Stock markets and economic growth: a comparative analysis between Islamic and conventional markets in Malaysia

Basheer Hussein Motawe Altarturi*

IIUM Institute of Islamic Banking and Finance,
International Islamic University Malaysia,
Kuala Lumpur, Malaysia
Email: altarturibasheer@yahoo.com
*Corresponding author

Muhamad Abduh

School of Business and Economics,
Universiti Brunei Darussalam,
Bandar Seri Begawan, Brunei Darussalam
Email: dr.muh.abduh@gmail.com

Abstract: This paper aims at examining the impact of Islamic and conventional stock markets upon the macroeconomic performance in Malaysia. Real GDP is used to represent economic growth; while Islamic market capitalisation ratio and conventional market capitalisation ratio are used to indicate the Islamic and conventional stock market development, respectively. Investment ratio and GDP deflator are added as controlled variables for both models. The results shows there is a bidirectional relationship between Islamic stock markets and economic growth in Malaysia, and the contribution towards the economic growth is seemed to be indirectly through its impact on investment. On the other hand, there is a unidirectional relationship between conventional stock markets and economic performance in Malaysia, in which the development of conventional stock market causes the growth. Interestingly, the impact of the development on conventional stock market upon economic growth is more than the impact of the Islamic one. The exogeneity test shows that both the Islamic and conventional stock markets development is found to be super-exogenous.

Keywords: Islamic capital markets; economic growth; stock markets; Malaysia.

Reference to this paper should be made as follows: Altarturi, B.H.M. and Abduh, M. (2016) 'Stock markets and economic growth: a comparative analysis between Islamic and conventional markets in Malaysia', *Middle East J. Management*, Vol. 3, No. 1, pp.34–48.

Biographical notes: Basheer Hussein Motawe Altarturi is a PhD candidate at the International Islamic University Malaysia. He received his Master's degree in Finance from the same university. His research interests include the applied econometrics and econometrics development. He is currently conducting his doctoral research on payment system.

Muhamad Abduh is an Assistant Professor of Islamic finance at the School of Business and Economics, Universiti Brunei Darussalam (UBD). He completed both his Master of Economics and PhD in Business Administration from the International Islamic University Malaysia (IIUM). His research interest is in the area of Islamic economics and finance.

This paper is a revised and expanded version of a paper entitled 'The role of stock markets in economic performance: a comparison between Islamic and conventional market in Malaysia' presented at the 2nd ASEAN International Conference on Islamic Finance (2nd AICIF), State Islamic University Sunan Kalijaga and Royal Ambarukmo Hotel, Yogyakarta, Indonesia, 12–14 November 2014.

1 Introduction

The relationship between financial markets development and economic growth is still open for debate. A growing theoretical literature mentions that the financial markets perform the key role in the economy by catalysing economic growth, and thus, affecting economic welfare. This is achieved by playing several critical roles, in which they aggregate savings and they allocate funds. Financial markets take the relatively small savings of large numbers of individuals, aggregate them together, and thus make funds available for larger-scale enterprises (Stiglitz, 1989). Thus, the financial markets make a more efficient transfer of funds by obtaining funds from lenders or investors and lending or investing the funds that they have borrowed to those who need funds.

Financial markets, therefore, are the most eminent means of channelling investment capital to its highest return uses. These markets also provide liquidity, alleviate liquidity risk and allow risk sharing (Greenwood and Smith, 1997). Given that most investors are risk reluctant, they tend to prefer to hold liquid assets instead of locking in their capital in long-term investments. In this regards, the financial markets provide liquid assets such as liquid bank deposits and easily tradable shares to investors and, through effective fund pooling, they provide an avenue for risk sharing and diversification (Ibrahim, 2011).

Stock market is one of the key sectors of financial markets where long-term financial instruments are traded. The theoretical and empirical studies on the strong positive linkage between the stock market development and economic growth is well documented. In the recent decade, however, another type of capital markets are formed, namely, the Islamic stock markets, which clear difference with the conventional financial markets, is that the financial products are Shari'ah compliant products. The Islamic stock market indicates to the market where activities are executed in ways which does not contradict with Shari'ah (Islamic law). The Islamic stock market represents an assertion of religious law in capital market transactions where the market is free from prohibited activities and elements such as riba (usury), maysir (gambling) and gharar (ambiguity) manufacture or sale of non-halal products (Bursa Malaysia, 2011).

In view of the theoretical ambiguity about the comparison between role of Islamic stock market and conventional stock market development in economic performance, rigorous empirical analysis assumes great importance. Unfortunately, not many empirical studies have been done in this area. Most of the researchers have highlighted on the role of Islamic banks in economic growth. Moreover, few of economists have taken the

importance of Islamic financial development but without making a comparison with the conventional financial markets in the process of economic development. Hence, the purpose of this paper is to empirically examine and compare the impact of Islamic stock markets and conventional stock markets on the macroeconomic performance of Malaysia, one of the biggest Islamic financial markets in the world.

The rest of this paper introduces four other parts. Firstly, briefly review the related previous studies. The data and methodology are described in the second part. The third part is the discussion of the findings. The final section summarises the main findings and provides concluding remarks.

2 Literature review

The studies that discuss the impact of financial markets upon economic performance have been started by the seminal work of Schumpeter (1911); he established his own theory on economic development in which he argues that the financial development boosts economic growth. Later on, Robinson (1952) clearly mentioned about financial system. However, he claimed that the financial system passively responds to economic performance. In the late 1960s and early 1970s, few studies highlighted the significant influence of financial markets in economic growth especially in the USA (Goldsmith, 1969; McKinnon, 1973; Shaw, 1973). The pinnacle of the literatures was in the '90s, where many studies have proven, empirically, the role of financial markets innovations in economic growth in many countries and economic unions.

Atje and Jovanovic (1993) found that the development of stock markets is strongly and positively correlated with economic performance. According to Bencivenga et al. (1996) and Greenwood and Smith (1997), the stock market promotes economic performance via minimising the cost of mobilising savings and facilitates investment in the most productive sectors. In short, the stock markets' liquidity provides facilities to improve the economy. Moreover, previous studies were supportive of Schumpeter's view and had found a positive correlation between stock market development and economic performance of a country (Arestis and Demetriades, 1997; Rousseau and Wachtel, 1998; Levine and Zervos, 1998; Beck and Levine, 2002; Alam and Hasan, 2003).

In addition, some literatures have shown that the stock markets' contribution towards the economy is only for developed countries, while others argued that it is for developing countries. Harris (1997) concluded that stock market can contributes to economic growth only in developed countries. Different studies like Dritsaki and Bargiota (2005) and Ho and Odhiambo (2012) have also investigated this issue in developed countries and shown similar findings with Harris (1997). However, studies on developing centuries have shown that stock markets development were able to contribute to economic performance (Kaya et al., 2011; Hussain et al., 2012; Jamshidi et al., 2012).

Furthermore, few studies on Middle Eastern and African countries had proven that stock markets development have a significant impact upon economic growth. Naceur et.al. (2007) investigated the role of stock markets in economic growth using a sample of 12 MENA region countries and highlighted that saving rate, financial intermediary and stock market liquidity are the macroeconomic factors that significantly affecting growth. Goaied and Sassi (2011) supported Naceur et al. (2007) by doing same on MENA region

countries for different time span. Nurudeen (2009) also found that the stock market development in Nigeria improves economic growth and Tachiwou's (2010) study in West African Monetary Union found that stock market development positively affect economic growth both in the short run and long run.

Therefore, it is clear that financial development has a significant impact upon economic growth in most of the countries, regardless whether it is developed or developing countries. Likewise, many studies found that Islamic financial markets contribute to economic growth. However, most of current studies about the role of Islamic financial markets in promoting economic performance used Islamic banks total financing to measure the development of the Islamic financial markets. For example, Abduh and Omar (2012) and Abduh et al. (2012) investigated the role of Islamic financial development towards economic growth in Indonesia and Bahrain respectively. They used Islamic banks' total financing to represent of Islamic financial sector and GDP to represent economic growth. Interestingly, they found bidirectional relations among Islamic financing and economic growth. The results shown that the Islamic financial development, in the long run, has a significant positive correlation with economic performance and capital accumulation.

Yahya et al. (2012) tested the relationship between Islamic stock market and macroeconomic performance in Malaysia. The study used Kuala Lumpur Shari'ah Index to denote Islamic stock market and Industrial Production Index to represent GDP. As the study focuses more on macroeconomic performance, they added four other variables, namely, Malaysia ringgit/US dollar used to reflect foreign exchange in Malaysia, Consumer Price Index to represent the inflation rate, Financial Aggregate Supply and Islamic Inter Bank Rate as the proxy for the money supply and the interest rate in the Islamic financial system, respectively. They found that Islamic stock market has a positive long run unidirectional relationship with economic growth and inflation, while negative relationship appeared with money supply and foreign exchange rate. Moreover, the finding of the study proven that Islamic investment rate cannot predict Islamic stock market performances.

Abduh and Sukmana (2013) studied the dynamic effects of stock markets development, Islamic and conventional, on the economic growth in Malaysia. Therefore, their study is so near to ours in which they have the same purpose and same country. However, they just used three variables in their investigation. Bursa Malaysia Emas Shari'ah Index reflects Islamic financial sector. The second variable is FTSE Bursa Malaysia Composite Index to measure conventional financial sector and the third variable is GDP to represents the income level. They found that there is a long run bidirectional relationship between Islamic stock market development and economic performance, while there is no sufficient evidence for conventional stock markets.

In short, previous studies, except Abduh and Sukmana (2013), did not show any comparison between the Islamic and conventional stock markets in enhancing the economic performance. Unfortunately, Abduh and Sukmana (2013) did not add any control variable which may bias the results. Therefore, this paper is trying to empirically examine the difference of the impact level between Islamic and conventional stock market upon the macroeconomic performance of Malaysia by utilising investment ratio and aggregate price level as control variables.

3 Methodology

This study aims at investigating the difference of the impact level between Islamic and conventional stock market upon the economic growth of Malaysia. Therefore, the focal variables in this study are real domestic products (GDP), Islamic market capitalisation (IMC) and conventional market capitalisation (CMC). However, only applying these variables in a bivariate analysis, two models in which the first one is GDP with IMC and the second model is GDP with CMC, may not be justifiable due to the influences from other common variables. A bivariate model may mislead the conclusion because of the causal relations of these variables may reflect responses to the other common variables. Owing to that and to avert the possibility of bias by omitting some variables, other control variables are needed to add. Among many variables observed, the elimination of investment in economic development studies is not justifiable on theoretical grounds due to a positive and strong relationship among them (Alexander, 1997; Levine, 1997). Ericsson et al. (2001), Gillman et al. (2004) and Ibrahim (2011) incorporated the aggregate price level to link it to economic development.

Therefore, the analysis of this study is based on five variables: economic growth, Islamic stock market development, conventional stock market development, investment ratio, and the aggregate price level. GDP is used to measure the level of economic development and IMC and CMC to illustrate the level of Islamic and conventional stock development respectively. For the control variables, investment ratio is measured by investment to GDP (INV) and the aggregate price level is measured by GDP deflator (P).

A time-series techniques of cointegration, vector autoregression (VAR), variance decompositions (VDC), impulse response functions (IRF) and exogeneity test are applied in this study to examine the difference of the impact level of Islamic stock markets and conventional stock market on the economic development of Malaysia. Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests are employed as commonly used to verify whether the series data are stationary.

Two VAR models estimation, the first one is to examine the influence of Islamic stock market development on the economic growth, while the second model is to investigate the influence of conventional stock market development on the economic growth. The VAR models are appear in levels as the following:

$$X_t = A_0 + \sum_{i=1}^{p} A_i X_{t-i} + \varepsilon_t \tag{1}$$

$$Y_t = B_0 + \sum_{i=1}^{p} B_i Y_{t-i} + \epsilon_t \tag{2}$$

where X and Y indicating GDP, CMC, INV, and P. A_0 and B_0 is a 4 × 1 vector of constant terms, A_i and B_i is a matrix of coefficients, and are a vector of error terms. Finally, p indicates to optimal lag order. After running the cointegration tests using the previous specification of VAR models, IRF and VDC are applied to interference and interpret the estimation results of the VAR easily. IRF is able to illustrate the temporal response of economic growth when there is a shock in Islamic as well as conventional stock markets. On the other hand, the objective of using VDC is to reflect the significant importance of Islamic and conventional stock market development towards economic growth by providing the factors' expectation error variances to variations in other factors.

Unlike IRF and VDC which are mainly to provide clear picture on the causality between economic growth and stock market development, the weak-exogeneity and super-exogeneity are able to find control causality between economic growth and stock market development and be useful for policy analysis. Being exogenous and super-exogenous means that it has a robust relationship that makes Islamic and/or conventional stock market development become an impulse to economic development (Ibrahim, 2011).

To know whether economic development is exogenous or not, the significant of the error correction term test in the economic development is needed. After implementing cointegration test, the exogeneity test can be employed in the same framework of cointegration by adding an error correction term in the framework. So for exogeneity test, it will be focused on the significant of the error correction term (Urbain, 1992). As a result, the following error correction models are estimated:

$$\Delta GDP_t = \beta_0 + \sum_{i=1}^{p} \beta_{1_i} \Delta GDP_{t-i} + \sum_{i=1}^{p} \beta_{2_i} \Delta IMC_{t-i} + \sum_{i=1}^{p} \beta_{3_i} \Delta INV_{t-i} + \sum_{i=1}^{p} \beta_{4_i} \Delta P_{t-i} + \beta_{5_i} EC_{t-1} + e_t \tag{3}$$

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1_i} \Delta GDP_{t-i} + \sum_{i=1}^{p} \alpha_{2_i} \Delta CMC_{t-i} + \sum_{i=1}^{p} \alpha_{3_i} \Delta INV_{t-i} + \sum_{i=1}^{p} \alpha_{4_i} \Delta P_{t-i} + \alpha_{5_i} ET_{t-1} + v_t \tag{4}$$

where Δ indicates to the first difference operator, *EC* and *ET* denote the error correction term and e_t and v_t are the residuals. Due to quarterly data used in this study, the maximum lag-order for error correction models is four and the general to specific procedure by sequentially eliminating insignificant lags is implemented. If EC and/or ET is insignificantly different from zero, the Islamic and/or conventional stock market will be weakly exogenous. Having implemented exogeneity test, super-exogeneity test is applied by adding EC and ET squared in the Islamic stock market and conventional stock market equations, respectively, as the following:

$$\Delta GDP_t = \beta_0 + \sum_{i=1}^{p} \beta_{1_i} \Delta GDP_{t-i} + \sum_{i=1}^{p} \beta_{2_i} \Delta IMC_{t-i} + \sum_{i=1}^{p} \beta_{3_i} \Delta INV_{t-i} + \sum_{i=1}^{p} \beta_{4_i} \Delta P_{t-i} + \beta_{5_i} EC_{t-1} + \beta_{6_i} EC^2{}_{t-1} + e_t \tag{5}$$

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_{1_i} \Delta GDP_{t-i} + \sum_{i=1}^{p} \alpha_{2_i} \Delta CMC_{t-i} + \sum_{i=1}^{p} \alpha_{3_i} \Delta INV_{t-i} + \sum_{i=1}^{p} \alpha_{4_i} \Delta P_{t-i} + \alpha_{5_i} ET_{t-1} + \alpha_{6_i} ET^2{}_{t-1} + v_t \tag{6}$$

The economic development is super-exogeneity if both and together is insignificantly different from zero. In conclusion, the same procedures are implemented to Islamic and conventional stock markets since it does not mean that Islamic and/or conventional stock market is endogenous if GDP is exogenous. Briefly, both can be exogenous in the system (Ibrahim, 2011).

4 Findings and discussions

4.1 Descriptive analysis

The data in this study are quarterly spanning the period Q2:2000 to Q4:2007. Real GDP, GDP deflator and investment are obtained from International Monetary Fund (IMF) website, while, the Islamic and CMC has been collected from Bursa Malaysia (the stock exchange of Malaysia) website. In short, the framework of this study contains two models and five variables, namely, real GDP, IMC ratio, CMC ratio, investment ratio, and the aggregate price level. All of the variables are expressed in natural logarithm. Malaysia exhibited average annualised growth rate 5% over this period. Regarding inflation rate, Malaysia has low inflation rate, around 3% yearly. The stock market innovations in Malaysia witnessed an increasing trend, particularly in Islamic stock market in which Islamic capital market of Malaysia is considered one of the big Islamic capital markets in the world.

The results from unit root tests for variables in the study are provided in Table 1. Due to the data is raw; it is not seasonally adjusted, so it should start with modifying the presence of deterministic trend of seasonal patterns in the data, if there is any. The intercept is implemented in the tests. From Table 1, the ADF test denotes non-stationarity in levels but stationarity in first differences for all variables except investment to GDP (INV), while PP test indicates stationarity for INV and CMC (CMC) in levels but for other variables is non-stationarity in levels. All variables are stationer in first differences. Expressly, all variables of the study are integrated of order one, i.e., I (1). Regarding INV, there is a discrepancy among the results from the ADF and PP tests. By using the ADF test, it is found that INV is non-stationary even in its first difference. On the other hand, the PP test shows that the variable is stationarity in level and first difference at 5% and 1% respectively.

Table 1 Unit root tests

Variable	*Level*		*First difference*	
	ADF	*PP*	*ADF*	*PP*
GDP	1.983565	3.712341	–6.155765*	–4.724509*
INV	–2.957778	–2.963079**	–2.438041	–8.199180*
IMC	–1.438838	–2.027193	–4.964670*	–11.79354*
CMC	–2.877242	–3.094683**	–4.413739*	–8.294820*
P	1.340260	1.232457	–4.031914*	–4.031914*

Note: * and ** denote significant at 1% and 5% respectively.

Table 2 provides the JJ cointegration test. The trace and maximal eigenvalue test statistics and 5% critical values are also provided in Table 2. However, according to Reinsel and Ahn (1992) the trace and maximal eigenvalue test statistics is adjusted to correct small number of observations bias so that the cointegration results will not be inverted. Thus, the trace and maximal eigenvalue statistics is modified by the following factor:

$$(T - np)/T \tag{7}$$

where T is the effective number of observations, n indicates to the number of variables and p denotes to the order of VAR. Note that, lag order chosen is 4 in this test due to its

ability to whiten the noise process. According to Table 2, the trace and maximal eigenvalue statistics exhibit a long run relationship due to the existence of cointegration among the variables of both models.

Table 2 Cointegration test

Null hypothesis	*Islamic capital market model (model 1)*		*Conventional capital market model (model 2)*		*Critical values (5%)*	
	Test statistics		*Test statistics*			
	Trace	*Max Eigen*	*Trace*	*Max Eigen*	*Trace*	*Max Eigen*
None	135.0779	51.42230	158.0523	94.42670	47.85613	27.58434
At most 1	83.65560	44.83948	63.62557	34.99702	29.79707	21.13162
At most 2	38.81612	36.90017	28.62855	27.72913	15.49471	14.26460
At most 3	1.915952	1.915952	0.899418	0.899418	3.841466	3.841466

Following Granger (1988), there will be at least causality for one direction when there is a cointegration between two variables or more. From the results in Table 3, it is found that there is the presence of causality among GDP and IMC in two directions. However, there a unidirectional view between GDP and CMC, in which CMC Granger causes economic growth. Interestingly, it is found that both ICM and CMC Granger causes the aggregate price levels in Malaysia. Additionally, Table 3 shows that there is a bidirectional effects among GDP and INV.

Table 3 Granger causality test

Null hypothesis	*F-stat.*
IMC does not Granger cause GDP	5.32828*
GDP does not Granger cause IMC	3.65335**
INV does not Granger cause GDP	3.45321**
GDP does not Granger cause INV	3.70889**
P does not Granger cause GDP	5.68114*
GDP does not Granger cause P	1.97024
INV does not Granger cause IMC	0.59975
IMC does not Granger cause INV	1.38128
P does not Granger cause IMC	1.26717
IMC does not Granger cause P	6.16469*
P does not Granger cause INV	0.67610
INV does not Granger cause P	1.60815
CMC does not Granger cause GDP	5.99429*
GDP does not Granger cause CMC	1.83740
INV does not Granger cause CMC	0.32769
CMC does not Granger cause INV	1.33198
P does not Granger cause CMC	1.56780
CMC does not Granger cause P	4.60242*

Note: * and ** denote significant at 1% and 5% respectively.

4.2 IRF and VDC

Based on the findings of cointegration test, IRF and VDC are applied to interference and interpret the estimation results of the VAR. Particularly, IRF and VDC aim to illustrate the causal interactions among the variables in the framework of the study. Note that, because of the residuals serially uncorrelated when lag length is set to 4, so the lag length is set to 4 in these tests. Figure 1 displays the IRF for the first model, which examines the influence of Islamic stock market development on the economic growth, while Figure 2 shows the IRF for the model which tests the influence of conventional stock market development on the economic growth. The VDC for both models are summarised in Table 4.

Table 4 Variance decompositions

Period	*Islamic capital market model (model 1)*				*Conventional capital market model (model 2)*			
	Explained by Innovation in				*Explained by Innovation in*			
	GDP	*IMC*	*INV*	*P*	*GDP*	*CMC*	*INV*	*P*
	Variance decomposition of GDP				Variance decomposition of GDP			
1	100.000	0.00000	0.00000	0.00000	100.000	0.00000	0.00000	0.00000
3	67.5785	16.9659	14.1546	1.30097	56.2409	32.7143	9.68703	1.35777
6	49.9250	14.9454	12.4701	22.6596	42.8529	29.5388	14.7193	12.8890
12	62.6523	6.21830	20.4892	10.6402	45.6630	21.0295	24.1234	9.18411
20	60.6076	4.03332	24.0331	11.3259	46.7931	16.0039	28.2677	8.93529
	Variance decomposition of IMC				Variance decomposition of CMC			
1	16.4419	83.5581	0.00000	0.00000	0.40160	99.5984	0.00000	0.00000
3	23.6353	44.7977	0.07120	31.4958	14.7737	49.2863	11.7746	24.1654
6	53.9292	27.4500	4.01114	14.6096	10.9707	51.9148	16.0411	21.0733
12	52.9624	19.8754	10.8254	16.3368	31.0790	40.5977	12.4039	15.9195
20	57.5412	16.0155	13.5136	12.9297	32.6461	35.6021	15.8123	15.9395
	Variance decomposition of INV				Variance decomposition of INV			
1	9.39556	6.63004	83.9744	0.00000	15.6142	23.4174	60.9684	0.00000
3	25.9664	19.9616	45.6550	8.41698	19.7937	35.6861	38.9986	5.52159
6	25.0768	18.6522	42.1380	14.1330	20.5684	37.0205	31.9191	10.4920
12	28.7122	17.0213	42.3165	11.9500	21.1329	39.4569	28.3180	11.0923
20	30.6869	16.8481	40.1666	12.2985	21.0268	39.2163	27.9243	11.8326
	Variance decomposition of P				Variance decomposition of P			
1	67.7961	5.29856	0.39784	26.5076	79.7192	9.16864	0.00640	11.1058
3	52.8033	21.5346	5.02263	20.6395	55.5884	33.4399	2.71973	8.25196
6	40.1424	30.6674	4.84942	24.3408	43.4825	37.9882	6.77632	11.7530
12	63.6365	12.0244	13.1616	11.1775	43.3221	28.7627	17.0952	10.8201
20	62.2352	7.94308	18.2187	11.6030	44.9140	23.6039	21.0801	10.4020

Note: The variables' ordering for model 1 are GDP, IMC, INV and P; while for model 2 are GDP, CMC, INV and P.

Starting by the core variables of the study, it is noted that there is a bidirectional causal relations among GDP and IMC. It is found that GDP reacts positively to the innovation in IMC but in a declining slope. From Table 4, 14.95% of GDP forecast error variance imputes to Islamic stock market innovations in six-quarter horizon. Simultaneously, around 53.93% of the differences in IMC are refereed to GDP shocks. The significant positive impact of Islamic stock market on INV and P are noticeable, too. The percentage of INV and P variations rely on IMC innovations by around 17% and 12% in 12-quarter horizon, respectively. Noteworthy, the contributions of INV to Islamic stock market is a gradual increasing; however the influence of P on Islamic stock market is decreasing.

Moving to conventional stock markets' model, it is clear that the influence of the innovations of conventional stock market is more than the Islamic stock market towards GDP. Depends on the results in Table 4, about 32.7% of changes in GDP refers to conventional stock market innovations after six quarters, while deviations of conventional stock market to GDP is lower than Islamic stock market by 43% at the same horizon. About 40% of INV is attributable to innovations of conventional stock market from 6 to 20 quarters. For the same period, conventional stock market relies on 12.4% of INV shocks.

Apart from the focal variables, Figure 1 and Figure 2 shows that there is a bidirectional causal relation between GDP and INV. The reaction of GDP due to the variation of INV is increasing, around 20% in 12 quarters. This result is predicted from the causal relations among GDP and INV, in which investment considers an important factor to economic growth, similarly economic development should stimulate investment as suggested by the accelerator model of investment. According to causal relations between IMC and INV as well as CMC and INV, both Islamic and conventional stock market development play an indirect role in contributing to economic growth through their shocks on investment (Ibrahim, 2011).

It is remarkable that conventional stock market engages in economic growth of Malaysia more than Islamic stock market, regardless whether these contributions are directly or indirectly. The response of conventional stock market is more significant that the response of Islamic stock market to investment and price levels shocks.

Figure 1 IRF of Islamic stock market model (see online version for colours)

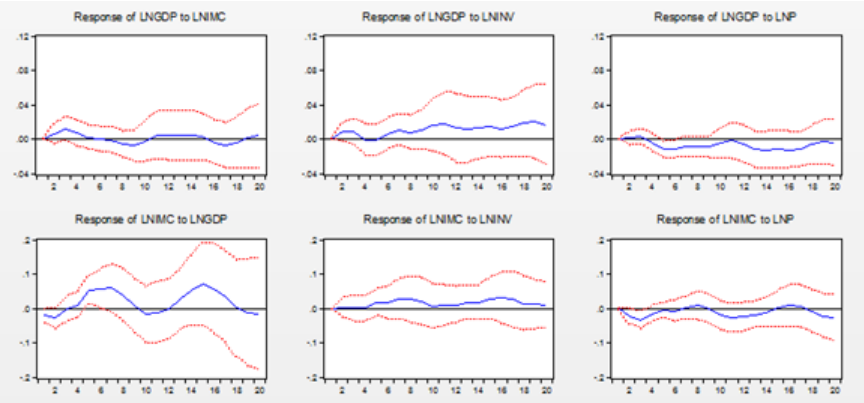
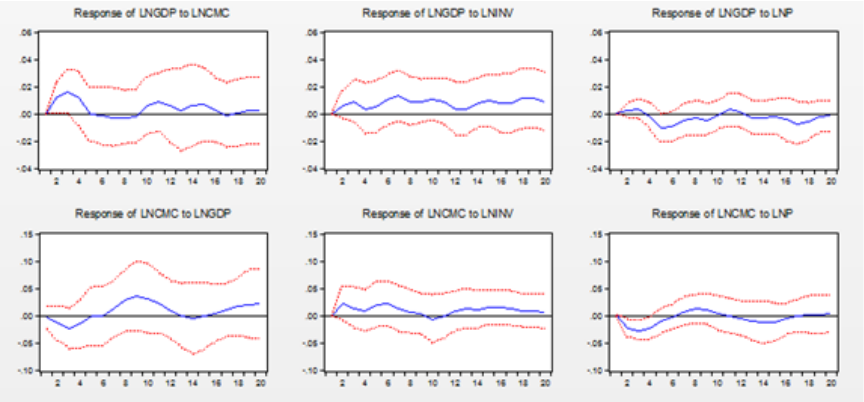


Figure 2 IRF of conventional stock market model (see online version for colours)



4.3 Exogeneity test

To add a credence to this study, the last part of analysis focus on the important of both Islamic and conventional stock market in economic performance in Malaysia, through verifying whether economic growth is exogenous in the framework. Error correction models for Islamic and conventional stock markets are specified with the maximum lag order for the first differenced variables are set to 4. Afterwards, to eliminate insignificant lags, the general-to-specific method is implemented. The findings of the error correction models are provided as well as all diagnostic tests, namely, the LM test for serial correlation, ARCH test for autoregressive conditional hetrosekadasticity, the Jarque-Bera (JB) test for error normality and the REST test for model misspecification.

Starting with Islamic stock market model, Table 5 part 1 shows that the coefficient of error correction term is significant at 1%. Therefore, there is a robust evidence that the Islamic stock market innovation is weakly exogenous. By adding squared error correction term to the equations, super-exogeneity is tested as it appears in part 2. From F-statistics, there is significant evidence at 1% to accept the super-exogeneity of the Islamic stock market development.

Table 5 Exogeneity test of Islamic stock market innovation

(1) Weak exogeneity test

$$\Delta GDP_t = 0.038 - 0.120\Delta IMC_{t-1} + 0.101\Delta IMC_{t-4} + 0.398\Delta INV_{t-1} + 0.253\Delta INV_{t-2}$$
$$(0.000)\quad (0.020)\qquad (0.042)\qquad (0.000)\qquad (0.000)$$
$$- 0.648\Delta P_{t-3} - 0.455EC_{t-1}$$
$$(0.004)\qquad (0.001)$$

LM (3) =	2.462 (0.482)	ARCH (3) =	2.425 (0.489)	JB =	0.013 (0.994)	R^2 =	0.827
LM (6) =	2.859 (0.826)	ARCH (6) =	3.007 (0.808)	RESET =	0.197 (0.846)	Adjusted R^2 =	0.772

Notes: The numbers between brackets are p-value. LM is a test for serial correlation. ARACH used is a test for conditional heterosedasticity. JB is Jarque-Bera test for normality. Finally, REST is model misspecification test.

Table 5 Exogeneity test of Islamic stock market innovation (continued)

(2) Super-exogeneity test

$$\Delta GDP_t = 0.036 - 0.124\Delta IMC_{t-1} + 0.103\Delta IMC_{t-4} + 0.404\Delta INV_{t-1} + 0.243\Delta INV_{t-2}$$
$$(0.000) \quad (0.019) \quad (0.042) \quad (0.000) \quad (0.001)$$
$$- 0.641\Delta P_{t-3} - 0.424EC_{t-1} + 1.769EC_{t-1}^2$$
$$(0.005) \quad (0.002) \quad (0.475)$$

LM (3) =	4.449 (0.217)	ARCH (3) =	3.353 (0.340)	JB =	0.121 (0.942)	Adjusted R^2 =	0.766
LM (6) =	6.701 (0.349)	ARCH (6) =	4.117 (0.661)	RESET =	0.101 (0.921)	F-statistics =	12.70 (0.00)

Notes: The numbers between brackets are p-value. LM is a test for serial correlation. ARACH used is a test for conditional heterosedasticity. JB is Jarque-Bera test for normality. Finally, REST is model misspecification test.

Table 6 Exogeneity test of conventional stock market innovation

(1) Weak exogeneity test

$$\Delta GDP_t = 0.030 + 0.075\Delta CMC_{t-2} + 0.111\Delta CMC_{t-3} + 0.301\Delta INV_{t-1} + 0.201\Delta INV_{t-2}$$
$$(0.000) \quad (0.109) \quad (0.023) \quad (0.000) \quad (0.002)$$
$$- 0.097\Delta INV_{t-3} - 0.525\Delta P_{t-3} - 0.390ET_{t-1}$$
$$(0.184) \quad (0.016) \quad (0.036)$$

LM (3) =	3.818 (0.282)	ARCH (3) =	9.540 (0.023)	JB =	0.006 (0.997)	R^2 =	0.829
LM (6) =	11.140 (0.084)	ARCH (6) =	10.106 (0.120)	RESET =	0.279 (0.783)	Adjusted R^2 =	0.766

(2) Super-exogeneity test

$$\Delta GDP_t = 0.032 + 0.071\Delta CMC_{t-2} + 0.113\Delta CMC_{t-3} + 0.289\Delta INV_{t-1} + 0.188\Delta INV_{t-2}$$
$$(0.000) \quad (0.141) \quad (0.025) \quad (0.000) \quad (0.007)$$
$$- 0.120\Delta INV_{t-3} - 0.538\Delta P_{t-3} - 0.396ET_{t-1} - 3.985ET_{t-1}^2$$
$$(0.161) \quad (0.016) \quad (0.037) \quad (0.570)$$

LM (3) =	2.372 (0.499)	ARCH (3) =	10.613 (0.014)	JB =	0.140 (0.932)	Adjusted R^2 =	0.758
LM (6) =	10.354 (0.111)	ARCH (6) =	9.648 (0.140)	RESET =	0.293 (0.773)	F-statistics =	11.17 (0.00)

Notes: The numbers between brackets are p-value. LM is a test for serial correlation. ARACH used is a test for conditional heterosedasticity. JB is Jarque-Bera test for normality. Finally, REST is model misspecification test.

Table 5 shows that the relationship between economic growth and Islamic stock market development is significant. However, it is interesting to see that the relationship between Islamic stock market development and economic performance is negative relationship. Similarly, Table 6 gives the exogeneity test of conventional stock market development. Like Islamic stock market development, conventional stock market development shows a significant relationship with economic growth with positive direction.

5 Conclusions

This paper aims to empirically examine the difference of the influence level of Islamic stock markets and conventional stock markets upon the macroeconomic performance of Malaysia. In the analysis, two models are estimated. The first one tests the impact of Islamic stock markets on economic performance, while the second model examines the role of conventional stock markets on economic performance in Malaysia.

A time-series techniques of cointegration, VAR model, VDC, IRF and exogeneity test are applied in this study to assess the dynamic interaction among the variables in the framework. From the analysis, the results show long run cointegrations among the four variables in each model. The results found that there is a bidirectional relation among the Islamic stock markets and economic growth in Malaysia, which is in the line with the findings of Abduh and Sukmana (2013). Also, the Islamic stock market contributes to economic growth indirectly by impact on investment. Differently from the findings of Abduh and Sukmana (2013), this paper find there is a unidirectional relation between the conventional stock market and economic performance in Malaysia, in which the conventional stock market Granger causes the growth. Interestingly, the impact of the conventional stock market development, directly and indirectly, is more than the impact of the Islamic stock market development.

From exogeneity test, both the Islamic and conventional stock markets development is found to be super-exogenous. Apart from these main findings, there is also bidirectional causality between GDP and investment ratio. Moreover, there is a substantial contribution of both GDP and the Islamic and conventional stock market development to variations in the aggregate price level of Malaysia.

References

Abduh, M. and Omar, A. (2012) 'Islamic banking and economic growth: the Indonesian experience', *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 5, No. 1, pp.35–47.

Abduh, M. and Sukmana, R. (2013) 'The role of stock markets in promoting economic growth in Malaysia: Islamic vi-a-vis conventional', *Global Review of Islamic Economics and Business*, Vol. 1, No. 1, pp.1–12.

Abduh, M., Brahim, S. and Omar, A. (2012) 'A study on finance-growth nexus in dual financial system countries: evidence from Bahrain', *World Applied Sciences Journal*, Vol. 20, No. 8, pp.1166–1174.

Alam, M.I. and Hasan, T. (2003) 'The causality between stock market development and economic growth: evidence from the United States', *Studies in Economics and Finance*, Vol. 21, No. 1, pp.93–104.

Alexander, W.R. (1997) 'Inflation and economic growth: evidence from a growth equation', *Applied Economics*, Vol. 29, No. 2, pp.233–238.

Arestis, P. and Demetriades, P. (1997) 'Financial development and economic growth: assessing the evidence', *Economic Journal*, Vol. 107, No. 442, pp.783–799.

Atje, R. and Jovanovic, B. (1993) 'Stock markets and development', *European Economic Review*, Vol. 37, No. 2, pp.634–640.

Beck, T. and Levine, R. (2002) *Stock Markets, Banks and Growth: Panel Evidence*, NBER Working paper, pp.82–90.

Bencivenga, V.R., Smith, B.D. and Starr, R.M. (1996) 'Equity markets, transaction costs, and capital accumulation: an illustration', *The World Bank Economic Review*, Vol. 10, No. 2, pp.241–265.

Bursa Malaysia (2011) *The Islamic Capital Market*, Bursa Malaysia, Kuala Lumpur.

Dritsaki, C. and Bargiota, M.D. (2005) 'The causal relationship between stock, credit market and economic development: an empirical evidence for Greece', *Economic Change and Restructuring*, Vol. 38, No. 1, pp.113–127.

Ericsson, N.R., Irons, J.S. and Tryon, R.W. (2001) 'Output and Inflation in the long run', *Journal of Applied Econometrics*, Vol. 16, No. 3, pp.241–253.

Gillman, M., Harris, M.N. and Matyas, L. (2004) 'Inflation and growth: explaining a negative effect', *Empirical Economics*, Vol. 29, No. 1, pp.149–167.

Goaied, M. and Sassi, S. (2011) 'Financial development, Islamic banking and economic growth evidence from MENA region', *International Journal of Business and Management Science*, Vol. 4, No. 2, pp.105–128.

Goldsmith, R.W. (1969) *Financial Structure and Development*, Yale University Press, New Haven.

Granger, C.W. (1988) 'Some recent developments in a concept of causality', *Journal of Econometrics*, Vol. 39, No. 1, pp.199–211.

Greenwood, J. and Smith, B.D. (1997) 'Financial markets in development, and the development of financial markets', *Journal of Economic Dynamics and Control*, Vol. 21, No. 1, pp.145–181.

Harris, R.D. (1997) 'Stock markets and development: a reassessment', *European Economic Review*, Vol. 41, No. 1, pp.139–146.

Ho, S.Y. and Odhiambo, N.M. (2012) 'Stock market development and economic growth in Hong Kong: an empirical investigation', *International Business & Economics Research Journal*, Vol. 11, No. 7, pp.795–808.

Hussain, M., Zia-ur-Rehman, M. and Rza, I. (2012) 'Relationship between stock market development and Economic growth; a case study on Pakistani Stock Exchange', *International Journal of Management and Innovation*, Vol. 4, No. 2, pp.54–61.

Ibrahim, M. (2011) 'Stock market development and macroeconomic performance in Thailand', *Inzinerine Ekonomika-Engineering Economics*, Vol. 22, No. 3, pp.230–240.

Jamshidi, D., Hussin, N., Roustasekehravani, A. and Pirzadeh, A. (2012) 'Potential linkage between stock market development and banking structure improvement on economic growth of Malaysia', *Interdisciplinary Journal of Contemporary Research in Business*, Vol. 4, No. 6, pp.325–333.

Kaya, E., Bektaş, E. and Feridun, M. (2011) 'Stock market and banking sector development in Turkey: do they have same impact on economic growth?', *Ekonomska istraživanja*, Vol. 24, No. 4, pp.65–74.

Levine, R. (1997) 'Financial development and economic growth: view and agenda', *Journal of Economic Literature*, Vol. 35, No. 2, pp.688–726.

Levine, R. and Zervos, S. (1998) 'Stock markets, banks and economic growth', *American Economic Review*, Vol. 88, No. 3, pp.537–558.

McKinnon, P. (1973) *Money and Capital in Economic Development*, Brookings Institution, Washington, DC.

Naceur, S., Ghazouani, S. and Omran, M. (2007) 'The determinants of stock market development in the Middle-Eastern and North African region', *Managerial Finance*, Vol. 33, No. 7, pp.477–489.

Nurudeen, A. (2009) 'Does stock market development raise economic growth? Evidence from Nigeria', *The Review of Finance and Banking*, Vol. 1, No. 1, pp.15–26.

Reinsel, G.C. and Ahn, S.K. (1992) 'Vector autoregressive models with unit roots and reduced rank structure: estimation, likelihood ratio test, and forecasting', *Journal of Time Series Analysis*, Vol. 13, No. 4, pp.353–375.

Robinson, J. (1952) *The Generalization of the General Theory: The Rate of Interest and Other Essays*, Macmillan, London.

Rousseau, P. and Wachtel, P. (1998) 'Financial intermediation and economic performance: historical evidence from five industrialized countries', *Journal of Money, Credit and Banking*, Vol. 30, No. 4, pp.657–678.

Schumpeter, J.A. (1911) *The Theory of Economic Development*, Harvard University Press, Cambridge.

Shaw, E.S. (1973) *Financial Deepening in Economic Development*, Oxford University Press, New York.

Stiglitz, J.E. (1989) 'Financial markets and development', *Oxford Review of Economic Policy*, Vol. 5, No. 4, pp.55–68.

Tachiwou, A.M. (2010) 'Stock market development and economic growth: the case of West African Monetary Union', *International Journal of Economics and Finance*, Vol. 2, No. 3, pp.97–103.

Urbain, J.P. (1992) 'On weak exogeneity in error correction models', *Oxford Bulletin of Economics and Statistics*, Vol. 54, No. 2, pp.197–208.

Yahya, M.M., Muhammad, F., Fauzi, M. and Awang, S.A. (2012) 'Macroeconomic variables and Malaysian Islamic stock market: a time series analysis', *Journal of Business Studies Quarterly*, Vol. 3, No. 4, pp.1–13.