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## **FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH: AN EMPIRICAL INVESTIGATION ON 4 OIC COUNTRIES**

Hafnida<sup>1</sup>, Selamah Maamor<sup>1</sup>, and Hussin Abdullah<sup>2</sup>

<sup>1</sup>Islamic Business School, Universiti Utara Malaysia, 06010 Sintok, Kedah, Malaysia

<sup>2</sup>School of Economics, Finance and Banking, Universiti Utara Malaysia, 06010 Sintok, Kedah, Malaysia

### **ABSTRACT**

Financial development is one of the important factors for the growth of economy. Despite its importance, the relationship between financial development and economic still debated in economic literature. Therefore, this paper examines empirically the long run relationship between financial development and economic growth in 4 OIC countries over period 1990-2012. The 4 OIC countries namely Jordan, Kuwait, Malaysia and Saudi Arabia analyzed using panel unit root test and Pedroni co-integration approach. The analysis is carried out using domestic credit to private sector to GDP as measurement of financial development, and have three control variable such as government expenditure, investment and net export. The findings found a positive long run relationship between financial development and economic growth, it also support supply-leading hypothesis.

**Keywords:** financial development; economic growth; Pedroni co-integration

### **INTRODUCTION**

Economists hold divergent opinion regarding the role of the financial system in promoting economic growth. The relationship between financial development and economic growth begins with the pioneer work of Schumpeter (1911) who underlined the central role of financial services in innovation and as a tool in productive investment financing. In addition, Patrick (1966) also noted that financial sectors are one of the vital sources for the growth of economy. The efficiency on financial intermediaries are able to perform more on decreasing transaction cost, minimizing data and provide monetary support to the economy.

Regarding on causality considerations, there are two dominant views on the nexus between financial development and economic growth. First is supply-leading view; Patrick (1966) noted that the creation of financial institutions and instruments can stimulate economic growth in advance. This view means that financial development lead to economic growth. This effect is caused by an improvement in the efficiency of capital accumulation, an increase in the rate of savings or investment (Schumpeter, 1911; King & Levine, 1993; Christopoulos & Tsionas, 2004).

Second is the demand-following view; where economic growth causes financial development. An increase in real economic growth causes a rise in the demand for financial services which results in the financial sector expansion. It means that financial development responds to economic growth (Jung, 1986; Goldsmith, 1969; Kar & Pentecost, 2000). Two other views exist that lie between the supply-leading and demand-following hypotheses (Apergis, *et al.*, 2007). The first one postulates the mutual impact between that two variable or called bi-directional (Demetriades & Hussein, 1996; Ghiramy, 2004; Bangake & Eggoh, 2011). The second view postulates that there is no relationship between financial development and economic growth (Akinboade, 2000; Mahran, 2012; Aric, 2014).

Therefore, the reviews of past studies show that the relationship between financial development and economic growth reveal inconclusive results and as such, it is still debated until now. Hence, this study attempts to find out the long run relationship between financial development and economic growth and also whether financial development will have supply-leading, demand-following, bi-directional or independent relationship with economic growth among selected OIC countries. This study is divide into four parts: as follows: Section 2 explain literature from previous studies related with financial development and economic growth. Section 3 is concerned the methodology will used in this study, while Section 4 highlight findings of the study and lastly Section 5 concludes with a summary.

## **FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH**

In economic literature, the relationship between financial development and economic growth has developed in recent years. King and Levine (1993) found that financial development gave positive signs and statistically significant on growth in eighty countries from period 1960-1989. Their finding is consistent with Schumpeter's view of supply-leading theory that financial development promotes economic growth.

Kar and Pentecost (2000) attempted to examine the causal relationship between financial development and economic growth in Turkey from 1963-1995. By using Granger causality, co-integration and VECM, they found that economic growth lead financial development. Another

study by Waqabaca (2004) investigated the relationship between financial development and growth in Fiji from 1970-2000 period. The result reveals a positive relationship between financial development and economic growth with the direction of causation running from economic growth to financial development in Fiji.

In another study, Christopoulos and Tsionas (2004) found long run relationship and support supply-leading hypothesis between financial development and economic growth in ten developing countries from 1970-2000. Studying a panel data of 75 countries during period 1960-2000, Loayza and Ranciere (2006) found positive long run relationship between financial development and economic growth. Further, Acharya *et al.*, (2009) found long run relationship between financial development and economic growth in India by using co-integration and Fully Modified Ordinary Least Squares (FMOLS).

Leitao (2010) examined the link between financial development and economic growth in EU Countries and BRIC (Brazil, Russia, India and China) during the period 1980-2006. Using fixed effect and GMM approach, the results demonstrate that the financial development contribute to economic growth. By using panel co-integration and GMM system, Rachdi and Mbarek (2011) studied the direction of causality between finance and growth in 10 countries (6 from OECD region and 4 from MENA region) during 1990-2006. The results found that long run relationship between financial development and economic growth in all countries. It also found bi-directional causality for the OECD countries and demand-following for MENA countries.

Another test of the link between financial development, trade openness and economic growth in Bolivia during 1940-2010 comes from Bojanic (2012). In this study, he found that long-run equilibrium relationship exists, and the direction of causality runs from both the indicator of financial development and trade openness to economic growth. By using VAR model and VECM model, Duasa (2014) investigated the impact of financial development on economic growth on selected OIC countries from 1960-2005. He found that there is bi-directional causality for Malaysia and Egypt, while for Iran and Jordan support demand-following and there is no correlation between financial development and economic growth for Bahrain, Kuwait, Libya, Pakistan and Saudi Arabia. In addition, there is long run relationship between that two variable only for Jordan and Kuwait.

Hamdi *et al.*, (2014) conducted the causal relationship between financial development and economic growth in GCC countries from 1980-2012. They employed panel unit root test and ECM model to detect long run and short run causality between the variables. The results reveal that bi-directional causality and a strong relationship between financial development and economic growth in long run. By using data from Qatar from 1990 to 2012, Alkhuzaim (2014)

investigated the short and long run relationship and causality between financial development and economic growth by using co-integration approach and ECM. The result found that positive relationship between all variable in long run. Meanwhile, the causality results indicate supply-leading view that domestic credit provided by the bank sector as percentage of GDP led on economic growth.

Another study of the relationship between financial development and economic growth was conducted in 50 African countries from 1980-2008 by Musamali *et al.*, (2014). In their paper they used different indicators of financial development and the panel data approach. Their result indicate that bi-directional causality and positive relationship between financial development and economic growth. Rehman *et al.*, (2015) investigated the linkage between the financial development and economic growth in Bahrain during the period 1981-2013. They employed co-integration test and VAR framework as method. The results support neither the supply leading hypothesis nor the demand following hypothesis for Bahrain.

Therefore, from previous studies found some different view on the relationship between financial development and economic growth, such as supply leading (King & Levine, 1993; Christopoulos & Tsionas, 2004), demand following (Kar & Pentecost, 2000; Waqabaca, 2004), bi-directional causality (Hamdi *et al.*, 2014; Musamali *et al.*, 2014), no correlation (Rehman *et al.*, 2015), which means that it is still controversial issue until now in the economist view. Hence, this study want to find out the long run relationship between financial development and economic growth, and also attempts to see the causality impact between that two variable especially in the case of 4 OIC countries.

## **METHODOLOGY**

The objective of this study is to examine the relationship between financial development and economic growth in long run for 4 OIC countries from 1990-2012. The 4 OIC countries include Jordan, Kuwait, Malaysia and Saudi Arabia. The chosen of this countries because they use dual banking system and as success countries for implement Islamic finance. In this study, we use domestic credit to private sector to GDP as measurement for financial development (King & Levine, 1993; Altaee and Al-Jafari, 2015; Caporale and Helmi, 2016). Regarding previous literature, there as some factors linked with economic growth, such as government spending and investment. Therefore, there are three control variable had been chosen in our analysis. These variables are net export measured by export minus import to GDP (Sun and Heshmati, 2010; Ortiz, Xia and Wang, 2013). Increased on net export will contribute to economic growth. Investment measured by ratio of real gross domestic (public plus private) to GDP (Zhang, Wang and Wang, 2012; Kilavuz and Topcu, 2012). Increased on investment enhances to economic

growth. Government expenditure measured by total government consumption expenditure to GDP (Amaira and Amairya, 2014; Sadraoui and Hleli, 2015). The effects of government expenditure on economic growth could be either positive or negative. Data cover from 2000-2012 taken from World Bank and International Monetary Fund (IMF). Accordingly the general model used as below:

$$LEG_{it} = \beta_0 + \beta_1 (LInv_{it}) + \beta_2 (LGOV_{it}) + \beta_3 (LNetexp_{it}) + \beta_4 (LFD_{it}) + \varepsilon_t$$

Where: LEG = Log of economic growth, LINV = Log of investment, LGOV = Log of government expenditure, LNETEXP = Log of net export, LFD = Log of financial development,  $\varepsilon$  = error term.

The statistical methods for the possibility of panel co-integration will be examined using the panel unit root test. Panel unit root test is used to test whether the data is stationary or non-stationary as reported by some previous studies such as Levine *et al.*, (2002), Im *et al.*, (2003), Maddala and Wu (1999), Choi (2001) and Hadri (2000). This study chosen Levine *et al.*, (2002) unit root test to check the stationary of data. Pedroni co-integration will utilized to examine the hypothesis between financial development and economic growth in long run. Furthermore, employed panel causality tests by Dumitrescu and Hurlin (2012) which allow heterogeneity for coefficients among cross sectional units.

## FINDINGS

This section discusses the results based on the methodology explained in the earlier section for 4 OIC countries consisting of Jordan, Kuwait, Malaysia and Saudi Arabia from 1990-2012. It begins with descriptive statistics, which utilized to see the overall situation of economic growth with determinants variables such as net export, government expenditure, investment and financial development are shown in Table 1.

**Table 1: Descriptive statistics for the 4 OIC countries**

No	Variable	Mean	Standard deviation	Minimum	Maximum
1.	Economic Growth	24.82	1.33	22.15	27.30
2.	Financial Development	23.96	1.13	21.68	25.80
3.	Net export	24.38	0.63	23.21	26.10
4.	Government expenditure	23.21	1.24	20.72	25.70
5.	Investment	23.32	1.28	20.80	25.70

From Table 1, it can be seen that the mean of economic growth from these four selected countries is 24.82, whilst its standard deviation is 1.33. The Minimum level of economic growth

is 22.15, while the maximum level is 27.30. The other determinants of economic growth show that the highest of mean value is net export (24.38) followed by investment (23.32) and government expenditure (23.21). In terms of standard deviation, investment (1.28) has the greatest value than government expenditure (1.24) and net export (0.63). Therefore, it is noted that from the standard deviations, the differences in value of all variables are not very far from each other.

Furthermore, to test the order of integration on the variables, this study utilizes the methodology of Pedroni (2004). We begin with stationary test of our panel data. It was mentioned earlier that the stationary test of the panel data is needed in order to avoid the problem of spurious regression. Here, we discuss on the Levine *et al.*, (2002), to determine the existence of unit root test in our panel data series.

Based on Table 2, it shows that all variables are integrated of order one  $I(d)$  and hence the null of unit root test is rejected. Hence, we could say that the panel data series are stationary at first difference and we can proceed to test for long run co-integration for the following model in 4 OIC countries.

**Table 2: Panel unit root test based on Levine et al., (2002)**

Variables	Level	First Difference
LFD	-0.72720	-3.50043 <sup>a</sup>
LEG	-1.56605 <sup>c</sup>	-6.22878 <sup>a</sup>
LGov	3.46144	-6.06561 <sup>a</sup>
LInv	0.50143	-6.42149 <sup>a</sup>
LNetexp	0.36609	-9.13831 <sup>a</sup>

Notes: <sup>a</sup> stationary based on all other test; <sup>b</sup> stationary based on individual intercept; <sup>c</sup> stationary based on individual intercept and trends,

Since the variables are found to be integrated in the same order  $I(1)$ , we continued with the panel co-integration tests proposed by Pedroni (1999, 2000, and 2004) that there are seven statistic alternative hypothesis of co-integration if the null hypothesis states no co-integration. In addition, Pedroni (2004) stated that in the case of small sample, we can use the rho ( $\rho$ ) and Philips Peron (PP) tests to reject the null hypothesis. As indicated in Table 3, the result shows that generally a long run co-integration for the financial development and other variables to economic growth. Therefore, it suggest that during period of 2000-2012 financial development channel matters in promoting growth in 4 OIC countries.

**Table 3: Panel co-integration based on Pedroni**

7 statistic of Pedroni co-integration	LEG
Panel v-statistic	1.012730
Panel rho-statistic	0.371303
Panel PP-statistic	-1.142812
Panel ADF-statistic	-1.330562*
Group rho-statistic	1.277503
Group PP-statistic	-1.217535
Group ADF-statistic	-1.282746*

Notes: statistical significance at: \*10, \*\*5 and \*\*\*1 per cent levels.

In addition, the results of causality can be seen in Table 4. It found that bi-directional causality among investment and economic growth. On the other hand, it revealed that a unidirectional causality runs from financial development to economic growth. This imply that when financial development increase, it will lead to economic growth. This finding supported the theoretical framework of finance and growth nexus which explain that financial development leads to economic growth as mentioned by King and Levine (1993), Levine (1997), Christpoulas and Tsionas (2004) and more recent ones like Alkhuzaim (2014).

**Table 4: Results of Dumitrescu-Hurlin Panel Granger Non-Causality Test**

Null Hypothesis:	W-Stat.	Zbar-Stat.	Prob.
LFD does not homogeneously cause LEG	6.23637	2.99369	0.0028
LEG does not homogeneously cause LFD	1.46234	-0.62393	0.5327
LGOV does not homogeneously cause LEG	3.60611	1.00056	0.3170
LEG does not homogeneously cause LGOV	11.0300	6.62617	3.E-11
LINV does not homogeneously cause LEG	4.78990	1.89760	0.0577
LEG does not homogeneously cause LINV	5.47293	2.41518	0.0157
LNETEXP does not homogeneously cause LEG	2.50942	0.16951	0.8654
LEG does not homogeneously cause LNETEXP	3.62098	1.01183	0.3116

Note: Lag length selected automatically on the basis of the SBC

## CONCLUSION

This paper empirically examines the relationship between financial development and economic growth in long run for 4 OIC countries, namely Jordan, Kuwait, Malaysia and Saudi Arabia. Using panel data from 1990-2012, we employed panel unit root test based on Levine *et al.*, (2002) and Pedroni co-integration. The analysis carried out using domestic credit to private sector to GDP to measure financial development and also included three control variable namely government expenditures, net export and investment. The result show that all variables are integrated at order one I(d), it means that our panel data series are stationary at first difference. It

also found that financial development lead to economic growth (support supply leading) and have a long run co-integration between financial development and economic growth.

Therefore, the government of OIC especially that four countries should improve financial development to increase the efficiency of investment and later it will contribute to economic growth in the long run. In facing economics slow down and some facing economic down turn lately, policy makers have to focus more on the strategies of financial development. For OIC countries, which now offer a lot of Islamic mode of financing and Shariah compliance product, it's time to find tune back to the origin and re-check their financial development.

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