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The Impact of Financial Development on Iraqi Economic Growth (1970-2015)

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Abstract

Financial development plays vital role in channelling financial resources toward highly productive and efficient investment opportunities. This paper examined the potential effect of the Iraqi financial sector development on economic growth using annual data for the period 1970-2015. We applied principle component analysis to aggregate the financial development indicators in Iraq. VECM estimator applied after the data are examined for unit root order, and the existence of co-integration among model variables.

The results of the estimated reduced form shows clearly positive and significant short run effect of the financial development variable on economic growth, and negative significant long run effect. The role of the financial sector in the Iraqi economy will furthered enhanced if More development, new innovation and technology, efficient management, more freedom and government support to the private financial sector. We strongly believe that the Iraqi financial sector will witnesses a huge expansion and development in the coming years, and will contribute positively not in the short run but in the long run too in higher economic growth.

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KEYWORDS : Financial Deepening, Economic Growth, Financial Development.

Introduction :

Financial development is the key factor in stimulating and enhancing the economic rate of growth. This statement has a generalconsensus among many economists who conduct an econometric investigation to the effect of the financial sector development on economic growth. Among developing countries and Iraq is one of them, recent studies suggest weak, insignificant, and sometimes negative effect between financial development and economic growth Kalaf (2014), Breede (2015), Nwani and BasseyOrie, (2016), Adeniyi et al., (2015), Samargandi et al., (2014). In resource abundance countries such as oil dependence economies where oilrevenue, and thus government role is a dominant in the economic activities, private financial institutions have been marginalized and had a very trivial role in economic activity.

Although such financial private intermediaries should contribute positively by channelling saving, improve allocation of resources and increase

investment, and then enhance economic rate of growth. Government owned financial institutions are dominant of the financial Iraqi sector and rely heavily on oil revenue to finance their investment rather than developing vibrant private financial sector.

The rest of Our paper is organized as follow: section 2presents the the oreticalback ground, section 3 examines The mechanism of Financial Deepening affecting Economic Growth, section 4 discusses Financial development and economic growth models, section 5 explain Data and methodology, section 6 deals with Model specification, section 7 presents Estimation Results and Discussion, and section 8 deals with conclusions.

2. Theoretical Background

Financial development contributes positively to a country's flexibility and enhances economic growth. It channels savings, encourage information sharing, refinement resource

allocation, and expedite diversification and management of risk. It also helps to achieve financial stability and sustain rate of economic growth. A deep and liquid financial systems with diverse instruments help dampen the impact of shocks Sahay (2015).

Financial deepening is an important factor affecting the economic growth rate in developed and developing countries. First economist argued that developing the financial system will contribute positively to economic growth through the rational allocation of resources to the most productive investments, Schumpeter, 1934; Gurley and Shaw, 1955; Goldsmith, 1969; King and Levine, 1993; Greenwood and Smith, 1997; and many others. However some up to date research found that the relation between financial deepening and economic growth are weakened and even negative in the short run Niliand Rastad (2007), and Beck (2011). Other argued the nonlinearity of the relationship, and its affected by

the degree of development of the financial system, Deidda and Fattouh (2002).Arcand et al. (2012) concluded that the existence of a negative relationship between the degree of deepening of the financial system and the economic growth especially in highly developed countries where the financial sophistication exceeds a certain threshold point.

Akpan, E. et.al (2017) examined the effect of financial development on economic growth in Nigeria for the period 1985-2015. They found a bi-directional causality moving from credit to the private sector, total bank deposit, and market capitalization toward economic growthrate.

Nawani and Orie (2016) study the effect of the stock market and the development of the banking system on economic growth of Nigeria for the period 1981-2014. They used ARDL method of co-integration analysis. They found insignificant relationships between both Stock market, and banking system development on economic

growth. They concluded that the great degree of dominancy of the oil sector in economic activity weakened the financial sector influence.

Kurronen (2015) studied the effect of the banking sector development in resource dependent economies. He used data from 128 countries covering the period 1995-2009. He found that the banking sector getting smaller in resource dependent countries while the utilising of market based finance is getting more common. He also found that if the financial sector created to meet the needs of the resource sector, hence will obstruct the economic diversification and consolidate the resource curse legacy.

Samargaroli et.al (2013) studied the effect of the financial sector development on oil rich country (Saudi Arabia). They used ARDL bounds test method, and found insignificant effect but negative of financial sector development on GDP, while found positive effect and significant on Non-Oil GDP.

Estrada et.al., (2010) investigated the effect of financial development on economic growth on Asia countries. They found a significant positive but weak relationship between financial development and economic growth. They concluded that further development of the financial system in Asia countries will effect economic growth not by increasing the quantity of investment, but by improving quality and efficiency to sustain the rate of economic growth Barajas and Yousefi (2012) studied the reason behind the slow rate of growth in the Mediterranean Associated Countries (MEDA) over the past three decades. They concluded that the low rate of growth can be traced to underperformance of the financial sector. Hence strengthening the financial deepening, promote banking competition, enhancing credit information, reducing state bank roles, and providing financial infrastructure conducive to

bank and financial market development, will result in higher economic growth in the long run.

3. The mechanism of Financial Deepening affecting Economic Growth:

The mechanism that financial development can affect economic growth is through two channels. The first developed by Gurley and Shaw (1955) which called Capital Accumulation theory. In which, financial intermediaries are channelled private saving towards investment and capital accumulation. The second is the Total Factor productivity (TFP) channel. The TFP channel emphasizesthe importance of financial technology innovation byreducing the asymmetricstatus of information that hampers efficient allocation of financial resourcesand oversighting investment projects. The importance of the financial system comes from the improvement of the imperfection status of the financial market due to information asymmetry and transactional cost. This will cause the emergence of financial intermediaries,

financial market, and financial instruments in the economy. Those factors will contribute positively on mobilizing of saving, reducing risk, efficient allocation of resources, Facilitating transactions, and exercising corporate control.

4. Financial development and economic growth models:

Economic literature about the effect of the financial market development on economic growth started from Shupeter 1934. Keynes (1936) argued that individual's demand for moneyis either for transactions, precautionary, and speculative reasons. According to Keynesian theory, the money demandfunction can be shown as

$(M/P)^D = a + (\beta /r-i)$ a & $\beta > o$

Where $(M/P)^D$ = Demand for real balances.

i = Liquidity trap interest rate.

r = Market interest rate. $r > i$

Market interest rate related negatively with the demand of real money balances. Liquidity trap is the situation where interest rate fails to go down in spite of surplus of credit creation. It shows the ineffectiveness of the expansionary monetary policies.Keynesian theory concluded that a high interest rate related negatively to economic growth.

After the Keynesian model came the Neoclassical Model. This model postulates that the capital market operatesin perfect and costless manor.

Individuals hold money for transactions reasons, and not for capital accumulation. The money demand function of this theory can be expressed as:

$(\frac{M}{P})^{D} = f(Y, r_{Money}, r_{Capital}); fY > 0, fr_{Money} > 0, fr_{Capital} < o$.

Where income Y, and real rate of return on money balances ($r_{Money)}$ are correlated positively with the demand of real money balances $(\frac{M}{P})^{D}$,

while the real rate of return on capital ($r_{Capital}$)related negatively to the demand for real balances. This is because of the theory assumption of strong substitution between money and capital. Therefore, an increase in the demand of physical capital due to the increase in the real rate of return will reduces the demand of real cash,Conversely, holding large real cash balances will diminishthe accumulation of capital. This implies that $r_{capital}$ is inversely related with M/P, whereas ,r_{money} is positively associated with

(M/P)D. Hence, to foster economic growth an optimum interest rate is necessary for achieving the highest rate of return from both capital and money.

McKinnon and Shaw (1973) concluded that theprocess of financial development is the process of interest rate liberalization. The saving will increase and then investment will follow, if the margin between interest on loan and the interest

on savings reduces with the mechanism offinancial deepening.

McKinnon (1973)developed the complementarity hypothesis,which can explain the monetary process and capital accumulation in developing economies. The demand for real money balances $(M/P)^D$and the investment ratio I/Y are related positively to an increase in $r_{captial}$ and r_{money}.

Endogenous and finance growth model developed by Romer (1986) due to the predictive failure of the neoclassical growth model. This theory relates economic growth to innovation and technological development rather than to capital accumulation. It was further developed by Lucas (1988) and Pagano (1993). Pagano adopts asimple endogenous growth setting, i.e., the AK model of Rebelo (1991). It is assumedthat the production process only requires capital (Kt), where the production functionexhibits constant returns to scale.

$Y = AK_t$ .....(1)

Where Y is the output, A is total factor productivity, and K is capital stock.

The model of Pagano further assumes that capitaldepreciates at rate ofϴand there is no population growth, hence capital formationfunction is expressed as:

$K_{t+1} = I_t + (1 - ϴ)K_t$ .....(2)

Where K is capital formation and ϴ is depreciation ratio.

Only δ of the total saving S is channelled through the financial system into investment. So:

$I_t = δ S_t$ .....(3)

The steady state growth rate G can be presented as:

$G = (K_{t+1} - K_t)/K_t$.....(4)

$G = (I_t + (1 - ϴ)K_t) - K_t)/ K_t$.....(5)

$G = (δ S_t / K_t) - ϴ$.....(6)

$\mathbf{G} = \mathbf{A}\ \delta\ s_t - \Theta$ .....(7)

The steady state growth rate is can be affected through the financial development by the capital marginal product, saving, depreciation ratios, and the fraction of saving going to investment which reflects the efficiency of the financial sector.

The growth rate G will be affected by the financial deepening through the magnitude of saving channelled into investment. If we assume the constant rate of depreciationΘ, then the rate of economic growth will rely on the financial deepening. Thus equation (7) can be written as:

$G = B_0 + B_1\ S/Y + \varepsilon$ .....(8)

Where S/y is the total saving over the GDP, which can be considered as a proxy to the financial deepening (FD) factors.

$G = B_0 + B_1\ FD + \varepsilon$ .....(9)

Where G is the rate of economic growth, B_0 is the intercept coefficient, FD is the factor of financial

deepening, B_1 is the coefficients reflect the effect of financial deepening on economic growth, and **ε** is the error term.

5. **Data and methodology**

There are many studies uses different variables as proxies to the financial deepening of the financial sector. Traditional one used by the World Bank Report 1989 is the broad money **M_2** to **GDP** at current prices. Demetriades and Hussein (1996) argued that this ratio reflects the monetisation rather than Financial deepening, especially in developing countries, where currency in circulation is a high in the standard measure of financial development, utilized in the literature, is the ratio of broad money, usually M_2, to nominal GDP (World Bank Report, 1989). Nevertheless, this ratio measures the extent of monetisation rather than financial depth. In developing countries, monetisation may be increasing without financial development; therefore, it is not an entirely satisfactory indicator of financial depth. We

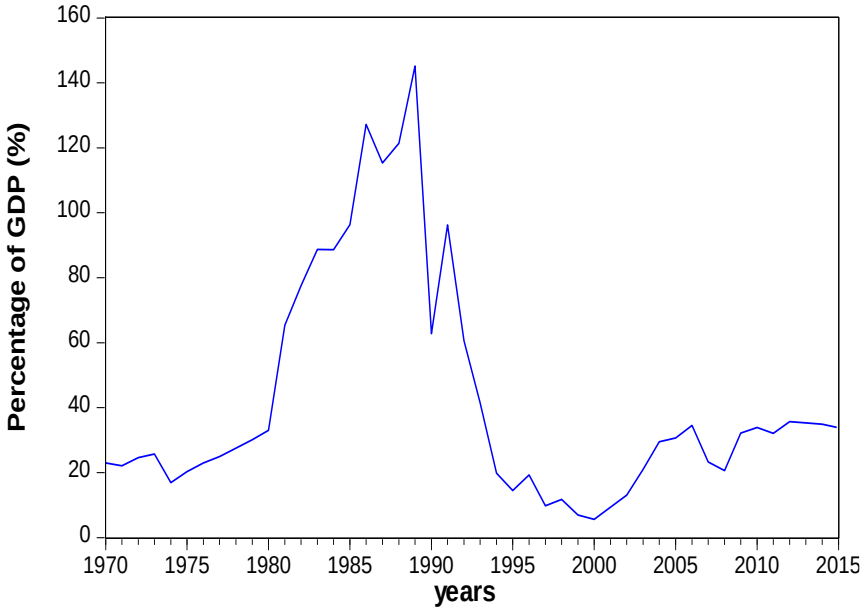
therefore, follow authors in literature, such as Demetriades and Hussein (1996), Khan et al. (2005), Boulila and Trabelsi (2002) and Trabelsi (2002) among others and define financial depth as the ratio of total bank deposit liabilities to nominal GDP. The ratio of liquid liabilities to GDP aims to measure the overall size of the financial intermediary sector.

We are going to use annual data for the period 1960-2015 collected from World Development Indicators (WDI), The Global Economic data, Central bank of Iraq bulletins, Ministry of Finance data, and the Central Statistical Organization. Data are collected on Gross Domestic Product GDP, per capita GDP RPERGDP, Liquidity Liabilities (LL) as a ratio of the GDP, Credit to the private sector to the GDP (CPS), Financial Saving to GDP (FS), Bank deposit to GDP (BD), Oil Revenue(OILREV), Inflation rate (INF),Government Consumption to GDP (GCONS), Capital Formation to GDP (PINV),

and Trade openness (Foreign trade to GDP) (TROPN).

Graph (1) shows the ratio of M3/GDP which is the Liquidity Liabilities (LL). The ratio reaches its peak around 1989 where financial sector continue to expand in spite of the Iran-Iraq 8 year war. Then started to decline during the 1990s due to economic embargo and first Gulf war till hit bottom low early 2000. Then started to climb again especially after 2003 to where it started.

Graph 1 Liquidity Liabilities (LL) 1970-2015

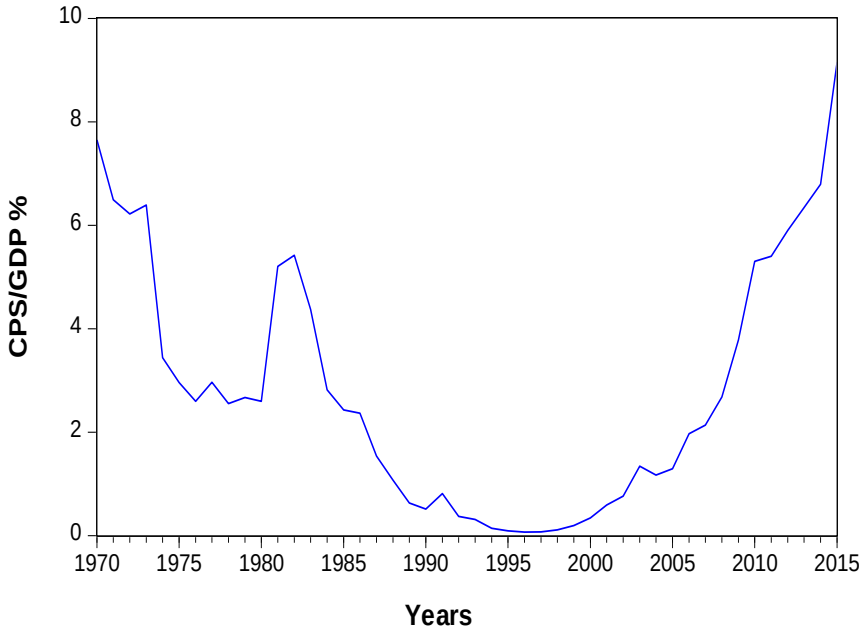


Source: WDI, and Iraqi central bank bulletin.

Credit to the private sector historical data presented by Graph (2).

As Graph (2) clearly reflects, private sector credit depends totally on government decision and extended mostly from state banks. The rate of credit depended on government economic philosophy. Early seventies were heading towards the socialist regime and state ownership is the only one allowed in the economy. Then during late 1970s government economic policy shifted towards giving more roles to the private sector, hence state banks started to extend credit to them.

Graph 2 Credit to the Private Sector (CPS)/ GDP



Source: WDI, and Iraqi central bank bulletin.

The credit rate to the private sector as a ratio of the GDP continued to rise till early 1980s where Iraq enters an eight years of war with Iran. The ratio started to decline during the eighties and continues during mid half of the 1990s

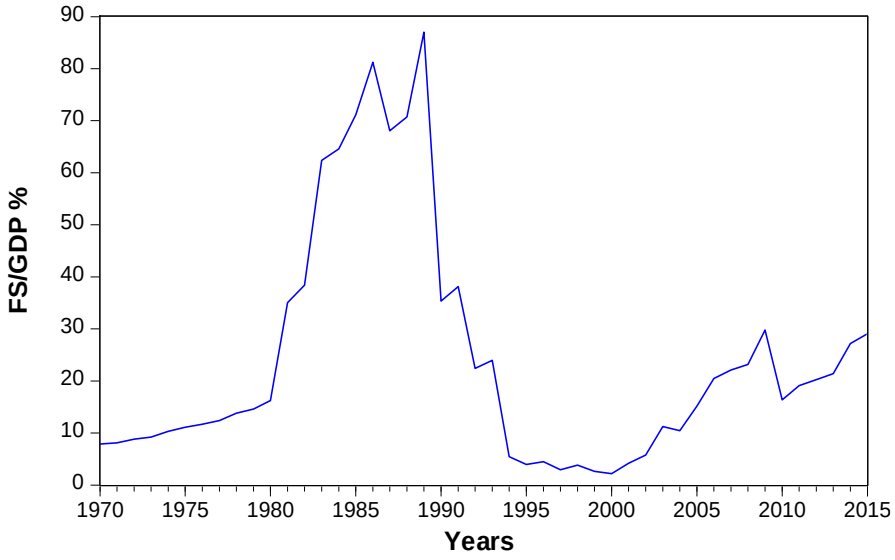
Where Iraq suffer from economic embargo and gone through the first Gulf war. After 1995 state bank started to extend credit again to the private sector to increase local supply of goods and services due to the scarcity of foreign currency.

The rate started to accelerate after 2003 till 2015 which reaches around 9%. Due to the changes in economic philosophy and implementing free market economy and new private banks started to appear on the Iraqi economy. The rate in general was low and below 10% for the whole of the research period. This reflects the need to make more funds available to the private sector if we hope to accelerate our economic growth rate.

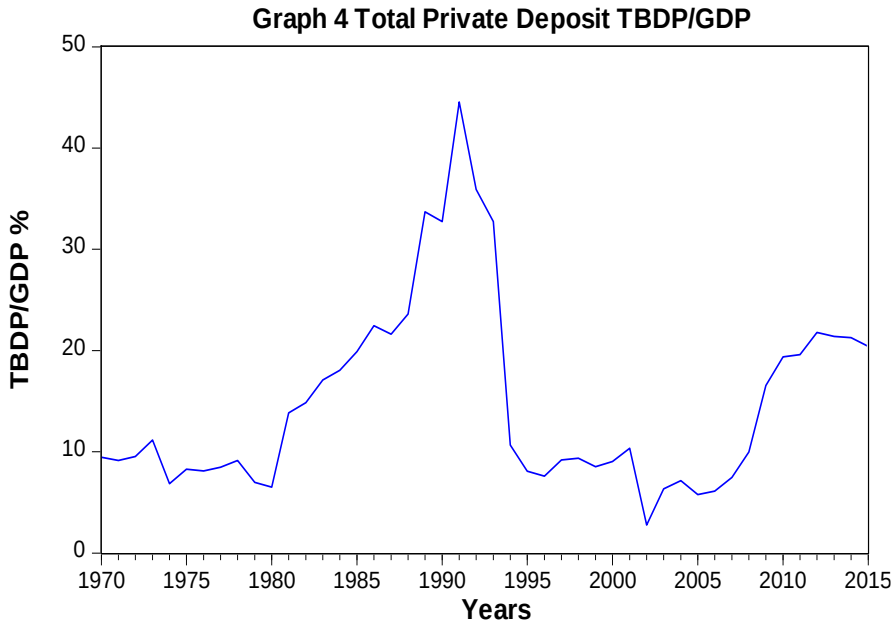
The total bank saving ratio to GDP as shown in Graph (3) is unstable as we can see. It started to increase steadily during the seventies. The jump during the eighties is due to two reasons, first is the rise of per capita income, and second to the uncertainty due to the Iraq-Iran war, and the rise of inflation rate. The rate is deteriorated considerably after the first gulf war and the economic embargo and high rate of inflation during the first half of the 1990s. In 1996 Iraq accepted the Oil for Food programme and standard of living started to improve considerably,

hence the ratio started to rise again. It continued to grow after 2003 and the huge jump in living standard and the high jump of oil prices. The same analysis goes for the Total Private Deposit ratio to GDP as Graph (4) shows.

Graph 3 Total Private Saving Ratio FS/GDP



Source: WDI, and Iraqi central bank bulletin.



Source: WDI, and Iraqi central bank bulletin.

Principle component method is going to be used to formulate the financial development variables and Table (1) shows the results. This is due to the high multi-collinearity existed between the variables used as proxies of financial development. We are going to use Principal Component Analysis to form a new variable represent the effect of the financial deepening. We used this method for two reasons, first are because of the multi collinearity between the

different indicators measure the financial development, and secondly due to no general consensus among researchers of which indicators represent the financial development.

The new PCA variable of financial development will be named as FD, and made out of using PCA method on LL, CPS, FS, and BD.

Table 1

(Principal Component Analysis of the Financial development Indicators)

Principal Components Analysis					
Date: 04/18/17 Time: 22:01					
Sample: 1970 2015					
Included observations: 46					
Computed using: Ordinary correlations					
Extracting 4 of 4 possible components					
Eigenvalues: (Sum = 4, Average = 1)					
				Cumulative	Cumulative

Number	Value	Difference	Proportion	Value	Proportion
1	2.488846	1.487634	0.6222	2.488846	0.6222
2	1.001213	0.523057	0.2503	3.490059	0.8725
3	0.478156	0.446372	0.1195	3.968216	0.9921
4	0.031784	---	0.0079	4.000000	1.0000
Eigenvectors (loadings):					
Variable	PC 1	PC 2	PC 3	PC 4	
CPS_GDP	-0.022280	0.998721	0.010071	0.044250	
FS_GDP	0.598660	0.047421	-0.437503	-0.669289	
LL	0.615939	-0.015967	-0.283225	0.734948	

TDEPRT	0.511595	0.007226	0.853389	-0.099728	
Ordinary correlations:					
	CPS_GDP	FS_GDP	LL	TDEPRT	
CPS_GDP	1.000000				
FS_GDP	0.011173	1.000000			
LL	-0.050451	0.960589	1.000000		
TDEPRT	-0.017174	0.586202	0.666247	1.000000	

6. Model specification:

The general estimated model will be based on equation (9). The FD variables which represent the financial development (FD) are: LL, CPS, FS, and BDP. We also are going to add some of the control variables which affect the economic

growth rate and omission them might cause bias in the causality direction effect between economic growth and financial development, such as PINV, OILREV, INF, GCONS, and TOPN. So the general model will be:

$$RPERGDP = B_0 + B_1 FD + a_1 OILREV + a_2 INF + a_3 GCONS + a_4 TROPN + a_5 PINV + \varepsilon \quad \ldots\ldots(10)$$

Where RPERGDP is the real per capita GDP, FD financial development.

Other economic variables such as Oil Revenue OILREV, Government consumption GCONS, Private investment INVP, and trade openness TROPN will be used as control variables to capture the unexplained variations in the dependent variable which are not captured by financial development variables.

We are going to apply the Vector Error Correction Model VECM method in our estimation. This method has been used as another test of co-integration which investigate the long and the

short run effect of the independent variables and their dynamic interaction. It has several merits such as after selecting the lag order of the model, the co-integration relationship can be easily estimated by using OLS method. Also provide a test for the short and long run among the model variables simultaneously, can be used when the co-integration order among the model variables weather I(0) or I(1).

VECM model estimates reflect unbiased coefficients results of independent variables beside a valid t-statistics even with the potential existence of the endogeneity.

The vector error correction model (VECM) can be formulated as:

$$\Delta \ln RPERGDP = \beta 0 + \beta_1 \ln RPERGDP_{t-1} + \beta 2 FD_{t-1} + \beta_3 \ln OILREV_{t-1} + \beta 4 Ln\ PINV_{t-1} + B_5 \ln TROPN_{t-1} + B_6 \ln GCONS_{t-1} + B_7 LNINF_{t-1} + \sum_i^p \gamma_i \Delta \ln RPERGDP_{t-i} + \sum_j^r \delta_j \Delta FD_{t-j} + \sum_j^r \varphi_j \Delta \ln OILREV_{t-j} + \sum_j^r \eta_m \ln PINV_{t-}$$

$_j+\sum_j^r\psi_j lnTROPN_{t-j} + \sum_j^r\sigma_j lnGCONS_{t-j} + \sum_j^r\lambda_j lnINF_{t-j} + \varepsilon t$ .....(10).

Where:

RPERGDP real per capita GDP, FD=Financial deepening indicator, OILREV is the oil revenue, PINV is capital formation, TROPN is the trade openness, GCONS is government consumption expenditure ratio, INF rate of inflation, εt is the error term, B_i is the coefficients of the explanatory variables, and j is the lag order.

We estimate equation (10) with VECM, then we estimated the VECM reduced form with OLS. Wald test used to test the joint significance of the coefficients of lagged variables, and to check for the existence of a long-run relationship among the variables. B1 in Eq10 represents the effect of long run term. It's also test the existence of the causality between the explanatory variables and the dependent variables. It also represents the speed adjustment toward the long run equilibrium

status after a short run shock occurs in one or more of the independent variables. We expected the sign of B1 to be negative, and significant. This can be tested using Wald Test method. B2 to B6 estimate the long run effect of the explanatory variables, while the coefficient of the first difference variables estimates the short run effect.

The SIC criteria is to be used to choose the suitable lag length of themodel, andStability test (CUSUM) will be conducted for the long run coefficients alongside with the short run dynamics.

7. Estimation Results and Discussion:

We conduct a unit root test with Augmented Dickey-Fuller test in order to investigate the stationary or the non-stationary of the model variables. As Table (2) shows, all independent variables are nonstationary at l(0) level and become stationary on first difference l(1) where

their t Statistics value became higher than their critical values under 1% level of significance.

Table (2)

(Results of Unit Root Test)

Var	Integration order	t-statistics	Mackinnon Cv (1%)	Mackinnon Cv (5%)
Ln RPERGDP	(0) (1)	-0.573646 -5.1588	-3.58 -3.58	-2.93 -2.93
PFD	(0) (1)	-2.439 -3.638	-3.58 -3.58	-2.93 -2.93
Ln oiLRev	(0) (1)	-0.41 -9.55	-3.58 -3.59	-2.93 -2.93
Ln Invp	(0) (1)	-1.88 -11.81	-3.59 -3.59	-2.93 -2.93
Ln Gcons	(0) (1)	-1.989 -6.349	-3.59 -3.58	-2.93 -2.93
Ln InF	(0) (1)	3.31 -9.50	-3.59 -3.59	-2.93 -2.93

Ln	(0)	-2.17	-3.58	-2.93
TROPN	(1)	-5.60	-3.58	-2.93

The dependent variable Real Per Capita GDP (RPERGDP) is stationary of order I(1) where its t Statistics value (-5.16) is greater than the critical value under 1% level of significance (-3.58). The integration of the model variables of I(0) and I(1) only will allow us to use the VECM estimator to estimate the model and explore the existence of the long and short run relationships between the dependent variable and the explanatory variables.

7.1 Co-integration Test

The co-integration test will be conducted to test the hypothesis of the existence of long and a short run relationship between the dependent variable and other explanatory variables. If the model variables are co-integrated then we will move to use Vector Error Correction Model to estimate our model. Five lags of the variables have been used as our number of freedom allows

us depending of the number of observations in the data.

Table (3)

shows that there are 5 co-integrated equations

in Table 3 Johansen Co-integration Test

Date: 05/04/17 Time: 13:03				
Sample (adjusted): 1972 2002				
Included observations: 31 after adjustments				
Trend assumption: Linear deterministic trend				
Series: RPERGDP FD OILREV INVP TRDOP INF GCONS				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.994622	440.5702	125.6154	0.0001
At most 1 *	0.987582	278.5796	95.75366	0.0000
At most 2 *	0.883318	142.5324	69.81889	0.0000
At most 3 *	0.726212	75.93496	47.85613	0.0000
At most 4 *	0.490920	35.77748	29.79707	0.0091
At most 5	0.254677	14.84782	15.49471	0.0624

At most 6 *	0.168917	5.735776	3.841466	0.0166
Trace test indicates 5 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.994622	161.9906	46.23142	0.0000
At most 1 *	0.987582	136.0472	40.07757	0.0000
At most 2 *	0.883318	66.59746	33.87687	0.0000
At most 3 *	0.726212	40.15748	27.58434	0.0007
At most 4	0.490920	20.92966	21.13162	0.0533
At most 5	0.254677	9.112046	14.26460	0.2769
At most 6 *	0.168917	5.735776	3.841466	0.0166
Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

7.2 VECM estimation

We used five lags to the independent variables, as our data permit us to do. Table (4) presents the reduced form of the VECM results. This is derived from the VECM general.

Table 4

(VECM Reduced form)

D(LNRPERGDP,2) = C(1)*(D(LNRPERGDP(-1)) - 0.386319571867*LNTROPN(-1) - 0.488911273294*LNINF(-1) + 0.89830604706*LNGCONS(-1) - 0.0757341876688) + C(2)*(FD(-1) + 2.49912900199*LNTROPN(-1) + 1.65081515223*LNINF(-1) - 4.70945071649*LNGCONS(-1) - 0.320919353475) + C(3)*(LNOILREV(-1) + 14.0930796458*LNTROPN(-1) + 17.4699972485*LNINF(-1) + 4.93355304072*LNGCONS(-1) - 122.458519221) + C(4)*(LNINVP(-1) - 0.3323459237*LNTROPN(-1) -

0.00112855097102*LNINF(-1) + 2.26386401529*LNGCONS(-1) - 7.45224965165) + C(5)*D(LNRPERGDP(-1),2) + C(6)*D(LNRPERGDP(-2),2) + C(7)*D(LNRPERGDP(-3),2) + C(8)*D(FD(-1)) + C(9)*D(FD(-2)) + C(10)*D(FD(-3)) + C(11)*D(LNOILREV(-1)) + C(12)*D(LNOILREV(-2)) + C
(13)*D(LNOILREV(-3)) + C(14)*D(LNINVP(-1)) + C(15)*D(LNINVP(-2)) + C(16)*D(LNINVP(-3)) + C(17)*D(LNTROPN(-1)) + C(18)*D(LNTROPN(-2)) + C(19)*D(LNTROPN(-3)) + C(20)*D(LNINF(-1)) + C(21)*D(LNINF(-2)) + C(22)*D(LNINF(-3)) + C(23)*D(LNGCONS(-1)) + C(24)*D(LNGCONS(-2)) + C(25)*D(LNGCONS(-3)) + C(26)
D(FD) = C(27)*(D(LNRPERGDP(-1)) - 0.386319571867*LNTROPN(-1) - 0.488911273294*LNINF(-1) + 0.89830604706*LNGCONS(-1) - 0.0757341876688) + C(28)*(FD(-1) + 2.49912900199*LNTROPN(-1) + 1.65081515223*LNINF(-1) - 4.70945071649*LNGCONS(-1) - 0.320919353475) + C(29)*(LNOILREV(-1) + 14.0930796458*LNTROPN(-1)

+ 17.4699972485*LNINF(-1) + 4.93355304072*LNGCONS(-1) - 122.458519221) + C(30)*(LNINVP(-1) - 0.3323459237*LNTROPN(-1) - 0.00112855097102*LNINF(-1) + 2.26386401529*LNGCONS(-1) - 7.45224965165) + C(31)*D(LNRPERGDP(-1),2) + C(32)*D(LNRPERGDP(-2),2) + C(33)*D(LNRPERGDP(-3),2) + C(34)*D(FD(-1)) + C(35)*D(FD(-2)) + C(36)*D(FD(-3)) + C(37)*D(LNOILREV(-1)) + C(38)*D(LNOILREV(-2)) + C(39)*D(LNOILREV(-3)) + C(40)*D(LNINVP(-1)) + C(41)*D(LNINVP(-2)) + C(42)*D(LNINVP(-3)) + C(43)*D(LNTROPN(-1)) + C(44)*D(LNTROPN(-2)) + C(45)*D(LNTROPN(-3)) + C(46)*D(LNINF(-1)) + C(47)*D(LNINF(-2)) + C(48)*D(LNINF(-3)) + C(49)*D(LNGCONS(-1)) + C(50)*D(LNGCONS(-2)) + C(51)*D(LNGCONS(-3)) + C(52)
D(LNOILREV) = C(53)*(D(LNRPERGDP(-1)) - 0.386319571867*LNTROPN(-1) - 0.488911273294*LNINF(-1) + 0.89830604706*LNGCONS(-1) - 0.0757341876688) + C(54)*(FD(-1) + 2.49912900199*LNTROPN(-1) + 1.65081515223*LNINF(-1) -

4.70945071649*LNGCONS(-1) - 0.320919353475) + C(55)*(LNOILREV(-1) + 14.0930796458*LNTROPN(-1) + 17.4699972485*LNINF(-1) + 4.93355304072*LNGCONS(-1) - 122.458519221) + C(56)*(LNINVP(-1) - 0.3323459237*LNTROPN(-1) - 0.00112855097102*LNINF(-1) + 2.26386401529*LNGCONS(-1) - 7.45224965165) + C(57)*D(LNRPERGDP(-1),2) + C(58)*D(LNRPERGDP(-2),2) + C(59)*D(LNRPERGDP(-3),2) + C(60)*D(FD(-1)) + C(61)*D(FD(-2)) + C(62)*D(FD(-3)) + C(63)*D(LNOILREV(-1)) + C(64)*D(LNOILREV(-2)) + C(65)*D(LNOILREV(-3)) + C(66)*D(LNINVP(-1)) + C(67)*D(LNINVP(-2)) + C(68)*D(LNINVP(-3)) + C(69)*D(LNTROPN(-1)) + C(70)*D(LNTROPN(-2)) + C(71)*D(LNTROPN(-3)) + C(72)*D(LNINF(-1)) + C(73)*D(LNINF(-2)) + C(74)*D(LNINF(-3)) + C(75)*D(LNGCONS(-1)) + C(76)*D(LNGCONS(-2)) + C(77)*D(LNGCONS(-3)) + C(78)
D(LNINVP) = C(79)*(D(LNRPERGDP(-1)) - 0.386319571867*LNTROPN(-1) - 0.488911273294*LNINF(-1) + 0.89830604706*LNGCONS(-1) - 0.0757341876688) +

C(80)*(FD(-1) + 2.49912900199*LNTROPN(-1) + 1.65081515223*LNINF(-1) - 4.70945071649*LNGCONS(-1) - 0.320919353475) + C(81)*(LNOILREV(-1) + 14.0930796458*LNTROPN(-1) + 17.4699972485*LNINF(-1) + 4.93355304072*LNGCONS(-1) - 122.458519221) + C(82)*(LNINVP(-1) - 0.3323459237*LNTROPN(-1) - 0.00112855097102*LNINF(-1) + 2.26386401529*LNGCONS(-1) - 7.45224965165) + C(83)*D(LNRPERGDP(-1),2) + C(84)*D(LNRPERGDP(-2),2) + C(85)*D(LNRPERGDP(-3),2) + C(86)*D(FD(-1)) + C(87)*D(FD(-2)) + C(88)*D(FD(-3)) + C(89)*D(LNOILREV(-1)) + C(90)*D(LNOILREV(-2)) + C(91)*D(LNOILREV(-3)) + C(92)*D(LNINVP(-1)) + C(93)*D(LNINVP(-2)) + C(94)*D(LNINVP(-3)) + C(95)*D(LNTROPN(-1)) + C(96)*D(LNTROPN(-2)) + C(97)*D(LNTROPN(-3)) + C(98)*D(LNINF(-1)) + C(99)*D(LNINF(-2)) + C(100)*D(LNINF(-3)) + C(101)*D(LNGCONS(-1)) + C(102)*D(LNGCONS(-2)) + C(103)*D(LNGCONS(-3)) + C(104)
D(LNTROPN) = C(105)*(D(LNRPERGDP(-1)) - 0.386319571867*LNTROPN(-1) -

0.488911273294*LNINF(-1) + 0.89830604706*LNGCONS(-1) - 0.0757341876688) + C(106)*(FD(-1) + 2.49912900199*LNTROPN(-1) + 1.65081515223*LNINF(-1) - 4.70945071649*LNGCONS(-1) - 0.320919353475) + C(107)*(LNOILREV(-1) + 14.0930796458*LNTROPN(-1) + 17.4699972485*LNINF(-1) + 4.93355304072*LNGCONS(-1) - 122.458519221) + C(108)*(LNINVP(-1) - 0.3323459237*LNTROPN(-1) - 0.00112855097102*LNINF(-1) + 2.26386401529*LNGCONS(-1) - 7.45224965165) + C(109)*D(LNRPERGDP(-1),2) + C(110)*D(LNRPERGDP(-2),2) + C(111)*D(LNRPERGDP(-3),2) + C(112)*D(FD(-1)) + C(113)*D(FD(-2)) + C(114)*D(FD(-3)) + C(115)*D(LNOILREV(-1)) + C(116)*D(LNOILREV(-2)) + C(117)*D(LNOILREV(-3)) + C(118)*D(LNINVP(-1)) + C(119)*D(LNINVP(-2)) + C(120)*D(LNINVP(-3)) + C(121)*D(LNTROPN(-1)) + C(122)*D(LNTROPN(-2)) + C(123)*D(LNTROPN(-3)) + C(124)*D(LNINF(-1)) + C(125)*D(LNINF(-2)) + C(126)*D(LNINF(-3)) + C(127)*D(LNGCONS(-1)) + C(128)*D(LNGCONS(-2)) + C(129)*D(LNGCONS(-3)) + C(130)

D(LNINF) = C(131)*(D(LNRPERGDP(-1)) - 0.386319571867*LNTROPN(-1) - 0.488911273294*LNINF(-1) + 0.89830604706*LNGCONS(-1) - 0.0757341876688) + C(132)*(FD(-1) + 2.49912900199*LNTROPN(-1) + 1.65081515223*LNINF(-1) - 4.70945071649*LNGCONS(-1) - 0.320919353475) + C(133)*(LNOILREV(-1) + 14.0930796458*LNTROPN(-1) + 17.4699972485*LNINF(-1) + 4.93355304072*LNGCONS(-1) - 122.458519221) + C(134)*(LNINVP(-1) - 0.3323459237*LNTROPN(-1) - 0.00112855097102*LNINF(-1) + 2.26386401529*LNGCONS(-1) - 7.45224965165) + C(135)*D(LNRPERGDP(-1),2) + C(136)*D(LNRPERGDP(-2),2) + C(137)*D(LNRPERGDP(-3),2) + C(138)*D(FD(-1)) + C(139)*D(FD(-2)) + C(140)*D(FD(-3)) + C(141)*D(LNOILREV(-1)) + C(142)*D(LNOILREV(-2)) + C(143)*D(LNOILREV(-3)) + C(144)*D(LNINVP(-1)) + C(145)*D(LNINVP(-2)) + C(146)*D(LNINVP(-3)) + C(147)*D(LNTROPN(-1)) + C(148)*D(LNTROPN(-2)) + C(149)*D(LNTROPN(-3)) + C(150)*D(LNINF(-1)) + C(151)*D(LNINF(-2)) + C(152)*D(LNINF(-3)) + C(153)*D(LNGCONS(-1)) + C(154)*D(LNGCONS(-2)) +

C(155)*D(LNGCONS(-3)) + C(156)

We choose the first equation because real per capita GDP is the dependent variable.

To get the coefficients we need to estimate the first equation. We are going to use OLS to estimate the reduced form of the VECM. Table (5) shows the results of estimation.

Table 5

(OLS results of the Reduced VECM Form)

Dependent Variable: D(LNRPERGDP,2)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 04/22/17 Time: 14:58
Sample (adjusted): 1975 2015
Included observations: 41 after adjustments
D(LNRPERGDP,2) = C(1)*(D(LNRPERGDP(-1)) - 0.386319571867
*LNTROPN(-1) - 0.488911273294*LNINF(-1) + 0.89830604706

LNGCONS(-1) - 0.0757341876688) + C(2)(FD(-1) + 2.49912900199
*LNTROPN(-1) + 1.65081515223*LNINF(-1) - 4.70945071649
LNGCONS(-1) - 0.320919353475) + C(3)(LNOILREV(-1) +
14.0930796458*LNTROPN(-1) + 17.4699972485*LNINF(-1) +
4.93355304072*LNGCONS(-1) - 122.458519221) + C(4)*(LNINVP(-1)
- 0.3323459237*LNTROPN(-1) - 0.00112855097102*LNINF(-1) +
2.26386401529*LNGCONS(-1) - 7.45224965165) + C(5)
*D(LNRPERGDP(-1),2) + C(6)*D(LNRPERGDP(-2),2) + C(7)
*D(LNRPERGDP(-3),2) + C(8)*D(FD(-1)) + C(9)*D(FD(-2)) + C(10)
*D(FD(-3)) + C(11)*D(LNOILREV(-1)) + C(12)*D(LNOILREV(-2)) + C(13)
*D(LNOILREV(-3)) + C(14)*D(LNINVP(-1)) +

C(15)*D(LNINVP(-2)) +				
C(16)*D(LNINVP(-3)) + C(17)*D(LNTROPN(-1)) + C(18)*D(LNTROPN(				
-2)) + C(19)*D(LNTROPN(-3)) + C(20)*D(LNINF(-1)) + C(21)*D(LNINF(				
-2)) + C(22)*D(LNINF(-3)) + C(23)*D(LNGCONS(-1)) + C(24)				
*D(LNGCONS(-2)) + C(25)*D(LNGCONS(-3)) + C(26)				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-2.553499	0.401272	-6.363508	0.0000
C(2)	-0.901314	0.248711	-3.623942	0.0025
C(3)	0.015845	0.022991	0.689197	0.5012
C(4)	-0.49554	0.265553	-1.8660	0.0817

	7		96	
C(5)	1.773150	0.327835	5.408667	0.0001
C(6)	1.232920	0.331409	3.720231	0.0021
C(7)	0.566298	0.178162	3.178548	0.0062
C(8)	0.404444	0.560808	0.721181	0.4819
C(9)	0.984252	0.647472	1.520147	0.1493
C(10)	0.946661	0.732591	1.292209	0.2158
C(11)	-0.157141	0.247643	-0.634547	0.5353
C(12)	-0.248254	0.252886	-0.981685	0.3418
C(13)	0.019010	0.164005	0.115909	0.9093

C(14)	0.374434	0.386585	0.968567	0.3481
C(15)	0.304188	0.426056	0.713962	0.4862
C(16)	0.071379	0.272550	0.261894	0.7970
C(17)	0.116996	0.338500	0.345631	0.7344
C(18)	0.498410	0.249292	1.999305	0.0640
C(19)	-0.103560	0.282607	-0.366447	0.7191
C(20)	-0.155255	0.327469	-0.474105	0.6423
C(21)	-0.057314	0.221557	-0.258686	0.7994
C(22)	-0.34227	0.163281	-2.0962	0.0534

	7		39	
C(23)	-1.061072	1.027815	-1.032357	0.3183
C(24)	-0.204347	1.039251	-0.196629	0.8468
C(25)	-1.386576	1.299488	-1.067017	0.3028
C(26)	-0.002031	0.194829	-0.010422	0.9918
R-squared	0.932883	Mean dependent var		-0.028236
Adjusted R-squared	0.821020	S.D. dependent var		1.565948
S.E. of regression	0.662490	Akaike info criterion		2.277149
Sum	6.58340	Schwarz criterion		3.3638

squared resid	0		05
Log likelihood	-20.68156	Hannan-Quinn criter.	2.672849
F-statistic	8.339546	Durbin-Watson stat	2.136498
Prob(F-statistic)	0.000050		

As you see from Table (5) that some variables are insignificant and might have the wrong signs. So some insignificant variable were dropped as we move from general to specific model. Table (6) presents the chosen model.

Table 6

(the chosen version of the model)

Dependent Variable: D(LNRPERGDP,2)
Method: Least Squares (Gauss-Newton / Marquardt steps)

Date: 04/22/17 Time: 01:53
Sample (adjusted): 1975 2015
Included observations: 41 after adjustments
D(LNRPERGDP,2) = C(1)*(D(LNRPERGDP(-1)) - 0.386319571867
*LNTROPN(-1) - 0.488911273294*LNINF(-1) + 0.89830604706
LNGCONS(-1) - 0.0757341876688) + C(2)(FD(-1) + 2.49912900199
*LNTROPN(-1) + 1.65081515223*LNINF(-1) - 4.70945071649
LNGCONS(-1) - 0.320919353475) + C(4)(LNINVP(-1) -
0.3323459237*LNTROPN(-1) - 0.00112855097102*LNINF(-1) +
2.26386401529*LNGCONS(-1) - 7.45224965165) + C(5)
*D(LNRPERGDP(-1),2) + C(6)*D(LNRPERGDP(-2),2) + C(7)
*D(LNRPERGDP(-3),2) + C(9)*D(FD(-2)) +

C(10)*D(FD(-3)) + C(14) *D(LNINVP(-1)) + C(15)*D(LNINVP(-2)) + C(18)*D(LNTROPN(-2)) + C(22)*D(LNINF(-3)) + C(25)*D(LNGCONS(-3)) + C(26)				
	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-2.410684	0.212791	-11.32889	0.0000
C(2)	-0.790214	0.086553	-9.129815	0.0000
C(4)	-0.378144	0.082674	-4.573892	0.0001
C(5)	1.531334	0.177299	8.637001	0.0000
C(6)	1.075982	0.113100	9.513551	0.0000
C(7)	0.50162	0.0874	5.733069	0.0000

	2	96		
C(9)	0.845963	0.186452	4.537170	0.0001
C(10)	1.026948	0.265377	3.869772	0.0006
C(14)	0.470478	0.172765	2.723226	0.0112
C(15)	0.434743	0.178197	2.439673	0.0215
C(18)	0.356810	0.085945	4.151590	0.0003
C(22)	-0.257255	0.091911	-2.798957	0.0093
C(25)	-1.063323	0.401657	-2.647339	0.0134
C(26)	-0.090363	0.087965	-1.027268	0.3134
R-squared	0.91591	Mean		-

	7	dependent var	0.028236
Adjusted R-squared	0.875433	S.D. dependent var	1.565948
S.E. of regression	0.552687	Akaike info criterion	1.917143
Sum squared resid	8.247508	Schwarz criterion	2.502265
Log likelihood	-25.30143	Hannan-Quinn criter.	2.130212
F-statistic	22.62394	Durbin-Watson stat	2.361852
Prob(F-statistic)	0.000000		

C1 is the Error correction term EC. It is significant of less than 5% and has the right negative sign. This means we have long steady state solution to the model. C1 represents the long run adjustment

speed to the equilibrium status.It also means that Financial deepening FD, oil revenue OILREV, capital formation INVP, government consumption GCONS, trade openness TROPN, and inflation INF have long term effect on economic growth. Let's check the significant of the C1 with Wald Testas Table(7) shows. The F-Statistic value is highly significant under 1%. This means we reject the null Hypothesis that C1 = 0, and accept that there are casual relations from the explanatory variables toward economic growth.

Table 7

(Wald Test Result)

Wald Test:			
Equation: Untitled			
Test Statistic	Value	Df	Probability
t-statistic	-11.32889	27	0.0000
F-statistic	128.3436	(1, 27)	0.0000
Chi-square	128.3436	1	0.0000
Null Hypothesis: C(1)=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
C(1)		-2.410684	0.212791

Restrictions are linear in coefficients.

Looking at Table (7), we can conclude that long run effect of Financial development (FD(-1)) but has the wrong signed although its highly significant. The negative long run of the FD means either our financial system is over developed and any further development on short run will result in adverse effect on long run, or our financial system is underdeveloped that the short run shock will die very quickly and might turn into negative effect on the long run. We believe the second explanation is more appropriate to our case. Having said that, the model results also shows short run positive effect of same variable FD lagged 2 and 3 period (C(9) and C(10)) with high significant. This means the effect of any financial development is positive on the short run and contributes positively to economic growth.Although the effect of financial development effect on economic growth is

unsettled and comes with contradicted results, last two studies on Iraq showed negative and insignificant effect of it (Kalaf (2014), and Dreebe (2015)..

The other explanatory variables are controlled variables used to catch the effect of other economic variables other than financial development on economic growth. Capital formation long run effect was significant but negative. This is due to the low productivity of investment and unwise allocation of resources, beside the huge margin of corruption and bad management, while the short run effect is positive and significant as one and two period lagged capital formation C14, and C15 stated. This is due to the positive effect of the first two years of the implementation of the investment projects, and due to corruption and bad management a lot of projects halted. Short run effect of economy openness C18 TROPN is highly positive and significant as table(6) shows. This concise with the

economic theory more economy openness help to enhance the local economy and then cement economy growth. Government consumption Gcons short run effect C22 is negative as expected and highly significant as t Statistics value and PP value shows. More resources allocated to government consumption will divert resources from high productivity usage to others with high wastage and bad management and inefficient usage.Inflation rate short run effect C25 is negative as expected and highly significant.

Diagnostic Tests

We will check the validity of our examining the residuals of the model we conclude that our model is free from Serial correlation and Heteroskedasticity as Table (8) & (9) show. The F-Statistics value is less the critical value on 5% level, which means we can reject the null hypothesis of serial

correlationandHeteroskedasticity existence in the model as Table (8) and (9) show.

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.806894	Prob. F(5,22)	0.5571
Obs*R-squared	6.353626	Prob. Chi-Square(5)	0.2733

Table 8

(Breusch- Godfrey Serial Correlation Test)

Table 9

(Breusch-Pagan-Godfrey Heteros kedasticityTest)

Heteros kedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.186137	Prob. F(21,19)	0.3564
Obs*R-squared	23.25871	Prob. Chi-Square(21)	0.3303

Scaled explained SS	24.43870	Prob. Chi-Square(21)	0.2723

Wald tests for the coefficients of the explanatory variables revealed high value of F- Statistics under 1% level of significance. So we can reject the null hypothesis of the equality of explanatory variables coefficients to zero as Table (10) shows.

Table 10

Wald test results of the Explanatory Variables

Wald Test:			
Equation: Financial Development FD			
Test Statistic	Value	df	Probability
F-statistic	30.35835	(3, 27)	0.0000
Chi-square	91.07506	3	0.0000
Null Hypothesis: C(2)=C(9)=C(10)=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.

C(2)	-0.790214	0.086553
C(9)	0.845963	0.186452
C(10)	1.026948	0.265377
Restrictions are linear in coefficients.		

Wald Test:

Equation: Untitled

Test Statistic	Value	df	Probability
F-statistic	31.29924	(3, 27)	0.0000
Chi-square	93.89771	3	0.0000

Null Hypothesis: C(5)=C(6)=C(7)=0 Null Hypothesis Summary: Normalized Restriction (= 0) Value Std. Err. C(5) 1.531334 0.177299 C(6) 1.075982 0.113100 C(7) 0.501622 0.087496 Restrictions are linear in coefficients. Wald Test:			
Equation: Capital Formation			
Test Statistic	Value	df	Probability

F-statistic	7.251586	(3, 27)	0.0010
Chi-square	21.75476	3	0.0001
Null Hypothesis: C(4)=C(14)=C(15)=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
C(4)		-0.378144	0.082674
C(14)		0.470478	0.172765
C(15)		0.434743	0.178197

Restrictions are linear in coefficients.

Wald Test:

Equation: Trade Openness

Test Statistic	Value	df	Probability
t-statistic	4.151590	27	0.0003
F-statistic	17.23570	(1, 27)	0.0003
Chi-square	17.23570	1	0.0000

Null Hypothesis: C(18)=0

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(18)	0.356810	0.085945

Restrictions are linear in coefficients.

Wald Test:

Equation: Inflation

Test Statistic	Value	df	Probability
t-statistic	-2.798957	27	0.0093
F-statistic	7.834162	(1, 27)	0.0093
Chi-square	7.834162	1	0.0051

Null Hypothesis: C(22)=0

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(22)	-0.257255	0.091911

Restrictions are linear in coefficients.

Wald Test:

Equation: Government Consumption

Test Statistic	Value	df	Probability
t-statistic	-2.647339	27	0.0134
			0.0134
F-statistic	7.008404	(1, 27)	
Chi-square	7.008404	1	0.0081

Null Hypothesis: C(25)=0

Null Hypothesis Summary:

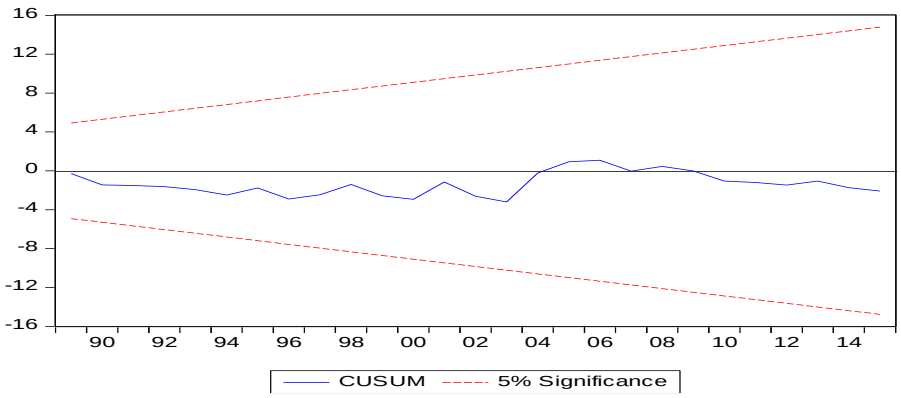
Normalized Restriction (= 0)	Value	Std. Err.
C(25)	-1.063323	0.401657

Restrictions are linear in coefficients.

The last check is to see whether our model stable or not. Graph (5) shows that our model is stable

according to CUSON test where the residual values stayed between the upper and lower boundaries.

Graph 5 The stability Test of the model



8. **Conclusion Remarks**

Although Iraqi financial and intermediary institutions are underdeveloped, any new development in this sector produced positive effect in the short run as the coefficient of the FD variable were positive and highly significant. The short run positive effect of financial development on economic growth will not last due to the under development of the banking system in

general, bad financial public habits and customs. This is due to the dominant of the public banking sector, except after 2003, and suppressing the opportunity of the private sector.Our results differ from the previous studies. We found positive strong effect of short run of financial development on economic growth, while there was significant long-run effect but with wrong sign. We can conclude that financial development will have tremendous effect on Iraq future economic growth especially with new vibrant private sector are establishing itself, new and rapidly developing stock market, change of government economic philosophy and management towards more freedom and role to the private sector in general and financial sector specifically. New products, innovations, new technology, efficient resource management will attract more interaction with the public and more saving, hence more opportunities of investment which will lead to higher economic growth.

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