Economic Growth and Stock Market Development in Bahrain

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Abstract

This study investigates the relationship between stock market development and economic growth in the Kingdom of Bahrain over the twenty-five year period of 1990 to 2014. Using regression analysis, the study analyzes the relationship between economic growth, measured by GDP growth rate, and stock market indicators, such as size, liquidity, All-Share Index, turnover, and market capitalization. The first major finding is that stock markets indicators have influence on economic growth in Bahrain. The most significant of these variables are All-Share Index, market capitalization, and turnover ratio. This result indicates that stock market development leads to economic growth in Bahrain. Secondly, by investigating the effect of economic growth on stock market development, the study confirms that economic growth, in turn, also leads to development of the stock market. As such, when the relationship between economic growth and stock market development indicators is subjected to analysis, findings show that stock market development indicators explain variation in economic growth rates even at the sector level. These findings have clear policy implications, in that they provide evidence that strengthening the growth and reform of the stock market will help enhance economic growth in the country; therefore, the government should be encouraged to continue its efforts in this respect

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1   Introduction

Realizing the depleting nature of oil, Bahrain was one of the first Gulf Cooperation Council (GCC) countries to make attempts to diversify its economy to generate another source of income besides oil revenue. In this respect, considerable attention has been given to the development of a sound financial sector that would make Bahrain the financial centre of the region. Stock markets play an important role in channeling savings productively, to the real sector of the economy, and provide a strong link between savings and investment. Their effectiveness and efficiency influences the volume and quantity of investment, which in turn facilitate economic growth. A growing body of theoretical and empirical literature shows how stock markets mobilize savings, allocate resources, diversify risk and contribute to economic growth. A well-developed stock market provides savers relatively higher yield, thus working to increase saving rates in the economy. Stock markets also provide savers with financial instruments that meet their risk preferences, and thus encourage saving. A better savings mobilization may increase the overall savings rate in the economy (Livine and Zarvos, 1998). In addition, by reducing information and transaction costs, stock markets facilitate the transfer of funds from savers to borrowers. Stock markets provide facilities that allow companies to raise funds at lower costs, and make them less dependent on bank financing. Many authors, as will be seen in literature review, argue that there is a strong relationship between the development of stock markets and economic growth. Well-developed stock markets lead to higher investment rate, thus increasing economic growth in the country.

Realizing the importance of stock markets, the government of Bahrain has undertaken many policies to establish the Bahrain stock market (now named the Bahrain Bourse), which started operation in 1989. Moreover, the government has designed many policies to develop the financial sector in the country in the hopes of making Bahrain the financial hub of the region.

Currently, Bahrain is the home of more than 400 licensed financial institutions, as reported by the Central Bank of Bahrain, CBB (Central Bank of Bahrain 2014), representing a mixture of international, regional and local institutions who provide a wide range of financial services. Regulated by the CBB, the financial sector is now the second most important sector in the economy, after oil, contributing around 16.7% to the GDP of the country and providing employment for more than 14,000 employees, 66% of who are Bahrainis. An assessment of GDP growth rate in Bahrain in 2013 drives home this point, as it rose to 4.79% in 2013 from 4.42% in 2012. The inflation rate simultaneously declined from 2.81% in 2012 to 2.68% in 2013.   Thus, it is worth investigating whether the stock market development has stimulated economic growth in Bahrain, or whether economic growth has fueled the development of the stock market. Using data culled from the period of 1990-2014, the purpose of this paper is to investigate whether stock market development has contributed to economic growth in Bahrain, or whether economic growth has contributed to the development of the stock market. The analysis is conducted using stepwise multiple regression technique. Proceeding from this introduction, the paper provides a short overview and main features of the stock market in Bahrain in section two. Section three presents a short review of literature on this subject. Section four discusses the data and methodology employed in the study, while the results are presented and assessed in section five. Finally, some concluding remarks are posed in section six.

2   Background of the Bahrain Bourse

Bahrain is considered as one of the major financial hubs in the Middle East. Its strategic geographical position and open-market economy, coupled with the government's dynamic economic policy and a well-trained national workforce, have helped Bahrain achieve this status. Bahrain also has the advantage of a modern and well-planned infrastructure, together with excellent air, sea and road links. The tax-free economic structure and the ability to freely remit funds abroad give Bahrain its unique appeal, as well as considerable advantage in attracting foreign investors to the country.

It was back in 1920 that the first branches of a commercial bank (the Standard Chartered Bank; then the Eastern Bank) were opened in Bahrain and in the region. The purpose of this bank was to facilitate the growth of a strong and stable business community. By 1957, Bahrain had its first public shareholding company: the National Bank of Bahrain. However, in the late 1980s, Bahrain realized there was a growing need for an organized stock market due to the economic growth spurred by the oil price boom in the region. As a result, the government, in cooperation with the International Finance Corporation (IFC), highlighted the importance of establishing an official stock market in Bahrain. So in 1987, the Amiri Decree No. 4 was issued, establishing the Bahrain Stock Exchange (BSE), which officially commenced operations on 17th June 1989 with 29 companies listed on the Exchange.   In 2010, the Bahrain Stock Exchange was renamed the Bahrain Bourse. The Bahrain Bourse is considered to be one of the most innovative stock markets in the region. It is continuously upgrading its facilities, and in recent years has relaxed the rules for foreign investors, thereby opening up the market to all. It aims to enhance the services it offers to investors while monitoring its standards in accordance with the international norms employed to improve efficiency and maintain integrity in the market.

Over the years, the Bahrain Bourse has grown to become one of the leading emerging stock markets in the region, having started with 29 listed companies in 1989, which has increased to 47 listed companies in 2014.   Despite a decrease in government support in 2013, the Bahrain Bourse showed noticeable, wider-ranging growth rates as compared to the fiscal growth witnessed in 2012, which is a clear indication of its increasing prevalence.   The total assets of the Bourse increased to BD 9,397,052 in 2013, from BD 8,961,272 in 2012, and its liabilities amounted to only BD 969,517, compared to BD 1,205,617 in 2012.   In addition, shareholders' equity increased from BD 7,755,655 in 2012 to BD 8,427,535 in 2013.

As reported by the Bahrain Bourse website, the Bahrain All-Share Index increased by 17.2% in 2013, and the value of the shares traded increased by 104.88% compared to the values in 2012.   The volume of shares traded rose by 197.55% and the number of transactions increased by 39.62%. The Commercial Banks sector captured 68.01% of the total trading value, followed by the Investment sector, which totaled at 14.13%, the Services sector at 8.7%, the Industrial sector at 2.47%, the Insurance sector at 0.34% and finally the Hotels and Tourism sector at 0.14%. Market capitalization of the Bahraini public shareholding companies listed on the Bourse increased from 5.86 billion at the beginning of the year to BD 6.96 billion at the end, an increase of 18.91%. The Bahrain Bourse listed a Government Development Sukuk issue of BD100 million, as well as a Government Development Bonds issue of BD 150 million. In addition, US$ 9.9 million in mutual funds were also listed on the Bourse.

3   Review of the literature

Debate about the role of the financial system in achieving higher economic growth is well-rooted in the history of economic thought. Considerable amount of both theoretical and empirical research has been undertaken to assess the role a nation's financial system plays in its economic growth. Most of these studies, however, concentrate on the relationship between banks and financial intermediaries and economic growth. Livine (2005) provides a detailed summary of theoretical and empirical results in this respect. It wasn't until the publication of a paper by Livine and Zarvos in 1998 that more attention was granted to the role of stock markets in the economic growth process. They investigated whether measures of stock market liquidity, size, volatility, and integration with world capital markets are robustly correlated with current and future rates of economic growth, capital accumulation, productivity improvements, and saving rates, using data collected from 47 countries from 1976 through 1993. Livine and Zarvos (1998) found that stock market liquidity and banking development both positively predict growth, capital accumulation, and productivity improvements when entered together in regressions, even after controlling for economic and political factors.

Antonios (2010) investigated the causal relationship between stock market development and economic growth in Germany from 1965 to 2007 using a Vector Error Correction Model (VECM). His results indicated that there is a unidirectional causality between stock market development and economic growth, with clear direction from stock market development to economic growth. Ovat (2012) investigated the Nigerian stock market, using stock market size and stock market liquidity as stock market indicators, and found that stock market liquidity has dominance over market size. He discovered that while there is a two-way causation between stock market liquidity and economic growth, with the strength of causality predominantly coming from stock market liquidity, market size is found to have little or no effect on growth. His results equally suggested a one-way causation between financial deepening and growth, with causality flowing from financial depending to economic growth. In his analysis of the stock market and economic growth in Kuwait, Bentour (2014) found market capitalization to have a positive impact on the Gross Domestic Product. Wai Mun et al (2008), working with the Malaysian economy, found that stock market Granger-caused economic activity had no reverse causality.

Suliman and Dafaalla (2011) investigated stock market development and economic growth in Sudan, and concluded that the causal relationship between stock market development and economic growth is sensitive to the proxy used for describing the stock market development. They found that when the stock market capitalization is used, a bidirectional causal relationship can be observed between stock market development and economic growth, and when the stock market liquidity is used, the results exhibit a unidirectional causal relationship from economic growth to stock market development. Their overall conclusion is that Granger causality test results suggest that stock market development in Sudan leads to economic growth. Hossain et al (2013) examined the co-integration relationship and causality direction between the stock market and the economic growth of Malaysia using time series quarterly data acquired over nearly two decades, from 1991 to 2009, and found that there exists a long and short-run correlation between stock market and economic growth; however, Granger Causality test results suggest a unidirectional causality relationship.

Ali and Aamir (2014), using panel data from five East Asian countries for the period of 1991 to 2011 concluded that GDP per capita is significantly explained by independent

variables, which include stock market size and liquidity, foreign direct investment (FDI) , investments, government expenditure as percentage of GDP (EXP) and gross domestic savings as percentage of GDP (GDS). Shahbaz, et al (2008) investigated causal relationship between stock market development and economic growth in Pakistan and found that there exist a very strong relationship between stock market development and economic growth. They found that Engle-Granger-causality estimation confirms in the long-run that there is bi-directional causality between stock market development and economic growth. However, in terms of the short-run, they found only one-way causality, i.e., from stock market development to economic growth. Rioja and Valev (2014) studied the effects of stock markets and banks on sources of economic growth, productivity and capital accumulation, using a large cross-country panel that included high- and low-income countries. They found that, in low-income countries, while banks have a sizable positive effect on capital accumulation, stock markets have not contributed to capital accumulation or productivity growth. Conversely, they found that in high-income countries, stock markets have sizable positive effects on both productivity and capital growth, while banks affect only capital accumulation.

Investigating the causal relationship between stock market performance and economic growth in Kenya for the period of 2001 to 2010, using quarterly secondary data, Olweny and Kimani (2011) found that the causality between economic growth and stock market runs unilaterally or entirely in one direction from the share index to the GDP. Wild and Lebdaoui (2014) investigated the relationship between stock market development and economic growth in Morocco from 2000 to 2013 on a quarterly basis. As proxies for stock market development, they used the Morocco All Shares Index (MASI), market liquidity, market capitalization and a principal component analysis based on the stock market development index. They found that long-run association exists between stock market development and economic growth, as do unidirectional Granger-causalities running from MASI, traded volume and stock market index to the real GDP, but no evidence confirms the existence of Granger-causality from capitalization to the real GDP.

To the best of our knowledge, no paper attempted to investigate the relationship between stock market development and economic growth in Bahrain. Abdelbaki (2013) attempted to investigate the relationship between macroeconomic variables and Bahraini stock market development using the Autoregressive Distributed Lag model. He found that income level, domestic investment, banking system development, private capital flows and stock market liquidity are important determinants of Bahraini stock market development. This is different than the current paper in that we address the question of whether stock market development explains the changes in economic growth in Bahrain, or economic growth rate has stimulated the development of the Bahrain Bourse.

4 Methodology and Data

Time series data are collected for a period of 25 years (1990 - 2014). Data are extracted from different sources: World Bank Database for economic indicators and Bahrain Bourse for the stock market indicators. To measure the stock market development indicators, a set of variables are used following the methodology applied by Levine and Zervos (1998). These variables along with their definitions are explained below and listed briefly in Table 1.

1.   Size of the market (SIZE):   This is measured by the value of all listed domestic companies in the Bahrain Bourse divided by the GDP.
2.   Liquidity of the market (LIQ):   Turnover (TROV) could be used as a liquidity indicator.   This stands as a measure of the volume of domestic companies traded in ratio to the size of the market. According to Levine and Zervos (1998), high turnover indicates low transactions costs. In addition, a large stock market is not necessarily a liquid market. Alternatively, liquidity could be measured as the value of the traded shares of domestic companies relative to the GDP. Demirguc-Kunt and Levine (1996) showed that value traded may be significantly different from turnover. Levine and Zervos (1998) argued that value traded captures trading relative to the size of the economy, and turnover measures trading relative to the size of the stock market.
3.   Stock market All-Share Index (ASI): This measures the overall performance of the Bahrain Bourse, i.e. the indicator of the average performance of all listed companies.
4.   Market capitalization (MKTCAP): This measures the size of the market and its performance.
5.   Sector Index (SECINDEX): This is a measure of market index for individual sectors.
6.   Growth rate in real gross domestic product (GGDP): This is measured as the economic indicator and is computed by measuring the percentage change in the GDP from the pervious to the current year.

Table 1: List of the Variables

	The variables	Definitions
1	ASI	Bahrain Bourse All-Share Index as a measure of stock market index
2	GGDP	Growth rate of real GDP as measure of economic growth
3	LIQ	Value of traded shares relative to real GDP as measure of Liquidity
4	MKTCAP	Total market capitalization
5	SECINDEX	Sector index by Bahrain Bourse
6	SIZE	Value of all listed domestic companies in Bahrain Bourse divided by GDP
7	TROV	Volume of trades shares relative to size as a measure of Turnover

To test the relationship between stock market indicators and economic growth, two main models (model 1 and 2) are hypothesised. One model is used for the economic indicator, i.e. growth rate in the GDP, and the other one is for the stock market indicators, such as: the All-Share Index, liquidity, market capitalization, size and turnover. Model 1 hypothesises that economic growth rate is affected by the stock market indicators identified in the study. The hypothesis is formulized as follows:

$$GGDP_t = \alpha + \beta_1 ASI_t + \beta_2 LIQ_t + \beta_3 MKTCAP_t + \beta_4 SIZE_t + \beta_5 TROV_t + \varepsilon_t \qquad (1)$$

Where α is the constant, $\beta_1, \beta_2 ... \beta_5$ are standardized coefficients to be estimated, and ε_t is a random error term. The null hypothesis proposed here is that β_i (i = 1, 2 …, 5) is equal to zero, meaning that variable i does not affect the dependent variable GGDP at time t. Model 2 hypothesises that economic growth affects stock market indicators, and stock

market indicators change in response to changes in the GDP rather than causing GDP growth. To capture this relationship, each stock market indicator is considered as a dependent variable and regressed on GGDP as the independent variable. For example, the model for the ASI is specified as:

$$ASI_t = \alpha + \beta_1 GGDP_t + \varepsilon_t \tag{2}$$

The null hypothesis proposed in this respect is that if $\beta_1 = 0$, then economic growth does not explain the variable under consideration. Similar models are specified for the other stock market indicators as follows:

$$LIQ_t = \alpha + \beta_1 GGDP_t + \varepsilon_t \tag{3}$$

$$MKTCAP_t = \alpha + \beta_1 GGDP_t + \varepsilon_t \tag{4}$$

$$SIZE_t = \alpha + \beta_1 GGDP_t + \varepsilon_t \tag{5}$$

$$TROV_t = \alpha + \beta_1 GGDP_t + \varepsilon_t \tag{6}$$

Further analysis will be performed in this study: First, to test the relationship between the Bahrain Bourse and economic growth sector-wise, and second, to test the effect of financial crisis on the developed models.

4   Findings and Discussion

Table 2 highlights the descriptive statistics for each variable used in the models. Figure 1 shows the scatter diagram between the GGDP and the ASI and the GGDP and market capitalization. Both charts exhibit a positive correlation between market growth and stock market indicators.

Table 2: Descriptive statistics

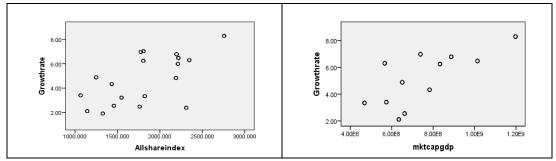| Variable	Symbol	Sample	Min	Max	Mean	Std Dev
All-Share Index	ASI	133	1,040.26	2,794.30	1,769.93	633.74
Growth rate in GDP	GGDP	133	1.91	8.29	4.87	2.06
Liquidity	LIQ	105	19,928	642,786	137,100	162,856
Market capitalization (in ml)	MKTCAP	84	5,094.47	10,185.22	7,007.585	1,418.861
Real GDP (in ml)	GDPR	133	1,720.26	5,250.24	3,080.44	996.77
Size	SIZE	84	469	1,197	750	199
Turnover ratio	TROV	91	0.12	17.43	2.89	2.52

Figure 1: Economic and Stock Market Indicators

Table 3 presents an indication of the relationship between economic growth and stock market indicators through the correlation matrix. It highlights that all stock market variables used in this study are positively correlated with the GDP growth rate. They are, moreover, all significant at 1% level. The highest correlation coefficient (r = 0.717) is with size, followed by the All-Share Index (0.614), and then the liquidity variable (r = 0.546). Observing the correlation between stock market indicators such as the All-Share Index, size, turnover and liquidity, the strength of the relationship is found to be very high (r = 0.872) between size and liquidity. This high correlation is explained by the fact that increasing the size of the stock market increases its liquidity. This result is consistent with findings of Demirgucs-Kunt and Levine (1996), which state that large stock markets measured by equity capitalization are more liquid. As a result, both variables should not be included in the same model to avoid the possibility of multicollinearity. The other two high correlations are between size and market capitalization (r = 0.866) and liquidity and market capitalization (0.775).

To test the significance of stock market variables in explaining the economic growth rate, or GGDP, four models are used to gather estimates using stepwise multiple regression. The results are summarized in Table 4. Model 1 in Table 4 indicates that two variables, All-Share Index and size, are highly significant at 1% level, while turnover is significant at 5% level and liquidity is insignificant. Due to the high correlation between liquidity and size, liquidity was dropped by the stepwise regression and deemed to be insignificant to the model. Market capitalization and size are also highly correlated (r = 0.866), and as a result, market capitalization was also dropped from the model through the stepwise regression. The relatively high R^2 (0.733) indicates a high degree of relevance. The relative importance of each variable, as indicated by its coefficient, indicates that the All-Share Index exerts more effect on growth rates in the GDP (GGDP) than the other two variables. Durban-Watson (DW) is 2.07, which is an indication of no serial correlation.

Table 3: Correlation Matrix

	MKTCAP	TROV	SECINDEX	GGDP	ASI	SIZE	LIQ
MKTCAP	1	0.123	0.093	0.406***	0.231**	0.866***	0.775***
TROV		1	0.140	0.340***	0.252**	0.245**	0.241**
SECINDEX			1	0.260***	0.355***	0.235**	0.226**
GGDP				1	0.614***	0.717***	0.546***
ASI					1	0.636***	0.583***
SIZE						1	0.872***
LIQ							1

*** significant at 1%,   ** significant at 5%

Models 2 and 3 in Table 4 estimate the effects of liquidity and market size on economic growth. Liquidity is statistically significant at 5% when used with All-Share Index. Market size becomes highly significant at 1% level when used as a separate single independent variable. Model 4 investigates the importance of All-Share Index by itself in explaining variation in economic growth, which seems to be highly significant, with an even higher coefficient compared to Model 1 in the same table. Naturally, the value of R^2 decreases when there are fewer independent variables. As discussed, we can conclude that the null hypothesis is rejected, and therefore stock market indicators do explain changes in real GDP growth rates. Out of these four models, we can conclude that Model 1 is the most accurate when it says that 73.3% of the variation in the development of the economic growth in Bahrain is explained by the following variables: the All-Share Index, stock market turnover ratio, and market size.

Table 4: Stock Market Indicators and GDP Growth Rate (GGDP)

Models	Constant	Independent variables				R^2	DF	DW
		ASI	LIQ	SIZE	TROV			
1	-1.270 (-2.834)	0.582 (7.847)***		0.317 (4.282)***	0.123 (2.078)**	0.733	83	2.07
2	0.151	0.637 (7.930)***	0.175 (2.173)**			0.557	104	2.13
3	-0.012			0.717 (9.306)***		0.508	84	
4	-0.072	0.614 (8.898)***				0.372	132	

Dependent Variable: GGDP
t-values in parenthesis, *** significant at 1%, ** significant at 5%

To analyze the second hypothesis, which is the effect of economic growth on the stock market, in other words whether changes in the real GDP cause changes in stock market activities, we developed four models. These models are reported and summarized in Table 5, with the real GDP growth rate as an independent variable and each stock market indicator as a dependent variable. It is clear from the results expressed in these models that that changes in the economic growth rate of a nation affect stock market indicators, since all coefficients haven been proven highly significant at 1% level, with the exception of size.

Table 5: GDP Growth Rate and Stock Market Indicators

Models	Dependent Variable	Constant	**Independent variable:** GGDP	R^2	DF
1	ASI	1139.304 (13.929)***	0.614 (8.898)***	0.372	132
2	LIQ	-101,719 (-2.643)***	0.546 (6.617)***	0.291	104
3	SIZE	366,098,856 (8.307)	0.717 (9.306)	0.508	83
4	TROV	0.739	0.340 (3.406)***	0.105	90

t-values in parenthesis, *** significant at 1%

As a new contribution to the current literature, we attempted to analyze the relationship between economic growth and stock market development indicators sector-wise. For each sector, we estimated the relationship between real GDP growth rate and stock market variables to observe the effect in each sector, rather than developing a uniform assessment of aggregate economic activity. Results of estimation are represented in Table 6. The results indicate that for the commercial banks sector, investment sector and services sector, only the sector index variable is statistically significant at 1% level. For the industrial and the insurance sector, sector index and market capitalization are significant at 1% and 5% level, respectively. For the hotels and tourism sector, it is the market capitalization and turnover ratio that are significant, at 1% and 5% level, respectively. The overall conclusion is that stock market development indicators do, indeed, explain variation in economic growth rates, even at the sector level. Moreover, real growth in GDP affects the sector index, as presented in Table 6.

To investigate the effect of GDP growth on each sector index, we estimated regression equations using GDP growth rate as the independent variables and each sector index as dependent variables; the results are presented in Table 7.   As indicated in the table, while growth in GDP stimulates growth of commercial banks, insurance and services sectors, other sectors do not seem to be affected by GDP growth.

Table 6: Sector analysis - *GGDP as Dependent Variable*

Sectors	Constant	MKTCAP	SECINDEX	TROV	R^2
Commercial Banks	-1.776		0.831 (4.726)***		0.66
Hotels & Tourism	-0.803	0.689 (3.878)***		0.451 (2.539)**	0.654
Industrial	-2.612	0.762 (4.211)***	0.443 (2.449)**		0.643
Insurance	-5.801	0.477 (2.282)**	0.493 (2.355)**		0.632
Investment	1.625		0.758† (3.678)***		0.533
Services	-2.592		0.794 (4.133)***		0.594

t-values in parenthesis, *** significant at 1%, ** significant at 5%, * significant at 10%

Table 7: Sector Analysis - *SECINDEX as Dependent Variable*

Sectors	Constant	GGDP	R^2	DF
Commercial Banks	1,189	0.653 (3.555)***	0.393	18
Insurance	1,369	0.648 (3.508)***	0.386	18
Services	1,266	0.603 (3.119)***	0.327	18

t-values in parenthesis, *** significant at 1%

To assess the impact of the 2007 – 2008 financial crisis, we separated the data into three periods: 1990 to 2006 to represent the period pre-financial crisis, 2007 to 2008 to represent the period during the crisis, and 2009 – 2014 to represent the post-crisis period. Results of estimation are presented in Table 8. Results indicate that both liquidity and size are statistically significant at 1% level, while the All-Share Index is significant at 5% level, indicating that economic growth is affected by these variables. Since the crisis, however, the All-Share Index and liquidity have become highly significant, while market capitalization no longer seems to enter the equation. During the crisis, no significant models were found, indicating that financial crisis caused variables and the economy to function differently and unexpectedly; therefore, we cannot reject the null hypothesis that there is no statistically significant difference between the period of crisis and pre crisis.

Table 8: Financial Crisis and Economic Growth

Status	Constant	ASI	LIQ	SIZE	R^2	DF
Before the Crisis	-1.420	0.258 (2.326)**	-0.641 (-4.032)***	1.078 (6.776)***	0.639	34
After the Crisis	5.813	-0.475 (-6.001)***	1.110 (14.041)***		0.855	34

Dependent Variable: GGDP
t-values in parenthesis, *** significant at 1%, ** significant at 5%

Using the All-Share Index as the dependent variable and the growth rate of the GDP as the independent variable for the period before the financial crisis, Table 9 highlights this significant relationship at 1% level. This means that the growth rate of the GDP was leading to the development of the stock market before the year 2007.   But, running the same model after the crisis, i.e. after 2008, all coefficients measured in at insignificant levels, and the GDP growth rate could not give any explanation to the decreased utility of the stock market indicators.   Changing the dependent variable to size, a better explanation is given, and a model can be adequately developed at 5% level of significance.

Table 9: Financial Crisis and Bahrain Bourse

Status	Dependent Variable	Constant	GGDP	R^2	DF
Before the Crisis	ASI	1,597 (19.095)***	0.457 (4.657)***	0.199	83
After the Crisis	SIZE	576,844,905 (15.124)***	0.372 (2.305)**	0.139	34

t-values in parenthesis, *** significant at 1%, ** significant at 5%

5   Conclusion

This study investigates the relationship between stock market development and economic growth in the Kingdom of Bahrain. Using stepwise multiple regression techniques, and data that covers the twenty-five year period of 1990 to 2014, our investigation has identified a number of stock market development indicators and used them to analyze how the stock market affects economic growth in Bahrain, and vice versa. These indicators include: Value of traded shares relative to the real GDP as measure of market liquidity; volume of traded shares relative to size as a measure of turnover; the Bahrain Bourse All-Share Index as a measure of stock market index; total market capitalization to GDP as size; and market capitalization.

For the purposes of this study, economic growth is determined according to the real GDP growth rate. To test the significance of stock market variables in explaining the economic growth rate, we developed a number of regression models. The analysis produced various findings. First, it determined that stock market indicators have substantial influence on economic growth in Bahrain. The most significant variables include the All-Share Index, size, and turnover. These results indicate that stock market development does, indeed, stimulate economic growth in Bahrain. Secondly, investigating the effect of economic growth on stock market development, results confirm that economic growth does cause development of the stock market development. Thus, we have presented evidence implicating a positive symbiotic relationship between the growth of the stock market and the health of the economy in the Kingdom of Bahrain. This information may be valuable in the future as we face economic booms as well as financial crises, or periods of economic stagnation.

Generally, our results are consistent with the majority of theoretical and empirical studies conducted on both developed and developing economies. However, our results indicate that stock-market development has a stronger effect on economic growth than GDP growth has on stock market indicators. This suggests that, in order to facilitate economic growth in Bahrain, the government should be encouraged to promote policies that support stock market expansion and financial sector development.

As a new contribution to the established body of literature, we have attempted to provide an in-depth analysis of the relationship between economic growth and stock market development indicators according to sector. We estimated the relationship between real GDP growth rate and stock market indicators in each individual sector in order to observe the effect on each sector separately, rather than grouping all the sectors together and making blanket estimates of the effect on the aggregate economy. The overall conclusion in this respect is that stock market development indicators play a significant role in creating variation in economic growth rates, even at the sector level. To assess the impact

of the 2007–2008 financial crisis, we separated the data into three periods: pre-crisis, crisis, and post-crisis. Results indicate that stock market indicators do explain variation in GDP growth before and after the crisis, while no significant models were proven relevant during the crisis period, indicating the severe effect the crisis had on the economy. Hence, we could not manage to find any relationship between the stock market and economic growth during this period.

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