

Contribution of Financial Sector and Trade on Economic Growth: Evidence from MENA Countries

Md Shakhawat Hossain*, Md Rokonuzzaman

Department of Statistics, University of Chittagong, Chittagong, Bangladesh

Abstract This research work is an attempt to examine the contribution of financial sector and trade on economic growth for the countries in MENA region. For this purpose, yearly data on inflation rate, trade service, domestic credit to private sector, domestic credit provided by financial sector and broad money on GDP, investigated for nine MENA countries over the period of 1981-2016 are collected from World Bank database. Descriptive statistics refer that variables diverge greatly among the countries. For some countries inflation rates are found to be considerably high. Significant Hausman test conferred that the random effect model is appropriate for this panel data. The empirical results from random effect model with robust standard error reveal significant effects of trade service, domestic credit provided by financial sector, inflation rate, domestic credit to private sector and broad money on GDP growth. It is mentionable that inflation rate, domestic credit to private sector and broad money have negative impact on GDP growth that might be due to high inflation rates and less stable economies of the sampled countries.

Keywords Panel Data, Financial Sector, Trade, GDP, Random Effect Model

1. Introduction

The relationship between financial development and economic growth has been the subject of increasing attention. In an empirical research Levine and Zervos [1] found evidence of a robust relationship between financial development and long-run economic growth. There is ambiguity in findings due to various definitions of financial development indicators and misspecification of empirical models. The empirical assessment attempts to capture the effects of financial development and economic growth.

The Middle East and North Africa region (MENA), as defined by the World Bank in the MENA 2008 Economic Developments and prospects (EDP) report, comprises Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, the Palestinian Territories (West Bank and Gaza), Qatar, Arabia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen.

Unfortunately, it is well documented that the wider Middle East and North Africa region has had disappointing growth performance over long periods of time relative to other emerging and developing countries (EDC). A slowdown in world trade and financial sector that is not very

well intrigued has weakened economic prospects. Moreover, the stretched political transition and instability are further weighing likely on the economies in the region and likely to result in a slugging and protracted economic recovery. Trying to achieve and maintain macroeconomic stability in this environment will be a key challenge for the coming years.

Although most of the empirical studies found positive relationship between financial development and economic growth, it is shocking that empirical studies from the Middle East North Africa region are inadequate as well as the fact that the empirical results are mixed. For example; Al-Awad and Harb [2] pointed out that financial development and growth may be related in the long run but their results fail to clearly establish the direction of causality.

The simple quantitative measures may also give a misleading picture of financial development. For instance, although a higher ratio of broad money to GDP is generally associated with greater financial liquidity and depth, the ratio may decline rather than rise as a financial system develops because people have more alternatives to invest in longer term or less liquid financial instruments. A well-developed and dynamic financial sector is essential to achieve sustainable economic growth. Many attempts have been made in the last decade to improve the performances and efficiency of the MENA financial sector. However, there still exists a wide gap if compared to other developed and emerging regions. Although MENA countries present different levels of the financial sector's development, some broad generalizations can be made.

* Corresponding author:

shakhawat.stat@cu.ac.bd (Md Shakhawat Hossain)

Published online at <http://journal.sapub.org/statistics>

Copyright © 2018 The Author(s). Published by Scientific & Academic Publishing

This work is licensed under the Creative Commons Attribution International

License (CC BY). <http://creativecommons.org/licenses/by/4.0/>

What leads to a well-developed financial sector? Conversely, what hinders financial sector development? These questions are the subject of a large and still growing research literature from which some general conclusions can be drawn.

In this paper we attempt to show the effect of financial development on economic growth in these 9 countries from 1981 to 2016 by using World Bank Development Indicator online database.

The current study is associated with the demand of following hypothesis which theorizes that economic growth propels financial development. The study is significant for two main reasons. One, contrary to the status in which the relationship between financial development and economic growth has been predominantly investigated using time series data; the current study investigates the relationship between financial development and economic growth using panel data. Besides, the study departs from the conventional interest of testing whether financial development promotes economic growth rather promoting financial development in the panel context.

There have two research questions in our study which are;

- What is the relationship among financial sector, trade and economic growth for MENA countries?
- What extent financial sector and trade affects on economic growth of MENA countries?

The rest of the paper is divided as follows. The next section focuses on review of literature followed by the data and methodology section. The penultimate section is the results section. Conclusion and recommendation section ends the paper.

2. Literature Review

More recently, Chow and Fung [3] examined the relationship between financial development and economic growth in 69 countries using a regime switching panel vector autoregression model. They also perform a clustering analysis to identify the presence of convergence clubs based on data properties. The study found that most countries have been switching between two states: one way causality from growth to financial development but not the other way round, and coexistence of bi-directional causality.

Barajaset *et. al* [4, 5] examined whether there might be a financial sector dimension to the Middle East and North Africa growth problem, either because financial systems there had not developed or deepened sufficiently, or because the deepening that did occur had not been as effective as in other regions in providing intermediation services that ultimately would enhance economic growth. The study found that, at least at the aggregate level, financial depth did not seem to be an issue for the region as a whole, although there was significant variation across countries in the region.

Shan and Morris [6] investigating of the causal relationship among the following variables: real GDP, ratio of total credit to GDP, spread of borrowing and lending

interest rates, productivity, ratio of gross investment to GDP, ratio of total trade to GDP, consumer price index, official interest rate, and stock market price index for 19 OECD countries. The authors contend that financial development leads to economic growth either directly or indirectly through the remaining examined variables.

In the Middle East, Al-Awad and Harb [2] investigated the relationship between financial development and economic growth and report that in the long run financial development and economic growth may be related to some level. However, in the short run, the panel causality tests point to real economic growth as the force that drives changes in financial development.

Kar, M. *et. al* [7] investigated the direction of causality between financial development and economic growth in the Middle East and North African countries. The empirical results showed that the direction of causality between financial development and economic growth is sensitive to the measurement of financial development in the MENA countries.

Deidda and Fattouh [8] explore a non-linear relationship between financial development and economic growth. The results of their study suggested that in low-income countries there is no significant relationship between financial development and economic growth, whereas in high-income countries there is a positive and statistically significant relationship between financial development and economic growth.

Gregorio, J. D. and Guidotti, P. E. [9] examined the relationship between long run growth and financial development in 95 countries. The empirical result showed that more financial development leads to improved growth performance. The level of growth differs from countries to country.

Rachdi, H and Mbarek, H. B. [10] demonstrated that there is a long-term relationship between financial development and economic growth, but the causal effect is running from economic growth to financial development.

In a research, Hossain, M. S. *et. al* [11] showed that market capitalization and domestic credit to private sector have a statistically significant positive contribution to the economic growth (GDP) for SAARC countries. Najid, A. and Uma-Tul, S. J. [12] found a positive relation between inflation and economic growth of Pakistan.

Abbas, A. O. *et. al* [13] examined the impact of stock market development on Tanzanian economy based on time series data from 2000-2011 and they found Dar-es Salam Stock Exchange has no effect on economic growth of Tanzania.

Hossain, M. S. and Rokonuzzaman, M. [14] studied the impact of stock market, trade and credit by bank on economic growth for Latin American countries and found that inflation rate, import and credit by banking sector have negative impact on GDP growth and exports, stock market, broad money, credit by private sector and interest rate have positive contribution to the GDP growth.

The review reveals that a number of researchers were

worked on financial development and economic growth in various ways. But there is still a specific gap of working the impacts of financial development, trade on economic growth for MENA region.

3. Data and Methodology

In this study, data is collected from the World Bank Development Indicator online database for MENA countries. Although it is a large database but information for some countries are not available. Due to unavailability of complete information only nine MENA countries and some selected factors related to economic growth over 36 years data with the period 1981-2016 are considered for the analysis. Here the following variables and countries are considered:

Dependent Variable: Per capita GDP growth in % (GDP)

Independent Variable: Inflation, GDP deflator annual % (Inflation), Trade Service in % of GDP (Trade), Domestic Credit to Private Sector in % of GDP (DPS), Broad Money in % of GDP (BM), Domestic Credit provided by Financial Sector in % of DP (DCF).

Panel countries: Bahrain, Kuwait, Saudi Arabia, Egypt, Morocco, Sudan, Iran, Oman, Tunisia

In this study various descriptive statistics are computed for all the variables that are considered. In the next step, the ordinary least squares (OLS), least squares dummy variable approach and random effect model are fitted for the data. Also conduct the Hausman test to determine the suitable

model for this panel data. All the analyses are done using computer software STATA-12.0.

The following models are considered for these aforementioned analyses:

Model 1:

$$GDP = \beta_0 + \beta_1(Inflation) + \beta_2(Trade) + \beta_3(DPS) + \beta_4(BM) + \beta_5(DCF) + Error$$

Model 2:

$$GDP = \beta_0 + \beta_1(Inflation) + \beta_2(Trade) + \beta_3(DPS) + \beta_4(BM) + \beta_5(DCF) + \gamma_1(Egypt) + \gamma_2(Iran) + \gamma_3(Kuwait) + \gamma_4(Morocco) + \gamma_5(Oman) + \gamma_6(Saudi Arabia) + \gamma_7(Sudan) + \gamma_8(Tunisia) + Error$$

4. Results and Discussion

The GDP growths for different countries over the period 1981-2013 are shown in Figure 1. It is obvious from both the figures that the GDP growths for different countries are not similar. There have distinctions of GDP growth from country to country. Also we see that GDP line of Bahrain, Egypt, Oman and Tunisia are not too much fluctuating but GDP for Iran, Kuwait, Morocco, Saudi Arabia and Sudan are very much fluctuated.

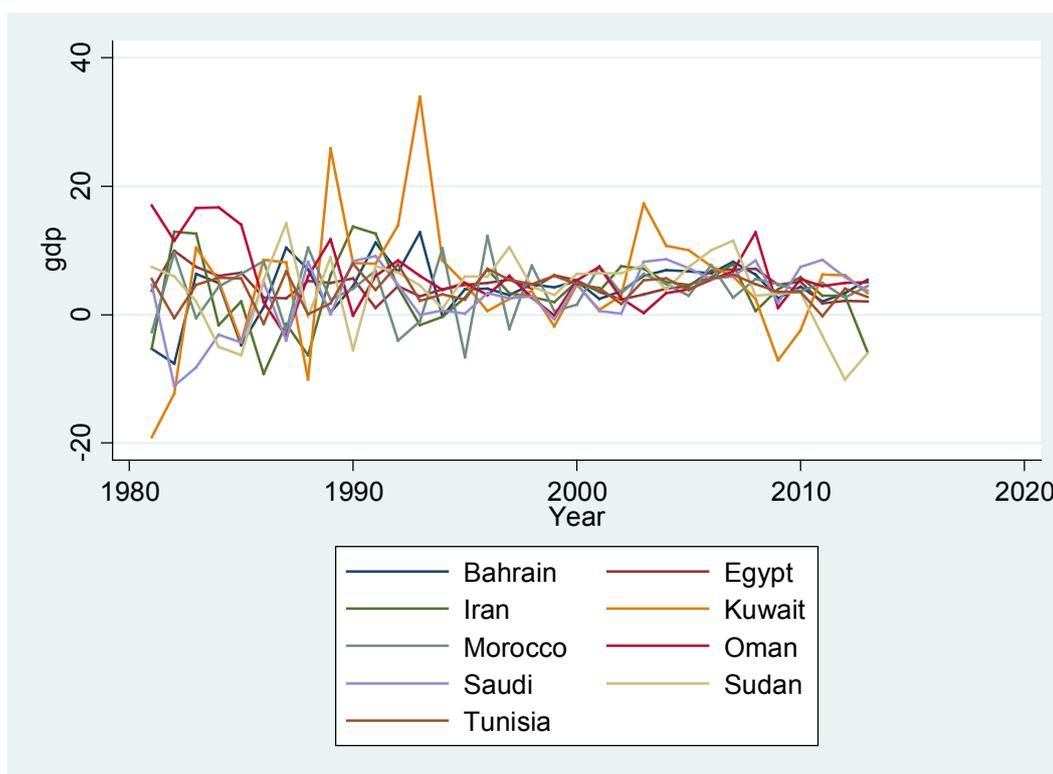


Figure 1. Line diagram of country wise gross domestic product (GDP) in annual percentage

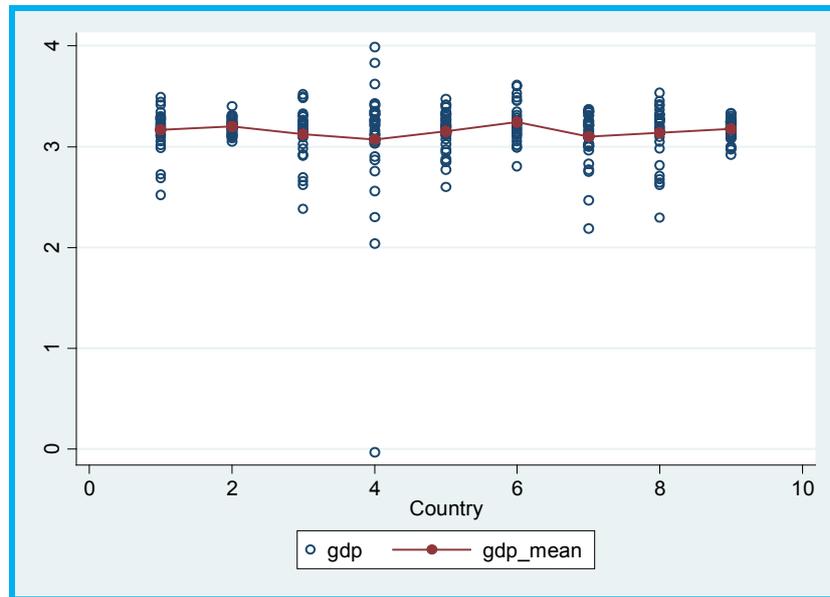


Figure 2. Heterogeneity across countries

From the figure 2, it is observed that the economic growth between different countries is heterogeneous especially for the countries Iran, Kuwait, Saudi Arabia and Sudan.

Country wise various descriptive statistics like measures of location and dispersion are computed for all the variables that are considered to compare and observe the pattern. For simplicity and to save the space only mean and coefficient of variation (CV), as means are differ greatly, are comprises for different countries and factors are comprised in Table 1.

From Table 1, it is observed that mean GDP growth is the height in Oman (6.14%) and the lowest in Saudi Arabia (2.89%). For majority countries of MENA region, CV of GDP growth are high indicating less stable GDP growth. It also found that average inflation rate is the height in Sudan (39.22%) followed by Iran (19.93%) and Egypt (10.27%) which are considerably very high.

Furthermore it is seen that mean trade of all sampled countries are between 26% and 95% except Bahrain for

which it is 159.74%. The maximum average domestic credit to private sectors is found in Kuwait (67.39%) and the minimum in Sudan (7.69%). Mean broad money for all countries varies from 20% and 86%. The lowest mean domestic credit provided by financial sector is 8.40% for Saudi Arabia and that of height is 90.20% for Egypt.

To analyze this panel data, at first ordinary least squares (OLS) method is applied for fitting Model 1 and the results are presented in Table 2.

The results in Table 2 illustrate that partial elasticity of GDP growth is negatively related to inflation rate, domestic credit to private sector and broad money while has positive relation of trade and domestic credit provided by financial sector to GDP. It is also seen that all the explanatory variables are significant except broad money.

Then least squares dummy variable approach (Model 2) considering country as dummy is fitted to see the country effect and the results are shown in Table 3.

Table 1. Country wise descriptive statistics for GDP Growth, Inflation Rate, Trade, DPS, Broad Money and DCF

Country	GDP		Inflation		Trade		DPS		Broad Money		DCF	
	Mean	CV	Mean	CV	Mean	CV	Mean	CV	Mean	CV	Mean	CV
Bahrain	4.18	103.11	3.58	249.65	159.74	20.43	47.00	24.38	67.34	14.31	32.30	71.53
Egypt	4.62	41.74	10.27	58.12	52.30	20.97	36.40	30.51	85.54	8.50	90.20	13.81
Iran	3.46	159.25	19.93	51.65	41.42	30.47	22.68	27.16	44.82	27.17	46.83	35.50
Kuwait	4.96	200.11	4.31	277.40	95.11	11.18	57.39	34.62	80.93	29.91	76.96	33.55
Morocco	3.83	116.51	3.95	87.71	62.51	18.35	38.03	50.51	71.95	33.78	68.68	32.84
Oman	6.14	82.57	2.97	400.99	86.59	8.90	30.31	32.87	31.33	17.24	26.89	42.82
Saudi Arabia	2.89	174.11	2.67	352.99	75.00	14.93	25.46	37.37	46.17	19.96	8.40	356.50
Sudan	3.84	146.65	39.22	94.21	26.36	41.72	7.69	56.70	20.06	36.27	18.34	58.65
Tunisia	4.09	57.64	5.53	62.72	88.76	12.84	54.42	13.53	51.32	14.32	68.20	10.08

*CV indicates coefficient of variation

Table 2. Stata output of least square estimates of GDP on inflation, trade, dps, dcf, bm

Source	SS	df	MS	Number of obs = 297		
Model	2.40743639	5	.481487278	F(5, 291) = 5.86		
Residual	23.9195604	291	.082197802	Prob> F = 0.0000		
Total	26.3269968	296	.088942557	R-squared = 0.0914		
				Adj R-squared = 0.0758		
				Root MSE = .2867		

gdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
inflation	-.0748266*	.0377589	-1.98	0.048	-.1491418	-.0005115
trade	.1726038**	.0638301	2.70	0.007	.0469765	.298231
dps	-.2853818**	.0926552	-3.08	0.002	-.4677411	-.1030224
dcf	.2141846***	.0416835	5.14	0.000	.1321451	.2962241
bm	-.0953808	.0789659	-1.21	0.228	-.2507974	.0600358
cons	3.225796	.3689386	8.74	0.000	2.499669	3.951922

legend: * p<0.05; ** p<0.01; *** p<0.001

Table 3. Stata output of estimates with its S.E of Least square dummy regression model

Source	SS	df	MS	Number of obs = 297		
Model	2.89706521	13	.22285117	F(13, 283) = 2.69		
Residual	23.4299316	283	.082791278	Prob> F = 0.0014		
Total	26.3269968	296	.088942557	R-squared = 0.1100		
				Adj R-squared = 0.0692		
				Root MSE = .28773		

gdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
inflation	-.0700071	.040061	-1.75	0.082	-.1488623	.0088482
trade	.2137032	.1242107	1.72	0.086	-.0307909	.4581974
dps	-.2736878*	.1088012	-2.52	0.012	-.4878502	-.0595253
dcf	.2192023**	.0479642	4.57	0.000	.1247905	.3136141
bm	-.0347855	.143672	-0.24	0.809	-.3175869	.2480158
Egypt	.0791457	.1285461	0.62	0.539	-.1738822	.3321736
Iran	.0594088	.1435458	0.41	0.679	-.223144	.3419617
Kuwait	-.0734504	.0892519	-0.82	0.411	-.2491323	.1022315
Morocco	.0224495	.1137798	0.20	0.844	-.2015125	.2464116
Oman	.096415	.1095761	0.88	0.380	-.1192726	.3121026
Saudi Arabia	.081676	.1084333	0.75	0.452	-.1317622	.2951141
Sudan	.0889688	.1836735	0.48	0.628	-.2725709	.4505084
Tunisia	.0583778	.099103	0.59	0.556	-.1366947	.2534503
_cons	2.641471	.8495683	3.11	0.002	.9691961	4.313746

legend: * p<0.05; ** p<0.01

From Table 3, it is observed that inflation, domestic credit to private sector and broad money have negative contribution to the GDP growth on the other hand trade and domestic credit provided by financial sector have positive contribution to the GDP growth. The relations are as similar as OLS estimates. Here only domestic credit to private sector and domestic credit provided by financial sector are significant and none of the country effects, which are our main concern in fitting such a model, are statistically significant.

Since it is a panel data and Model 2 shows that country effects are insignificant we should move to either fixed effect or random effect panel model. To determine the appropriate model Hausman test is used for the data and test results are given in Table 4.

From Table 4 it is found that the value of the Hausman test statistic is highly insignificant which indicates that there exists heterogeneity among the variables over time and country and a random effect panel model would be a suitable

one for the data.

Finally random effect panel model with robust standard error (for Model 1) is applied and the outputs are presented in Table 5. It is observed from Table 5 that, inflation rate, domestic credit to private sectors and broad money have negative effect on GDP growth while trade service and domestic credit provided by financial sector have positive contribution to the GDP growth for the countries in MENA

region. It is also found that all the explanatory variables except broad money are significant. Moreover overall $R^2=0.0913$ which is bit higher than other previously used models and hence it justifies the random effect model is more appropriate model for the considered data. Furthermore it is mentionable that here parameters are estimated with smaller robust standard errors.

Table 4. Stata output of calculation table for hausman test for choosing random effect model

```

----- Coefficients -----
      |          (b)          (B)          (b-B)          sqrt(diag(V_b-V_B))
      |          fixed          random          Difference          S.E.
-----+-----
inflation |   -.0700071   -.0736378   .0036308   .0115273
trade     |    .2137032    .1739652   .039738   .1012759
dps       |   -.2736878   -.2827629   .0090752   .049314
dcf       |    .2192023    .2163247   .0028775   .020217
bm        |   -.0347855   -.089161   .0543755   .1102162
-----+-----
b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test:  Ho:  difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
          =          0.67
Prob>chi2 =          0.9847

```

Table 5. Stata output of random effect regression model

```

Number of obs      =      297
Number of groups   =         9
Obs per group: min =      33
                  avg =     33.0
                  max =      33

R-sq:  within = 0.0834
       between = 0.3784
       overall = 0.0913
Wald chi2(5)      =      456.93
Prob> chi2        =      0.0000
(Std. Err. adjusted for 9 clusters in var2)

-----+-----
gdp          |          Coef.      Robust          z    P>|z|    [95% Conf. Interval]
              |          Std. Err.
inflation    |  -.0736378**   .0261645   -2.81  0.005   -.1249193   -.0223564
trade        |   .1739652**   .0677022    2.57  0.010    .0412713    .3066591
dps          |  -.2827629*    .116914   -2.42  0.016   -.5119102   -.0536157
dcf          |   .2163247***  .0271315    7.97  0.000    .163148    .2695014
bm           |  -.089161     .0607897   -1.47  0.142   -.2083066    .0299846
_cons       |   3.167948     .2929232   10.81  0.000    2.59383    3.742067
-----+-----
sigma_u1     .04204392
sigma_e1     .28773474
rho          |   .02090484   (fraction of variance due to u_i)
-----+-----
legend: * p<0.05; ** p<0.01; *** p<0.001

```

5. Conclusions

This study provides new evidence that sheds light on the effect of financial development of economic growth. The study is a piece of empirical work that contributes on the role of some selected explanatory variables on the economic growth (consider GDP growth) in nine countries of MENA region. In this investigation it is observed from figure 1 & 2 that the GDP growth of different sampled countries show heterogeneity especially in Oman, Kuwait, Saudi Arabia and Sudan.

From descriptive statistics, it is found that the mean GDP growth is the highest in Oman (6.14%) and the lowest in Saudi Arabia (2.89%). The average inflation rates for Sudan, Iran and Egypt are 39.22%, 19.93% and 10.27% respectively which could be considered as very high.

OLS estimates showed that GDP growth has negative change with inflation rate, domestic credit to private sector and broad money while it has positive change with trade service and domestic credit provided by financial sector. Here it is also seen that inflation rate, trade service, domestic credit to private sector and domestic credit provided by financial sector are significant. The same directions of GDP changes with explanatory variables are observed in the least squares dummy variable approach and only domestic credit to private sector and domestic credit provided by financial sector are significant.

The significant Hausman test statistic conferred random effect model to analyze the panel data and hence finally random effect model with robust standard error is used. Here it is found that partial elasticity of GDP has negative relation with inflation rate, domestic credit to private sector and broad money while has positive relation with trade service and domestic credit provided by financial sector in countries of MENA region. Inflation rate, trade service, domestic credit to private sector and domestic credit provided by financial sector are significant. Negative impact on GDP might be due to high inflation rate and/or less stable economy which is also consistent with study of Iabal and Nawaz [15].

In view of provision over the exact role of financial sector and trade on economic growth, the results of present study should not be viewed as conclusive empirical evidence but rather as an additional inspiration for further research in this area.

6. Recommendations

Due to data unavailability, all of the MENA countries could not be included and only some selected factors are considered in the study. One can try to collect the data for all other countries from other source rather than the database of World Bank. Also more intensive analysis and test procedure can be employed by other researcher to get better estimate for using forecasting model (Like as discriminant and PCA can be used in further analysis.)

In brief, there is agreement that macroeconomic stability is critical for the growth of financial sector services. Countries should adopt appropriate macroeconomic policies, encourage competition within the financial sector, and develop a strong and transparent institutional and legal framework for financial sector activities. In particular, there is a need for prudential regulations and supervision, strong creditor rights, and contract enforcement.

7. Limitations

(1) Due to unavailability of data, the some MENA Countries are not considered in the analysis. (2) Expected result is not found for all explanatory variables (e.g. negative estimate for credit to private sector). (3) Our response variable GDP may depends on many factors but this study considered only five explanatory variables. (4) The study may have model specification error.

REFERENCES

- [1] Levine, R. and Zervos, S. (1998). Stock Markets, Banks, and Economic Growth. *The American Economic Review*, 88(3), 537-558.
- [2] Al-Awad, M. and Harb, N. (2005). Financial Development and Economic Growth in the Middle East, *Applied Financial Economics*, 15, 1041-1051.
- [3] Chow, W. W. and Fung, M. K. (2013). Financial development and growth: A clustering and causality analysis, *The Journal of International Trade & Economic Development. An International and Comparative Review*, 22(3), 430-453. DOI: 10.1080/09638199.2011.570364.
- [4] Barajas, A. et. al (2011). "The Impact of Financial Development on Growth in the Middle East and North Africa," Unpublished Surveillance Meeting Note, Washington, D.C., International Monetary Fund, 2011a.
- [5] Barajas, A. et. al (2011) "The Impact of Financial Development on Economic Growth in the Middle East and North Africa", Chapter 3.3, in International Monetary Fund, Middle East and Central Asia Regional Economic Outlook, Washington, D.C., International Monetary Fund, 2011b.
- [6] Shan, J. and Morris, A. (2002). Does financial development lead economic growth? *International Review of Applied Economics*, 16(2), 153-168.
- [7] Kar, M. et. al (2010). Financial Development and Poverty Reduction in the MENA Countries: Panel Data Analysis, Economics of the Mediterranean and the Euromediterranean Process Conference, CREMed and European Institute, 16-17 July, Barcelona, Spain.
- [8] Deidda, L. and Fattouh, B. (2002). Non-linearity between finance and growth, *Economics Letters*, 74(2), 339-345.
- [9] Gregorio, J. D. and Guidotti, P. E. (1995). Financial development and economic growth. *World Development* 23, 433-448.

- [10] Rachdi, H and Mbarek, H. B. (2011). The Causality between Financial Development and Economic Growth: Panel Data Cointegration and GMM System Approaches, *International Journal of Economics and Finance*, 3(1), 143-151.
- [11] Hossain, M. S. et. al (2012). The Impact of Stock Market Development and Banks on Economic Growth for SAARC Countries: A Panel Analysis. *Asian Journal of Research in Business Economics & Management*, 2(9), 109-115 (Print).
- [12] Najid, A. and Uma-Tul, S.J. (2012). The Relationship between Inflation and Economic Growth in Pakistan: An Econometrics Approach. *Asian Journal of Research in Business, Economics and Management*, 2(9).
- [13] Abbas, A. O. et. al (2016). Impact of Stock Market on Economic Growth Evidence: Dar-es Salam Stock Exchange, Tanzania. *Journal of Finance and Accounting*, 4(6), 321-327.
- [14] Hossain, M. S. and Rokonuzzaman, M. (2018). Impact of Stock Market, Trade and Bank on Econometric Growth for Latin American Countries: An Econometrics Approach. *Science Journal of Applied Mathematics and Statistics*, 6(1), 1-6.
- [15] Iqbal, N. and Nawaz, S. (2010). Investment, Inflation and Economic Growth Nexus. *PIDE*, 19.