

The Determinates of Financial Development in Iraq

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Received: 2017, December 15

Accepted: 2018, January 21

Abstract

This paper examines the effect of factors on the development of commercial banking in Iraq. Seven factors used as determinates for financial depth which are per capita GDP, inflation rate, government budget deficit, share of state-owned banks of total assets as proxy of financial repression, oil sector domination, international trade openness and political stability as explanatory variables against the banking development as endogenous variable. By using VAR model, empirically the paper found that the per capita real GDP, the degree of openness and share of state-owned banks of total assets are the variables stimulated the financial depth in Iraq during 1980 and 2010. However other variables did not register any influence for financial development in Iraq. In addition, the paper found unidirectional relationship between financial development and economic growth run from real sector to financial sector.

Keywords: Financial Depth, Economic Growth, VAR, Iraq.

JEL Classification: G18, O10, C22.

1. Introduction

There are voluminous studies emphasizes that a well-functional financial system accelerating and promoting economic growth such as studies by Schumpeter, 1912; Patrick, 1966; Mackinnon, 1973; Shaw, 1973; King & Levine 1993 and others. The most functional financial system is the one that can effectively mobilizing savings, allocating funds to most productive uses, monitoring managers, so the funds allocated will be spent as envisaged, and transforming risk (reducing it through aggregation and enabling it to be carried by those more willing to bear it (World Bank, 2001: 33).

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Most of the studies have examined the relationship between the financial development as independent variable and economic growth as dependent variable as well other explanatory variables (King & Levine, 1993) and others. However, there are very few studies that explained what effects the development of financial system, in other words, making the financial development as dependent variable and a set of variables independent. Hence, the main contribution of this paper is to be extending to the literature and to be the first to determine the factors that affect the banking development in Iraq.

Banks operate in uncertain economic conditions and unpredictable political environments. Thus, there are various economic and political factors affect the performance and development of the banking system. The selected factors are per capita GDP, inflation rate, government budget deficit, government ownership of banks as proxy of financial repression, oil sector domination, international trade openness and political stability. A minor turbulence in any of these volatile variables is assured to affect the banking system in a major way. Therefore, the most important question needs an answer is: what leads or accelerates a well-developed banking system in Iraq? Or, put differently, what hinders the development of banking system in Iraq? It would be incorrect to assign a single factor that influences the development of banking system. Rather, researchers have pointed out several factors that contribute to the development of banking system.

The Iraqi banking system has undergone several economic and politic changes and fluctuates since 1980s. These changes and fluctuations represented in the government dominated over the banking system, oil shocks, wars, economic sanctions, deteriorate of economic growth, and finally the harmful sequences of USA invasion since 2003. Consequently, this paper attempts to shed some light on the main factors that affected the development of banking system in Iraq during the period (1980 - 2010).

- Objective of the Paper

The paper aims to determine the main factors that have played key role in promoting or dampening the development of banking system in Iraq.

- Hypothesis of the Paper

The paper tests the following hypothesis “all seven mentioned above factors have stimulated the development of banking system in Iraq”.

- Problem of the Paper

A developed banking system is strongly needed to finance and spurring economic growth in Iraq. Therefore, we must identify the factors that stimulate or hinder the development of banking system in Iraq. Once we determinate that factors we can improve the factors that leads to its development and at the meantime we can tackle the factors that deterring its development.

The paper has divided into following. Section 2 is overviews of literature. Section 3 methodology and data sources. Section 4 interprets of the result. Last section summarizes the findings and policy implementations.

2. Literature Review

The paper cites seven factors and believes that they are responsible for the development of the banking system in Iraq. Thus, this section is viewing the literature regarding these seven factors.

2.1 Economic Growth

The literature has examined the importance of nexus between financial development and economic growth since early 20th century. The original debate on this subject can be traced to the writings of Schumpeter (1911) who argued that finance leads economic growth. This idea has further conformed by (King & Levine, 1993) and others.

However, Robinson introduced different idea when she stated that financial development follows economic growth, and articulated this causality argument by suggesting that “where enterprise leads finance follows” (1952: 88). Patrick also concluded the same idea that “as the real side of the economy develops its demand for various new financial services materialize, and these are met rather passively from the financial side (1966: 177). At the same line, the empirical searches on the topic pointed out that economic growth leads to the financial development. Boulila and Trabelsi (2004) examined the nexus between economic growth and financial development for the Middle

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East and North African (MENA) countries. They found that the direction of causality runs from economic growth to financial development for the sample group during the period 1960-2002. Zang and Kim (2007) tested the causality between financial development and economic growth and found that the direction of causality runs from economic growth to financial development.

According to this view, the lack of financial development in a country is simply an indicator of the lack of demand for financial services due to underdeveloped real economic sectors. As the real sectors of an economy grow, the demand for financial services increases and this will be provided by the financial sector and then create a developed financial system.

2.2 Inflation Rate

A growing theoretical literature describes mechanisms whereby even predictable increases in the rate of inflation inhibit with the ability of the financial sector to allocate resources efficiently. More specifically, recent theories emphasize the importance of information asymmetries in credit markets and demonstrate how increases in the rate of inflation adversely affect credit market frictions with negative consequences for financial sector (both banks and equity markets) performance and therefore long-run real activity (Huybens and Smith, 1999).

Now there is a fact that a high rate of inflation adversely affects financial development. This fact has been proved by the empirical studies. For instance, Haslag and Koo (1999: 5) show that the financial sector is less developed as inflation increases, particularly, when the average of inflation rate is high. Boyd et al. (2001) empirically provide evidence that there is a significant and economically negative relationship between inflation and development of banking sector. The deterioration in the banking sector development takes the form of diminished long-term lending potential by banks to the private sector, inferior quality of bank's assets and reduced volume of liability. The results of their study show that in economies with annual inflation rates above 15 percent, there is a large discrete drop in financial sector development as compared to economies with lower inflation rates. In addition, Khan et al. (2001:

15) also confirmed that when the inflation rate is above (6%) annually will has high negative effects on financial development in sample of 168 countries during the period 1960-1999.

2.3 Budget Deficit

An increased deficit in the state budget would have further negative consequences on the banking sector. In order to take care of deficits in their budgets, governments follow two types of policies. (i)The first is the excessive printing and over-issue of new currency. This method is the easiest, but has greater negative impact on the price and overall macroeconomic stability as this leads to the hyperinflation. (ii)The second is excessive borrowing directly from the banking sector via issuing treasury bills and bonds which are subscribed to and held by banks. In the case of excessive issue of treasury bills and bonds, the government preempts the national savings to pay for its deficits. In addition, the private intermediation function of banks will be undermined. As commercial banks hold a considerable portion of their assets in the form of treasury bills and government bonds, ultimately they will have less capacity of lending to potential borrowers from the private sector. The financial development decreases as long as low credit delivered to private sector.

In most countries, even the most developed, banks hold a certain fraction of their assets as government bonds. This has long been deemed essential for liquidity. However, in case of high budget deficit, the proportion of bank assets held as government bonds is likely to be especially high. Therefore, the high budget deficit is associated with low development of banking sector.

Recent studies confirmed the ‘crowding-out’ hypothesis, which means that a rise in the government’s borrowing from banks to meet budget deficit reduces the scope of bank lending to the private sector and consequently inhibit the financial development (Mustafa Ismihan et al., 2010; Rym Ayadi et al., 2013).

2.4 State Ownership of Banks

The harmful effect of financial repression on financial development has been argued since the seminal works of McKinnon (1973) and Shaw (1973). They ascribed the poor performance of investment and growth in

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developing countries to interest rate ceilings, high reserve requirements, quantitative restrictions in the credit allocation mechanism, and more government intervention in the banking system by ownership of banks. Those restrictions were sources of financial repression the main indicators of low savings, credit supply and low investment.

The empirical studies have provided clear evidence of the negative consequences of financial repression on financial development and economic growth. Roubini and Sala-i-Martin (1992) found that a high degree of financial repression leads to the lowering of economic growth. Demetriades and Luintel (1997) show that the policies of financial repression played restrained role in development of the financial system in India. Fry (1997) found that financial repression reduces economic growth via dampening the financial development.

Moreover, we have focused on the wide intervention of the government in the banking system via its ownership of banks. A number of studies proved that the wide share and control of state-owned banks in the banking system associated with low performance and depth of the banking system. Rafael La Porta et al. (2000) revealed in their paper two main findings, the first is that the state ownership of banks is wide in countries with low levels of per capita income and underdeveloped financial systems, and the second is that the state ownership of banks is associated with lower subsequent of financial development. In the same vein, Xiao and Zhao (2012) found that in countries with higher government ownership of banks, banking sector development has no significant or sometimes even significantly negative effects on firm innovation.

2.5 Political Stability

Political stability of the country is equally important for the financial sector development just as all the other factors that have been explained above. The importance of political factor lies in the observation that there is a tremendous variability in the levels of financial development in those countries that are at the same stage of economic development but are governed by different political systems. The mode of exercise of political power of incumbent governments is invoked to explain this phenomenon. It is therefore, argued that this disparity is justified due to the existence of interested

groups who are fundamentally opposed to financial openness and liberalization. Financial liberalization induces greater competition from new entrants thereby threatening the self-interests of the existing elites who enjoy a privileged position in obtaining finance and other benefits. Hence, financial liberalization is closely connected to political democracy, and, so, taking a firm decision to liberalize the economy requires the government to reconstructing deliberately itself by taking a new view of its role in the economic affairs, and authoritarian governments do not find that easy to do (Bein and Calomiris, 2001: 39).

Arestis and Sawyer (2005: 28) argued that the introduction of trade and financial sector liberalization simultaneously is expected to align the interests of both the elites and other economic agents and promote financial development. Similar arguments about the relationship between the degree of application of democratic principles of governance, political stability and financial sector development can be found in the works of Rajan and Zingals (2003) and Grima and Shortland (2008). For instance, Rajan and Zingales (2003) have empirically proved that the political systems governed by narrow elites (incumbents) obstruct the development of the financial system. Therefore, they suggest economic liberalization as an instrument to reduce incumbents' power in the economy and create competition. By opening the windows to liberalization, the financial sector development will be freed from the stifling atmosphere for favoritism and discrimination. Grima and Shortland (2008) also provide empirical evidence to argue that both the degree of democracy in governance and stability of the political system have statistically significant effects on the speed of financial development. Their findings also confirm that the more liberalized a country is, faster is its financial development. Similarly, those countries that have not experienced a major regime transition for a long time tend to have faster financial development than those which have regular political upheavals and radical changes in government.

2.6 Domination of Oil Sector

Many studies revealed that the dominion of natural resource (especially oil sector) as key source of finance and investment is

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associated with underdeveloped financial system. The increased revenues from oil sector crowds out the banking system in allocating loans to public sector enterprises, since in most developing oil economies the public sector is controlling the economic activities. Thorvaldur and Gylfi suggested that “When a large part of national wealth is stored in a natural resource, renewable or not, there is less need for financial intermediation to conduct day-to-day transactions” (2001: 22). This may generate lower propensities to save since the government is the main spender in the country. Nili and Rastad (2007) found that there is lower level of financial development in the oil economies, and the financial systems have net damping effect on investment for oil economies. Yuri and Álvaro (2014: 4) stated that “in an economy largely dependent on natural resources (for example, oil), it is very unlikely that financial sector development has a significant influence on overall growth”. Meanwhile, they found that the highly dependence of Angola on oil sector inhibited the development of financial system in the same country. Another study by Nahla and others (2014) found that the great dependence on oil sector makes the financial system negatively affect the GDP growth of Saudi Arabia.

2.7 Trade Openness

The positive effect of international trade in spurring economic growth has long been proved and can be traced to the seminal work of Adam Smith since 1779. There are several empirical studies found steady nexus between the trade openness and economic growth¹. The nexus between trade openness and financial development has also been examined. Kletzer and Bardhan concluded from their theoretical models that the underdeveloped financial system (where exist of high interest rate on loans and tighter credit rationing) drives the economy away from specializing in sophisticated manufactured products requiring more working capital, selling costs and trade finance (1987: 70). In the same vein, Thorsten Beck (2002) indicated that the

1. For more details about the international trade and economic growth see:
- Óscar Afonso, The Impact of International Trade on Economic Growth, working paper, Faculdade De Economia, 2001. Retrieved from:
<http://wps.fep.up.pt/wps/wp106.pdf>.

countries with a relatively developed financial system have a comparative advantage in industries and sectors that rely on external finance. Do and Levchenko (2004) found that trade openness is associated with faster financial development in wealthier countries, and with slower financial development in poorer ones. In a research for Mauritius (Jeevita and Boopen) found that the impact of trade openness was significant but negative on financial development.

3. Methodology and Data Sources

For testing the paper's hypothesis stated early and building on the discussions viewed in section2, we have to estimate the following equation.

$$\text{DEPTH} = f(\text{GROW}, \text{INF}, \text{OWN}, \text{POLI}, \text{OIL}, \text{OPN}, \text{DEFI}) \quad (1)$$

DEPTH refers to financial depth which measured by the credit to private sector divided by GDP. The banking system can be developed as long as more credit granted to the private sector.

The economic growth rate (CROW) proxied by the real per capita GDP. The development in the real sector induces the financial sector to produce and meet the additional demand for new financial services. This idea was first introduced by Robinson when she claims that "where enterprise leads, finance follows" (1952: 86). In the same vein, Patrick (1966) introduced the approach of (Demand – Following Hypothesis), where he stated that "finance is essentially passive and permissive in the growth process" (1952:175). That mean the developed financial sector is manifestation to the demand for financial services and products by investors and savers. Therefore, the underdeveloped financial system is due to low demand for financial services and products because of the structural distortions in the real sector. Thus, we expect to have a positive sign between the economic growth rate as endogenous variable and financial depth according to the Robinson's school.

The annual inflation rate (INF) measured by annual change in the consumer price index CPI. The high rate of inflation over the interest rate on deposits means that the depositors receive negative and unmotivated gains. This situation induces the savers to hold other

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assets rather than bank deposits and ultimately reduce the bank scope to provide more credit. Therefore, we expect to have negative sign of this indicator on the financial depth.

The share of state-owned banks of total assets of banking system (OWN) also used to gauge the effect of banks ownership on the development of banking system. As many studies indicated that the state-owned banks are associated with low financial performance and depth. Thus, we assume to have negative sign of this indicator.

The financial sector as well as real sector can perform their functions efficiently only if there is stable political and security situation. We believe the presence of stable political situation promotes financial depth as long as it allows the financial institutions work safely and the capital move freely. Thus, the political stability (POLI) used as determinative to financial development. We measure this indicator by dummy variable which get value (0) for the year of peace and value (1) for the year of uncertain security and war.

The domination of one sectors in the economy either oil or agricultural sector or other sector of course will influence the development of financial sector. The petroleum sector is the main sector in many developing countries including Iraq, where its share of GDP and national income reaches over 60% (Iraqi Ministry of Planning). We have to keep in mind that the petroleum sector is capital intensive sector and usually does not borrow from the financial system for purposes of production or distribution. The highly dependence on the petroleum sector in an economy is associated with underdeveloped financial system. Thus, we assume a negative effect of high share of petroleum sector of GDP on the financial depth in Iraq. According to the data availability of the national accounting of Iraq we used the share of Mining and Quarrying sector of GDP which it denoted by (OIL).

The openness to international trade (OPN) also found to have an impact on the financial development and thus it used here as determinative of financial development in Iraq. Iraq largely relies on the imports to meet the increased domestic demand for consumer and durable goods. This highly dependence on imports imply decreased level of local production and then lower demand for bank loans by local private enterprises. At the meantime, Iraq extensively relies on

exporting single good which is oil to obtain enough funds for government budget. The process of extracting and sale of oil in the international market does not need to borrow from national financial system. Therefore, the indicator of trade openness measured by $\{(\text{imports}+\text{exports})/\text{GDP}\}$ and expected to have negative sign on financial depth in Iraq.

The budget deficit (DEFI) also expected to pursue negative impact on financial development in Iraq. The high level of budget deficit usually is financed by the borrowing from the banking system via issuing of Treasury bills and government bonds. The high government borrowing from banking system crowded out the private enterprises for obtaining finance at moderate rate of interest. According to data, the ratio of treasury bills and government bonds held only by commercial banks to total assets of banks reached (18%) in 1982, (86%) in 1991, (52%) in 2000, and (1.5%) in 2010 (Central Bank of Iraq). This reveals that Iraqi banks highly financed the budget deficit particularly during the times of war in 1980s and economic sanctions in 1990s.

4. Empirical Results Analysis

4.1 Unit Root Test

The Augmented Dickey – Fuller (ADF) test is used to test the null hypothesis, which states that the particular series has unit root (non-stationary) against the alternative hypothesis the same series has not unit root (stationary). Table (1) shows that all variables are integrated of order one $I(1)$, which means that all variables become stationary after differencing.

4.2 Testing for Cointegration

The first step in applying VAR model to examine what derive the financial depth in Iraq is to test the existing of long run relationship (cointegration) of the estimated model. Thus, we applied the Johansen-Juselius approach for cointegration test. This approach used to test the null hypothesis of long run nexus (cointegration) does not exist against the alternative hypothesis of existing long run nexus in the estimated model. The results of table (2) reveal that there is long

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run relationship among the estimated variables and thus the null hypothesis must be rejected.

Table 1: Results of Unit Root Test

| <i>ADF</i> | | | |
|------------------|---------------|-----------------------------------|------------------------------|
| <i>Variables</i> | <i>Levels</i> | <i>1st Differenced</i> | <i>Status of Integration</i> |
| DEPTH | -2.0 | -5.7 | I(1) |
| GROW | -2.5 | -6.3 | I(1) |
| INF | -2.9 | -6.8 | I(1) |
| OWN | -2.7 | -4.5 | I(1) |
| OIL | -3.2 | -7.6 | I(1) |
| OPN | -2.8 | -4.7 | I(1) |
| DEFI | -1.4 | -9.3 | I(1) |

| | | | | |
|-----------------|-----------|------|-----------|------|
| Critical Values | 1% level | -4.2 | 1% level | -4.2 |
| | 5% level | -3.5 | 5% level | -3.5 |
| | 10% level | -3.2 | 10% level | -3.2 |

Notes: Critical values follow the MacKinnon (1996) one-sided p-values.

Source: Author's estimation by using EViews 9 package.

Table 3: Johansen-Juselius Test of Cointegration

| Null Hypothesis | Estimated Statistic Tests | | Critical Value 5% | |
|-----------------|---------------------------|----------|-------------------|------|
| | Trace | Max | Trace | Max |
| $r=0$ | 279.8 * | 130.6 * | 159.5 | 52.3 |
| $r \leq 1$ | 149.2 * | 42.7 | 125.6 | 46.2 |
| $r \leq 2$ | 106.5 * | 37.4 *** | 95.7 | 40.0 |
| $r \leq 3$ | 69.0 *** | 23.4 | 69.8 | 33.8 |
| $r \leq 4$ | 45.5 *** | 16.7 | 47.8 | 27.5 |
| $r \leq 5$ | 28.8 *** | 13.0 | 29.7 | 21.1 |
| $r \leq 6$ | 15.8 ** | 10.6 | 15.4 | 14.2 |
| $r \leq 7$ | 5.1 ** | 5.1 ** | 3.8 | 3.8 |

Notes:

1. The results obtained by using the EViews 9 package.
2. r stands for the number of cointegration vectors.
3. *, **, and *** denoted significantly at 1% , 5%, and 10% level of significance respectively

4.3 Estimation of Vector Autoregressive (VAR) Model

The above analysis strongly approved the existing of long run nexus among the variables. This point allows us to continue further analysis in examining what derive or hinder the financial depth in Iraq. The Vector Autoregressive (VAR) is applied to estimate the nexus among the variables. VAR model fundamentally simple model in it is multivariate linear time series model designed to capture joint dynamic multiple time series. VAR model treats each endogenous variable in the system are functions of lagged values of all endogenous variables. It offers simple and flexible alternative to the traditional multiple models. Every equation in VAR model includes lagged values of all variables as endogenous variables in addition to the exogenous variable. The reduced form of VAR model is given as following:

$$DEPTH_t = \alpha_1 + \omega_{11} DEPTH_{t-1} + \varphi_{12} CROW_t + \varphi_{13} INF_t + \varphi_{14} OIL_t + \varphi_{15} OPN_t + \varphi_{16} OWN_t + \varphi_{17} DEFI_t + \mu_1$$

$$CROW_t = \alpha_2 + \omega_{21} CROWN_{t-1} + \varphi_{22} DEPTH_t + \varphi_{23} INF_t + \varphi_{24} OIL_t + \varphi_{25} OPN_t + \varphi_{26} OWN_t + \varphi_{27} DEFI_t + \mu_2$$

$$INF_t = \alpha_3 + \varphi_{31} INF_{t-1} + \varphi_{32} DEPTH_t + \varphi_{33} CROWN_{t-1} + \varphi_{34} OIL_t + \varphi_{35} OPN_t + \varphi_{36} OWN_t + \varphi_{37} DEFI_t + \mu_3$$

$$OIL_t = \alpha_4 + \varphi_{41} OIL_{t-1} + \varphi_{42} DEPTH_t + \varphi_{43} CROWN_{t-1} + \varphi_{44} INF_t + \varphi_{45} OPN_t + \varphi_{46} OWN_t + \varphi_{47} DEFI_t + \mu_4$$

$$OPN_t = \alpha_5 + \varphi_{51} OPN_{t-1} + \varphi_{52} DEPTH_t + \varphi_{53} CROWN_{t-1} + \varphi_{54} INF_t + \varphi_{55} OIL_{t-1} + \varphi_{56} OWN_t + \varphi_{57} DEFI_t + \mu_5$$

$$OWN_t = \alpha_6 + \varphi_{61} OWN_t + \varphi_{62} DEPTH_t + \varphi_{63} CROWN_{t-1} + \varphi_{64} INF_t + \varphi_{65} OPN_t + \varphi_{66} OIL_{t-1} + \varphi_{67} DEFI_t + \mu_6$$

$$DEFI_t = \alpha_7 + \varphi_{71} DEFI_{t-1} + \varphi_{72} DEPTH_t + \varphi_{73} CROWN_{t-1} + \varphi_{74} INF_t + \varphi_{75} OIL_{t-1} + \varphi_{76} OPN_t + \varphi_{77} OWN_t + \mu_7$$

Table (4) summarize the results of VAR's model estimation which reveal that the variables (economic growth CROW, openness OPN, and, share of state owned banks of total assets OWN) are significantly affect the financial depth (DEPTH) as exogenous variable. While the other variables are not, because of they were not statistically significant. At the same time, when we use the economic growth variable as exogenous variable the results indicate that the openness variable affects the economic growth only in Iraq, while the other variables are not. This fact

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emphasizes that the nexus between economic growth and financial depth run in one direction from economic growth to financial depth and the opposite is not true in the case of Iraq.

Table 4: Vector Autoregression Estimates

| Vector Autoregression Estimates | | | | | | | |
|--|--------------------|------------|------------|------------|------------|------------|------------|
| Sample (adjusted): 1982 2010 | | | | | | | |
| Included observations: 29 after adjustments | | | | | | | |
| Standard errors in () & t-statistics in [] | | | | | | | |
| | DEPTH | CROW | DEFI | INF | OIL | OPN | OWN |
| | 1.407435 | -66.82204 | 1431077. | 30.21298 | -8.255168 | -0.548162 | -2.021127 |
| DEPTH(-1) | (0.50424) | (168.527) | (2143939) | (55.8668) | (9.01189) | (1.20597) | (0.88647) |
| | [2.79118] | [-0.39651] | [0.66750] | [0.54080] | [-0.91603] | [-0.45454] | [-2.27997] |
| | -0.586626 | 169.3438 | -946050.3 | -31.55836 | 7.999722 | 0.385722 | 1.438209 |
| DEPTH(-2) | (0.39701) | (132.689) | (1688015) | (43.9864) | (7.09545) | (0.94951) | (0.69796) |
| | [-1.47760] | [1.27625] | [-0.56045] | [-0.71746] | [1.12744] | [0.40623] | [2.06060] |
| | 0.001893 | 0.535963 | -3033.527 | -0.066872 | -0.012359 | -0.001870 | -0.002137 |
| CROW(-1) | (0.00080) | (0.26897) | (3421.75) | (0.08916) | (0.01438) | (0.00192) | (0.00141) |
| | [2.35258] | [1.99264] | [-0.88654] | [-0.74999] | [-0.85929] | [-0.97158] | [-1.51012] |
| | -0.001206 | 0.002076 | -5682.631 | -0.046933 | 0.008030 | 0.000693 | 0.003343 |
| CROW(-2) | (0.00067) | (0.22422) | (2852.47) | (0.07433) | (0.01199) | (0.00160) | (0.00118) |
| | [-1.79827] | [0.00926] | [-1.99218] | [-0.63141] | [0.66973] | [0.43185] | [2.83452] |
| | 5.36E-08 | 6.25E-06 | -0.507338 | -3.81E-06 | -8.61E-07 | -2.22E-09 | -7.19E-08 |
| DEFI(-1) | (8.5E-08) | (2.8E-05) | (0.36028) | (9.4E-06) | (1.5E-06) | (2.0E-07) | (1.5E-07) |
| | [0.63216] | [0.22075] | [-1.40817] | [-0.40560] | [-0.56826] | [-0.01093] | [-0.48259] |
| | 6.49E-08 | -1.01E-05 | -0.182180 | -1.66E-06 | -3.35E-07 | -8.26E-08 | -8.03E-08 |
| DEFI(-2) | (5.7E-08) | (1.9E-05) | (0.24173) | (6.3E-06) | (1.0E-06) | (1.4E-07) | (1.0E-07) |
| | [1.14172] | [-0.53185] | [-0.75366] | [-0.26387] | [-0.32957] | [-0.60713] | [-0.80380] |
| | 0.002190 | -0.422736 | -7678.455 | 0.288658 | -0.022839 | -0.016397 | -0.002743 |
| INF(-1) | (0.00280) | (0.93556) | (11901.8) | (0.31014) | (0.05003) | (0.00669) | (0.00492) |
| | [0.78224] | [-0.45185] | [-0.64515] | [0.93074] | [-0.45652] | [-2.44915] | [-0.55749] |
| | 0.000880 | -0.594408 | -540.7268 | -0.276634 | -0.032430 | 0.010316 | -0.000526 |
| INF(-2) | (0.00268) | (0.89669) | (11407.3) | (0.29725) | (0.04795) | (0.00642) | (0.00472) |
| | [0.32809] | [-0.66289] | [-0.04740] | [-0.93064] | [-0.67633] | [1.60765] | [-0.11157] |

Table 4: Vector Autoregression Estimates

| | | | | | | | |
|-----------------------|-------------------|-------------------|-----------------|------------------|-----------------|-----------------|-----------------|
| | 0.005392 | -6.565719 | 350123.4 | 1.182097 | 0.138843 | -0.000816 | -0.016740 |
| OIL(-1) | (0.03584) | (11.9790) | (152392.) | (3.97102) | (0.64057) | (0.08572) | (0.06301) |
| | [0.15044] | [-0.54810] | [2.29752] | [0.29768] | [0.21675] | [-0.00952] | [-0.26567] |
| | -0.021424 | 10.35569 | 95376.07 | -2.481017 | 0.909056 | 0.024241 | 0.090240 |
| OIL(-2) | (0.02992) | (9.99919) | (127206.) | (3.31473) | (0.53470) | (0.07155) | (0.05260) |
| | [-0.71607] | [1.03565] | [0.74978] | [-0.74848] | [1.70012] | [0.33878] | [1.71571] |
| | 0.059424 | -67.70163 | -63579.32 | -11.95937 | -1.779222 | 0.529250 | -0.306514 |
| OPN(-1) | (0.10346) | (34.5771) | (439876.) | (11.4623) | (1.84899) | (0.24743) | (0.18188) |
| | [0.57439] | [-1.95799] | [-0.14454] | [-1.04337] | [-0.96227] | [2.13899] | [-1.68527] |
| | 0.269128 | 89.59452 | -240697.1 | -6.205292 | -2.434988 | -0.329927 | -0.290187 |
| OPN(-2) | (0.11050) | (36.9327) | (469844.) | (12.2432) | (1.97495) | (0.26429) | (0.19427) |
| | [2.43545] | [2.42588] | [-0.51229] | [-0.50684] | [-1.23293] | [-1.24837] | [-1.49373] |
| | 0.551553 | -9.443729 | -1088884. | 8.069477 | -6.208797 | -0.482217 | -0.264008 |
| OWN(-1) | (0.21425) | (71.6065) | (910950.) | (23.7376) | (3.82911) | (0.51241) | (0.37666) |
| | [2.57433] | [-0.13188] | [-1.19533] | [0.33995] | [-1.62147] | [-0.94108] | [-0.70092] |
| | -0.443295 | 5.416839 | 1418075. | 1.116528 | 2.585255 | 0.401254 | 0.684005 |
| OWN(-2) | (0.18423) | (61.5717) | (783291.) | (20.4110) | (3.29251) | (0.44060) | (0.32387) |
| | [-2.40626] | [0.08798] | [1.81041] | [0.05470] | [0.78519] | [0.91070] | [2.11196] |
| | -10.54254 | 593.8862 | -30185765 | -698.3486 | 355.7394 | 9.777868 | 54.15064 |
| C | (8.71302) | (2912.05) | (3.7E+07) | (965.345) | (155.720) | (20.8384) | (15.3177) |
| | [-1.20998] | [0.20394] | [-0.81482] | [-0.72342] | [2.28448] | [0.46922] | [3.53518] |
| | -0.640515 | -223.6739 | -363050.3 | 40.64966 | 5.803647 | -0.330139 | 1.461785 |
| SECURITY | (0.65810) | (219.948) | (2798095) | (72.9128) | (11.7616) | (1.57393) | (1.15695) |
| | [-0.97328] | [-1.01694] | [-0.12975] | [0.55751] | [0.49344] | [-0.20976] | [1.26348] |
| R-squared | 0.843863 | 0.843853 | 0.810640 | 0.509866 | 0.785361 | 0.632527 | 0.950996 |
| Adj. R-squared | 0.663704 | 0.663683 | 0.592147 | -0.055674 | 0.537700 | 0.208520 | 0.894453 |
| Sum sq. resids | 9.057190 | 1011706. | 1.64E+14 | 111178.6 | 2892.980 | 51.80634 | 27.99242 |
| S.E. equation | 0.834690 | 278.9687 | 3548929. | 92.47809 | 14.91767 | 1.996272 | 1.467400 |
| F-statistic | 4.684005 | 4.683652 | 3.710144 | 0.901556 | 3.171116 | 1.491785 | 16.81894 |
| Log likelihood | -24.27503 | -192.8171 | -466.8977 | -160.7974 | -107.8890 | -49.56236 | -40.63647 |
| Akaike AIC | 2.777588 | 14.40118 | 33.30329 | 12.19292 | 8.544072 | 4.521542 | 3.905963 |
| Schwarz SC | 3.531959 | 15.15555 | 34.05766 | 12.94729 | 9.298442 | 5.275912 | 4.660333 |
| Mean dependent | 1.888966 | 771.0800 | 2089936. | 52.43276 | 20.85759 | 0.851317 | 96.12379 |

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Table 4: Vector Autoregression Estimates

| | | | | | | | |
|---|-----------|----------|----------|----------|----------|----------|----------|
| S.D. dependent | 1.439343 | 481.0399 | 5557064. | 90.00652 | 21.94012 | 2.243881 | 4.516740 |
| Determinant resid covariance (dof adj.) | 2.26E+23 | | | | | | |
| Determinant resid covariance | 8.23E+20 | | | | | | |
| Log likelihood | -986.3652 | | | | | | |
| Akaike information criterion | 75.74932 | | | | | | |
| Schwarz criterion | 81.02991 | | | | | | |

Source: Calculated by Using Eviews 9.

4.4 Estimate Granger Causality Test

The Granger causality test is used to identify the causal direction among related variables particularly. The results of table (5) indicated that the economic growth granger cause financial depth and the opposite incorrect when we use one lag period. When we apply two lags order the results show absence of causality between these variables.

Table 5: Granger Causality Test Results

| Pairwise Granger Causality Tests | | | |
|--|-----------|----------------|---------------|
| Sample: 1980 2010 | | | |
| Lags: 1 | | | |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
| CROW does not Granger Cause DEPTH | 30 | 5.36156 | 0.0284 |
| DEPTH does not Granger Cause CROW | | 2.74731 | 0.1090 |

Source: Calculated by Using Eviews 9. The whole results shown in appendix 1.

4.5 Testing the Stability of VAR Model

The test of stability of our estimated model is done by applying the AR Roots in both the table and graph as shown in table (6). The results reveal that our VAR model is stable which indicate the accuracy of the model's results.

Table 6: The Stability of VAR's Model

| Root | | Modulus |
|-----------------------|--|----------|
| -0.989702 | | 0.989702 |
| 0.973283 - 0.136494i | | 0.982807 |
| 0.973283 + 0.136494i | | 0.982807 |
| 0.535969 - 0.577422i | | 0.787831 |
| 0.535969 + 0.577422i | | 0.787831 |
| -0.326570 - 0.639811i | | 0.718336 |
| -0.326570 + 0.639811i | | 0.718336 |
| 0.109739 - 0.662724i | | 0.671748 |
| 0.109739 + 0.662724i | | 0.671748 |
| 0.554730 - 0.338903i | | 0.650062 |
| 0.554730 + 0.338903i | | 0.650062 |
| -0.447289 - 0.330468i | | 0.556127 |
| -0.447289 + 0.330468i | | 0.556127 |
| 0.318782 | | 0.318782 |

No root lies outside the unit circle.
 VAR satisfies the stability condition.

Inverse Roots of AR Characteristic Polynomial

5. Conclusion and Policy Implication

A developed financial system is strongly needed for Iraqi economy to correct the structural distortions in the economy. We believe as the literatures emphasize that an existing of sophisticated financial system is necessary as springing for economic development especially in the early stages of development process. Thus, this paper investigates what derive or hinder the financial development in the country. The empirical analysis found that the per capita real GDP, openness and share of state-owned banks of total assets are the variable stimulated the financial depth in Iraq during the period 1980-2010. However other variables did not register any influence for financial development in Iraq.

Consequently, we suggest that more attention need to be given to increase the GDP by various channels, since the improvements in the real sector can create new demand for financial services. Moreover, the over 40 privately owned banks have to increase their competition with the only 2 state-owned commercial banks as a way to improve the supply of financial services for both savers and investors. The Central Bank of Iraq has also to adopt a strategy to merger those 40 private banks into smaller number of banks with greater scope of providing better financial services.

In addition, other strategies that can increase the financial depth in Iraq are: 1) establishing more small and medium enterprises that can create more demand for financial products as well as reducing the gap between imports and the increased local demand for consumer and durable goods. 2) Improves other real sectors rather than highly relying on the oil sector can increase the variation of GDP and also the demand for financial products.

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Appendix (1): Results of Granger Causality Test

| Pairwise Granger Causality Tests | | | |
|-----------------------------------|-----|-------------|--------|
| Sample: 1980 2010 | | | |
| Lags: 1 | | | |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
| CROW does not Granger Cause DEPTH | 30 | 5.36156 | 0.0284 |
| DEPTH does not Granger Cause CROW | | 2.74731 | 0.1090 |
| DEFI does not Granger Cause DEPTH | 30 | 1.49960 | 0.2313 |
| DEPTH does not Granger Cause DEFI | | 0.21978 | 0.6430 |
| INF does not Granger Cause DEPTH | 30 | 2.28127 | 0.1426 |
| DEPTH does not Granger Cause INF | | 0.79731 | 0.3798 |

Appendix (1): Results of Granger Causality Test

| | | | |
|---------------------------------------|----|---------|--------|
| OIL does not Granger Cause DEPTH | 30 | 2.85669 | 0.1025 |
| DEPTH does not Granger Cause OIL | | 5.08694 | 0.0324 |
| OPN does not Granger Cause DEPTH | 30 | 0.32158 | 0.5753 |
| DEPTH does not Granger Cause OPN | | 1.77756 | 0.1936 |
| OWN does not Granger Cause DEPTH | 30 | 0.10916 | 0.7437 |
| DEPTH does not Granger Cause OWN | | 4.16255 | 0.0512 |
| SECURITY does not Granger Cause DEPTH | 30 | 0.64982 | 0.4272 |
| DEPTH does not Granger Cause SECURITY | | 7.13620 | 0.0126 |
| DEFI does not Granger Cause CROW | 30 | 2.5E-05 | 0.9960 |
| CROW does not Granger Cause DEFI | | 0.06284 | 0.8040 |
| INF does not Granger Cause CROW | 30 | 2.31134 | 0.1401 |
| CROW does not Granger Cause INF | | 0.27284 | 0.6057 |
| OIL does not Granger Cause CROW | 30 | 0.00116 | 0.9730 |
| CROW does not Granger Cause OIL | | 0.00225 | 0.9625 |
| OPN does not Granger Cause CROW | 30 | 0.31554 | 0.5789 |
| CROW does not Granger Cause OPN | | 0.98732 | 0.3292 |
| OWN does not Granger Cause CROW | 30 | 0.08314 | 0.7753 |
| CROW does not Granger Cause OWN | | 2.80004 | 0.1058 |
| SECURITY does not Granger Cause CROW | 30 | 2.59983 | 0.1185 |
| CROW does not Granger Cause SECURITY | | 1.96510 | 0.1724 |
| INF does not Granger Cause DEFI | 30 | 0.00022 | 0.9883 |
| DEFI does not Granger Cause INF | | 0.25489 | 0.6177 |
| OIL does not Granger Cause DEFI | 30 | 5.22450 | 0.0303 |
| DEFI does not Granger Cause OIL | | 0.40536 | 0.5297 |
| OPN does not Granger Cause DEFI | 30 | 0.19804 | 0.6599 |
| DEFI does not Granger Cause OPN | | 0.00291 | 0.9574 |
| OWN does not Granger Cause DEFI | 30 | 0.05305 | 0.8196 |
| DEFI does not Granger Cause OWN | | 0.00045 | 0.9832 |
| SECURITY does not Granger Cause DEFI | 30 | 1.04670 | 0.3153 |
| DEFI does not Granger Cause SECURITY | | 0.70725 | 0.4077 |
| OIL does not Granger Cause INF | 30 | 0.73985 | 0.3973 |
| INF does not Granger Cause OIL | | 0.51418 | 0.4795 |
| OPN does not Granger Cause INF | 30 | 0.31375 | 0.5800 |
| INF does not Granger Cause OPN | | 0.41893 | 0.5229 |
| OWN does not Granger Cause INF | 30 | 0.35403 | 0.5568 |
| INF does not Granger Cause OWN | | 0.24005 | 0.6281 |

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Appendix (1): Results of Granger Causality Test

| | | | |
|-------------------------------------|----|---------|--------|
| SECURITY does not Granger Cause INF | 30 | 2.10822 | 0.1580 |
| INF does not Granger Cause SECURITY | | 2.10407 | 0.1584 |
| OPN does not Granger Cause OIL | 30 | 0.41153 | 0.5266 |
| OIL does not Granger Cause OPN | | 0.26814 | 0.6088 |
| OWN does not Granger Cause OIL | 30 | 3.88641 | 0.0590 |
| OIL does not Granger Cause OWN | | 6.39717 | 0.0176 |
| SECURITY does not Granger Cause OIL | 30 | 0.33017 | 0.5703 |
| OIL does not Granger Cause SECURITY | | 4.23136 | 0.0495 |
| OWN does not Granger Cause OPN | 30 | 0.05659 | 0.8138 |
| OPN does not Granger Cause OWN | | 6.54796 | 0.0164 |
| SECURITY does not Granger Cause OPN | 30 | 0.82692 | 0.3712 |
| OPN does not Granger Cause SECURITY | | 0.49002 | 0.4899 |
| SECURITY does not Granger Cause OWN | 30 | 5.25609 | 0.0299 |
| OWN does not Granger Cause SECURITY | | 0.56719 | 0.4579 |