FINANCE-GROWTH NEXUS REVISITED: AN EVIDENCE FROM UNITED ARAB EMIRATES

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ABSTRACT: The present analysis is an attempt to examine the brunt of financial development on economic growth in United Arab Emirates. There has been a heated debate among theoretical and empirical economists on financial development and economic growth correlation. The expansion in financial sector leads to higher economic growth but less developed financial sector may not play a role in growth of the economy. The study utilizes ARDL approach to cointegration to analyze the effect of financial development on growth. Financial development variables showed negative impact on growth in UAE both in long run and short run. The results are statistically significant. The study also summarizes some policy implications.

Key Words: Financial Deepening, Growth, Broad Money, Cointegration, Error Correction Model

1.0 INTRODUCTION

There has been heated debate amongst the theorists and empirical economists on the role o financial sector and its development in setting the growth trajectory and poverty alleviation. Theoretical reasoning and empirical evidence suggested a central role of expansion and improvement in financial sector in the process of socioeconomic development [1-2]. The economies characterized with the higher levels of financial development are more likely to grow faster. Real world is more complex and imperfect. Acquisition and process of information about potential investments is costly. The costs and uncertainties are associated with the writing, interpreting and enforcing the contracts. Moreover, the costs are associated with the transaction of goods, services and financial products. These aforesaid market imperfections hamper economic growth by inhibiting the flow of savings to those with the best ideas and investment projects.The prevalence these costs and market imperfections create incentive for development of financial agreements, markets and intermediaries. Financial products and institutions, motivated by the profits, are created to ameliorate effects of market imperfections[3].

A developed financial sector serves as medium of saving-investment process in the economy. The extensive literature in empirical research suggests positive impact of financial progress on economic growth in the economy. Levine [2] presenting a survey of theories on link between financial sector development and growth pointed out five possible channels through which financial development have some bearing on economic growth. Firstly, the financial sector provides information about possible investment project making possible the efficient capital allocation. Secondly, a developed financial sector may monitor firms and improve corporate governance. Thirdly, this may help the firms in ameliorating risk. Fourthly, financial sector also helps mobilizing and pooling savings. Fifthly, developed and improved financial sector eases the trade of goods and services.

The extensive empirical literature is available on the finance-growth link. The early cross-country studies [4-6]evidenced positive association between financial advancementand economicgrowth. Goldsmith [4]used cross-country data of 35 economies to conclude a positive finance-growth link. The author did not endeavor to look into any causal link between financial development and growth. Moreover, Goldsmith did not control for some other related variables. King and Levine [5] ran regressions on a panel of 77 economies for 1960-89 period. The authors controlled for the other factors such as education, trade and political stability.Levine and Zervos [6] included stock markets to finance-growth model and found that banking progress and stock market liquidity forecast growth. But these studies did not focus on the causal association between financial development and growth.There is some empirical evidence that financial development has negative effect on economic growth. Ram [7] traced out "negligible or weakly negative" correlation between financial development and growth.Gillman and Harris [8] also explored negative and significant coefficient of M2 as percentage of GDP for 13 transitional economies.

Some of the empirical studies looked into whether financial sector is a fundamental factor of economic growth. These studies employed instrumental variables.Levine [9] and Levine *et al* [10]identified an economy's legal origin to be an important instrumental variable and concluded a robust and positive brunt of financial development on growth. This analysis also revealed the same result. In another cross-country analysis, Beck *et al* [11]employed GMM method for the dynamic panel data analysis and established a positive link between financial development and total factor productivity. Al-Tamimi *et al*[12] explored the causal link between financialdevelopments in selected Arab economies. Financialdevelopment and economic growth were strongly linked in long run but the link between the variables in short run was weak.

Rioja and Valev [13]inspected the impacts of financial development on growth in different groups of economies in a panel of 74 economies. The study suggested a nonlinear association between financial development and growth. Kemal *et al* [14]found no positive and significant link between indirect finance and growth but direct finance showed significant and positive impact on growth. The study also found a significant and positive effect of overall financial development on economic growth in sampled 19 high income economies. Khaled *et al* [15]attempted to explore connection between financial development and growth in 11 Arab economies. The researchers added new 4 financial indicators to trace out the impact of public credit ratios on growth under the application of the model

developed in Levine [1]. All of the financial development indicators affected growth but insignificantly pointing out the fact that financial sector was still underdeveloped in these economies.

Acaravci *et al* [16]reviewed the theoretical and empirical literature on finance-growth link and investigated the causality between financial development and growth in a panel of Sub-Saharan African economies. The authors found no long run link between financial development and growth. Butbidirectional causality between financial progress and economic growth was found. Asghar and Hussain [17] focused, in the context of FDI and trade liberalization, on the investigation of causal association between financial development and economic growth in developing economies. They explored channels through which financial development influenced growth. The study concluded a strong link between financial development and growth in long run. Asghar and Hussain [17] also explored bidirectional causality between financial advancement and economic growth.

There are a few studies exploring the finance-growth relationship in individual economies. In contrast to cross-country studies, country-specific studies provide more profound insight. Jayaratne and Strahan [18]verified growth boosting impact of financial development in the United States. Moreover, it was also found that branch deregulation increased bank-lending and stimulated growth. Guiso *et al* [19] analyzing the effects of development in local financialsector found that financial development promoted growth of the firm and added to the probability of expansion in individual's own business in Italy. Beck *et al*[20] industries characterized with a larger share of small firms develop faster than in the economies with well-development financial sector.

Mohamed [21]examining correlation between financial development and growth in Sudan concluded that financial development indicators affected real GDP negatively. Zhang *et al* [22]used city level data of 286 Chinese cities and found positive and growth stimulating impact of financial development. Furthermore, the authors also pointed out that state-regulated banking sector hampers growth. Ali *et al* [23] endeavored to scrutinize the impact financial development in economic growth of the Pakistan economy. Time series analysis revealed positive upshot of financial development indicators on economic growth. Moreover, the authors also observed bidirectional causality between deposits and economic growth.

Mosesov and Sahawneh [24] examining the finance-growth nexus UAE found negative association between M2 and economic growth. The study also revealed negative but insignificant impact of credit to private sector. The coefficient of other financial development indicator domestic assets of resident banks to GDP was positive but insignificant. Mosesov and Sahawneh [24]found no constructive impact in the growth of the UAE economy. The study by Mosesov and Sahawneh suffered from serious econometric problems as it used the standard OLS regression for estimation. Al-Malkawi *et al* [25]analyzing the finance-growth nexus in United Arab Emirates (UAE) for the period of 1974-2008 found negative and significant effect of financial development on growth. Al-Malkawi *et al* [25] also found that the finance-growth link was bidirectional.The studies regarding UAE economy has been open to doubt about the influence of financial development on economic growth. This present study is an attempt to explore the effect of financial development on economic growth while controlling for foreign direct investment, inflation and population growth rate from 1975 to 2013.

2.0 MATERIALS AND METHODS

The present study is aimed to analyze the impact of financial development on economic growth in United Arab Emirates for the period of 1975-2013. Financial development in an economy is characterized as the "improvement in the quantity, quality and efficiency" of financial intermediaries in the economy [25-26]. Several studies have identified different indicators of financial development. The present study utilized two indicators of financial development. First financial development indicator is broad money supply measured by money and quasi money as percentage of GDP (M2). Earlier studies such as Levine [1],King and Levine [5], Kemal *et al* [14], Al-Malkawi *et al* [25] used M2 as proxy of financial depth in the economy. The second variables used as a proxy for financial development is domestic credit. Levine [1], King and Levine [5], Kemal *et al*[14], Al-Malkawi *et al*[25]and Ali *et al*[23] used domestic credit as a measure of financial development. Domestic credit is considered as a better measure of financial development [26]. Following Acaravci *et al*[16], current study used domestic credit provided by financial sector as percentage of GDP as proxy for financial development. The standard economic literature has identified some other control variables [25] so present study includes foreign direct investment, inflation and population growth as control variables.The model to be estimated in the study is as:

$$G_t = \alpha_0 + \alpha_1 DC_t + \alpha_2 M2_t + \alpha_3 FDI_t + \alpha_4 I_t + \alpha_5 P_t + \varepsilon_t \quad (1)$$

In the model (1) *G* indicates economic growth measured by GDP per capita, *DC* is domestic credit provided by financial sector as percentage of GDP,*M2* is broad money supply measured by money and quasi money as percentage of GDP,*FDI* is foreign direct investment as percentage of GDP, *I* is inflation rate measured by annual GDP deflator and *P* is the population growth rate. All of the variables are in natural log form. The data of these variables are sourced from world development indicators of the World Bank [27].

2.1 UNIT ROOT TEST

The current time series econometric practice has been followed before the application of cointegration approach to check out the impact of financial progress on economic growth. The application of standard OLS on nonstationary time series may result in spurious results so it necessary to pretest the order of integration of time series variables. Phillips-Perron [28] unit root test and DF-GLS unit root test are applied in the present study. The PP-tests the null hypothesis that $x_t \sim I(1)$ against the alterative hypothesis that $x_t \sim I(0)$.Elliott *et al* [29] introduced an efficient unit root test. The authors modified the Dickey-Fuller [31] by using the rationale of generalized least squares. In the small size, DF-GLS test has best overall performance. Moreover,

DF-GLS unit root test "has substantially improved power when an unknown mean or trend is present" [29].

2.2 ARDL COINTEGRATION APPROACH

Since time series data (from 1975 to 2013) has been used in the present study so Autoregressive Distributed Lag (ARDL) approach is applied. The ARDL cointegration approach is more preferable method for the analysis because it can be applied to the time series variables whether they are purely I(0) and/or purely I(1) [30]. The traditional approaches of cointegration suggested in Johansen[32] require prior information whether variables are I(0) or I(1). But, ARDL models, Pesaran and Shin[33]solved this problem that the time series in the cointegrating link can be either I(0) or I(1). Moreover, symmetry of lag length is not required while estimating the cointegrating association by ARDL method. So this technique allows the use of different number of lags of the variables in the model[33]. Furthermore, the ARDL model is a standard least squares model including lags of both the explained variable and explanatory variable(s) [34].Moreover, it is also suitable and robust when sample size is small. The ARDL approach simultaneously estimates the long run and short run coefficients of the model.

The ARDL model based on our Model (1) would is:

$$\Delta G_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, \Delta G_{t-i} + \sum_{i=1}^{p} \beta_{2i}\, \Delta DC_{t-i} + \sum_{i=1}^{p} \beta_{3i}\, \Delta M2_{t-i} + \sum_{i=1}^{p} \beta_{4i}\, \Delta FDI_{t-i} + \sum_{i=1}^{p} \beta_{5i}\, \Delta I_{t-i} + \sum_{i=1}^{p} \beta_{6i}\, \Delta P_{t-1} + \rho_1 G_{t-1} + \rho_2 DC_{t-1} + \rho_3 M2_{t-1} + \rho_4 FDI_{t-1} + \rho_5 I_{t-1} + \rho_6 P_{t-1} + \epsilon_t \quad (2)$$

In the ARDL model (2), the null hypothesis of that $\rho_1 = \rho_2 = \rho_3 = \rho_4 = \rho_5 + \rho_6 = 0$ [there is no cointegration] against the alternative hypothesis that $\rho_1 \neq \rho_2 \neq \rho_3 \neq \rho_4 \neq \rho_5 \neq \rho_6 \neq 0$ [there is cointegration]. The standard F-statistics is estimated to test the null hypothesis. Pesaran *et al*[30] provide two critical values. The null hypothesis of no cointegration is rejected if the standard F-value exceeds the upper bound critical value otherwise we accept it.

$$\Delta G_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, \Delta G_{t-i} + \sum_{i=1}^{p} \beta_{2i}\, \Delta DC_{t-i} + \sum_{i=1}^{p} \beta_{3i}\, \Delta M2_{t-i} + \sum_{i=1}^{p} \beta_{4i}\, \Delta FDI_{t-i} + \sum_{i=1}^{p} \beta_{5i}\, \Delta I_{t-i} + \sum_{i=1}^{p} \beta_{6i}\, \Delta P_{t-1} + \omega ECT_{t-1} + \epsilon_t \quad (3)$$

The model (3) is the error correction representation of the growth model. Here ω is the coefficient of the error correction term. If ω has the negative sign and significant then long run causality form financial development indicators and control variables to per capita GDP would be confirmed. It would ratify the cointegration association between these variables. The significance of *β's* would confirm the short run causality from respective variable to growth variable. Diagnostic test are applied on the residuals to test their normality property. Moreover, the ARCH heteroskedasticity test and serial correlation LM test are also applied to confirm whether error terms are heteroskcedastic and serially correlated. CUSUM and CUSUMSQ test are used to test the parameter or variance stability. CUSUM test [35] is based on the cumulative sum of recursive residuals. In this test cumulative sum of recursive residuals and cumulative sum of squares of recursive residuals are plotted together with the 0.05 critical lines. If the cumulative sum lies inside the area between the 5 percent critical lines it is the indication of stability otherwise it shows the instability.

3.0 RESULTS AND DISCUSSION

Phillips-Perron test and DF-GLS unit root test results reported in Table 1 are evident thatnone of variable is integrated of order 2. Phillips-Perron test confirm that G and M2 are I(1) and DC and FDI are I(0). DF-GLS test also confirmed that G and M2 are I(1). DC and FDI are also I(0) at their first difference as adjudged by DF-GLS statistics. I and P are found to be stationary at their level. The prerequisite to apply ARDL approach is that the variables should be I(0) or I(1) or combination of I(0) and I(1). So ARDL approach cap be applied to test the long run relationship between the variables.

The standard F-statistic for Model (1) is 10.64 which exceeds the upper bound value at 99 percent confidence level. It confirms the existence of cointegrating relationship between financial development variables and economic growth in UAE. We, then, proceeded further and estimated long run coefficients with the Schwarz Information Criterion (SIC) lag specification ARDL(1, 1, 0, 1, 0, 1). The results of the econometric analysis are given in Table 2. The model is statistically robust as the measure of goodness of fit is 0.99 which is very high. The joint significance of regressors adjudged by the F-value is confirmed as the probability of F-statistics is less than 0.01.

The results of long run and short run estimations concluded a negative association between financial development variables and economic growth in UAE for the sampled period. The evidence of negative impact of financial development on economic growth in UAE is inconsistent with that of in theoretical and economic literature but it may not be surprising in the case of UAE economy. The financial sector has not contributed to the economic growth of the economy of UAE due transitional nature of the sector during the period of 1975-2013. The financial sector in UAE might have not developed enough to mobilize savings and channelize these saved financial resources towards productive economic activities to generate growth in the economy. The result is agreement with findings in [25]. Furthermore, the result of the present analysis is consistent with that in [24] that M2 and growth are negatively correlated in UAE. There are some other studies [7-8][21] and[25] confirming the negative correlation between financial development indicators and growth.

The control variables foreign direct investment and population growth significantly affect economic growth in UAE over long run period. FDI stimulates economic growth in economy. The coefficient of FDI in short run equation is also positive but insignificant. The overall impact of FDI flows into the economy is positive. Population growth hampers growth in the economy. A rapid increase in population increases the dependency burden in the economy. Inflation also showed negative impact both in long run and short run but the short run coefficient of inflation is insignificant. It shows that the changes in the economic growth due to fluctuations in the general price level are only traceable in the long run. The error correction terms arenegative and statistically significant. The speed of adjustment is -0.4889 showing that about 50 percent of the disturbances in equilibrium in last year are corrected in the next year. The existence of the cointegrating association

between financial development and economic growth in UAE is ratified with the significance of the error correction term.

The results of time series analysis are statistically significant and robust as error terms of the estimated model are normally distributed. Moreover, residuals are uncorrelated and have constant variance as Breusch-Godfrey serial correlation LM test and ARCH heteroskedasticity test statistics, respectively, have p-value greater than 0.05. Furthermore, the estimated parameters are stable as the plot of CUSUM and CUSUMSQ are between the 5 percent critical line (Figure 1 & 2).

4.0 CONCLUSION

The present study empirically investigated the impact of financial development on economic growth in United Arab Emirates by employing ARDL approach to cointegration for the period of 1975-2013. Two financial development indicators are used for the analysis. The domestic credit provided by financial sector as percentage of GDP and money and quasi money as percentages of GDP were used as proxy variables for financial development. Moreover, the study also used three control variables foreign direct investment, inflation rate and population growth rate. The Phillips-Perron and DF-GLS unit root tests were applied to test the order of integration of the time series in the model. The favorite ARDL approach to cointegration has been applied for the econometric analysis.

The results of the econometric analysis showed that financial development variables; domestic credit and money and quasi money negatively and significantly affect economic growth both in long run and short run in UAE. Though the financial sector has tremendous growth in UAE economy but it has not reached a level to show its growth stimulating impacts in the UAE economy. The financial sector might not have contributed in stimulating savings and channelizing these savings towards investment projects. The financial sector in UAE is not well-developed and efficient so more developed and efficient financial sector are warranted to stimulate growth. Moreover, appropriate regulatory and policy reforms would expand and improve the credit system in UAE. Furthermore, the liberalization and deregulation of the financial and banking system in the economy would help in creating competition and efficiency in the financial sector resulting in stimulated growth in the economy.

APPENDIX

Table 1: The Unit Root Test

Phillips-Perron Test				
Variables	Level		1 Difference	
	C	Ct	C	Ct
G	-0.6545	-1.9256	-4.4043*	-4.3230*
M2	-0.5736	-2.5150	-6.8212*	-6.7014*
DC	-3.4729**	-5.4656*		
FDI	-2.0655*	-2.9160		
I	-8.8123*	-8.6217*		
P	-1.6312	-1.7795	-1.6507	-2.0379
DF-GLS Test				
G	-0.5268	-2.3747	-3.9166**	-4.2759*
M2	-0.1337	-2.1610	-1.6239	-5.2945*
DC	-0.6579	-2.8926	-1.7198	-3.2548**
FDI	-2.0163	-2.8276	-7.3783*	-7.4091*
I	-6.5444*	-6.7559*		
P	-2.6451*	-3.0643		

Source: Author(s) estimations

Table 2: Empirical Analysis: Results

1. ARDL Bounds Test				
Model	F-Statistics	Critical Bounds (5%)		Decision
		I(0)	I(1)	
F(G/DC, M2, FDI, I, P)	**10.6440**	2.62	3.79	Cointegration
2. Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DC	-0.3082	0.0838	-3.6775	0.0010
M2	-0.4488	0.0994	-4.5139	0.0001
FDI	0.0889	0.0349	2.5455	0.0167
I	-0.0054	0.0198	-0.2740	0.7861
P	-0.0637	0.0287	-2.2206	0.0346
3. Short Run Equation				
D(DC)	-0.1548	0.0247	-6.2762	0.0000
D(M2)	-0.2798	0.0521	-5.3748	0.0000
D(FDI)	0.0179	0.0179	1.0031	0.3244
D(I)	-0.0020	0.0080	-0.2539	0.8014
D(P)	0.0606	0.0278	2.1813	0.0377
C	7.3192	1.1228	6.5186	0.0000
CointEq(-1)	-0.4889	0.0749	-6.5274	0.0000
4. Diagnostic Tests				
R-squared		0.9900	F-statistic	307.1621
Adjusted R-squared		0.9868	Prob(F-statistic)	0.0000
Durbin-Watson stat		1.5439		
Test			F-value	p-value
Breusch-Godfrey Serial Correlation LM Test:			1.0219	0.3739
Heteroskedasticity Test: ARCH			0.0007	0.9796
Jarque-Bera Nomality Test			0.2809	0.8689

Source: Author(s) estimates

Figure 1: Plot of Cumulative Sum of Recursive Residuals

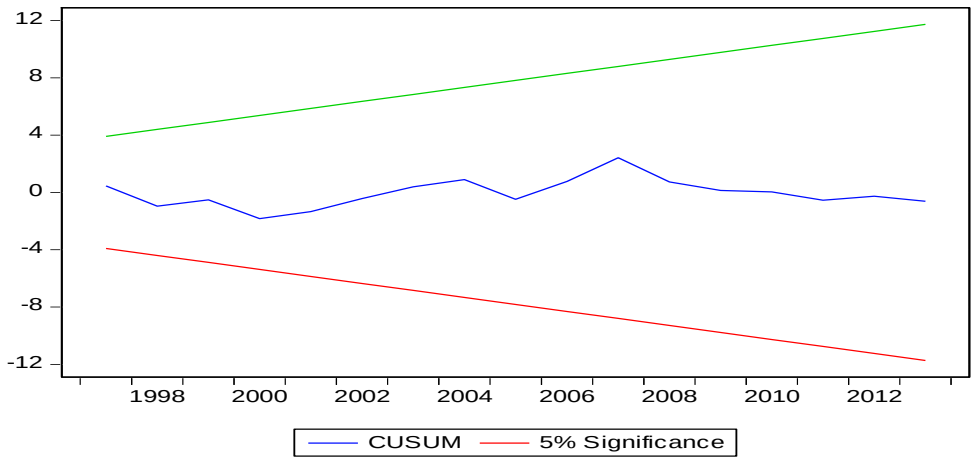
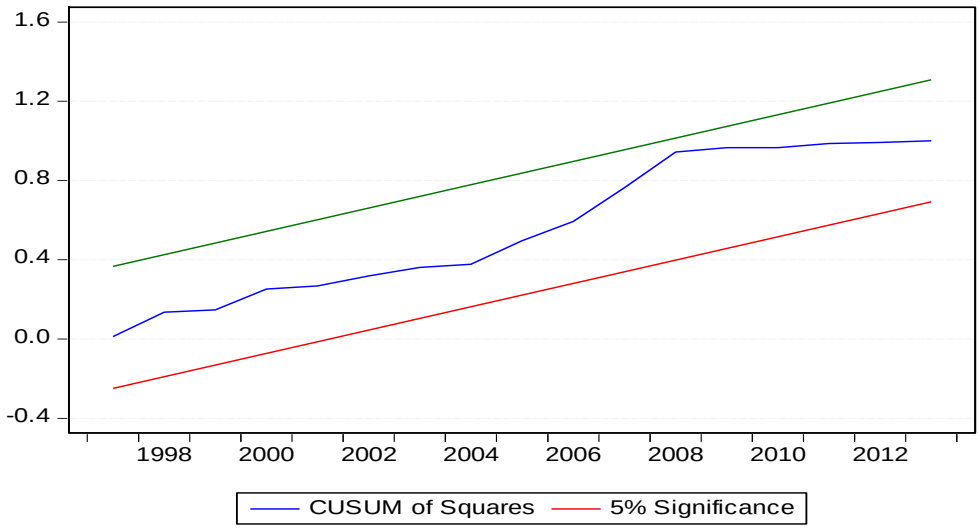


Figure 2: Plot of Cumulative Sum of Squares of Recursive Residuals



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