect theoretical discourses about the resource curse with the specific socioeconomic context of Oman. This paper considers how overabundance has affected sustainable development in Oman and hopes to provide policymakers with useful information on balancing growth. Moreover, as Oman transitions to a knowledge-based economy, this research helps understand the critical factors that can mitigate the effects of the curse on the economy, ensuring long term stability and social prosperity.

The research deals with complex interrelations between economic growth, natural resource richness, and economic prosperity within the framework of the resource curse. However, the banking sector remains underdeveloped in Oman, with domestic credit to the private sector equal to 57% of GDP compared to the middle-income average of 80% (IMF, 2024). Financial underdevelopment inhibits the efficient flow of resource resources to non-resource sectors, restricting diversification and contributing to economic vulnerability (Al-Saadi and Khudari, 2024). The empirical work here studies how financial development affects the relationship between the supply of resources and the performance of economies. Important measures include the level of financial intermediation, the depth of capital markets and the degree to which private companies can obtain credit. Despite the policy changes brought by Vision 2040, Oman's financial industry is still under-developed as only 12% of SMEs indicate sufficient access to finance (CBO, 2023). This disproportionate concentration of funding in oil and gas has held back innovation and development in other sectors, leading to a growth rate of <2%/year in the non-oil sector over the past 10 years (Alam et al., 2022). Further, fluctuations in international oil prices have demonstrated the fragility of resource-based economies like Oman whose fiscal deficit increased to over 5% of GDP in 2020 because of a collapse in oil prices during the COVID-19 pandemic (Alshubiri, 2023; Alam et al., 2022).

This empirical study examines the relationship between trade, urbanisation and economic development from the perspective of the resource curse. This hypothesis says that resource-based economies are not developing as rapidly as they should due to structural inefficiencies, an excessive dependency on the resource sector and neglect of diverse growth options. Oman has oil – which generates around 72% of public revenue and 40% of GDP (World Bank, 2023) – and exhibits the hallmarks of a resource-based economy. Exports are an important part of Oman's economy, contributing 105% of GDP in 2022. It is, however, highly resource-intensive, with oil and gas representing over 60% of exports (WTO, 2023). This dependence on commodity trade leaves the economy open to external shocks, such as fluctuations in global prices. The corollary of the COVID-19 pandemic was that the collapse in oil prices left the country with a fiscal deficit of more than 10% of GDP. Urbanisation, closely linked to Oman's resource abundance, has shaped the country's economy. Currently, 87% of Oman's population is urbanised, and cities like Muscat and Salalah serve as economic centers (UN, 2023). Although rapid urbanisation has meant the concentration of resources and labour in major cities, it has not produced a similar diversification of economies. Non-oil GDP growth has increased steadily at an average of 2.3% per year for the past decade (IMF, 2024), meaning that manufacturing, services and other non-resource sectors have made little headway. In addition, there are differences in how cities develop infrastructure, with secondary cities struggling to attract investment and talent, thereby increasing regional economic inequalities. This pattern raises concerns about the long-term viability of growth based almost entirely on exports of resources and urban policies.

This study seeks to assess whether the resource curse theory applies to Oman, a country heavily reliant on hydrocarbon revenues. It will also analyse the role that financialisation, natural wealth, commerce and urbanisation play in enhancing its economic growth. Its studies aim to analyse how these variables interact with each other and how they shape Oman's economic trajectory, particularly whether the need for resources impedes sustainable development. This paper employs the Autoregressive Distributed Lag (ARDL) approach to compute the interactions between the variables over the short and long term, providing a thorough description of their dynamics. This work is valuable in that it takes a holistic view, and binds together key economic and structural factors, while also revealing what factors shape Oman's economic success. This paper points out how financial development indicators assist in reducing the dependence on resources through well-spent capital and institutional infrastructure. Similarly, trade and urbanisation are assessed for their ability to encourage diversification and balanced growth. This research fills a gap in the literature by providing an empirical perspective on Oman's unique socio-economic context, contributing to broader discussions of resource-intensive economies in the Gulf region. These findings will also be expected to help policymakers develop strategies to boost financial efficiency, diversify trade and optimize urbanisation to reduce the downsides of resource dependence. This paper explores the interrelationship of these factors and provides actionable recommendations to increase Oman's economic resilience and add meaningful value to the fields of resource economics and sustainable development.

2. LITERATURE REVIEW

There has been a burst of disagreement within academia about the Resource Curse Hypothesis, the notion that the abundance of natural resources slows down growth and development. Recent studies have examined this phenomenon using different approaches and regions and provide hints as to how it works. Lin et al. (2024) debunk the curse of resources by showing the positive contribution of mineral and natural resources to economic growth in least developed countries. Their findings recommend responsible management of resources to maximize long-term returns, in accordance with the Resource Bless Hypothesis. Similarly, Baafi (2024) on Ghana explains how open government and pluralistic economic policy kept it out of the resource curse by showing the positive relationship between oil exploration and economic development. Across the divide, several studies point to situations where the curse of resources remains. Yanyan and Dong (2024), working across 32 OECD countries, discover that rents from natural resources thwart economic growth during political conflicts. Domestic and international conflicts pose growth challenges and highlight the importance of political stability. Syed et al. (2024) go further, looking at the impact of geopolitical

risk, and conclude that, if resources generally favour growth, then geopolitical instability spurs it, proving the resource curse hypothesis on these lines. The ecological dimensions of the curse of resources matter, too. Boulanouar and Essid (2023) address the negative effect of resource rents and fossil fuel subsidies on the adoption of renewable energy in MENA. They propose that we make policy changes in our quest for sustainable energy, associating resources with deforestation. Similarly, Joshia et al. (2024) to understand why developing countries fail to use energy for sustainable development and why developed countries do succeed. From a financial perspective, Li et al. (2024) and Hou et al. (2023) examine the intersections between resources, growth, and politics. Li et al. (2024) concluded that, as long as conflict is held in check, natural resources can lead to economic growth in MENA. Hou et al. (2023) highlight institutional strongholds in OPEC states as well as the transformative role of good governance to translate natural resource wealth into credit and growth.

This connection between financial growth and economic growth has become an economics obsession, and a series of papers have focused on its dynamic. Contemporary works of literature discuss how financial institutions influence economic decisions, discovering risks and rewards. Gull et al. (2023) address how financial development helped Pakistan's economy grow between 1990 and 2020, using ARDL models to develop effective long- and short-term links. The movement also highlights green finance as an engine of sustainable development and advocates its incorporation into economic policy. Similarly, Pandey et al. (2024) see finance development as one of the most important pillars of Nepal's growth, its near-similarity to FDI guarantees both stability and growth for the short term. Drawing on these observations, Karki and Pradhan (2024) see financial access, private sector credit and stock-market capitalisation as leading factors in Nepal's real GDP and per capita income, with the two biggest drivers being financial access and credit. These conclusions agree with Pușcașu's (2024) survey of EU member states, which demonstrated that financial development spurs growth if investments match actual sector productivity. The regional differences in the financial development-growth equation produce different results. While Jaapar et al. (2024) concludes that financial development hinders economic growth and raises income inequality in ASEAN, it advocates legislative reforms to promote access to financial services. Conversely, Trebicka et al. (2024) demonstrates that financial inclusion, stability and institutional quality contribute positively to Albania's economic development, emphasizing the importance of governance in emerging economies. Ikhsan and Satrianto (2023) offer a high-income country view, illustrating the importance of depth and efficiency in the financial market to economic growth. But they also reveal bank inefficiencies and the small role that gross savings play in stimulating economic growth.

Trade openness and growth have long been associated with each other, with studies documenting its varied consequences across regions and income levels. Although trade openness tended to foster economic growth, its effects appeared to be conditional and policy-dependent. Nam and Ryu (2024) showed the two-sided impact of trade openness among ASEAN countries. They observed that, while lower trade barriers initially limited GDP growth in developing countries, higher trade volumes were strongly associated with economic growth in countries with higher trade barriers. Ifa and Yahdi (2020), in a similar vein, showed how trade openness dramatically improved economic outcomes in Indonesia. They concluded that trade bolstered the economy but warned of the risks posed by external economic movements. In Sub-Saharan Africa, Mugun (2021) and Gabriel and David (2021) investigated the uneven effects of openness in trade. Mugun discovered that extra-regional trade led to greater economic growth than intra-regional trade, allowing for technology transfers, information flows and economies of scale. Gabriel and David also broke down trade openness by income, showing that it greatly benefited low-income economies while its effects in middle-income economies were uneven, based on structural and policy differences. Wani (2022), on the other hand, found that trade openness had a negative effect on Indian economic growth. They found that 1% more openness in trade translated into a small decline in long-term economic growth, suggesting that trade policies must be reformed to align with national interests. Ajayi and Araoye (2019) noted problems in Nigeria, too, with exports bolstering the balance of payments while imports and large money supply had relatively few effects. The paper proposed infrastructure investment as the best way to increase economic activity.

Urbanisation is intertwined with economic development, with many potential and challenges. Recent research has exposed how urbanisation affects economic outcomes across regions and development stages in non-linear, regional-specific ways. Ngounou et al. (2024) revealed a U-shaped connection between urbanisation and development in poor countries. They found that economic development suffers at lower stages of urbanisation because of resource scarcity and a lack of efficient use of production factors. But as urbanisation progresses, the concentration of capital, labour and technology drives growth, and infrastructure is central to maximizing the benefits of urbanization. Hovhannisyan and Asci (2024) found the same inverted U in China, where urbanisation initially led to growth through productivity gains. Yet beyond a certain level, diminishing returns weakened its effect, highlighting the need for sensible urban design to ensure growth. Kolomak (2012) observed similar trends in Russia, where urbanisation improved regional productivity enormously but had diminishing returns as city sizes increased, underscoring the boundaries of urban agglomeration. Sukanya and Tantia (2023) also drew attention to the innovation-producing effects of urbanisation. They emphasised how cities spur economic growth by acting as centres of innovation, investment and employment. Yet they warned of road congestion and inequality, arguing for sound urban management to foster equity. Region-specific studies revealed further nuances. Jacobs et al. (2023) with the Gauteng Province in South Africa showed that economic development facilitates urbanisation by fostering it indirectly through creation of jobs. In contrast, Khan and Khan (2023), who looked at Belt and Road Initiative countries, found that urbanisation's economic effects were dampened by the quality of governance and environmental issues, and a non-linear relationship between urbanisation and carbon emissions correlated with growth.

While the Resource Curse Hypothesis is already widely studied, there has been limited research on the impact it could have in

Oman. Global and regional literatures focus on how natural resource abundance influences economic development, but they rarely take account of Oman's distinctive socio-economic and institutional conditions. This means that we still don't know if Oman is a victim of the resource curse or a beneficiary of its abundant resources. Further, the synergistic roles of financialisation, openness to trade and urbanisation in propelling Oman's growth have not been fully explored. Currently, most studies look at larger areas such as the Middle East and North Africa (MENA) or other resource-poor countries, while ignoring Oman's unique circumstances, including policy environment and economic diversification. Even the methodology of earlier research leaves something to be desired. No direct correlations between urbanisation and growth or natural resources and economic growth, especially in small, resource-hungry economies such as Oman, have been explored. Econometric models must be tailored to account for the interactions and thresholds that exist in Oman's economy. We intend to fill in these gaps by determining whether there is such a thing as the resource curse in Oman and how the combination of the richness of natural resources, economic growth, commerce and urbanisation affect its economic performance.

3. METHODOLOGY AND DATA

3.1. Data and Variables

This paper studies the resource curse hypothesis in Oman between 1990 and 2021 to assess whether Oman's natural resources inhibit or encourage its economic development. GDP is chosen as the dependent variable because it's a universal indicator of economic activity, a gauge of how the economy functions and is doing. As independent factors, the study incorporates economic growth, natural resources, trade and urbanisation, all selected because they are theoretically and empirically relevant to economic development and the curse of resources. It incorporates finance development to find out how a healthy financial sector can foster saving and investment. It is particularly useful in resource-based economies like Oman, where a sound financial system can transform resources into useful products that might mitigate the negative effects of being resource-dependent (Polcyn et al., 2023; Voumik et al., 2023a). Abundance of natural resources plays an important role in assessing the resource curse because it directly affects the supply and use of natural resources and the effect they have on economic production (Raihan et al., 2023a; Voumik et al., 2023b). It is this variable that allows the research to pinpoint whether Oman's abundance of resources is a good thing or bad. Other big determinants include trade, which dictates the extent to which Oman's economy is open and integrated with global markets. Commerce can contribute to growth through technology transfer, competition and access to bigger markets (Pattak et al., 2023; Ahmad et al., 2024). Even for a mineral-rich country such as Oman, trade accounts for the importance of exporting minerals in fuelling growth. We include urbanisation as a way to look at the structural shift of Oman's economy, as urbanisation is typically linked with industrialisation, better infrastructure and productivity. Urbanisation could also contribute to the effective use of resource revenues for sustainable development (Raihan et al.2024a, Ridwan et al., 2024a). Table 1 gives descriptive, source, and units of measurement information for each variable to ensure transparency and repeatability of the study. By selectively choosing these variables, the research aims to offer a comprehensive picture of the variables driving Oman's economic development and provides important answers to the question of whether the resource curse exists.

3.2. Theoretical Framework and Model Specification

In theory, the resource curse hypothesis holds that, rather than leading to economic growth, excessive natural resources suppress growth through institutional degradation, rent-seeking and economic distortions (Li et al., 2024). Such negative consequences frequently result when resource revenues are unchecked or when they overtax productive sectors of the economy (Raihan et al., 2024b). Natural resources have the potential to boost growth, yielding a large amount of revenue which can be used by governments to fund infrastructure, education, healthcare, and technological innovations, supporting long-term economic growth (Ridzuan et al., 2023). But according to the resource curse hypothesis, this wealth is almost always super-reliant on the resource sector, leaving the economy vulnerable to external forces, including volatile world commodity prices. Additionally, the surge in resource incomes can generate currency appreciation (often referred to as the "Dutch disease") that negatively affects non-resource exporters. This research speculates that Oman's natural resource-based economic growth relies on efficient exploitation of resources. With natural resource abundance included as one of the variables, the paper seeks to determine if Oman's resource dependence fits the resource curse or whether it fosters growth by successfully managing revenue and diversifying the economy. The empirical methodology consists of short- and long-term models that capture the subtle role of natural resources in economic growth while controlling for other variables, including financialisation, openness of trade, and urbanisation, which interact with natural resource abundance to affect economic growth. Functions of economic growth and other explanatory variables in the Resource curse hypothesis can be formulated as follows in equation 01:

$$GDP = f(FD, NRS, TRD, URBA) \quad (1)$$

Where, GDP denotes Gross Domestic Product, FD shows financial development, NRS is natural resource abundance, TRD is trade, and URBA shows urbanization.

Table 1: Description and source of variables

Variables	Description	Log form	Unit of measurement	Source
GDP	Gross domestic product	LGDP	GDP (constant 2015 US$)	WDI
FD	Financial development	LFD	Financial Development Index	IMF
NRS	Natural resource abundance	LNRS	Total natural resources rents (% of GDP)	WDI
TRD	Trade	LTRD	Trade (% of GDP)	WDI
URBA	Urbanization	LURBA	Urban population (% of total population)	WDI

Now, the econometric version of equation (1) can be write in equation (2):

$$LGDP_t = \beta_0+\beta_1 LFD+\beta_2 LNRS+\beta_3 LTRD+\beta_4 LURBA+\varepsilon_t \quad (2)$$

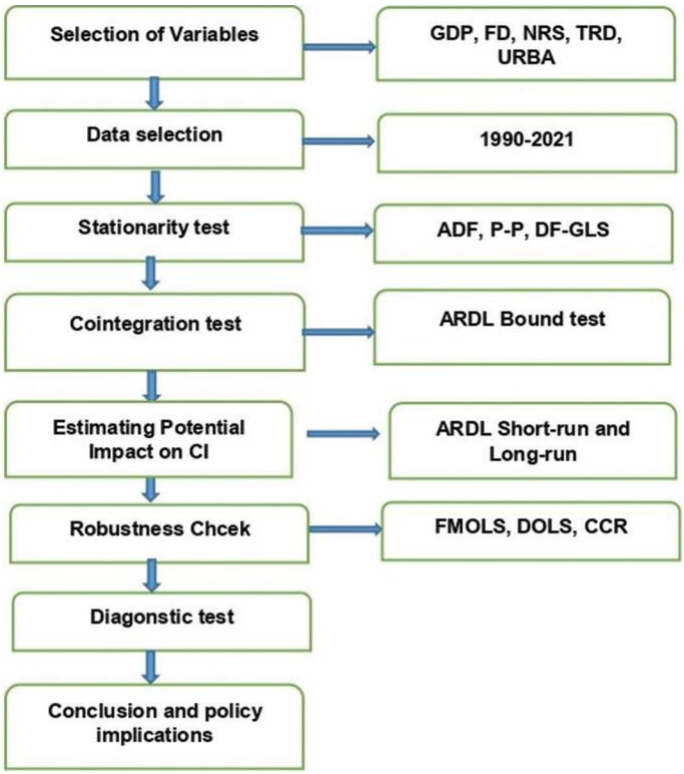
Where, β_0 shows intercept term and β_1 to β_4 used as coefficient of explanatory variables.

In equation (2) author use logarithm form of variables instead of their base form. Using the logarithmic form of variables instead of their base form is common in econometric research because it helps linearize nonlinear relationships, making it easier to estimate and interpret coefficients. Logarithmic transformations also allow for elasticity interpretation, where coefficients represent percentage changes in the dependent variable for a 1% change in the independent variable. Additionally, the log transformation reduces skewness in highly skewed data, stabilizes variance, and mitigates heteroscedasticity, leading to more reliable results. Overall, using logarithms often improves model fit and provides more meaningful and interpretable insights.

3.3. Econometric Framework

By doing so, this paper employed several econometric methods to meet its research objectives. We used the unit root test to check that variables were stationary. We then applied the ARDL algorithm to study the short-run and long-run correlations between variables. In order to validate ARDL estimations, the paper also used FMOLS, DOLS and CCR. At the end, various diagnostic tests were run to ensure that the model was valid and reliable. Here, we'll go over the econometric techniques we use to achieve the research goals in great detail. Figure 1: The estimate process diagram. To begin with, the unit root test does the trick by showing the stationarity of a time series (this is crucial to proper econometric modeling). Non-stationary observations can lead to false observations, preventing accurate conclusions (Raihan et al., 2024c). By knowing that a series does not have a unit root (ie, it is not stationary), researchers can apply the necessary adjustments, such as differencing, to convert the data to be stationary to run further calculations. It enhances accuracy and reliability of model estimates and intervariate relationships. They utilised Augmented Dickey-Fuller (ADF), Phillips-Perron (P-P) and Dickey-Fuller Generalized Least Squares (DF-GLS) tests to determine stationarity.

Figure 1: Path of estimation approach



This study employed ARDL method to detect cointegration among variables (Pesaran, 2001). The ARDL bound test is preferred over other estimation approaches because it can be applied regardless of whether the variables are stationary at level, first difference, or a combination of both (I(0) and I(1)). This flexibility allows for more robust analysis of both short-run and long-run relationships between variables. Unlike traditional cointegration tests, the ARDL bound test does not require the variables to be of the same order of integration, making it particularly useful for small sample sizes. Furthermore, it provides reliable results even in the presence of structural breaks or when the variables exhibit different levels of integration, offering an advantage over other cointegration techniques. Equation 3 illustrates the ARDL limits test:

$$\Delta LGDP_t = \varphi_0 + \pi_1 \mathrm{LGDP}_{t-1} + \pi_2 LFD_{t-1} + \pi_3 LNRS_{t-1} + \pi_4 LTRD_{t-1} + \pi_5 LURBA_{t-1} + \sum_{i=1}^{w} \varphi_2 \Delta\mathrm{LGDP}_{t-i} + \sum_{i=1}^{w} \varphi_3 \Delta\mathrm{LFD}_{t-i} + \sum_{i=1}^{w} \varphi_4 \Delta LTRD_{t-i} + \sum_{i=1}^{w} \varphi_5 \Delta\mathrm{LURBA}_{t-i} + \epsilon_t \quad (3)$$

No cointegration (the null hypothesis) is contrasted with evidence of cointegration (the alternative hypothesis). If the F-statistic exceeds the threshold values for the upper and lower limits, we cannot accept the null hypothesis. Null and alternative hypotheses are shown in Equations 4 and 5:

$$H_0 = \varphi_1 = \varphi_2 = \varphi_3 = \varphi_4 = \varphi_5 = \varphi_6 \quad (4)$$

$$H_1 = \varphi_1 \neq \varphi_2 \neq \varphi_3 \neq \varphi_4 \neq \varphi_5 \neq \varphi_6 \quad (5)$$

H_1 stands for the alternative hypothesis and H_1 for the null hypothesis.

We used the ARDL method after establishing that the parameters are co-integrated. The Error correction model (ECM) is applied to evaluate short-term correlations and the "Error Correction Term" after that the long-term associations have been established. Equation 6 is employed for the long-run ARDL estimation.

$$\Delta LGDP_t = \sum_{i=1}^{w} \varphi_1 \Delta\mathrm{LGDP}_{t-i} + \sum_{i=1}^{w} \varphi_2 \Delta\mathrm{LFD}_{t-i} + \sum_{i=1}^{w} \varphi_3 \Delta\mathrm{LNRS}_{t-i} + \sum_{i=1}^{w} \varphi_4 \Delta LTRD_{t-i} + \sum_{i=1}^{w} \varphi_5 \Delta\mathrm{LURBA}_{t-i} + \ell ECT_{t-i} + \epsilon_t \quad (6)$$

Where speed of adjustment is denoted by ℓ

We have employed the fully modified (FMOLS) and dynamic OLS (DOLS) and canonical correlation regression estimator (CCR)

estimation approach to check the validity of ARDL model. As a result, this research calculates long-term elasticity using FMOLS and DOLS estimators. As follows The FMOLS equation is shown by Equation 7;

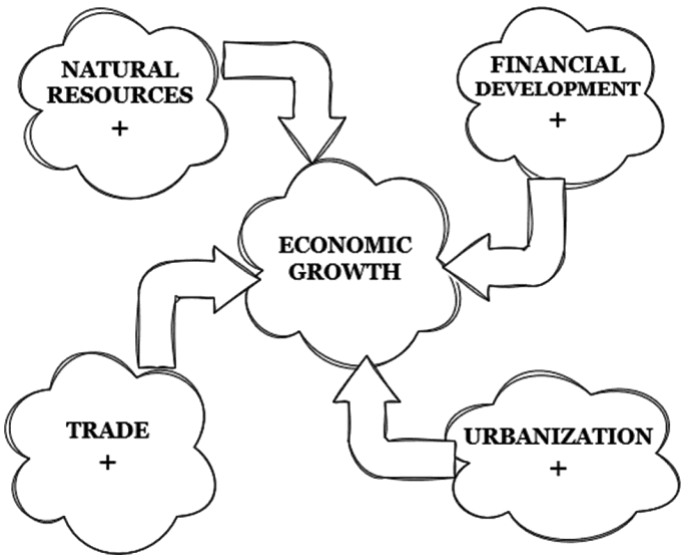
$$\Delta LGDP_t = \mho_0 + \mho_1 LFD_t + \mho_2 LNRS_t + \mho_3 LTRD_t + \mho_4 LURBA_t + \sum_{i=1}^{w} \pi_1 \Delta \mathrm{LGDP}_{t-i} + \sum_{i=1}^{w} \pi_2 \Delta \mathrm{LFD}_{t-i} + \sum_{i=1}^{w} \pi_4 \Delta LNRS_{t-i} + \sum_{i=1}^{w} \pi_5 \Delta \mathrm{LTRD}_{t-i} + \sum_{i=1}^{w} \pi_6 \Delta \mathrm{LURBA}_{t-i} + \epsilon_t \quad (7)$$

Where t illustrates the timing trend and SIC is used to indicate the lag order. The advantage of FMOLS and DOLS is that they address the issues of endogeneity, auto-regression, and bias resulting from sample bias. Figure 2 shows the flow of estimation approach.

4. RESULTS AND DISCUSSION

The summary statistics reveal key insights into the distribution of the five variables: LGDP, LFD, LNRS, LTRD, and LURBA. LGDP (log of GDP) has a mean of 24.70 with a narrow range between 24.10 and 25.15, indicating consistent economic growth across the dataset (Table 2). Its standard deviation of 0.32 signifies low variability. LFD (log of financial development) has a mean of −1.08, with higher skewness (−0.44) and a minimum value of −1.41, reflecting some degree of asymmetry in financial conditions. LNRS (log of natural resources share) exhibits a mean of 3.50 and the highest skewness (−0.72), suggesting a concentration of observations toward the lower end of its range. LTRD (log of trade openness) and LURBA (log of urbanization) have means of 4.42 and 4.32, respectively, with standard deviations of around 0.16 and 0.07, highlighting their relative stability. LURBA is positively skewed (0.64), contrasting the negative skewness of LTRD (−0.48). Kurtosis values for all variables are close to 3, suggesting near-normal distributions, with Jarque-Bera test results confirming no significant deviation from normality (P > 0.05). The dataset consists of 32 observations for each variable, with their sums and squared deviations showing consistent patterns of variability. Collectively, the data suggest modest variability across the variables, with LGDP and LURBA being more stable and LNRS displaying more pronounced skewness and range variation.

Figure 2: Visualization of findings



The outcomes of the unit root tests carried out to check the stationarity of the variables are presented in Table 3. This study utilized the Augmented Dickey-Fuller (ADF), Phillips-Perron (P-P) and Dickey-Fuller Generalized Least Squares (DF-GLS) tests to ensure robustness. The results show that LGDP, LFD and LNRS are not stationary at their respective concentrations but become stationar after differencing first. That is, these variables are of order one, I(1). LTRD and LURBA, on the other hand, do not move anywhere at all, which means that they are integrated of order zero, I(0). So the variables considered here are of mixed integration, some of them being I(0) and others I(1). Significantly, these outputs verify that the data is unaffected by unit root errors, and therefore ensures the confidence of subsequent computations. This conflation of stationarity characteristics supports the usage of models that can take in variables with varying integration orders, like the ARDL model. By taking the stationarity features into account, the paper ensures that the econometrics come up with fair and consistent outcomes.

The ARDL bounds test results presented in Table 4 evaluate the existence of a long-run relationship among the variables under study. The F-statistic value is 5.045, which is compared against the critical bounds at various significant levels: 10%, 5%, 2.5%, and 1%. The bounds are divided into two categories: I(0), representing the lower bound (no cointegration), and I(1), representing the upper bound (cointegration). At all significance

Table 2: Summary statistics of variables

Characteristics	LGDP	LFD	LNRS	LTRD	LURBA
Mean	24.70204	−1.080834	3.500857	4.421863	4.31831
Median	24.62318	−1.073368	3.530846	4.457966	4.286107
Maximum	25.1541	−0.850493	3.921626	4.72334	4.466414
Minimum	24.102	−1.414398	2.8933	4.114756	4.191199
Std. Dev.	0.324558	0.165334	0.263221	0.165573	0.074006
Skewness	−0.028241	−0.442057	−0.723881	−0.477085	0.636931
Kurtosis	1.799412	2.258391	2.853345	2.259025	2.318359
Jarque-Bera	1.926135	1.775521	2.823367	1.945977	2.783148
Probability	0.38172	0.411576	0.243733	0.377952	0.248684
Sum	790.4653	−34.58668	112.0274	141.4996	138.1859
Sum Sq. Dev.	3.265471	0.8474	2.147837	0.849848	0.169786
Observations	32	32	32	32	32

Table 3: Results of unit root test

Variables	ADF		P-P		DF-GLS		Decision
	I (0)	I (1)	I (0)	I (1)	I (0)	I (1)	
LGDP	−2.029	−3.443***	−2.761	−3.421***	−2.541	−3.651***	I (1)
LFD	−2.040	−4.295***	−2.431	−4.230***	−2.541	−4.540***	I (1)
LNRS	−2.670	−5.074***	−2.491	−5.630***	−2.506	−5.321***	I (1)
LTRD	−5.074***	−6.341***	−4.071***	−5.087***	−5.031***	−6.081***	I (0)
LURBA	−4.310***	−5.401***	−3.981***	−4.071***	−4.761***	−5.095***	I (0)

Table 4: Results of ARDL bound test

ARDL bound test	Test statistics	Value	K	
	F statistics	5.045	4	
	Significance level			
Critical bounds (%)	10	5	2.50	1
I (0)	2.20	2.56	2.88	3.39
I (1)	3.09	3.49	3.87	4.37

levels, the F-statistics exceeds the upper bound critical values of I(1). For instance, at the 5% significance level, the critical bounds are 2.56 (I(0)) and 3.49 (I(1)), and since the F-statistic (5.045) is >3.49, the null hypothesis of no cointegration is rejected. This implies a strong evidence of a long-run relationship among the variables in the model.

Table 5 presents the ARDL model results, highlighting both the short- and long-run dynamics of key determinants of economic growth in Oman. Financial development (LFD) demonstrates a significant positive impact, with long-run and short-run coefficients of 0.556 and 0.196, respectively. This indicates that a 1% increase in financial development leads to a 0.556% rise in economic growth in the long term and 0.196% in the short term. These findings emphasize the critical role of financial development in mobilizing savings, allocating resources efficiently, and fostering productive investments. In the Omani context, this positive relationship suggests that reforms in financial institutions and increased access to credit have supported economic activities, enabling businesses to expand and diversify. However, the greater magnitude of the long-run effect compared to the short run underscores the cumulative benefits of sustained financial sector growth, which policymakers must prioritize through targeted regulatory frameworks and innovations in financial inclusion. Natural resource abundance (LNRS) also reveals a strong positive relationship with economic growth, with coefficients of 0.432 in the long run and 0.451 in the short run. These results contradict the widely debated resource curse hypothesis, which argues that resource wealth often hinders economic progress. Instead, the findings suggest that Oman has effectively managed its resource revenues, transforming them into a source of economic prosperity. The positive short-run impact highlights the immediate benefits of resource exports, while the long-run impact reflects investments in infrastructure, education, and diversification initiatives funded by resource income. This underscores Oman's ability to turn natural resource wealth into a blessing by adopting sound fiscal policies and forward-looking strategies. However, while these findings are encouraging, the reliance on resource revenues necessitates continued efforts to mitigate vulnerabilities from global commodity price fluctuations through sustained economic diversification.

Table 5: ARDL Long-run and short-run results

Variables	LR	SR
LFD	0.556** (0.0402)	
LNRS	0.432*** (0.0641)	
LTRD	0.328*** (0.0431)	
LURBA	0.516* (0.4512))	
D.LFD		0.196** (0.0444)
D.LNRS		0.451*** (0.0221)
D.LTRD		0.074* (0.0741)
D.LURBA		0.191** (0.3998)
ECT (Speed adjustment)		−0.081*** (0.0172)
Constant		15.221*** (2.9981)
R-square	0.974	

Trade openness (LTRD) is another critical determinant, with significant positive impacts on economic growth observed in both the short run (0.074) and the long run (0.328). These results highlight the crucial role of trade in driving economic performance by providing access to larger markets, fostering competition, and facilitating technology transfer. Oman's strategic location on major international trade routes and its investments in port infrastructure have likely contributed to these positive effects. The larger long-run coefficient indicates that trade policies fostering integration into global markets yield substantial benefits over time by enhancing productivity and competitiveness. Policymakers should continue to promote trade liberalization and regional trade agreements while addressing barriers to trade, such as logistical inefficiencies and non-tariff obstacles, to maximize these gains. Urbanization (LURBA) also has a significant and positive impact on economic growth, with long-run and short-run coefficients of 0.516 and 0.191, respectively. This indicates that a 1% increase in urbanization results in a 0.516% increase in economic growth in the long term and a 0.191% increase in the short term. Urbanization fosters economic growth by concentrating economic activities, enhancing labor market efficiency, and creating economies of scale. In Oman, government-led urban development initiatives, including infrastructure investments and urban housing projects, likely contribute to this positive impact. However, the higher long-run effect highlights the importance of sustainable urban planning, as unplanned urbanization could strain resources and infrastructure, undermining long-term benefits. Policymakers must balance the rapid pace of urbanization with investments in sustainable urban infrastructure, public services, and environmental management.

The paper used FMOLS, DOLS, and CCR estimation to test the validity of the ARDL findings. These methods consistently found a strong positive correlation between financial development and economic development in Oman. In particular, FMOLS, DOLS and CCR respectively determined that a 1% increase in LFD increased GDP by 0.214%, 0.301% and 0.298% respectively

Table 6: Results of robustness check

Variables	FMOLS	DOLS	CCR
LGDP dependent			
LFD	0.214** (0.0541)	0.301*** (0.0352)	0.298** (0.2301)
LNRS	0.368*** (0.2031)	0.290*** (0.1082)	0.298** (0.2141)
LTRD	0.243** (0.573)	0.342** (0.2412)	0.315** (0.1562)
LURBA	0.145* (0.3201)	0.184** (0.3510)	0.189** (0.4220)
C	13.761***	15.782	15.335
R-squared	0.971	0.901	0.915

Table 7: Results of diagnostics test

Diagnostic tests	Coefficient	P-value	Decision
Jarque-Bera test	1.872931	0.2174	Residuals are normally distributed
Lagrange multiplier test	1.457182	0.2561	No serial correlation exits
Breusch-Pagan-Godfrey test	1.981021	0.1081	No heteroscedasticity exists

(Table 6). Likewise, natural resource abundance (LNRS) also showed strong positive correlations with economic growth, with a 1% increase in LNRS leading to 0.368%, 0.290% and 0.298% increases in LGDP depending on the approach. LTRD, too, was positively correlated with GDP growth: an increase of 1% in LTRD was followed by increases of 0.243%, 0.342% and 0.315% in LGDP (FMOLS, DOLS and CCR estimations). In addition, LURBA also proved to be a hugely beneficial factor: a 1% increase in LURBA increased LGDP by 0.145% in all three methods. These findings show consistency across estimation methods, adding weight to the strength of the conclusions and supporting the important roles of financial development, natural resources, trade and urbanization in Oman's economic growth.

Diagnostic tests results (Table 7) demonstrate the robustness of the model. The residuals are normalized by the Jarque-Bera test, with P = 0.2174, meaning that there is no problem of non-normality in the model that affects accurate hypothesis testing and inference. No serial correlation is observed using the Lagrange Multiplier test (P = 0.2561), suggesting that the residuals are time-independent and that the model is well defined to describe the correlations among variables. Additionally, the Breusch-Pagan-Godfrey test indicates no heteroscedasticity (P = 0.1081), meaning that the residual variance does not change with explanatory variables. These findings all validate the assumptions that are used in regression analysis and thus give more confidence to the results and ensure that the estimates are objective, effective and valid for policy decisions.

5. CONCLUSION AND POLICY IMPLICATION

This study examined the Resource Curse Hypothesis in Oman from 1990 to 2021, namely natural resource wealth, financial development, trade and urbanisation as drivers of economic development. These results shows that Resource Curse Hypothesis does not valid in Oman. They, more specifically, show that natural resource can substantially and positively impact economic growth in the short and medium term, which means that Oman has managed to maximise the advantages of its natural resources without being forced into the resource-intensive, stagnant traps of the hypothesis. Besides, the paper stresses the crucial role of financial development, trade and urbanisation in economic growth. Financial growth appears to be crucial to resource efficiency and investment, while trade brings economic diversification and globalisation. Urbanisation then propels growth further — not only through better infrastructure, but also innovation and labour market flexibility. The autoregressive distributed lag (ARDL) model and comparison with other estimations such as FMOLS, DOLS and Canonical Cointegration Regression (CCR) methods ensure the results are valid and robust. By illustrating how the link between natural resources and economic growth is good, as well as how these complement each other, this paper turns the classic Resource Curse argument on its head and instead explores Oman's capacity to effectively harness its resource wealth for long-term economic growth.

Based on this study, Oman must focus on maintaining its upward trajectory in resource use through policies that support the transformative potential of natural resource wealth for economic development. First, the government should focus on investments in economic diversification in order to lower long-term reliance on resource revenues, by developing manufacturing, tourism and technology industries. This diversification can be enhanced by targeted incentives, infrastructure, and skill development initiatives to better equip the workforce for the next wave of jobs. It's also important to improve financial development; government should encourage policies to deepen financial markets, improve access to credit for small and medium-sized businesses (SMEs), and foster innovation in the financial sector to increase capital mobilization and distribution. Expanding trade openness would mean reaching better trade deals, export competition, and trade barriers in order to make Oman more integrated in the global value chains. Cities and urban areas should be built sustainable, with smart cities, green infrastructure and affordable housing investing in them to keep up with population growth and sustain the environment. Then, Oman should set up mechanisms to oversee resource wealth responsibly, including sovereign wealth funds and stabilization funds, to insulate the economy from resource price shocks and intergenerational fairness. Such efforts would require cooperation among the public and private sectors, as well as good governance and anti-corruption measures, to enable these steps to be effectively carried out. With such policies, Oman can not only continue to grow economically but also establish resilience and adaptability in light of global economic and environmental threats.

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