Financial development and economic growth in GCC countries

A comparative study between Islamic and conventional finance

Received 5 December 2012
Revised 24 July 2013
Accepted 25 July 2013

Rihab Grassa
Higher Institute of Accounting and Administration, Manouba University, Manouba, Tunisia, and
Kaouthar Gazdar
Faculty of Economics and Management of Sousse, LEFA (IHEC Carthage), Sousse, Tunisia

Abstract

Purpose – The purpose of this paper is to compare the effects of Islamic financial development and conventional financial development on the economic growth for five GCC countries (Bahrain, Kuwait, Qatar Saudi Arabia and UAE).

Design/methodology/approach – Using generalized least squares, OLS and panel data frameworks, this paper employs different measures of financial development for the period (1996-2011).

Findings – Empirical results strongly support the hypothesis that Islamic finance leads to growth in the five GCC countries, however, no significant relationship observed between conventional financial development and growth.

Practical implications – The findings of this paper suggest the need to accelerate the financial reforms for Islamic finance that have been launched in the region since the last decade and to improve the efficiency of these countries' Islamic financial systems to stimulate saving/investment and, consequently, long-term economic growth.

Originality/value – This study has several contributions to the existing literature. To the best of the authors' knowledge, this paper is the first study that examines empirically the effect of Islamic finance on economic growth in GCC countries. As well, this paper is the first to compare the different effects of Islamic finance and conventional finance on economic growth on a context of countries having the most developed Islamic financial system in the world operating side-by-side with a conventional financial system.

Keywords Economic growth, GCC countries, Conventional financial development, Islamic financial development

Paper type Research paper

I. Introduction

The relationship between financial development and economic growth has been a major subject in the field of development economics over recent years. The theoretical foundation of this relationship can be traced as far back as the work of Joseph Schumpeterian the beginning of the twentieth century, Robinson (1952) and later to Goldsmith (1969), McKinnon (1973) and Shaw (1973). McKinnon (1973) and Shaw (1973) show the importance of financial liberalization in promoting domestic savings and hence investment. Empirical analyses on the impact of financial development on long-run economic growth include, among others, Roubini

International Journal of Social Economics
Vol. 41 No. 6, 2014
pp. 493-514

0306-8293
DOI 10.1108/IJSE-12-2012-0232

and Sala-I-Martin (1992) and King and Levine (1993a). This studies show the crucial role played by the financial sector when it is able to direct financial resources toward the sectors that demand those most. A developed financial sector promotes a better allocation of the financial resources into productive use and contributes positively to the economic growth.

Our research extends previous evidence by investigating the Islamic finance growth relationship in GCC region. In fact, the previous studies show that financial development has not worked as an engine of economic development in MENA and specially GCC region (Ben Naceur and Ghazouani, 2007; Goaied and Sassi, 2010). What about Islamic Banking development?

Islamic finance is a new industry which has attracted the attention of many economists regarding its rapid growth, ability to operate successfully and its instruments for mobilizing and allocating monetary resources. The Islamic financial system in GCC countries has evolved as viable and competitive component of the overall financial system as a driver of economic growth and development. Each GCC country has set up comprehensive Islamic financial infrastructures. According to the International Monetary Fund (2009), in 2008, the Islamic banks' assets in total assets was 35 percent in Saudi Arabia, 29.9 percent in Bahrain, 29 percent in Kuwait, 13.5 percent in UAE and 11.5 percent in Qatar.

As well, in term of economic growth in GCC countries has a remarkable record of consistently high growth in the past three decades. The growth of GDP accelerated in GCC countries to more than 4 percent in 2010. Hence, developed Islamic financial system and a remarkable economic growth at the same time draw our attention to investigate the effect of Islamic finance on economic growth.

The purpose of this paper is to examine the roles of the different financial system on economic growth. More precisely, the paper tries to examine the effect of overall financial system development on economic growth, and then to compares the effect of Islamic finance development and conventional finance development on the economic growth of five GCC countries (Bahrain, Kuwait, Qatar Saudi Arabia and UAE) for the period 1996-2001. Our main findings demonstrate strong evidence for the positive effect of Islamic financial development on economic growth in GCC countries. Based on these results, we can conclude that Islamic finance did better than conventional finance. As well, Islamic finance is superior system that can promote a better economic development

This study has several contributions to the existing literature. First to our best knowledge, this paper is the first study that examines empirically the effect of Islamic finance on economic growth in GCC countries. As well, this paper is the first to compare the different effects of Islamic finance and conventional finance on economic growth on a context of countries having the most developed Islamic financial system in the world operating side by side with a conventional financial system. Third, the findings of this paper suggest that the need to accelerate the financial reforms for Islamic finance that have been launched in the region since the last decade and to improve the efficiency of these countries' Islamic financial systems to stimulate saving/investment and, consequently, long-term economic growth.

The remaining of this paper is organized as follow: Section 2 discusses the related literature. Section 3 presents the context of our study. Section 4 describes the methodology used and some descriptive statistics. Section 5 provides empirical results. Section 6 summarized our paper.

II. Finance and growth nexus: related literature

2.1 Financial development and economic growth

Theoreticians hold different perspectives on the link between financial developments and economic growth. While the earliest theoretical studies have focussed on the effect of financial development on economic growth, as an important extension, some studies have interested the relative merits of a bank-based financial system and a market-based financial system on economic growth. Another strand of studies has also extended this theory by stressing the non-linearity of finance-growth nexus.

The notably early works on finance and development along the Schumpeterian lines include Gurley and Shaw (1955) and Goldsmith (1969). They argue that financial development is crucial in determining economic-growth which implicate that the under-developed financial system retard economic growth.

Building on the theoretical evidences, a number of empirical studies emerged focussing on examining the relationship between financial development and economic growth. These empirics have proceeded from using country-level data, to using industry- and firm-level data. The econometric methodologies on this subject can be broadly categorized into four groups:

(1) pure cross-country;

(2) instrumental variable (IV);

(3) times series; and

(4) firm- and household-level approaches.

Empirical investigations on finance and growth relationship come back to the seminal contribution of Goldsmith (1969). He sought to assess whether finance exerts a causal influence on growth and whether the mixture of markets and intermediaries operating in an economy influences economic growth. To this end he consider data on the assets of financial intermediaries relative to GNP and data on the sum of net issues of bonds and securities plus changes in loans relative to GNP for 35 countries over the period 1860-1963. Applying both OLS and graphical analysis, Goldsmith (1969) finds that there are a clear relationship between financial development and economic growth. However, as cited in Levine (1997, p. 704; 2005, p. 40) this study suffers from several weaknesses. Thus, several researchers have taken steps to address some of these caveats. King and Levine (1993a) adopt a sample of 77 countries over the period of 1960-1989 and control for other factors affecting long-run growth. The King and Levine (1993a) findings provide some support for the Schumpeterian view that finance matters for growth. King and Levine (1993b) confirm also this finding. In fact, using an alternative econometric methods and considering both the financial and growth indicators defined by King and Levine (1993a) for a sample of 80 countries King and Levine (1993b) find that financial development promote economic growth.

While the studies cited above focus to the finance-growth relationship through the impact of banking sector on economic growth, an important strand of studies attempt to examine the role of stock markets on economic growth. These strand of empirical evidence started with the contribution of Atje and Jovanovic (1993) who investigate the impact of both stock markets and bank on economic growth. Based an annual observations for 94 countries over the period of 1960-1985 and using a OLS analysis, Atje and Jovanovic (1993) find that while stock market have both positive levels and growth effects on economic activity, they fail to find a similar effect for bank lending. Building in Atje and Jovanovic (1993) study, Levine and Zervos (1998) examined

whether banking and stock market indicators are both robustly correlate with current and future rates of economic growth, capital accumulation, productivity improvements and private savings. Applying the OLS technique of estimation to a sample of 49 countries for the period of 1960-1989. Levine and Zervos (1998) find that while stock market liquidity is positively and significantly correlated with current and future rates of economic growth, capital accumulation, and productivity growth, stock market size, volatility and integration are not robustly linked with growth. Their finding also show that the initial levels of both stock market liquidity and banking sector development predict future rates of growth, capital accumulation and productivity growth.

To overcome the biases related to OLS, the classical approach adopted in cross-country growth regressions is to identify an IV that explain cross-country differences in financial development but are uncorrelated with economic growth beyond their link with financial development and other growth determinants. Therefore, In contrast to traditional cross-country investigations, Levine (1998) examine whether cross-country variations in the exogenous component of banking sector development explain cross-country variations in the rate of economic development. Thus, he uses the legal determinants of banking development as IVs for banking sector development indicator. As results he finds that the exogenous component of banking development is positively associated with all indicators of economic growth. In line with Levine (1998), Levine *et al.* (2000) find that the exogenous component of financial intermediary development is positively associated with economic growth.

To accounts explicitly biases induced by the inclusion of the lagged dependent variable and to controls for the potential endogeneity of all explanatory variables, researchers have utilized dynamic panel regressions as an alternative to cross-sectional IV regressions. In our best knowledge, Levine (1999), Rousseau and Wachtel (2000), Beck *et al.* (2000), Levine *et al.* (2000) are among the first studies that have used the dynamic panel analysis. More specifically they consider the generalized method of moments (GMM) estimators developed by Holtz-Eakin *et al.* (1988), Arellano and Bond (1991) and Arellano and Bover (1995). Moreover, besides the traditional cross-section, IV procedures, Levine *et al.* (2000) use the recent dynamic panel techniques "system estimator" to examine the relationship between financial intermediary and growth relationship. As with the traditional cross-section, the results of dynamic panel data show that exogenous changes in financial intermediary development imply large changes in economic growth. Constructing a panel data set with data averaged over each of the seven five-year periods between 1960 and 1995 and considering the GMM panel estimator they provide strong positive relationship between financial intermediary and both economic growth and total factor productivity growth. In the same vein Beck and Levine (2004) examines the relationship between growth and both stocks markets and bank development. Their findings show that stock markets and banks affect positively and significantly economic growth and these effects are not due to potential biases induced by simultaneity, omitted variables or unobserved country-specific effects.

In more recently paper, Kar *et al.* (2011) have examined the finance growth nexus in MENA countries. Specifically they examine the direction of causality between finance and growth. To this end, they have applied the recently proposed panel causality testing approach which takes into account cross-sectional dependence across the countries. Using the sample of 15 MENA countries over 1980-2007, they found that there is no clear consensus on the direction of causality between financial development

and economic growth for all measurements of financial development and it is also observed that the findings are country and financial development specific.

Hasan *et al.* (2009) contribution is to analyze the role of legal institutions, financial deepening and political pluralism on growth rates at the regional level, specifically in China. They results show that while capital market, legal environment, awareness of property rights and political pluralism have a strong influence on growth, the impact of bank lending is not significant and sometimes negative.

In a time series setting, Ghirmay (2005) explore the causal links between financial development and economic growth in a sample of 13 sub-Saharan African countries. He finds that there is a long-run relationship between financial development and economic growth in almost all (12 out of 13) countries of the countries. The evidence points to the causality running from financial development to economic growth, again in eight of the countries.

Hondroyiannis *et al.* (2005) examine the relationship between the development of the banking system and the stock market and economic performance for the case of Greece over the period of 1986-1999. Applying vector autoregressive (VAR) models their finding show that both bank and stock market financing can promote economic growth, in the long run, although their effect is small. However, contribution of the stock market to growth is limited compared to bank finance which can be explained by the minor role traditionally played by stock market in Greece.

Thangavelu and James (2004) empirically examine the dynamic relationship between financial development and economic growth in Australia in terms of bank-based and market-based financial structure. Therefore, to estimate the relationship, Thangavelu and James (2004) employ time series methodology of VAR model and Granger causality test. The time span of this study covers from 1960 to 1999, and with the use of quarterly data. Their results suggest that financial intermediaries (bank-based system) and financial markets (market-based system) tend to have different role in promoting growth in the economy. Indeed, the empirical results using financial intermediaries' indicators are consistent with the Robinson's hypothesis that economic growth promotes financial development. However, the results of using financial market indicators are consistent with the Schumpeter view that market-based system promotes economic growth in the Australian economy.

2.2 Islamic finance and economic growth

While the issue of the effect of financial development on economic growth has been discussed in large body of literature on economy and finance, few researches have studied the effect of Islamic finance on economic growth.

Many economists believe that Islamic finance must have a positive impact on the economic growth given that Islamic finance is based on a profit-loss-sharing mechanisms which eliminate all form of interest. Ahmed (2005) studied the role of Islamic finance and Islamic instruments on economic development. The findings of his paper suggest that debt contracts and leasing contracts cannot be used to finance working capital and to solve the problem of financing different growth factors it is necessary to work on developing operational models of corporate finance.

Al-Hallaq (2005) studied the role of Islamic finance on the economic growth in the Jordanian context for the period 1980-2000. Using a two stages ordinary least square method to examine the direct and the indirect effects of Islamic finance on the real GDP per capita, he found that Islamic finance have a positive but no significant effect on the economic growth.

In an Islamic economic context, Sadr *et al.* tried to examine the effect of agriculture credits give by agricultural banks on the value added in this sector in Iran for the period 1961-1996. His findings suggest that the implementation of the law of Usury-Free banking has a positive and significant effect on the value added in the agricultural sector.

More recently, Furqani and Mulyany (2009) use the Cointegration test and Vector Error Model to examine the interaction between Islam banking and economic growth in Malaysia over the period of 1997-2005. They find that Islamic bank financing is positively and significantly correlated with economic growth and capital accumulation of Malaysia. In the same line, Abduh and Omar (2012) examine the short-run and the long-run relationships between Islamic banking development and economic growth in Indonesia. Their findings demonstrate a significant relationship in short-run and long-run periods between Islamic financial development and economic growth. Nevertheless, the relationship is neither Schumpeter's supply – leading nor Robinson's demand following. It appears to be bi-directional relationship.

However, examining the Islamic finance – growth relationship for MENA region the findings of Goaied and Sassi (2010) do not support the previous studies. In fact, based on GMM estimation of a dynamic panel model and considering a sample of 16 MENA countries over the 1962-2006, Goaied and Sassi (2010) provide evidence that like conventional finance, Islamic finance does not contribute to economic growth in MENA region.

III. Research question

This paper tries to examine the relationship between financial development and economic growth in the five GCC countries (Bahrain, Kuwait, Qatar Saudi Arabia and UAE). Moreover, this study tries to compare the different effects of conventional and Islamic finance on economic growth.

IV. Islamic finance in the GCC countries

The Islamic finance industry has been developed in GCC since 1973. The first Islamic banks implanted in the GCC countries were the Kuwait Finance House (1975) and Dubai Islamic Bank (1975). The GCC region currently remains the primary financier of Islamic finance world-wide. By the end of 2011, there were more than 50 banks in GCC offering a full range of Islamic banking products and services. Today, the GCC countries are widely believed to have the most developed Islamic financial system in the world containing a large Islamic banking sector, a well-developed Islamic interbank money market, a growing Islamic securities market (Sukuk) and a sophisticated Islamic insurance market (Takaful) and operating side-by-side with a conventional-banking system.

At present, Islamic banks in the GCC have also become more diverse: large pioneers established in the 1970s co-exist with new entrants, former conventional financial institutions recently converted into fully fledged Shariah-compliant banking entities and the Islamic windows of still-conventional banking providers.

By the end of 2009, 42.9 percent of global aggregate of Islamic finance are provided by GCC states (around USD 353.2 billion)[1]. Gulf Islamic banks become part of mainstream financial intermediation in this part of the world. Saudi Arabian institutions provided the largest share of GCC total Islamic financial assets, accounting for 36.2 percent of the total. Institutions in the UAE represented 23.8 percent of the GCC total Islamic financial assets (USD 84 billion), Kuwait accounting 19.1 percent

(USD 67.6 billion), Bahrain 13 percent (USD 46.2 billion) and Qatar 7.8 percent (USD 27.5 billion)[2].

According to the International Monetary Fund (October, 2009), during the period 2002-2008, in the average, Gulf Islamic banks' assets represent 23.8 percent of the total banking assets, and the growth rate of Islamic banks' assets is over 44 percent (the growth rate of assets of the global banking system in GCC is over 22.6 percent). Table I summarizes some data for each GCC country.

V. Data and econometric methodology

In this section we empirically assess the relationship between financial development and economic growth in GCC countries over the period of 1996-2011. More precisely we try to test the following three hypotheses:

H1. Financial development contributes to economic growth in the GCC countries.

H2. Conventional finance have a positive effect on the economic growth in the GCC countries.

H3. Islamic finance have a positive effect on the economic growth in the GCC countries.

To give response to our hypotheses, the starting point of our analysis has the following form:

$$GROWTH_{it} = \alpha_i + \beta FD_{it} + \gamma Z_{it} + \varepsilon_{it}$$

$I = 1, \ldots\ldots\ldots\ldots, n\ ; t = 1, \ldots\ldots\ldots\ldots T_i.$

where $GROWTH_{it}$ is the dependent variable, which equals to real per capita GDP growth in the ith country for some time-period. FD_{it} includes variables that measure financial development; Z_{it} represents a matrix of control variables.

α_i is an unobserved country-specific effect, and ε_{it} is the error term of each observation. As discussed in the second section some theories suggest that the more developed financial system will be associated with more economic growth, i.e. these theories predict that β will be significantly greater than zero.

To estimate our model, we consider the standard cross-sectional OLS regressions. Following the subsequent literature, we also exploit the time series variation in the

	Islamic banks' assets to total assets	Growth rate of assets (Islamic banks)	Growth rate of assets[a] (banking system)	Period
Saudi Arabia[c]	35	33.4	19	2002-2008
Bahrain[b]	29.9	37.6	7.9	2000-2008
Kuwait	29	23.2	14.3	2002-2008
UAE	13.5	59.8	38.1	2002-2008
Qatar	11.5	65.8	31.9	2002-2008
GCC average	23.8	44	22.6	2002-2008

Notes: [a]Including Islamic banks; [b]including Islamic windows; [c]growth rate is calculated for the total of wholesale and retail while market share is for retail only

Table I. Market share and average annual asset growth of Islamic and conventional banks in selected countries (percent)

data; therefore the fixed effects as well as random effects models in this study. We use the Hausman test to select the appropriate estimator. If the Hausman test rejects the null hypothesis that the individual effects are not correlated with the explanatory variables, the most suitable estimation would then be the fixed-effects model. Moreover, for the robustness of our results and to remedy for the possible heteroskedasticity and serial correlation problems we consider the generalized least squares (GLS) method of estimations.

5.1 Data and measurement

For this study, data were gathered from various sources. For Islamic financial development indicators we collected data from central banks reports and Islamic banks financial statement. Other information related to financial development, control variables such macroeconomic stability, trade openness … are collected from the World Development Indicators (World Bank Database, 2012) database. However, the data are not available for a uniform period for each country. Therefore, the number of observations is expected to vary across countries leading to estimations over an unbalanced panel data.

5.1.1 Financial development indicators. Financial development is usually defined as a process that brings enhancement in quantity, quality, efficiency and efficacy of financial intermediary services (Abu-Bader and Aamer, 2008). This process involves the interaction of many activities and financial institutions. Therefore it cannot be captured by a single measure. In the purpose of testing the robustness of the findings of this paper, we employ three measures of financial development which are: private credit (CRE) equals banking institution credit to private sector as a percent of GDP. It is considered an indicator for financial intermediaries' activity (Demirgüç-Kuntm and Levine, 1999). Deposit money banks (DEPO) equals the ratio of the total assets of deposit money banks divided by GDP. It provides a measure of the overall size of banking sector. Sukuk to GDP ratio equals total Sukuk issued as a percent of GDP. Table II clarify more how we have distinct financial development indicators for conventional finance from Islamic finance.

Figures 1 and 2 describe the development of the financial sector in five GCC countries as measured accordingly by: deposit to GDP ratio and private bank credit to

Used for	Variables	Definition
Total financial system	Total deposit money bank (*ALL DEPO*)	Equals the ratio of the total assets of deposit money banks divided by GDP
	Total private credit (*ALL CRE*)	Equals total banking institution credit to private sector as a percent of GDP
Conventional financial system	Conventional deposit money bank (*CONDEPO*)	Equals the ratio of the total conventional assets of deposit money banks divided by GDP
	Private credit given by conventional banks (*CONCRE*)	Equals conventional banking institution credit to private sector as a per cent of GDP
Islamic financial system	Islamic deposit Money Bank (*ISDEPO*)	Equals the ratio of the total Islamic assets of deposit money banks divided by GDP
	Private credit given by Islamic banks (*ISCRE*)	Equals Islamic banking institution credit to private sector as a percent of GDP
	Sukuk (*Sukuk*)[a]	Equals total Sukuk issued as a percent of GDP

Note: [a]This indicators will only be used for Islamic financial development

Table II.
Financial development indicators

GDP ratio for the period 1996-2011. Both figures show that since the year 2002 deposits and credits of Islamic financial system has starting growing considerably at the expense of the conventional financial system which has seen since this date a considerable decrease as measured by deposit to GDP ratio and private credit to GDP ratio.

For the same period, Figures 3 and 4 describe the stage of development of Islamic finance in the different GCC countries as measured accordingly by to GDP ratio and Private Bank credit to GDP ratio. Bahrain seems to have the most developed Islamic financial system in the GCC region as fraction of GDP (Figure 5).

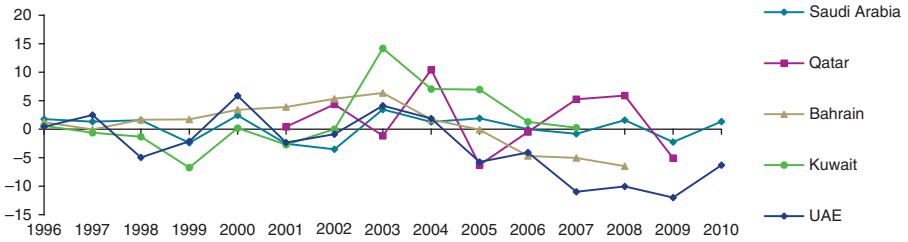

Figure 1.
Economic growth in GCC countries

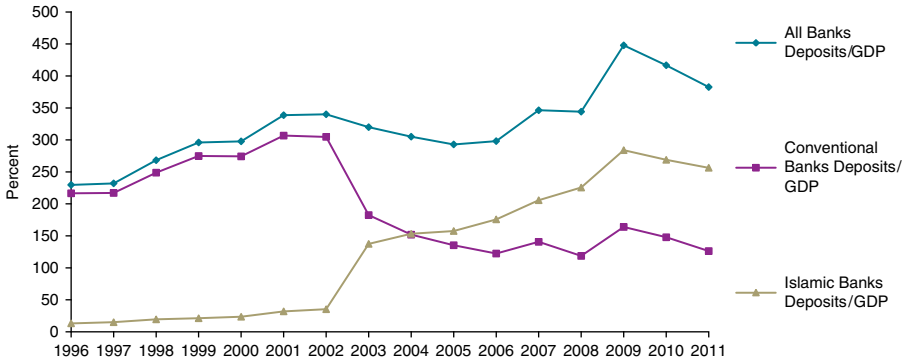

Figure 2.
Deposit/GDP

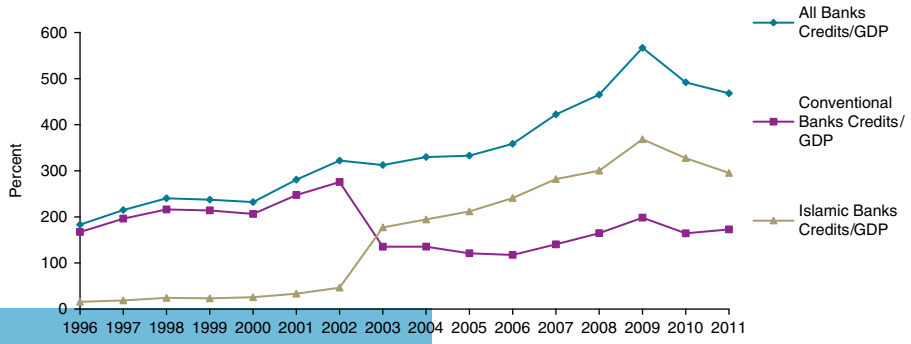

Figure 3.
Private banks credits/GDP

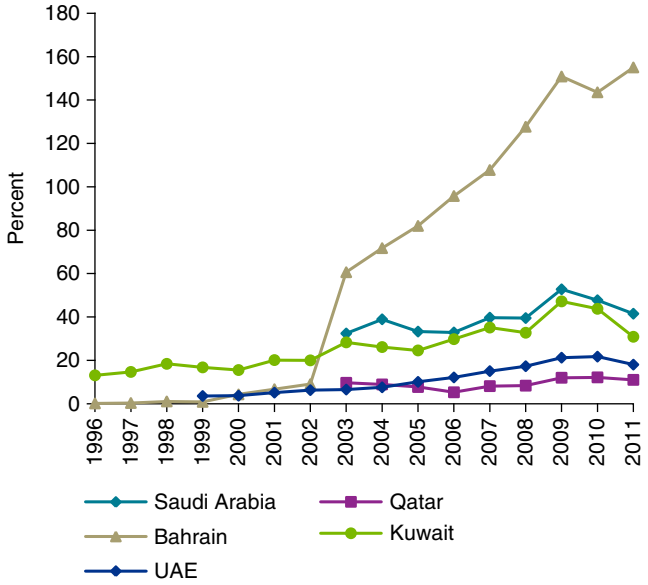

Figure 4.
Islamic banks deposits/GDP

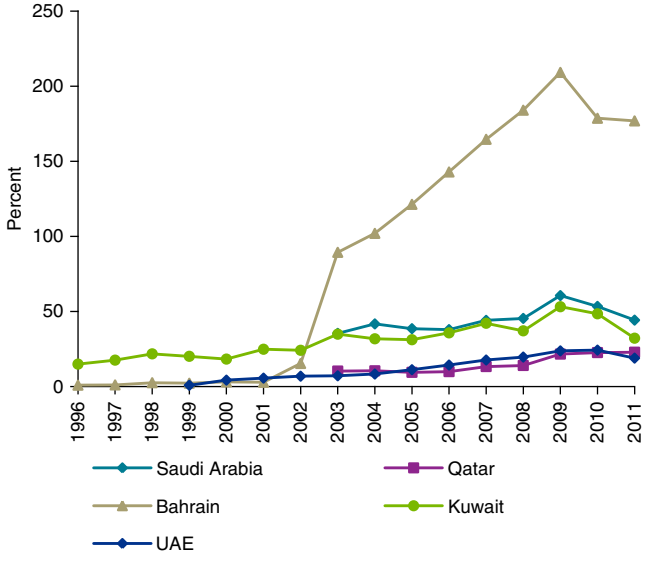

Figure 5.
Islamic private credits/GDP

5.1.2 Other variables can affect economic growth. Existing theoretical framework provides no guidance as to the choice of controls variables to include in the growth regression. However, the empirical growth literature suggests a wide range of growth determinants, "Over 50 variables have been found to be significantly correlated with growth in at least one regression" (Levine and Renelt, 1992, p. 943). Therefore to assess the strength of the independent link between financial development and economic

growth, we control for other potential determinants of economic growth in our regression. Specifically we consider the most used variables in the empirical growth theory defined as follows:

- Initial level of development (IIC): equals the logarithm of initial income per capita, which will provide evidence of any convergence effects. According to the neoclassical theory the sign of the coefficient associated to per-capita income should be negative.
- Trade openness (TO): the empirical growth literature has shown that openness to international trade is an important determinant of economic growth (Grossman and Helpman (1992) and Harrison (1996)). In fact, it is argued that openness to international trade stimulates the growth of exports and increases the availability of imports of inputs and machinery, thereby accelerating the economy's technological development and hence fosters economic growth. Our proxy for trade openness is the ratio of the sum of exports and imports over GDP. We expect a positive relationship between TO and economic growth.
- Secondary school enrollments (SSCE) which is an indicator of human capital development. We expect a positive relationship between a human development and economic growth.
- Government consumption (GC): we control for the level of GC with the ratio of GC to GDP. The economic growth literature suggests that a measure of GC used as a proxy for the level of political corruption in the country as well as for the direct effects of non-productive public expenditures and taxation (Cook and Uchida, 2003). We expect a negative relationship between GC and economic growth.

VI. Empirical results

Using the econometric methods outlined above, this section presents regression results concerning the relationship between economic growth and various measures of financial development. The results are grouped and presented in three sub-sections:

(1) results of regressions examining the effect of overall financial development on economic growth;

(2) results of regressions examining the effect of conventional finance on economic growth; and

(3) estimations results of the impact of Islamic finance on economic growth.

6.1 Financial development and economic growth

Table III presents the results of estimation examining the effect of financial development on economic growth using the OLS, panel data (FE and RE models) and GLS methods of estimations. Column 1 (Table III) traces the results when we consider the deposit money bank assets to GDP ratio (DEPO) as indicator of financial development. The results show that deposits money bank assets does not appear a significant determinant of economic growth in GCC countries. The results hold for different techniques of estimations (columns 3 and 5 Table I).

The results from columns (2, 4 and 6) show that the coefficient of domestic credit to private sector variable is not significant which is in accordance with the results when the deposit money bank is considered as indicator of financial development. That is,

	OLS estimations		Panel data estimations		Generalized least squares estimations (GLS)	
	(1) FD = Deposit credit	(2) FD = Private credit	(3) FD = Deposit credit	(4) FD = Private credit	(5) FD = Deposit credit	(6) FD = Private credit
IIC	−3.47***	−4.92	−3.47	−4.92	−3.13	−2.67
	(−1.87)	(−1.43)	(−0.72)	(−0.93)	(−1.16)	(−1.08)
ALL DEPO	−0.19		−0.19		0.030	
	(−1.09)		(−1.17)		(0.41)	
ALL CRE		−0.010		−0.01		0.041
		(−0.14)		(−0.10)		(1.37)
GC	0.07	−0.36	0.07	−0.36	−0.14	−0.19
	(0.16)	(−1.46)	(0.16)	(−1.28)	(−0.58)	(−0.95)
TO	−0.05	−0.04	−0.05	−0.04	−0.009	−0.06
	(−1.40)	(−1.13)	(−1.16)	(−0.83)	(−0.19)	(−1.05)
SSCE	0.24	0.03	0.24	0.03	0.079	0.087
	(1.17)	(0.27)	(0.97)	(0.19)	(−0.76)	(−0.93)
Cst	2.94	5.38	2.94	5.38	3.44	4.34
	(0.80)	(1.74)	(0.61)	(1.22)	(1.27)	(1.51)
R^2	37%	40%				
Hausman test			0.58	0.49		

Notes: *t*-statistics for the coefficient are in parenthesis. Total deposit money bank (ALL DEPO), equals the ratio of the total assets of deposit money banks divided by GDP; total private credit (ALL CRE), equals total banking institution credit to private sector as a percent of GDP; initial level of development (IIC), equals the logarithm of initial income per capita; trade openness (TO), measured by the ratio of the sum of exports and imports over GDP; government consumption (GC), measured by the ratio of government consumption to GDP; secondary school enrolments (SSCE), is an indicator of human capital development. *, **, ***Significant at 1, 5 and 10 percent, respectively

Table III.
Financial development and economic growth

our mains finding show that the overall financial system is unimportant to economic growth in GCC countries.

In summary, we find that the results are not consistent with the models that predict that well-functioning financial systems ease information and transaction costs and there by enhance resource allocation and economic growth. Moreover, financial development is not relevant for economic growth in GCC countries. These counter-intuitive results are particularly surprising, since the most empirical work have typically found a positive nexus between financial development and economic growth. However, these counter-intuitive results may be reflecting the inadequacy of the linear finance-growth relationship (Khan and Senhadji, 2000). Berthélemy and Varoudakis (1998) have been confronted to this paradox. They postulate that the relationship between growth and depth may involve a "threshold" effect.

Another explanation to these counter-intuitive results may be the high degree of financial repression on GCC countries. As stressed by many papers, the financial repression seems to have a harmful influence on the growth, therefore accompanied with an unadapted legal and macroeconomic environment; it is possible that the financial development generates a financial instability.

6.2 Conventional finance and economic growth

Table IV reports the results of estimation analyzing the effect of Conventional finance on economic growth. Tow indicators of conventional finance are considered, deposit money bank assets to GDP and private credit to GDP ratio. The results show that both the indicators of conventional finance appear no significant determinants of economic growth when OLS regressions are considered (columns 1 and 2 Table IV). When we consider the Panel data and GLS method of estimations, our findings show that the two indicators of conventional finance development affect negatively and significantly economic growth. As shown with overall financial development, conventional finance is irrelevant or even harmful for economic growth in GCC countries. What about Islamic finance?

Therefore, in the next step of our study we will examine the Islamic finance-economic growth relationship.

6.3 Islamic finance and economic growth

Column 1 (Table V) presents the results when we consider Islamic deposit to GDP ratio as indicator of Islamic finance development. Our main findings show that the Islamic deposit to GDP ratio has a positive and a significant effect on economic growth. Similar results are observed when we consider the private credit to GDP ratio as an indicator of Islamic Finance development. In fact, an increase in the private credit to GDP ratio by one point increases economic growth by 0.05 percentage points.

Considering the panel data and GLS estimations methods (Table VI), the first interesting results are that in term of significance the results are consistent with those of our findings with OLS method of estimation. Indeed, while the both indicators of Islamic banking development are statistically significant with the excepted positive sign, Sukuk market does not appear a significant determinant of economic growth (column 3 Table VI).

In summary our findings stress that while Islamic banking sector development appears a relevant determinant of economic growth in GCC countries, the Sukuk markets do not contribute to economic growth. These results may be explained by the

	OLS estimations		Panel data estimations			Generalized least squares (GLS)	
	(1) FD = CONDEPO	(2) FD = CONCRE	(3) FD = CONDEPO	(4) FD = CONCRE	(5) FD = Deposit credit	(6) FD = Private credit
IIC	4.56	1.11	4.56	1.35	4.72**	−0.62
	(1.24)	(0.27)	(1.36)	(0.09)	(1.96)	(−0.22)
CONDEPO	−0.04		−0.04***		−0.042**	
	(−1.63)		(−1.71)		(−2.46)	
CONCRE		−0.003		−0.07***		−0.009***
		(−0.16)		(−2.05)		(−1.84)
GC	0.41	0.24	0.41	0.12	−0.34***	0.020
	(1.37)	(0.74)	(1.60)	(0.41)	(−1.78)	(0.09)
TO	0.08***	0.06	0.08**	0.001	0.098*	0.061
	(1.92)	(0.80)	(2.04)	(0.02)	(3.29)	(1.08)
SSCE	−0.12	−0.07	−0.12	−0.28***	−0.083	0.024
	(−1.11)	(−0.57)	(−1.24)	(−1.77)	(−1.26)	(0.27)
Cst	−4.33	−1.11	−8.33	14.11	−5.94**	−1.39
	(−1.27)	(−0.33)	(−1.35)	(0.09)	(−2.10)	(−0.05)
R^2	57%	55%				
Hausman test			0.01(FE)	0.06(RE)		

Notes: *t*-statistics for the coefficient are in parenthesis. Conventional deposit money bank (CONDEPO), equals the ratio of the total conventional assets of deposit money banks divided by GDP; private credit given by conventional banks (CONCRE), equals conventional banking institution credit to private sector as a percent of GDP; initial level of development (IIC), equals the logarithm of initial income per capita; trade openness (TO), measured by the ratio of the sum of exports and imports over GDP; government consumption (GC), measured by the ratio of government consumption to GDP; secondary school enrolments (SSCE), is an indicator of human capital development. *,**,***Significant at 1, 5 and 10 percent, respectively

Table IV.
Conventional finance and economic growth

	(1) IF = Islamic deposit	(2) IF = Islamic credit	(3) IF = Sukuk
IIC	4.39	3.59	−5.69***
	(1.23)	(0.94)	(−2.10)
ISDEPO	0.05***		
	(1.80)		
ISCRE		0.05*	
		(3.41)	
Sukuk			0.34
			(0.55)
GC	0.34	0.38	−0.83*
	(1.26)	(1.31)	(−3.29)
TO	0.06***	0.08***	0.006
	(1.80)	(2.06)	(0.10)
SSCE	−0.16	−0.15	−0.03
	(−1.34)	(−1.17)	(−0.30)
Cst	−4.94	−3.75	−6.06***
	(−1.22)	(−1.05)	(−1.95)
R^2	46%	54%	44%

Notes: *t*-statistics for the coefficient are in parenthesis. Islamic deposit money bank (ISDEPO), equals the ratio of the total Islamic assets of deposit money banks divided by GDP; Private credit given by Islamic banks (ISCRE), equals Islamic banking institution credit to private sector as a percent of GDP; Sukuk (Sukuk), equals total Sukuk issued as a percent of GDP; initial level of development (IIC), equals the logarithm of initial income per capita; trade openness (TO), measured by the ratio of the sum of exports and imports over GDP; government consumption (GC), measured by the ratio of government consumption to GDP, secondary school enrolments (SSCE), is an indicator of human capital development. *,**,***Significant at 1, 5 and 10 percent, respectively

Table V.
Islamic finance and economic growth: OLS estimations

fact that Sukuk markets are new and generally small capital market in the GCC countries. Moreover, Sukuk markets in GCC countries do not reach a threshold level that will enable them to contribute to economic growth.

Robustness test. As an extension of our tests we have examined if the positive effect of Islamic banking development on economic growth can due to the oil rents. In fact, several reports have stressed that the increase of economic growth in GCC countries in last year's is due to increasing oil prices. Therefore, we have introduced an oil rents[3] variable in our regression models as a control variable.

The results from Tables (VII and VIII) show that while the Sukuk markets remain to be insignificant, both indicators of Islamic banking development are statistically significant with the positive sign. The coefficients on Islamic banking variables are statistically significant and similar to those of Tables (V and VI). While it is no significant in all regressions, the oil rents variable enters most regressions significantly with the expected positive sign. The results hold for different techniques of estimations.

Turning to the four macro-economic variables (Tables VII and VIII) we find that the coefficients of the initial level of development (IIC) have an expected significant negative sign in most regressions. This result support Barro's (1991) proposition that poor countries tend to grow more rapidly than rich countries. SSCE rate and GC does not appear a significant determinant of economic growth. While they are not significant in all regressions, trade openness to GDP ratios enters most regressions significantly with the positive sign which confirm the theoretical expectations.

	Panel data estimations			Generalized least squares (GLS)		
	(1) IF = Islamic deposit	(2) IF = Islamic credit	(3) IF = Sukuk	(4) IF = Islamic deposit	(5) IF = Islamic credit	(6) IF = Sukuk
IIC	4.39	3.59	5.69	5.07**	2.90	5.96
	(1.33)	(1.03)	(1.20)	(2.33)	(0.88)	(1.31)
ISDEPO	0.05***			0.053*		
	(1.71)			(2.70)		
ISCRE		0.05**			0.068**	
		(2.03)			(2.36)	
Sukuk			0.34			0.46
			(0.58)			(1.22)
GC	0.34	0.38	−0.83***	0.31***	0.18	0.86***
	(1.43)	(1.47)	(−1.86)	(1.73)	(0.71)	(1.94)
TO	0.06***	0.08***	0.006	0.087*	0.10**	−0.022
	(1.74)	(1.89)	(0.10)	(3.33)	(2.50)	(−0.45)
SSCE	−0.16	−0.15	−0.03	−0.13***	−0.06	−0.014
	(−1.58)	(−1.36)	(−0.21)	(−1.91)	(−0.65)	(−0.13)
Cst	−4.9	−8.75	−6.06	−5.23**	−3.18	−6.60
	(−1.26)	(−1.05)	(−1.21)	(−2.26)	(−1.13)	(−1.29)
Hausman test	0.22	0.24	0.00			
	(RE)	(RE)	(FE)			

Notes: *t*-statistics for the coefficient are in parenthesis. Islamic deposit money bank (ISDEPO), equals the ratio of the total Islamic assets of deposit money banks divided by GDP; private credit given by Islamic banks (ISCRE), equals Islamic banking institution credit to private sector as a percent of GDP; Sukuk (Sukuk), equals total Sukuk issued as a percent of GDP; initial level of development (IIC), equals the logarithm of initial income per capita; trade openness (TO), measured by the ratio of the sum of exports and imports over GDP; government consumption (GC), measured by the ratio of government consumption to GDP; secondary school enrolments (SSCE), is an indicator of human capital development. *,**,***Significant at 1, 5 and 10 percent, respectively

Table VI.
Islamic finance and economic growth: panel data and GLS estimations

	(1) IF = Islamic deposit	(2) IF = Islamic credit	(3) IF = Sukuk
IIC	1.39	−0.47***	−3.33**
	(0.31)	(−1.79)	(−2.23)
ISDEPO	0.07**		
	(2.35)		
ISCRE		0.06*	
		(3.53)	
Sukuk			0.20
			(0.46)
GC	0.18	0.37	0.20
	(0.61)	(1.20)	(0.50)
TO	−0.001	0.15	−0.11
	(−0.03)	(0.48)	(−1.01)
SSCE	−0.09	0.007	0.11
	(−0.73)	(0.10)	(0.64)
OIL	2.14**	0.55	1.01
	(2.30)	(1.46)	(1.73)
Cst	−6.04	10.10	4.01
	(−0.13)	(0.19)	(0.70)
R^2	40%	52%	57%

Notes: *t*-statistics for the coefficient are in parenthesis. Islamic deposit money bank (ISDEPO), equals the ratio of the total Islamic assets of deposit money banks divided by GDP; private credit given by Islamic banks (ISCRE), equals Islamic banking institution credit to private sector as a percent of GDP; Sukuk (Sukuk), equals total Sukuk issued as a percent of GDP; initial level of development (IIC), equals the logarithm of initial income per capita; trade openness (TO), measured by the ratio of the sum of exports and imports over GDP; government consumption (GC), measured by the ratio of government consumption to GDP; secondary school enrolments (SSCE), is an indicator of human capital development. *,**,***Significant at 1, 5 and 10 percent, respectively

Table VII.
Islamic finance, oil rents and economic growth: OLS estimations

VII. Conclusion

The purpose of this study is to investigate the effect of financial development on economic growth in GCC countries. Specifically the paper tries to examine the effect of overall financial system development on economic growth, and compares the effect of Islamic finance development and conventional finance development on the economic growth for five GCC countries (Bahrain, Kuwait, Qatar Saudi Arabia and UAE) observed for the period 1996-2011, using the OLS, panel data and GLS techniques of estimations. Our findings reveal that: first, the overall financial system development does not affect the economic growth of GCC countries. Second, conventional finance development affect negatively and significantly the economic growth of GCC countries. Third, while Islamic banking sector development (measured by Islamic deposit to GDP ratio and Islamic private credit to GDP ratio) is a relevant determinant of economic growth in GCC countries, the Sukuk markets do not contribute to economic growth since that Sukuk markets represent a small share of capital market in GCC countries and had not reached a threshold level that will enable them to contribute to the economic growth.

As an extension of our tests we have examined if the positive effect of Islamic banking development on economic growth is affected by the oil rents since that, several reports have stressed that the increase of economic growth in GCC countries in last year's is due to increasing oil prices. Therefore, we have introduced an oil rents variable

Table VIII.
Islamic finance, oil rents and economic growth: panel data estimations

	Panel data estimations			Generalized least squares (GLS)		
	(1) IF = Islamic deposit	(2) IF = Islamic credit	(3) IF = Sukuk	(4) IF = Islamic deposit	(5) IF = Islamic credit	(6) IF = Sukuk
IIC	1.39	−0.47	−3.33*	2.75	−2.26***	2.07
	(0.31)	(−0.10)	− (3.02)	(0.62)	(−1.80)	(1.49)
ISDEPO	0.07**			0.061*		
	(2.01)			(2.98)		
ISCRE		0.06**			0.062*	
		(1.97)			(2.87)	
Sukuk			0.20			0.79
			(0.34)			(1.14)
GC	0.18	0.15	0.20	0.15	−0.047	0.72
	(0.63)	(0.50)	(0.32)	(0.51)	(−0.18)	(0.97)
TO	−0.001	0.007	−0.11	0.049	−0.009	−0.032
	(−0.03)	(0.10)	(−1.02)	(0.63)	(−0.16)	(−0.40)
SSCE	−0.09	−0.07	0.11	−0.071	0.008	−0.47**
	(−0.81)	(−0.56)	(0.59)	(−0.68)	(0.09)	(−2.52)
OIL	0.15**	0.95***	1.01***	3.91	3.52**	−3.70
	(2.10)	(1.80)	(1.79)	(0.58)	(1.81)	(−1.60)
Cst	−6.04	10.10	4.01	−2.80	2.32	−1.14
	(−0.12)	(0.19)	(0.42)	(−0.55)	(0.64)	(−1.07)
Hausman test	0.54	0.45	0.88			
	(RE)	(RE)	(RE)			

Notes: *t*-statistics for the coefficient are in parenthesis. Islamic deposit money bank (ISDEPO), equals the ratio of the total Islamic assets of deposit money banks divided by GDP; private credit given by Islamic banks (ISCRE), equals Islamic banking institution credit to private sector as a percent of GDP; Sukuk (Sukuk), equals total Sukuk issued as a percent of GDP; initial level of development (IIC), equals the logarithm of initial income per capita; trade openness (TO), measured by the ratio of the sum of exports and imports over GDP; government consumption (GC), measured by the ratio of government consumption to GDP; secondary school enrolments (SSCE), is an indicator of human capital development. *,**,***Significant at 1, 5 and 10 per cent, respectively

in our regression models as a control variable. The results obtained have supported our main finding that Islamic banking development affects positively and significantly the economic growth of GCC countries. As well, while it is no significant in all regressions, the oil rents variable enters most regressions significantly with the expected positive sign.

In general, our empirical results demonstrate strong evidence that Islamic banks appear a relevant determinant of economic growth in GCC countries. Based on these results, we can conclude that Islamic finance did better than conventional finance. As well, Islamic finance is superior system that can promote a better economic development. These results suggest the need of better reforms for Islamic financial system and to improve the efficiency of the Islamic financial system to stimulate investment, saving and, as a result, long-term economic growth.

Notes

1. The banker report 2009.
2. Idem.
3. Oil rents are the difference between the value of crude oil production at world prices and total costs of production.

References

Abduh, M. and Omar, M.A. (2012), "Islamic banking and economic growth: the Indonesian experience", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 5 No. 4, pp. 35-47.

Abu-Bader, S. and Aamer, A.S. (2008), "Financial development and economic growth: empirical evidence from six MENA countries", *Review of Development Economics*, Vol. 12 No. 1, pp. 803-817.

Ahmed, H. (2005), "Islamic law, adaptability and financial development", *Islamic Economic Studies*, Vol. 13 No. 2, pp. 1-15.

Arellano, M. and Bond, S. (1991), "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations", *Review of Economic Studies*, Vol. 58 No. 2, pp. 277-297.

Arellano, M. and Bover, O. (1995), "Another look at the instrumental-variable estimation of error components models", *Journal of Econometrics*, Vol. 68 No. 1, pp. 29-52.

Atje, R. and Jovanovic, B. (1993), "Stock markets and development", *European Economic Review*, Vol. 37 No. 2, pp. 632-640.

Barro, R.J. (1991), "Economic growth in a cross section of countries", *The Quarterly Journal of Economics*, Vol. 106 No. 2, pp. 407-443.

Beck, T. and Levine, R. (2004), "Stock markets, banks and growth: panel evidence", *Journal of Banking and Finance*, Vol. 28 No. 3, pp. 423-442.

Beck, T., Demirguç-Kunt, A. and Levine, R. (2000), "A new database on financial development and structure", *World Bank Economic Review*, Vol. 14, pp. 597-605.

Ben Naceur, S. and Ghazouani, S. (2007), "Stocks markets, banks, and economic growth: empirical evidence from the MENA region", *Research in International Business and Finance*, Vol. 21 No. 2, pp. 297-315.

Berthélemy, J. and Varoudakis, A. (1998), "Economic growth convergence clubs and the role of financial development", *Oxford Economic Papers*, Vol. 48, pp. 70-84.

Cook, P. and Uchida, Y. (2003), "Privatization and economic growth in developing countries", *Journal of Development Studies*, Vol. 39 No. 6, pp. 121-154.

Demirgüç-Kuntm, A. and Levine, R. (1999), "Bank-based and market-based financial systems: cross-country comparisons", Policy Research Working Paper Series No. 2143, World Bank.

Furqani, H. and Mulyany, R. (2009), "Islamic banking and economic growth: evidence from Malaysia", *Journal of Economic Cooperation and Development*, Vol. 30 No. 2, pp. 59-74.

Ghirmay, T. (2005), "Financial development and economic growth in sub-Sahran African countries: evidence from time series analysis", *African Development Bank*, Vol. 16 No. 3, pp. 415-432.

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

Goaied, M. and Sassi, S. (2010), "Financial development and economic growth in the MENA Region: what about Islamic banking development", working paper, Institut des Hautes Etudes Commerciales, Carthage.

Grossman, G.M. and Helpman, E. (1992), *Innovation and Growth in the Global Economy*, MIT Press, Cambridge, MA and London.

Gurley, J.G. and Shaw, E. (1955), "Financial aspects of economic development", *The American Economic Review*, Vol. 45 No. 3, pp. 515-538.

Hasan, I., Wachtel, P. and Zhou, M. (2009), "Institutional development, financial deepening and economic growth: evidence from china", *Journal of Banking and Finance*, Vol. 33 No. 1, pp. 157-170.

Holtz-Eakin, D., Newey, W. and Rosen, H.S. (1988), "Estimating vector autoregressions with panel data", *Econometrica*, Vol. 56 No. 6, pp. 1371-1395.

Hondroyiannis, G., Lolos, S. and Papapetrou, E. (2005), "Financial markets and economic growth in Greece, 1986-1999", *Journal of International Financial Markets, Institutions and Money*, Vol. 15 No. 2, pp. 173-188.

Harrison, A. (1996), "Openness and growth: a time-series, cross-country analysis for developing countries", *Journal of Development Economics*, Vol. 48 No. 2, pp. 419-447.

Kar, M., Nazlıoğlu, Ş. and Ağır, H. (2011), "Financial development and economic growth nexus in the MENA countries: bootstrap panel granger causality analysis", *Economic Modelling*, Vol. 28 No. 1, pp. 685-693.

Khan, M. and Senhadji, S. (2000), "Threshold effects in the relationship between inflation and growth", Working Paper No. 00/110, IMF.

King, R.G. and Levine, R. (1993a), "Finance and growth: Schumpeter might be right", *Quarterly Journal of Economics*, Vol. 108 No. 3, pp. 717-737.

King, R.G. and Levine, R. (1993b), "Finance, entrepreneurship, and growth: theory and evidence", *Journal of Monetary Economics*, Vol. 32 No. 3, pp. 513-542.

Levine, R. (1997), "Financial development and economic growth: views and agenda", *Journal of Economic Literature*, Vol. 2 No. 2, pp. 688-726.

Levine, R. (1998), "The legal environments, banks, and long-run economic growth", *Journal of Money, Credit and Banking*, Vol. 30 No. 3, pp. 596-613.

Levine, R. (2005), "Finance and growth: theory and evidence", in Aghion, P. and Durlauf, S. (Eds), *Handbook of Economic Growth*, 1st ed., Volume 1, Chapter 12, Elsevier, pp. 865-934.

Levine, R. (1999), "Law, finance, and economic growth", *Journal of Financial Intermediation*, Vol. 8 No. 1, pp. 8-35.

Levine, R. and Renelt, D. (1992), "A sensitively analysis of cross-country growth regressions", *American Economic Review*, Vol. 82 No. 4, pp. 942-963.

Levine, R. and Zervos, S. (1998), "Stock markets, banks, and economic growth", *American Economic Review*, Vol. 88 No. 2, pp. 537-558.

Levine, R., Loayza, N. and Beck, T. (2000), "Financial intermediation and growth: causality and causes", *Journal of Monetary Economics*, Vol. 46 No. 1, pp. 31-77.

McKinnon, R.I. (1973), *Money and Capital in Economic Development*, Brookings Institution Press.

Robinson, J. (1952), "The generalization of the general theory", *The Rate of Interest and Other Essays*, Macmillan, London.

Roubini, N. and Sala-I-Martin, X. (1992), "Financial repression and economic growth", *Journal of Development Economics*, Vol. 39 No. 1, pp. 5-30.

Rousseau, P.L. and Wachtel, P. (2000), "Equity market and growth: cross country evidence on timing and outcomes 1980-1995", *Journal of Banking and Finance*, Vol. 24 No. 4, pp. 1933-1957.

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

Thangavelu, S.M. and James, A.B.J. (2004), "Financial development and economic growth in Australia: an empirical analysis", *Empirical Economics*, Vol. 29 No. 2, pp. 247-260.

World Bank Database (2012), "World development indicators".

Further reading

Allen, F. and Gale, D. (1999), "Diversity of opinion and financing of new technologies", *Journal of Financial Intermediation*, Vol. 8 Nos 1-2, pp. 68-89.

Apergis, N., Filippidis, I. and Economidou, C. (2007), "Financial deepening and economic growth linkages: a panel data analysis", *Review of World Economics*, Vol. 143 No. 1, pp. 179-198.

Beck, T., Levine, R. and Norman, L. (2000b), "Finance and the sources of growth", *Journal of Financial Economics*, Vol. 58 Nos 1-2, pp. 261-300.

Bencivenga, V.R., Smith, B.D. and Starr, R.M. (1995), "Transactions costs, technological choice, and endogenous growth", *Journal of Economic Theory*, Vol. 67 No. 1, pp. 53-177.

Bhattacharya, R. and Wolde, H. (2010), "Constraints on growth in the MENA region", Working Paper No. 10/30, IMF, Washington, DC.

Blundell, R. and Bond, S. (1998), "Initial conditions and moment restrictions in dynamic panel data models", *Journal of Econometrics*, Vol. 87 No. 1, pp. 115-143.

Boot, A.W.A. and Thakor, A. (1997), "Financial system architecture", *Review of Financial Studies*, Vol. 10 No. 3, pp. 693-733.

Caner, M. and Hansen, B.E. (2004), "Instrumental variable estimation of a threshold model", *Econometric Theory*, Vol. 20 No. 5, pp. 813-843.

Christopoulos, D.K. and Tsionas, E.G. (2004), "Financial development and economic growth: evidence from panel unit root and cointegration tests", *Journal of Development Economics*, Vol. 73 No. 1, pp. 55-74.

Deiddaa, L. and Fattouh, B. (2002), "Non-linearity between finance and growth", *Economics Letters*, Vol. 74 No. 3, pp. 339-345.

Demetriades, P. and Law, S.H. (2006), "Finance, institutions and economic development", *International Journal of Finance and Economics*, Vol. 11 No. 3, pp. 245-260.

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

Greenwood, J. and Smith, B.D. (1996), "Financial markets in development, and the development of financial markets", *Journal of Economic Dynamics and Control*, Vol. 21 No. 1, pp. 145-181.

Habib, A. (2005), "The Islamic financial system and economic growth: an assessment", in Iqbal, M. and Ausaf, A. (Eds), *Islamic Finance and Economic Development*, Palgrave Macmillan, Chipenham and Eastbourn, pp. 29-48.

Hassan, M.K., Sanchez, B. and Yu, J.S. (2011), "Financial development and economic growth: new evidence from panel data", *The Quarterly Review of Economics and Finance*, Vol. 51 No. 1, pp. 88-104.

Huang, H.-C., Lin, S.-C., Kim, D.-H. and Yeh, C.-C. (2010), "Inflation and the finance-growth nexus", *Economic Modelling*, Vol. 27 No. 1, pp. 229-236.

Kazem, S.S. (2000), "Estimating the role of credits of agricultural banks on value added in the agricultural sector in Iran", in Agricultural Bank (Ed.), *Summery Collection of Research Plans in the Agricultural Bank*, Tarbiat Modarres University Press, Tehran.

Loayza, N.V. and Ranciere, R. (2006), "Financial development, financial fragility, and growth", *Journal of Money, Credit and Banking*, Vol. 38 No. 3, pp. 1051-1076.

Lucas, R.E. (1988), "On the mechanisms of economic development", *Journal of Monetary Economics*, Vol. 22 No. 1, pp. 3-42.

Merton, R.C. and Bodie, Z. (1995), "A conceptual framework for analyzing the financial environment", in Crane, D.B., Froot, K.A., Mason, S.P., Perold, A., Merton, R.C., Bodie, Z., Sirri, E.R. and Tufano, P. (Eds), *The Global Financial System: A Functional Perspective*, Harvard Business School Press, Boston, pp. 3-31.

Nabli, M.K. and Véganzonès-Varoudakis, M.-A. (2003), "Reforms and growth in the MENA countries: new empirical evidences", Working Paper Series No. 36, Middle East and North Africa, Washington, DC.

Pagano, M. (1993), "Financial markets and growth: an overview", *European Economic Review*, Vol. 37 Nos 2-3, pp. 613-622.

Pedroni, P. (1999), "Critical values for cointegration tests in heterogeneous panels with multiple regressors", *Oxford Bulletin of Economics and Statistics*, Vol. 61 No. 1, pp. 653-670.

Pesaran, M.H., Yongcheol, S. and Ron, P.S. (1999), "Pooled mean group estimation of dynamic heterogeneous panels", *Journal of the American Statistical Association*, Vol. 94 No. 446, pp. 621-634.

Rioja, F. and Valev, N. (2004), "Does one size fit all? A reexamination of the finance and growth relationship", *Journal of Development Economics*, Vol. 74 No. 2, pp. 429-447.

Saeid, A. (2005), "The role of Islamic banks in economic growth: the case of Jordan", in Iqbal, M. and Ausaf, A. (Eds), *Islamic Finance and Economic Development*, Palgrave Macmillan, Chipenham and Eastbourn.

Shen, C.-H. and Lee, C.-C. (2006), "Same financial development yet different economic growth: why?", *Journal of Money, Credit and Banking*, Vol. 38 No. 7, pp. 1907-1944.

Corresponding author
Dr Rihab Grassa can be contacted at: rihab_grassa@hotmail.fr