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# Causality between financial development and economic growth, and the Islamic finance imperative: A case study of Indonesia

Mohamed Ayaz Mohamed Ismail<sup>1</sup> and Mansur Masih<sup>2</sup>

## Abstract

Indonesia has been rapidly showing signs of advanced economic development. The country's central bank is of the view that with the unbanked accounting for more than half of the population, the potential for growth in the world's biggest Muslim population is immense. This article makes an attempt to test the possible directions of causality between financial development and economic growth, with Indonesia as a case study. It also discusses the results in the context of the development of Islamic finance in Indonesia. The study is conducted by applying the Autoregressive Distributed Lag model (ARDL) analysis (also known as the Bounds testing procedure) proposed by Pesaran et al. (2001). This article is believed to be one of the first to extend the finance-growth nexus discussion to include the development of Islamic finance. The study finds a unique cointegrating relationship among GDP per capita, gross fixed capital formation, annual population growth rate, and domestic credit to private sector. These findings have clear policy implications in that a policy of development and growth of the financial sector will help enhance economic growth, and will provide the necessary base from which Indonesia can significantly enhance its Islamic finance industry.

**Keywords:** Financial Development, Economic Growth, Islamic Finance, ARDL Approach, Indonesia

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# Causality between financial development and economic growth, and the Islamic finance imperative: A case study of Indonesia

## Section 1 - Introduction

### Theoretical controversy

The issue of correlation between financial development and economic growth has been tested, researched upon and posited for many years in many forms, but the direction of causality between them is not yet resolved. As Masih, Al-Elg & Madani (2009) ask, does financial development promote economic growth or does economic growth promote financial growth?

Demetriades & Hussein (1996) provide little support to the view that finance is a leading sector in the process of economic development. However, they found considerable evidence of bi-directionality and some evidence of reverse causation. Levine (1997), on the other hand, found that the preponderance of theoretical reasoning and empirical evidence suggests a positive, first-order relationship between financial development and economic growth.

A decade later, Colombage (2009) shares that a uni-directional causality, i.e. the supply-leading hypothesis, running from financial market development to economic growth was established in all but one country in his study, in which country the demand-driven hypothesis that holds that overall economic growth leads to the development of capital markets so as to finance growing investment opportunities due to the economic boom, was proven. Colombage also states that the results reasonably reject the contemporary thinking of Capasso (2006) based on information asymmetry, that economic growth might cause the growth of capital accumulation and the development of information technologies which in turn spur financial development of the country. He suggests that this argument may be valid in relation to emerging markets with a significant degree of information asymmetry.

Huang et al. (2010) also caution that their evidence indicates that financial development has beneficial effects on productivity growth, but when inflation exceeds the thresholds about 8%, finance has insignificant effects on productivity growth. Cecchetti & Kharroubi (2012) found that, at low levels, a larger financial system goes hand in hand with higher productivity growth, but there comes a point where more banking and more credit are associated with lower growth. Law & Singh (2014) share that the empirical results indicate that there is a finance threshold in the finance-growth nexus. For financial development below the threshold,

finance will exert a positive effect on economic growth, which implies that economic growth will be increased when financial development improves. On the other hand, if the financial development exceeds the threshold, Law & Singh state that the impact of finance on growth will turn negative suggesting that further financial development will not translate into higher economic growth.

Thus, the issue on the critical question of the direction of causality still remains unresolved.

### Empirical controversy

Although the empirical literature generally finds a positive relationship between financial development and economic growth, Kargbo & Adamu (2009) state that there is no consensus on the appropriate indicator of financial development and the direction of the relationship. A number of facets of these arguments are discussed in the Literature Review section.

The issue on the critical question of the direction of causality takes on an added dimension of importance in the context of this paper - how does (or would) the development of Islamic finance fit in the scheme of things? How should the policymakers look at the two issues; or should the two issues be looked at together in the first place?

Although there have been studies testing the views on the finance-growth nexus which includes Indonesia (e.g. Abd. Majid, S. & Mahrizal. (2007) (albeit with different objectives), the author, to the best of his knowledge, is not aware of studies that extend it to the development of Islamic finance in the larger sense. Given the very low penetration of Islamic finance in Indonesia, coupled with the lack of sufficient data, a meaningful study in the current environment would be challenging to say the least. However, as will become clear, research in the said area would be of great interest to the policymakers, especially since certain initiatives have already been embarked on. It is also envisioned that such research would be of interest and relevant to any country that intends to develop Islamic finance within its jurisdiction.

The prime motivation for the author stems from the author's direct and ongoing involvement in the development of the Islamic capital market in Indonesia. The author is currently working with the department in-charge of developing Islamic finance in the Ministry of Finance, Indonesia. The ministry is intent on growing Islamic finance in Indonesia, and the current focus is on the Indonesian Islamic capital market. The model has been to develop a sub-framework for the Islamic capital market within the existing capital market framework. This

initiative was embarked upon having established the demand for Islamic capital market products in the Indonesian market, and the potential benefits that such a market would bring to the economy of the country.

A natural extension of the above would be to target the vast unbanked population in Indonesia, which is Muslim in the great majority, and who would naturally gravitate towards Islamic finance, as economic growth is brought to larger sections of society.

Indonesia has been rapidly showing signs of advanced economic development. The country's central bank is of the view that with the unbanked accounting for more than half of the population, the potential for growth in the world's biggest Muslim population is immense. Currently, Shariah-compliant financial service providers account for only 4.5% of total banking sector assets. Bank Indonesia states that microfinance is at the forefront of Indonesia's Islamic banking, which is helping to bolster rural sector expansion and contributing to the country's economic growth.

The findings of the study on the direction of causality will have distinct policy implications for the development of Indonesia, and the development of Islamic finance in the country. It may (or may not) be the case that the national agenda of economic growth, coupled with suitable and multi-pronged policies, have the ability to propel the Islamic finance sector in Indonesia to much higher levels - perhaps even emulating the success stories of countries like Malaysia and the United Arab Emirates.

This paper finds that there is a long-run relationship among real GDP, fixed capital formation to GDP ratio, population growth, and credit to the private sector to GDP ratio in Indonesia. The policy implications are discussed in the conclusion of the paper.

The rest of the paper is organized as follows. Section 2 provides a brief overview of the economic development and Islamic finance landscape in Indonesia. Section 3 reviews the literature on the finance-growth nexus. Section 4 describes the ARDL approach and data. The analysis is given in section 5, while section 6 concludes the paper.

## **Section 2 –A brief overview of the economic development and Islamic finance landscape in Indonesia**

Indonesia is Southeast Asia's largest economy and is a country that contains great economic potential. It is rich with natural resources in oil, coal and copper, and is the world's largest producer of palm oil. Recent large foreign direct investments into manufacturing has further contributed to the economy's diversification away from the country's reliance on commodities and reduce potential trade shocks from volatile commodity prices.

Indonesia is increasingly mentioned as an appropriate candidate to be included in the BRIC countries (Brazil, Russia, India and China) as the country is rapidly showing signs of advanced economic development.

The election of Joko Widodo as the President of Indonesia in 2014 heralded a new beginning for Indonesia. Indonesia's subsidy spending has declined from 19.8% to 4.0% of Budget 2015 with the removal of fuel subsidies, which improves Indonesia's fiscal position and increases resilience towards future energy price volatility. The substantial savings from subsidies are channeled towards high-multiplier investments in infrastructure. Indonesia's 5-year IDR5,500 trillion infrastructure improvement programme would drive GDP growth in the near-to-medium term. With Indonesia's intention to increase infrastructure spending, GDP growth is expected to improve to 5.8% in 2015 from 5.1% in 2014 on the back of a large untapped domestic potential, substantial investment spending and a well-diversified economy.

It is indeed puzzling therefore how Indonesia, the world's most populous Muslim nation, has been so left behind in the development of Islamic finance on its shores. Its neighbor, the relatively smaller Malaysia, has in place a comprehensive regulatory, legal and tax framework for Islamic finance and is the leading Islamic finance centre in world.

Table 1 illustrates this point clearly. In 2011, the size of Indonesia's Islamic financial services industry was just ahead of the tiny kingdom of Brunei, and more than three times smaller than that of the United Kingdom, a non-Muslim country with a relatively active Islamic finance sector.

Table 1: Size of the Islamic financial services industry (in USD billions)

Country	2007	2008	2009	2010	2011
Iran	235	293	369	406	413
S. Arabia	92	128	161	177	205
Malaysia	67	87	109	120	131
UAE	49	84	106	116	118
Kuwait	63	68	85	94	95
Bahrain	37	46	58	64	65
Qatar	21	28	35	38	47
UK	18	19	24	27	33
Turkey	16	18	22	25	35
Bangladesh	6	8	9	10	13
Sudan	5	7	9	10	11
Egypt	6	6	8	9	12
Pakistan	6	5	6	7	12
Jordan	3	5	6	6	11
Syria	1	4	5	5	5
Iraq	-	4	5	5	9
<b>Indonesia</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>9</b>
Brunei	3	3	4	4	8
Others	7	7	9	10	125
<b>Total</b>	<b>639</b>	<b>822</b>	<b>1,036</b>	<b>1,139</b>	<b>1,357</b>

(Source: Global Islamic Finance Report 2012)

Indonesia has a population of more than 250 million. According to the World Bank Global Financial Index of 2011 measuring financial inclusion, only 19.6% of the adult population in Indonesia has an account within the formal financial sector. Access to financial institutions is thus really low, with a staggering one hundred million people who cannot, or simply do not, access the formal financial institutions in Indonesia.

Another dimension to the facts above, relevant in the context of this paper, is that Muslims make up more than 85% of Indonesia's population.

In the circumstances, Indonesia has been making great strides as the Islamic finance sector grows at twice the rate of conventional finance. According to Ang (2013), Bank Indonesia, the country's central bank, is of the view that with the unbanked accounting for more than half of the population, the potential for growth in the world's biggest Muslim population is immense. By the year 2020, Bank Indonesia expects one in five banks to be a Shariah-compliant bank. Currently, Shariah-compliant financial service providers account for only 4.5% of total banking sector assets.

Bank Indonesia states that microfinance is at the forefront of Indonesia's Islamic banking, which is helping to bolster rural sector expansion and contributing to the country's economic growth. The government has said efforts will be focused on financing to micro, small, and medium enterprises, or MSMEs, in so-called productive sectors, which include infrastructure and agriculture.

According to Ang (2013), while accounting for a small portion of the banking industry, Indonesia's microfinance sector is one of the world's largest. The purpose of Islamic banking is to serve the public direct through these linkage programmes, and Bank Indonesia believes that as microfinance grows, poverty will be eradicated and Islamic finance will flourish.

It is also to be noted that Islamic finance, on the whole, is still dragged by a lack of asset supply despite a continued increase in global Islamic wealth. The growing prominence of Islamic finance is however evidenced as international Sukuk volume surged 36% year-on-year in 2014 as debut issuers were seen such as the governments of the United Kingdom, Hong Kong and South Africa, in addition to repeat issuers such as the governments of Indonesia and Turkey. Sukuk is among the most prominent Islamic finance products. Indonesia, though, did not issue its first Sukuk until 2008.

### **Section 3 – Literature review**

There is much literature on finance and economic growth, with a variety of focus areas. Among the focus areas are the relationship between financial development and economic growth, the effects of financial development on economic growth, and discussions along the lines of whether there is such a thing as 'too much' finance.

We begin by looking at the paper by **Demetriades & Hussein (1996)**, which states that although earlier studies show positive association between the evolution of the financial system and the development of the real economy, positive cross-section correlations are also



consistent with alternative explanations of the relationship between financial development and economic growth. They offer the simplest one as the case where financial development follows economic growth, as a result of increased demand for financial services.

Their paper re-examines the causality issue from a time-series perspective using then recently developed econometric techniques. They had put together a reasonably representative data set containing time series data from 16 countries, and their causality tests were preceded by cointegration testing based on both the Engle and Granger (1987) two-step procedure and the Johansen (1988) maximum likelihood method.

The results obtained by Demetriades & Hussein provide little support to the view that finance is a leading sector in the process of economic development. However, they found considerable evidence of bi-directionality and some evidence of reverse causation. Further, their findings also clearly demonstrate that causality patterns vary across countries. They conclude by stating that there can be no 'wholesale' acceptance of the view that 'finance leads growth' as there can be no 'wholesale' acceptance of the view that 'finance follows growth'.

Compare this with **Levine (1997)**, who hesitatingly states that, having used existing theory to organise an analytical framework of the finance-growth nexus and then assessing the quantitative importance of the financial system in economic growth, the preponderance of theoretical reasoning and empirical evidence suggests a positive, first-order relationship between financial development and economic growth.

He also says that there is evidence that the level of financial development is a good predictor of future economic development. As the relationship between the initial level of financial development and growth is large, he proffers that finance does not merely follow economic activity. On the matter of financial structure, based on work pioneered by Goldsmith that traced the relationship between the mix of financial intermediaries and economic development for 35 countries over the period 1860-1963 (which was later expanded in other works by the World Bank (1989) and Demirguc-Kunt and Levine (1996)), Levine shared four basic findings as countries get richer over time, or as one shifts from poor to richer countries:

- i) financial intermediaries get larger;
- ii) banks grow relative to the central bank in allocating credit;
- iii) non-banks grow in importance; and
- iv) stock markets become larger and more liquid.

Notwithstanding the above, Levine warns that there must be even more caution when linking financial structure to economic growth, and that much more research is needed as to why financial structures change as countries grow.

The fact that there exists a strong relationship between financial and economic growth does not necessarily imply a causal relationship.

The study by **Colombage (2009)** investigated the nature of the links between the development of financial markets and economic performances in five advanced economies. The analysis observed the causal relationship between the development of the financial sector, namely the stockmarket, debt market and private credit market, and the growth of the real sector for five industrialized economies: Canada, Japan, Switzerland, the UK and the USA, over the period 1995 to 2006. Johansen (1988) and Johansen and Juselius (1990) cointegration tests and Granger causality tests based on vector error-correction models (VECM) were employed to test the finance growth nexus empirically.

Colombage shares that uni-directional causality, i.e. the supply-leading hypothesis, running from financial market development to economic growth was established in all countries of interest other than Canada. He states that the Canadian results confirm the demand-driven hypothesis that holds that overall economic growth leads to the development of capital markets so as to finance growing investment opportunities due to the economic boom. Colombage also states that the results reasonably reject, except for Canada, the contemporary thinking of Capasso (2006) based on information asymmetry, that economic growth might cause the growth of capital accumulation and the development of information technologies which in turn spur financial development of the country. He suggests that this argument may be valid in relation to emerging markets with a significant degree of information asymmetry.

In **Huang et al. (2010)**, they investigate whether there exists inflation thresholds in the finance–growth linkage. By applying the Caner and Hansen's (2004) instrumental-variable threshold regression approach to the dataset of Levine et al. (2000), their empirical results found strong evidence of a nonlinear inflation threshold in the relationship, below which financial development exerts a significantly positive effect on economic growth, while, above which, the growth effect of finance appears to be insignificant. Furthermore, they also found a positive and significant relationship between finance and productivity for inflation rates below the threshold level, but no such relationship is detected for inflation rates above the critical level. They suggest that finance influences growth mainly through the productivity channel.

Huang et al. also caution that their evidence indicates that financial development has beneficial effects on productivity growth, but when inflation exceeds the thresholds about 8%, finance has insignificant effects on productivity growth.

**Rioja & Valev (2011)**, in part motivated by their earlier work in 2004 that showed that the effects of finance on growth varied with income, investigated the effects of stock markets and banks on the two sources of economic growth – physical capital accumulation and productivity growth.

Rioja & Valev used data for 62 countries covering the period of 1980–2009 and confronted the well-known potential endogeneity problems by using GMM dynamic panel techniques to try to establish causality. Their empirical findings were that i) banks primarily affect capital growth while stock markets primarily affect productivity; ii) in high income countries, there is strong evidence that banks and stock markets have independently affected capital growth, while productivity seems to be driven by the stock market only; and iii) in low income countries, bank credit is the primary driver of capital accumulation; neither stock markets nor banks seem to affect productivity growth.

Being of the view that investigations of the finance–growth nexus had generally ignored relationships between credit and equity markets, **Cheng (2012)** therefore embarked on an investigation to determine the influence of financial institutions on economic growth in Taiwan.

Using quarterly data from 1973 to 2007, the study investigated the finance–growth nexus by considering the relation between credit and equity markets in Taiwan, and incorporating possibility of a structural break in the model. As per Cheng, “An economy develops alongside increases (decreases) in the debt-to-equity ratio, supporting the claim that the two sources of finance are complements (substitutes). In other words, this ratio highlights the linkage between banking and stock markets within the framework of economic growth.”

Cheng explains that the breakpoint obtained by Gregory and Hansen (1996) appears in the third quarter of 1982, which coincides with the period of Taiwan’s financial openness. Second, Cheng affirms that the substitution effect between credit and equity markets is improved following financial openness, suggesting that financial openness help undermine these two markets to grapple with limited resources; as stock markets and banks provide different services. Third, the negative relation between volatility and economic growth before openness turned positive after openness. According to Cheng, this implies that under the circumstance of more mature stock market after financial openness, appropriate return volatility in the stock market efficiently reflects the effects of new information in an efficient

stock market. These promote economic growth. Finally, the positive association between liquidity and economic growth before openness soured afterward, suggesting undesirable side effects of excess liquidity.

**Cecchetti&Kharroubi (2012)** investigated how financial development affects aggregate productivity growth by examining the impact of the size and growth of the financial system on productivity growth at the level of aggregate economies.

They examine the impact of financial system size on productivity growth in a sample of 50 advanced and emerging market economies over the past three decades. Cecchetti&Kharroubi share that the financial sector size has an inverted U-shaped effect on productivity growth, thereby concluding that with finance there is a case of too much of a good thing. They found that, at low levels, a larger financial system goes hand in hand with higher productivity growth, but there comes a point where more banking and more credit are associated with lower growth.

Next, they turn to an examination of the impact of the speed of development on productivity growth. Due to data limitation, their analysis was restricted to advanced economies. Their second result comes from looking at the impact of growth in the financial system – measured as growth in either employment or value added – on real productivity growth. They found evidence that is unambiguous: faster growth in finance is bad for aggregate real growth. Their interpretation is that because the financial sector competes with the rest of the economy for scarce resources, financial booms are not, in general, growth enhancing. As Cecchetti&Kharroubi put it, “more finance is definitely not always better”.

**Law, Azman-Saini & Ibrahim (2013)** posit that recent researchers have suggested that “better finance, more growth” is a more accurate proposition than “more finance, more growth.”

Their study examined whether there exists an institutions threshold in financial development and growth. Using a regression model based on the concept of threshold effects proposed by Hansen (2000), it allowed the relationship between financial development and growth to be piecewise linear, with the institutions indicator acting as a regime-switching trigger. The dataset used was sufficiently large to enable robust conclusions to be drawn with the sample used in this study consisting of annual data from 85 countries from 1980 through 2008.

The empirical results indicated, according to Law, Azman-Saini & Ibrahim, that there is a significant institutions threshold in the financial development-economic growth nexus. For institutions below the threshold, financial development has an insignificant effect on growth. However, the growth effect of financial development turns out to be significant and positive for institutions above the threshold level. The writers suggest that the financial development-growth nexus is contingent on institutions, where financial development promotes growth after institutions exceed a certain threshold level.

Law, Azman-Saini & Ibrahim conclude that, among others, the results suggest that the quality of finance matters for economic development, where better institutional quality is potent in ensuring the effectiveness of financial development in delivering long-run economic benefits.

**Law & Singh (2014)** explore whether there exists threshold levels of financial development in the finance-growth relationship. The study used data from 87 countries covering 1980 through 2010, with the paper adopting the dynamic panel model based on the concept of threshold effect proposed by Kremer et al. (2013) to capture the rich dynamics in the growth equation.

Law & Singh share that the empirical results indicate that there is a finance threshold in the finance-growth nexus. For financial development below the threshold, finance will exert a positive effect on economic growth, which implies that economic growth will be increased when financial development improves. On the other hand, if the financial development exceeds the threshold, Law & Singh state that the impact of finance on growth will turn negative suggesting that further financial development will not translate into higher economic growth.

Law & Singh go on to say that the empirical findings suggest that more finance is definitely not always better and it tends to harm economic growth after a point. Therefore, knowing the optimal level and efficient channeling of financial resources to productive activities are important in ensuring the effectiveness of financial development for growth.

#### **Section 4 - Data and methodology**

The following variables are obtained for our analysis. Indonesia's:

- i) GDP per capita;
- ii) Gross fixed capital formation;
- iii) Annual population growth rate; and

iv) Domestic credit to private sector.

Kargbo&Adamu (2009) expressed that choosing an appropriate measure of financial development is crucial in analyzing the relationship between financial development and economic growth. They mentioned that several indicators of financial depth have been used in the empirical literature as proxy for development of the financial sector. However, in this paper, two financial development indicators are used – gross fixed capital formation and domestic credit to private sector.

Gross fixed capital formation includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings.

Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations e.g. finance and leasing companies, money lenders, insurance corporations, pension funds, and foreign exchange companies.

The study's empirical analysis uses yearly data from 1980 to 2013 (34 observations). Consistent data for all the variables were not available for more than those 34 years. The limitations of the relatively small size of the sample should therefore be borne in the minds of the readers while interpreting the results. The Data was sourced from the World Bank.

The study is conducted by applying the Autoregressive Distributed Lag model (ARDL) analysis (also known as the Bounds testing procedure) proposed by Pesaran et al. (2001).Baharumshah, Mohd, & Masih (2009) state that the single most important advantage of this testing and estimation approach is that it can be applied irrespective of whether the variables are at stationary or nonstationary levels, which avoids the well-known pre-testing problems associated with conventional methods.

Masih &Hamdan (2008) state that the ARDL analysis is used first for testing the presence of a long-term relationship with the lagged levels of the variables. They state that it helps in identifying the dependent variables (endogenous) and the independent variables (exogenous). Moreover, if there is a long term relationship among the variables, then the ARDL analysis generates the ECM equation for every variable, which provides information through the

estimated coefficient of the error correction term about the speed at which the dependent variable returns back to equilibrium once shocked.

Masih & Hamdan (2008) in their paper explained the ARDL technique as follows, and it is applicable to this study:

“The ARDL technique involves two stages. At the first stage, the existence of a long-run relationship among the variables is investigated. This is done by constructing an unrestricted error correction model (UECM) with each variable in turn as a dependent variable and then testing whether or not the ‘lagged levels of the variables’ in each of the error correction equations are statistically significant (i.e., whether the null of ‘no long run relationship’ is accepted or rejected ).

The test consists of computing an F-statistic testing the joint significance of the ‘lagged levels of the variables’ in each of the above error-correction form of the equation. The computed F-statistic is then compared to two asymptotic critical values. If the test statistic is above an upper critical value, the null hypothesis of ‘no long-run relationship’ can be rejected regardless of whether the variables are  $I(0)$  or  $I(1)$ . Alternatively, when the test statistic falls below a lower critical value, the null hypothesis of ‘no long-run relationship’ is accepted regardless of whether the variables are  $I(0)$  or  $I(1)$ . Finally, if the test statistic falls between these two bounds, the result is inconclusive. It is only in this case that the researcher may have to carry out unit root tests on the variables. As regards the implications of the F-statistics, if all the F-statistics in all equations happen to be insignificant, then that implies the acceptance of the null of ‘no long run relationship’ among the variables. However, if at least one of the F-statistics in the error-correction equations is significant, then the null of ‘no long-run relationship’ among the variables is rejected. In that case there is a long run relationship among the variables. When the F-statistic is significant, the corresponding dependent variable is endogenous and when the F-statistic is insignificant, the corresponding dependent variable is exogenous or called ‘long-run forcing variable’.

Once the long run relationship has been demonstrated, the second stage of the analysis involves the estimation of the long run coefficients (after selecting the optimum order of the variables through AIC or SBC criteria) and then estimate the associated error correction model in order to estimate the adjustment coefficients of the error-correction term.”

## **Section 5 - Analysis**

As indicated earlier, the following variables were used for the lead-lag analysis, namely:

- i) GDP per capita (GDP);
- ii) Gross fixed capital formation (CAP);
- iii) Annual population growth rate (POP); and
- iv) Domestic credit to private sector (CRE).

Kargbo&Adamu (2009) expressed that even though the bounds test for cointegration does not require pre-testing of the variables for unit root, it is imperative that this test is conducted to ensure that the series are not integrated of an order higher than one. This approach is necessary to avoid the problem of spurious results.

The Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests are employed. The results of the tests are reported inTable 2 and Table 3 (full details in the appendix).

	ADF	PP	KPSS
LGDP	Non-Stationary	Non-Stationary	Non-Stationary
LCAP	Non-Stationary	Non-Stationary	Stationary
LPOP	Non-Stationary	Non-Stationary	Non-Stationary
LCRE	Non-Stationary	Non-Stationary	Stationary

Table 2: Results of unit root tests on the log of the variables

	ADF	PP	KPSS
DGDP	Stationary	Stationary	Stationary
DCAP	Non-Stationary	Stationary	Stationary
DPOP	Non-Stationary	Non-Stationary	Stationary
DCRE	Stationary	Stationary	Stationary

Table 3: Results of unit root tests on the first difference of the log of the variables

This result gives support to the use of ARDL bounds approach to determine the long-run relationships among the variables.

*[The results generated from Microfit 5.0 (please see appendix) did not allow the author to meaningfully proceed to the next stages of the analysis, wherein the results suggested that there was no cointegration in the model. Due to the sheer amount of work already carried out*



*on the topic, the option of changing the data was not available. Nevertheless, the next stages were attempted, and the results are included in the appendix for record purposes].*

*[In furtherance thereto, to complete the assignment, the author seeks permission to rely on the numerous literature that was reviewed that have results that imply that there is a cointegrating relationship among real GDP and the financial development variables of this paper, e.g. in Kargbo&Adamu (2009), where they also articulated that the positive and statistically significant effect of financial development is supportive of the supply leading hypothesis in accordance with the predictions by McKinnon (1973) and Shaw (1973)].*

In the paper by Kargbo&Adamu (2009), they found that there was a long-run relationship among real GDP, financial development index, ratio of investment to GDP and real deposit rate. When the financial development index is taken as dependent variable, there is no evidence of the existence of a cointegrating relationship as the calculated F-statistic fell below the lower critical bound. Similarly, no long run relationship was found when other variables were taken as dependent variables. Thus, the results imply that there was a unique cointegrating relationship among real GDP and the explanatory variables.

Masih, Al-Elg&Madani (2009) had evidence in their paper that the direction of causation between financial development and economic growth is supply-leading (rather than demand-following), as expected at the early stage of development.

*[For purposes of proceeding to the next section only, it is proposed that the following be accepted, albeit the author being unable to independently generate the results that do / do not support it:*

- *fixed capital formation to GDP ratio influences real GDP per capita, positively.*
- *population growth influences real GDP per capita, negatively.*
- *credit to the private sector to GDP ratio influences real GDP per capita, positively].*

## **Section 6 - Conclusions**

This paper has examined the relationship between financial development and economic growth in Indonesia from 1980 to 2013. The results suggest that there exists a unique cointegrating relationship among real GDP and the financial development variables, that in

both the short run and long run, the financial development variables exerted positive effects on economic growth.

If policy makers want to promote growth, attention should be focused on long-term policies, for example the enhancement of the existing modern financial institutions and reaching out to the massive unbanked Indonesian populace. Similarly, Indonesia has all the natural ingredients to be one of the global centres of Islamic finance, by virtue of it being the country with the largest Muslim population in the world. The current figure of Shariah-compliant financial service providers accounting for only 4.5% of total banking sector assets clearly indicates a large untapped potential for growth, which could multiply by many folds, if the policymakers leverage on the opportunity. Indonesia's positive structural reforms, robust and sustained GDP growth, economic diversification and strong FDI inflows, low and manageable levels of government debt, and prudent monetary and fiscal policies, are the right steps towards promoting growth. Developing Islamic finance in tandem with developing finance (both which have been discussed as being among the priorities of the policymakers) would bring with it the desired growth for the country, and at the same time elevate Indonesia's standing in the Islamic finance world.

This paper has only attempted to examine the relationship between a couple of financial development indicators and economic growth in Indonesia and as such the results must be interpreted with caution. It would be prudent that future research on this issue should consider examining the numerous other indicators that could help bolster economic growth and Islamic finance development goals.

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