

The Impact of the Banking Sector on Economic Growth in Saudi Arabia: An Empirical Analysis (2000-2020)

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Abstract

The financial sector plays the essential role of intermediary acting as a capital allocation mechanism, it mobilizes financial resources to be used in the most efficient manner possible. The banking sector is pivotal in stimulating economic activities in various ways. This research empirically investigated the banking sector's impact on economic growth in Saudi Arabia, using annual time series data for the period (2000-2020) collected from the World Bank. The autoregressive distributed lag (ARDL) approach with bounds testing and the associated error correction model (ECM) are used to test whether there is a short and long-term relationship between the banking sector and economic growth in Saudi Arabia. The results show that there are positive and significant relationships between all the explanatory variables (banks deposit to GDP, domestic credit to GDP, liquid liabilities to GDP, and oil price), and economic growth in the long run. Still, in the short run, they are all positive and significant except (the bank deposit to GDP) is insignificant. The research recommends that there is a need to concentrate on policies that encourage bank credit to the private sector and encourage banks to raise liquidity by more supporting e-bank services because they are important indicators for economic growth.

Keywords: Banking Sector, Economic Growth, ARDL Approach

1-Introduction:

Theoretical relationships between financial development and economic growth have been analyzed extensively in the literature. Banks as financial intermediaries play a main role in transforming deposits into financial assets. They channel funds from savers to borrowers in an efficient way to facilitate investment in physical capital and spur innovation and the creative destruction process. At the macroeconomic level, banks have a positive impact on growth, such as leakage in savings, allowing the development of longer-term projects with higher returns, or allowing risk sharing, (Khan, and Saeed, 2005).

The Kingdom of Saudi Arabia is considered one of the top twenty economic countries in the world, so it makes and influences international economics policies. There are 30 banks licensed by the Saudi Central Bank, 13 local banks, and 17 foreign branches. Banks in Saudi Arabia operate in a very competitive environment where the competition for customers' deposits and investments is intense

The banking sector in Saudi Arabia is considered an axis of economic development and the quality of banking services index information and communication technologies acquire the importance of banking in economic life. Where the electronic bank is considered to be a vital channel for distributing bank's services in many ways, E-banking is like a traditional payment, and information processing system, differing only in that e-bank utilizes electronic means to deliver

these services (Mahdi,, 2012). Saudi Arabia's banking is based on Islamic fundamentals, so the Sharia law distributes risk between the lender and borrower depending on Musharaka financing and Mudaraba financing, (Rehman, 2018).

Saudi Arabia is the largest oil exporter, the government budget revenue depends on the oil sector with a share of about 87%. The oil sector contributes 42% of the GDP, and 90% of export earnings (World Fact Book, 2020).

Since the global financial crisis, oil markets have witnessed fluctuations in oil prices and the slowdown in global economic growth has had an adverse effect on the Saudi economy. In this very vein, the Kingdom brought a road map christened as Vision 2030, which has provided the requisite pedestal for the stock market to be in sync with the global benchmark, and the market capitalization of the Saudi stock market to GDP is 70% in 2017, (Ul Hassan and Amin, 2023).

The forte of Saudi stock market can be evinced by the fact that the market capitalization to GDP was reported 70% in 2017.

The research investigates empirically the long-run relationship and short-run dynamic linkages between banking sector and economic growth in Saudi Arabian during the period (2000-2020). More specifically, it investigates the effect of banks credit to the private sector (BCP) to GDP (%), liquid liabilities (LL) to GDP (%), banks deposit (BDP) to GDP (%), and oil prices (OL), on economic growth in Saudi Arabia.

2- literature Review

Theoretical relationships between financial development and economic growth have been analyzed extensively in the literature. Financial development mobilises savings, identifies and funds good business projects, monitors the performance of managers, facilitates trading and the diversification of risks, and fosters exchange of goods and services. These services result in a more efficient allocation of resources, a more rapid accumulation of physical and human capital, and faster technological innovation, thus inducing faster long-term economic growth (Nasir, and Aleem, 2018).

International Monetary Fund (IMF) argued that (electronic banking is the wave of the future, it provides not only enormous benefits for consumers in terms of the ease and cost of transactions, but also poses new challenges for country authorities in regulating and supervising the financial system and designing and implementing macroeconomic policy) (Jalil,2008 from (IMF, 2002)).

Economic growth plays a vital role in addressing unemployment issues. This is achieved by creating job opportunities across various sectors due to heightened demand for human resources. Moreover, it helps balance the economic restructuring process and enhances productivity within manufacturing sectors. Ultimately, economic growth supports many institutions and nations in achieving self-sufficiency, spanning sectors such as education and healthcare while maintaining a balanced payment situation (Anwar, and Kholishoh, 2023).

Rodriguez and Chavez's (2023) study aimed to evaluate the effect of commercial bank credit on economic activities across the whole manufacturing sector and seven selected manufacturing industries. Unlike previous literature examining the impact of bank credit on the Mexican economy, this research discovers evidence (using ARDL-Bounds models) of a positive and considerable influence of bank credit on output for the entire sector and specific industries: a) food, b) beverages and tobacco; c) paper; iv) non-metallic mineral products; v) manufacturing of transportation equipment; alongside significant effects from fixed investments in machinery and equipment and real interest rates. Additionally, the study found no evidence that loan concentration impacts manufacturing output. These findings

suggest that bank credit plays a pivotal role in incentivizing industrial activity and can inform policy development.

(Ul Hassan and Amin, 2023) examined the effect of banking performance on the economic growth of Saudi Arabia. The study employs panel autoregression distributed lag approach by considering 12 banks for the period between 2000-2018. The panel unit root analysis showed a mixed result of the stationarity of the variable. The dynamic fixed effects (DFE) estimates showed that bank performances as proxied by i.e., banks' asset and net interest margin have long-run and short-run effects on economic growth whereas the earlier one has more influence than the latter one. In addition to this, we also observed that oil price, as a control variable, has both long-run and short-run significant and positive relationship with the country's economic growth. Thus, they recommend that banking regulation and its related policy should be supportive of the expansion of the banking sector which has a direct linkage with the economic growth of Saudi Arabia.

Rehman (2018), investigated the linkage between financial development and economic growth in Saudi Arabia from 1985 to 2016 by employing Vector Auto Regression (VAR) model. Results of VAR report that there are few significant values of coefficients among the purported variables. The Granger causality test states that the economic growth measured by real GDP per capita and BSD measured by the ratio of Broad Money to GDP (M2 to GDP) exhibits bi-directional linkage. The SMD measured by the ratio of the stock market capitalization to GDP causes the BSD. Pertinent authorities in the Kingdom should buttress a considerable set of financial reforms in sync with the global stipulations to drive forward economic growth.

Different sets of indicators have been used in attempts to measure the financial development of economies. Starting in 1999, the World Bank began publishing a database on financial development and structure across countries. The most recent World Bank study updates and expands the financial development and structure database. This database has a select number of financial system indicators (around thirty) including:

- i. indicators for the size of the financial system, including liquid liabilities to GDP, currency outside banking system to base money, financial system deposits to GDP, and so forth;
- ii. banking system indicators for size, structure, and stability;
- iii. indicators for capital markets and the insurance sector; and
- iv. indicators for financial globalization, such as international debt to GDP and remittance inflow to GDP.

World Bank provide indicators on regulation and supervision of banks, coverage and structure of deposit insurance schemes, and indicators of barriers to banking access in developing and developed countries. The first indicator of financial intermediation credit to the private sector (CPS) which is credit extended to the private sector by commercial banks as a ratio to real GDP, this ratio emphasizes the important role the financial sector plays, especially commercial banks, in financing the private economy (World Bank, 2001) .

Also, Almalkawi, Marashdeh and Abdullah (2012), empirically examined the relationship between financial development and economic growth in a small open economy of United Arab Emirates (UAE). Using time series data from 1974 to 2008

the study showed a negative and statistically significant relationship between financial developments and economic growth .

Levine, Loayza and Beck (2000) showed that CPS is an exclusive measure of the intermediary role of commercial banks since it excludes credit issued to the private sector from credit issued to governments and its agencies, as well as credit issued by the central bank. The underlying assumption is that bank credit extended to the private sector impacts on investment and productivity to a much larger extent than do the credit provided to the public sector. This variable represents amore adequate indicator of financial development since it captures the role of banks in financial intermediation and measure the ability of the banking system to channel savings to investors, there by leading to growth (World Bank, 2001)).

The second indicator that captures and combines both the size and depth of financial intermediary activity of the sector is broad money supply as a percentage of real GDP (MS). An increase in MS may be interpreted as an improvement of financial deepening in the economy.

3- Methodology and Data collected:

3-1 Methodology: The research is using the autoregressive distributed lag (ARDL) bounds testing approach to co-integration, as developed by Pesaran and Smith (1995), and Pesaran, Shin and smith (2001). This research adopts the bounds testing approach on a sample size of 21 annual observations to examine the relationship between banking sector and economic growth in Saudi Arabia. The first step is to run the Augmented Dikky-Fuller (ADF) unit root test to examine stationary of the series of model variables in equation (1):

$$i. \quad LGDP_t = \alpha_0 + \alpha_1 BCP_t + \alpha_2 LDCP_t + \alpha_3 LL_t + \alpha_4 OL_t + U_t(1)$$

Along the lines of Pesaran, Shin and Smith (2001), if all variables involved are stationary, the next step is to apply the bounds testing approach to examine co-integration between the variables. According to Pesaran and Shin (1999), the bounds testing approach to co-integration involves:

- ii. The long-run equilibrium equations in (1) in the form of an autoregressive distributed lag (ARDL) model. Assuming maximum lag lengths of q and k\ for the dependent and explanatory variables, respectively, the general (unrestricted) error correction models (ECMs) underlying the two ARDL models in equation (1) are given by:

$$iii. \quad \Delta \ln GDP_t = a + Bt + \lambda_1 \quad GD \quad P_{t-1} + \lambda_2 \ln BCP_{t-1} + \lambda_3 \ln DCP_{t-1} + \lambda_4 \ln LL_{t-1} + \lambda_5 \ln OL_{t-1} + \sum_{i=1}^a \phi_i \Delta \ln GDP_{t-1} + \sum_{i=1}^k \varepsilon_i \Delta \ln BCP_{t-1} + \sum_{i=1}^k \psi_i \Delta DCP_{t-1} + \sum_{i=1}^k \gamma_i \Delta \ln LL_{t-1} + \sum_{i=1}^k \delta_i \Delta \ln OL_{t-1} + u_{1t}(2)$$

- iv. Where FD is as defined above; the parameters $\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5$ and λ_6 are the long-run parameters (elasticity's), while $\phi_i, \varepsilon_i, \psi_i, \gamma_i$, and δ_i , are the short dynamic coefficients of the underlying ARDL model and u_{it} is disturbance term..The null hypothesis “non-existence of the long-run relationship” defined by:

$$H0: \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = 0$$

And it is tested against the alternative hypothesis

$$H1: \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq \lambda_4 \neq \lambda_5 \neq \lambda_6 \neq 0$$

The F-test has a nonstandard distribution test. The lower critical bound assumes that all the variables are1(0) meaning that there is no cointegration among the variables, while the upper bound assumes that all the variables are

1(1). Applying OLS methods to estimate the general ARDL model of the form:

$$\begin{aligned} \text{LnPGD} \quad P_t = a + Bt + \sum_{i=1}^q \lambda_{1i} \ln \text{PGDP}_{t-i} + \sum_{i=0}^{k_1} \lambda_{2i} \ln \text{GOV}_{t-i} + \\ \sum_{i=0}^{k_2} \lambda_{3i} \ln \text{INV}_{t-i} + \\ \sum_{i=0}^{k_3} \lambda_{4i} \ln \text{OPEN}_{t-i} + \sum_{i=0}^{k_4} \lambda_{5i} \ln \text{INF}_{t-i} + \sum_{i=0}^{k_5} \lambda_{6i} \ln \text{FD}_{t-i} + U_t \quad (3) \end{aligned}$$

By applying OLS method to the conditional ARDL long-run models in equation (3), we obtain estimates of the long-run parameters $\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5$ and λ_6 . The estimated equation is also used to obtain an estimate of the error correction term (EC_{t-1}), which is obtained from equation (3) as:

$$\begin{aligned} EC_{t-1} = \ln \text{PGDP}_t - a - Bt - \sum_{i=1}^q \lambda_{1i} \ln \text{PGDP}_{t-i} - \sum_{i=0}^{k_1} \lambda_{2i} \ln \text{BCP}_{t-i} - \\ \sum_{i=0}^{k_2} \lambda_{3i} \ln \text{DCP}_{t-i} - \sum_{i=0}^{k_3} \lambda_{4i} \ln \text{LL}_{t-i} - \sum_{i=0}^{k_4} \lambda_{5i} \ln \text{OL}_{t-i} \quad (4) \end{aligned}$$

The final step involves estimating the short-run dynamic parameters by applying OLS to the error correction representation of the conditional ARDL model in equation (3). The ECM model is given by:

$$\begin{aligned} \Delta \ln \text{BCP}_{t-1} + \sum_{i=1}^{k_3} \gamma_i \Delta \ln \text{DCP}_{t-i} + \sum_{i=1}^{k_4} \delta_i \Delta \ln \text{LL}_{t-i} + \sum_{i=1}^{k_5} \theta_i \Delta \ln \text{OL}_{t-i} + \\ \mu EC_{t-1} + U_{1t} \quad (5) \end{aligned}$$

Where:

EC_{T-1} is error correction term.

$\phi_i, \varepsilon_i, \psi_i, \gamma_i, \delta_i$, and θ_i are the parameters of short-run dynamic coefficients.

μ is the a while the coefficient of the error correction term.

3-2 Data Sources

This research attempts to establish the relationship between banking sector and economic growth in Saudi Arabia. It employs annual data from (2000-2020) (21 years) for all the variables used. These are: Gross Domestic Product per capita (GDP), bank credit to the private sector (BCP) to GDP (%), Domestic credit to the private sector (DCP) to GDP (%), liquid liabilities (LL) to GDP (%) and Oil price (OL, control variable),.

$$\text{LGDP}_t = \alpha_0 + \alpha_1 \text{BCP}_t + \alpha_2 \text{LDCP}_t + \alpha_3 \text{LL}_t + \alpha_4 \text{OL}_t + U_t \quad (1)$$

Where: α_0 : The intercept.

LGDP : Growth in real GDP per capita.

LBCP : Bank Credit to the Private sector .

LDCP : Domestic Credit to the Private sector.

LOL : Oil Price.

U_t : Random variable. $\alpha_1, \alpha_2, \alpha_3$ and α_4 are the long-run parameters (elasticities).

World Bank (2007), bank credit can be considered as the best measure because it essentially captures the degree to which banks are channeling the society's saving to most productive uses and hence economic growth. This measure according to them excludes credit to public sector because in most cases especially in the developing countries where credits to public sector are not as efficient as to those in the private sector due to the problems of mismanagement, corruption and bureaucracies.

(BCP) is used as a proxy of banking sector development. This index measures the level of financial intermediation in the economy. Bank credit to private sector indicates the value of allocation of resources by financial intermediaries to private sector divided by GDP.

Liquid liabilities (LL) as a percentage of GDP Is defined as, currency plus demand and interest-bearing liabilities of banks and non-bank financial intermediaries as percent of GDP. It is a measure of financial depth and thus of overall size of the financial intermediary sector.

Bank deposits consist of money placed into banking institutions for safekeeping. These deposits are made to deposit accounts such as savings accounts, checking accounts and money market accounts. Banks should mobilize adequate amount of deposits in the economy. Deposit mobilization is therefore a key first step in the financial intermediation process. Banks simply cannot function without deposits from savers in the economy.

4- Empirical Results:

The purpose of this research is to examine the short and long run relationship between banking sector and economic growth in Saudi Arabia using annual time series data during (2000-2020) by employing the ARDL bounds testing approach to co-integration and the associated error correction model (ECM). The first test is unit root.

4.1 Unit Root Test Results: The implementation of unit root tests in the ARDL procedure might still be necessary in order to ensure that none of the variables is 1(2) or beyond.

Table (4.1) Unit Root Tests for Stationary of Variables:

Variable	Calculated ADF statistic						Order of Integration I(d)
	Levels			1st differenced			
	With Intercept	With Intercept and Trend	Without Intercept and Trend	With Intercept	With Intercept and Trend	Without Intercept and Trend	
lnGDP	-2.3129	-2.3898	0.8531	-5.8392	-5.7719	-5.9319	1(1)
	0.1736	0.3783	0.3394	0.0000	0.0002	0.0000	
lnBCP	0.2405	3.9412	1.9068	9.6030	9.4884	8.7230	1(0)
	0.9238	0.0203	0.9846	0.0000	0.0000	0.0000	
lnDCP	2.0779	-1.1424	3.3420	-3.7576	-4.6887	-3.2990	1(1)
	0.0017	0.9068	0.9996	0.0073	0.0034	0.0017	
lnLL	0.1174	3.8677	1.0029	3.1551	3.3956	2.7596	1(0)
	0.9626	0.0251	0.9133	0.0315	0.0683	0.0072	

<i>lnOL</i>	3.4543	2.6898	1.9232	5.9792	5.7919	5.9879	1(1)
	0.1223	0.3363	0.3399	0.0000	0.0001	0.0000	

Source: Eviews analysis results.

From Table (4.1) the variables: bank credit to private sector and liquidity liabilities are stationary in the level and thus integrated from the zero grade, while the economic growth and oil prices stationary in the first difference. Therefore the integrated in the first class so the ARDL method for co-integration is the most suitable one that can be adopted in this case.

As seen in the table (4.2) below, the calculated F-statistic for two equations exceeds the corresponding upper critical bound values at the 1% significance level as calculated by Pesaran et al (2001). Therefore, the hypothesis of no long term relation is rejected and long term relation is confirmed.

Table (4.2) ARDL Bounds Test for Co-integration:

F-Statistic	Critical value bounds of the F-statistics					
	1% Level		5% Level		10% Level	
	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)
7.87	4.29	5.61	3.23	4.35	2.72	3.77

Source: Eviews analysis results.

* Statistical significance at 1% level

Therefore, the null hypothesis of no co-integration is rejected and concluding that there is a long-run level relationship between the regressors and economic growth as dependent variable in the model.

Table (4.3) Estimation of the Long-Run Relationship:

To find a long-run relationship, the research applied the ARDL method to estimate the long-run coefficients.

Table (4.3) Estimation of Long-Run Coefficients Using the Selected ARDL Model for *lnGDP*:

Regressor	Coefficient	t-Ratio	P-value	R^2	D.W
<i>ln BCP</i>	1.535582	2.958179	0.0025	0.87	1.88
<i>lnDCP</i>	0.794759	1.810056	0.0870		
<i>lnLL</i>	1.126069	2.936298	0.0037		
<i>lnOL</i>	2.268837	2.975880	0.0015		

Source: EvIEWS analysis results.

It is obvious from Table (4.3) that the estimated equation of growth real GDP shows the results of the long-run relationship between the dependent variable GRGDP and the other regressors. As expected, the bank's credit to the private sector exerts a positive and statistically significant impact on economic growth in the long run, the relationship between them in terms of elasticity remains strong i.e. 1% increase in credit to the private sector leads to a respective economic growth increase of 1.53%. The domestic credit to the private sector by banks variable has the expected positive sign.

But even though, the level of domestic credit to the private sector by banks exerts a positive and statistically significant impact on economic growth in the long run, the relationship between them in terms of elasticizes remains weak i.e. a 1% increase in domestic credit to the private sector by banks leads to a respective economic growth increase of 0.79 % only. This indicates that domestic credit to the private sector by banks in Saudi Arabia has an important effect on economic growth, but is weak. This weakness may be attributed to the situations of negligence of banks to the productive sectors.

- As it is shown also liquid liabilities has the expected positive sign. That means liquid liabilities exert a positive and statistically significant impact on economic growth in the long run, the relationship between them in terms of elasticizes remains strong i.e. a 1% increase in liquid liabilities leads to a respective economic growth increase of 1.13%. The estimated coefficient is highly significant in the case of liquid liabilities. Oil price exerts a positive and statistically significant impact on economic growth in the long run, the relationship between them in terms of elasticizes remains strong i.e. a 1% increase in oil price leads to a respective increase of 2.27%. The estimated coefficient is highly significant in the case of oil prices.

The coefficient of determination (R^2) is 0.87. The result shows that about 87% of the variation in GDP is caused by variations in the explanatory variables in Saudi Arabia. The Durbin-Watson statistics is 1.88 which shows the absence of serial correlation.

Estimation of the Short-Run Dynamic Coefficients of the Error Correction Representations of the ARDL Models: Dependent Variable $\Delta \ln GDP$:

Lastly, I estimate the short-run dynamic coefficients by using OLS method to estimate the ECM equations associated with the ARDL long-run relationships. It is obvious from table (4.4) that the overall model is significant and the goodness of the fit is high. The coefficient of the lagged residual (ECT_{t-1}) in the ECM model shows the speed of adjustment towards the equilibrium following a shock to the system. The negative and significant ECT validates our system.

Table (4.4) Estimation of the Short-Run Dynamic Coefficients of the Error Correction Representations of the ARDL Models: Dependent Variable $\Delta \ln PGDP$

Regressor	Coefficient	t-Ratio	Significance Level
$\Delta \ln GDP_{-1}$	1.803270	5.368801	0.0000
$\Delta \ln BCP_{-1}$	1.045649	2.772121	0.0126
$\Delta \ln BDP_{-1}$	0.313230	2.068162	0.0296

$\Delta \ln LL_{-1}$	0.980653	3.311099	0.0039
$\Delta \ln OL_{-1}$	1.303250	5.144801	0.0000
EC_{-1}	1.762183	5.392453	0.0000
	13.3 =F	R²	0.85 =

Source: Eviews analysis results.

The results indicate that in the short-run all the variables (banks deposit to GDP, domestic credit to GDP, liquid liabilities to GDP, and oil price), are statistically significant and have expected signs, but it is obvious that the elasticity of banks domestic is low (0.31) with economic growth, thesis attributed to deposit credit may have gone into the wrong hands and the the wrong sector.

The results also indicate that the coefficient of the error correction term EC_{t-1} has the correct sign in the first version of the model,

5. Conclusion

This research investigated empirically the impact of banking sector on economic growth in Saudi Arabia using annual time series data for the period (2000-2021). Autoregressive distributed lag (ARDL) approach and the associated error correction model (ECM) are used to test whether there is short and long run relationship between banking sector indicators and economic growth in Saudi Arabia. The results shows that there are positive and significant relationship between all the explanatory variables (banks deposit to GDP, domestic credit to GDP, liquid liabilities to GDP, and oil price), and economic growth in the long run, but in the short run they are all positive and significant except (bank deposit to GDP) is insignificant.

6. Recommendations:

- Concentrate policies on encourage banks to raise the liquidity by more supporting of electronic banking which is transforming the banking and financial industry in term of the nature of core products, services and the way these are packaged, proposed , delivered and consumed. It's an invaluable and power full tool driving development, supporting growth, promoting innovation and enhancing competitiveness.
- Advocated for prioritizing credit allocation to the private sector, to encourage businesses, small and medium, due to promote economic growth through employment, production and logistics services.
- Directing economic policies to benefit from oil revenues in diversifying the productive structure of the Saudi economy instead of relying on the petroleum sector exposed to global price fluctuations to maintain stable economic growth.

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