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Islamic finance and economic growth:
The Malaysian case

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Abstract - Does Islamic Finance influence growth? The aim of this paper is to investigate empirically the impact of the Islamic Bank Financing on Malaysia's economic growth over the period 2000Q1–2011Q4. The hypotheses addressed in this study are discussed within the framework of Demirgüç-Kunt & Levine/Chapra approach and the analysis of the Islamic Banking system. A neoclassical production function augmented by some indicators of the Islamic bank financing has been the theoretical framework of our empirical investigations. In the short-run, the estimation of an error-correction model of the production in Malaysia has shown that the various indicators of Islamic financing growth elasticity vary between 0.14 and 0.20. In the long run, this elasticity is estimated to be around 0.35.

Keywords: Islamic finance, economic growth, Malaysia, VAR, ECM
JEL: C13, C51, G21, O49.

Introduction

The effect of Islamic banks' development on economic growth remains ambiguous at both the empirical and the theoretical levels. Theoretically, the analytical contributions of Chapra (1988 and 2003) and Hasan & Dridi (2010) have postulated that the integration of the Islamic legal framework (said *Shariah*) in finance and banking has enhanced the improvement of the economic activity. These authors, along with many others, such as Tag El-Din (2008) and Khan and Bashar (2008), have recommended the implementation and generalization of the Islamic finance principles. Indeed, they have considered these principles as necessary for the sake of improving contractual equity and economic efficiency. Conversely, Bjorvatn (1998), Kuran (1995 and 2004) as well as Yusof and Wilson (2005) have highlighted the fact that the Islamic finance principles have handicapped the development of the economic activity. Other economists such as Darrat (1988), Yousefi et *al.* (1997), Hasan (2008), Furqani and Mulyany (2009) and Ammar-Ayachi et *al.* (2011) have reached the result that the impact of the Islamic finance on the economic activity has turned out to be ambiguous and that there are no proofs of the superiority of the interest-free financial system over of the interest-based one.

In this paper we propose that the development of the Islamic banks, which are supposed to meet and respect a particular legal framework (in particular the prohibition of *riba* and the integration of PLS[1] principle), does contribute to improving the economic activity. This research proposal is based on the works of Chapra (1988 and 2008), Tag El-Din (2008) and Khan and Bashar (2008). The first author thinks that the presence of the Islamic finance in the financial system allows more prosperous activity and sustainable growth through the reduction of poverty, which, according to him, is a necessary step for economic development. As for the second author, he considers that unlike conventional finance, the Islamic finance principles allow a fairer distribution of risks. Regarding Khan and Bashar (2008), they consider that implementing the risk sharing principle ensures economic efficiency.

The estimation of the impact of Islamic banking activity development has been the subject of very few empirical studies. Most of them compare the effectiveness of the interest-free monetary and financial system to the interest-based one. In this respect, and by studying the Tunisian case over the period of 1960 to 1984, Darrat (1988) has examined the hypothesis stipulating that the financial and banking systems become more stable as the interest is paralyzed. He has come to the conclusion that the interest-free monetary system allows for more stability of the money velocity compared to the interest-based one. Furthermore, he has shown that the demand for money is structurally more stable in the absence of interest. He has also concluded that only the monetary and financial assets that do not bear interest may be used by the Tunisian

monetary authorities as an appropriate intermediate targets to reach its medium-term objectives.

Nine years later, Yousefi *et al.* (1997) published a paper in the same journal in which Darrat (1988) submitted his study, criticizing his choice of Tunisia as a study case despite the fact that this country has no significant experience in Islamic banking.[2] However, they have proposed to replicate the study conducted by Darrat (1988) to the Iranian case over the period from 1967 to 1992 because, according to them, Iran has a more solid experience than Tunisia in terms of Islamic banking. Their empirical findings partially confirm the results of Darrat (1988) and, consequently, do not allow the validation of the hypothesis assuming the superiority of the Islamic banks.

Charles *et al.* (2011) have tested the hypothesis stating that Islamic finance is more resilient to shocks than the conventional finance. To test this hypothesis, they have examined the question of whether the Islamic stock indices are more or less affected by the changes in the volatility regimes than the conventional stock indices. They have found that the Islamic and the conventional indices were affected to the same degree by the volatility changes, and discovered no empirical evidence causing them to validate the hypothesis of the Islamic finance superiority. During their presentation in the Second Symposium of Computational Economics and Finance, Arouri *et al.* (2012) found that Islamic finance helps save investors from financial crises by comparing some Islamic stock indices to conventional ones.

Using cointegration and Granger causality tests, Furqani and Mulyany (2009) were the first researchers to examine the empirical relationship between Islamic finance and economic growth in Malaysia over the period from 1997Q1 to 2005Q1. They have found that there is no causality between Islamic bank financing and economic growth in the short run. Nevertheless, they have found that the Islamic bank finance influences the short-term investment level positively. In the long term, they have found a reciprocal causal relationship between Islamic-bank financing and investments. As for the relationship between economic growth and Islamic finance development, the authors have revealed the existence of a "Robinsonian" long-term relationship. That is to say that the development of Islamic finance follows the development of the economic activities: the economic growth creates a demand for Islamic financial intermediation. Although the study of Furqani and Mulyany (2009) has permitted the explanation of the relationship between Islamic finance and economic growth, it remains based on limited observations, which are not adequate in econometrics of non-stationary variables.

By studying the impact of Islamic financial development on the economic growth in 15 countries over the period of 1990 to 2009 on a quarterly basis, Ammar et *al.* (2011) have discovered a prevalence of not only a weak correlation between economic growth and the variables measuring financial development but also a negative impact of Islamic finance on economic growth. Their results might be due to the use of inadequate indicators to measure the development of Islamic finance.[3]

In this respect, this paper provides empirical evidence of the Islamic finance development effect on the Malaysian economic growth over the period 2000Q1–2011Q4. We have chosen to study the case of Malaysia for four reasons. Firstly, and since its independence, it is one of the first countries to have made efforts to reform its financial systems in order to integrate Islamic finance. Secondly, the Malaysian financial system is a mixed system characterized by the simultaneous presence of Islamic and non-Islamic financial institutions. This allows us to obtain more indicators of Islamic financial development. Thirdly, Malaysia is the country where Islamic financial engineering is developed most. Finally, and relative to other countries that have integrated Islamic finance, Malaysia is one of the few countries having a powerful statistical system. This enables us to solve the problem of data unavailability characterizing the developing countries.

The contribution of our paper is twofold. On the one hand, it provides a further contribution to the rare empirical literature relative to the impact of Islamic finance on growth by determining the elasticity of economic growth with respect to Islamic bank financing in Malaysia. On the other hand, and to our knowledge, our paper remains the first to correctly resort to the Error-Correction Model in determining this elasticity.[4]

The rest of the paper is organized as follows. Section 2 analyzes the Malaysian banking system reforms. Section 3 analyzes the relationship between Islamic finance and economic activity. Section 4 presents the model's theoretical specification. Section 5 outlines the econometric results and their economic and statistical interpretation. Finally, section 6 highlights the major conclusions to be drawn.

## 2. The Malaysian banking system reforms

After their independence, countries with Moslem traditions discovered that Islamic finance allows them to distance themselves from the colonial period. The oil shocks represented the main technical element that enticed the concretization of the *Shariah* compliant finance (Martens, 2001). Respect of the precepts of Islam was the slogan of this new branch of finance. During the 1950s, and while preparing for its independence, the new Malaysian government had supported the idea of creating some investment institutions that met the needs of the Moslem majority in the Malaysian society. In 1956, the Malaysian government created *Tabung Haji*, a financial institution sponsored and supervised by the state. Its main aim was to collect the household savings for the pilgrimage (*al-Haj*) and invest in *Shariah compliant* projects.[5]

In July 1983, and under Islamic *Banking Act* (IBA), Malaysia established the first Islamic bank: Bank Islam Malaysia Berhad. Since 2005, the Central Bank of Malaysia (Bank Negara Malaysia) has granted licenses to foreign Islamic banks to operate in Malaysia. In June 2011, the Malaysian banking system contained 16 Islamic banks.[6] In March 1993, a decade after the vote for the IBA, the Malaysian authorities, and in compliance with the Islamic Banking Scheme (*Skim Perbankan Islam*),[7] authorized some conventional banks[8] to have separate Islamic windows in their branches. Under this scheme, the conventional banks must have a *Shariah* board for their Islamic banking activity. The international brilliance of this country was strengthened in 2002 when the Central

Banks and the National Monetary Authorities of some Islamic countries decided to implant the headquarters of the Islamic Financial Services Board (IFSB) in Malaysia.[9] Since 2005, the Bank Negara Malaysia (BNM) has transformed the Islamic windows into Islamic subsidiaries. The removal of the commercialization constraints of the *Shariah* compliant products by the conventional banks enhanced the liberalization of the Islamic banking sector, which induced an increase in the number of participants in the sector. In June 2011, 15 conventional banks already offered Islamic banking services in Malaysia.

The political will to implement an adequate legal and technical infrastructure for Islamic finance has contributed to strengthen the weight of the Islamic banking system. Figure 1 illustrates this catch-up effect: over the period 2007–2011, Islamic banking assets increased at a rate faster than the conventional ones. Assuming that, at the end of 2011, the growth rates (YOY) of Islamic and conventional banking assets remained constant (25.14% and 13.14% respectively), we find that the assets size of the two sub-systems (Islamic and conventional) will become equal in 2025.[10] The postcolonial political orientations and financial reforms have not only facilitated the integration of Islamic bank finance in the Malaysian financial system but have also allowed Malaysia to become an international center for Islamic finance, indicate Furqani and Mulyany (2009).

As mentioned before, Malaysia has implemented financial reforms aiming at facilitating the integration of Islamic financial institutions in its financial system. The fast and remarkable growth of Islamic financial institutions' weight compared to the conventional ones' in Malaysia shows the success of its implementation strategy. The Islamic banking subsystem has grown more and more in importance in the Malaysian banking system in terms of both balance sheet size (see Figure 1) and participant number. This revitalization of the Malaysian banking sector may have an impact on the economic activity. For example, the annual average growth (6.3%) of Islamic banking finance over the period from 2000Q1 to 2011Q4 was accompanied by a 2.7% growth of the economic activity (measured by the GDP) over the same period. Although the trend of these two aggregates seems to confirm the analyses of Chapra (1988 and 2008), Tag El-Din (2008) as well as those of Khan and
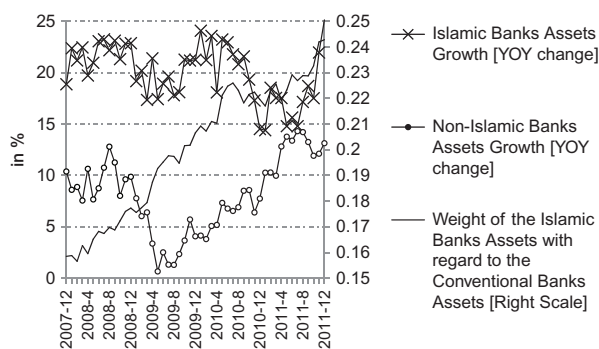
Bashar (2008).[11] Adequate statistical and econometric evaluations are necessary to examine the macroeconomic impact of Islamic banking financing development.

3. Islamic finance and economic activity

Islamic finance and economic opportunities

Demirgüç-Kunt and Levine (2008) think that by excluding a large share of the population from access to finance, the financial system contributes significantly to the persistence of inequality and to the limitation of economic opportunities for the poor. Following the same logic, Thurow (1980) has argued that in a conventional banking system, the credits are granted to those who are lucky instead of financing the projects of the most intelligent or meritocratic (Thurow, 1980 cited by Chapra in 1988 and in 1993). So, can a banking system governed by *Shariah* effectively reduce the exclusion of some population groups? Theoretically, the answer is yes. Islamic finance offers *Shariah* compliant financial products that are supposed to meet the financial needs of the population while being in harmony with the religious beliefs of some social groups. Some products offered by Islamic finance (including *mudharaba* and *musharaka*) are not based on the debtor's creditworthiness but rather on the project's economic viability and on the debtor's entrepreneurial abilities. This encourages the entrepreneurs who have investment projects to seek funding from Islamic banks. Moreover, Islamic finance does not offer its services exclusively to the Muslims, but also to all the economic agents in the society. It is called "Islamic" just because it has to respect the *Shariah* principles when structuring its products. Consequently, from this perspective, Islamic finance can, theoretically, reduce the proportion of people excluded from having access to finance. This allows Islamic finance to contribute to reducing the inequalities and improving the economic opportunities for poor people who have a high potential to contribute to the creation of added value.[12]

Islamic-Bank functions and economic activity

It is worth highlighting that the *Shariah* prohibits the borrower-lender relationship as established by the traditional bank and introduces a new "participatory associative relationship" between the intervening parties in financial transactions. This legal framework considers that the sharing of profits and losses among the funds' providers and those who provide labor as the just and fair alternative, which has to replace the interest rate practice. This structure of risk allocation makes the providers of funds more enticed to collect, *ex ante*, information about the project and about the agent in need of finance (entrepreneur), and to exercise, *ex post*, monitoring of the projects they fund.

Khan and Bashar (2008) think that the implementation of the PLS principle ensures the economic efficiency and leads to optimal levels of production, consumption and exchange. By implementing the PLS principle, Islamic finance is concerned with the economic viability of the projects rather than the personal solvency of the entrepreneur, because the most creditworthy entrepreneur may not carry the most viable projects. The financial instruments that implement the PLS principles effectively

Figure 1. Islamic Banks' Assets *vs* Conventional Banks' Assets in Malaysia.
Source: BNM / Authors' calculations.

Table 1. Islamic bank funding in Malaysia

| Financing by type		5/2011	6/2011	7/2011	8/2011	9/2011	10/2011	11/2011	12/2011	1/2012
Fin. non participatory	Bai Bithaman Ajil	34.417%	34.033%	33.655%	33.509%	33.299%	32.829%	32.551%	32.087%	32.044%
	Ijarah	2.270%	2.147%	2.115%	2.063%	2.052%	2.035%	2.042%	1.990%	1.959%
	Ijarah Thumma Al-Bai	26.080%	26.083%	25.938%	26.241%	26.346%	26.450%	26.435%	25.880%	25.623%
	Murabaha	14.714%	14.801%	15.059%	14.938%	15.182%	15.396%	15.271%	15.424%	15.107%
	Istisna'	0.848%	0.818%	0.784%	0.809%	0.791%	0.784%	0.774%	0.744%	0.725%
Fin. PLS	Musharaka	2.773%	2.808%	2.880%	2.935%	3.031%	3.145%	3.642%	3.755%	3.905%
	Mudharaba	0.148%	0.139%	0.135%	0.132%	0.137%	0.130%	0.132%	0.128%	0.122%
Others		18.750%	19.172%	19.434%	19.372%	19.161%	19.231%	19.153%	19.992%	20.516%
Total		100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: BNM / Authors' calculations

are the *mudharaba* and *musharaka* contracts. Yet, the *mudharaba* contract represents various risks for agents with a financing capacity, such as the project selection risk, the risk of opportunistic behavior (adverse selection and/or moral hazard)[13] from the user of funds (entrepreneur), *etc*. To reduce these risks, the agents with financing capacity (AFC) must actively monitor the entrepreneur's funds. Nevertheless, this monitoring process can be so expensive (in terms of time and money) that some AFC choose not to provide funds for the entrepreneur. If a group of AFC forms a financial intermediary that collects the necessary information for the identification and funding of the most viable projects, then the "marginal cost of monitoring and transactions" will be decreasing for each additional AFC who decides to join this new institution. At the same time, the entrepreneurs will find the necessary funds they need thanks to the economies of scale realized by the financial intermediaries. The result will be an improvement of the loanable funds use rate, which induces a better utilization of the productive capacities in the economy. Although this theory is analytically convincing, it has not been verified empirically for Malaysia. Table 1 shows that the weight of the *mudharaba* financing is marginal (0.12% of the total Islamic bank financing in January 2012),[14] unlike the mark-up financial products (*Bai Bithaman Ajil*, *Ijarah Thumma Al-Bai* and *Murabaha*) that are characterized by a significant share equal to 34, 25% and 15%, respectively.

Although the Islamic bank channels the deposits to the entrepreneurs having a financing need, it does not allow the qualitative transformation of the liabilities *à la* Gurley and Shaw (1960). Theoretically, Islamic banks' liabilities are, contractually, less liquid than those of the traditional banks; the depositors in Profit Sharing Investment Account (PSIA) know that their deposits do not represent a stock of money strictly speaking. Their deposits are effectively correlated to the bank assets since Islamic bank investments are theoretically backed by a real assets. Any shocks occurring on the bank assets will be automatically transmitted to the liabilities, indicates Darrat (1988) and Yousefi *et al.* (1997). Moreover, the absence of an active Islamic Monetary Market puts Islamic banks in a critical situation to obtain their need of liquidity in the short run, added Khan and Mirakhor (1994).

Unlike the traditional banks, Islamic ones, at least theoretically, do not facilitate transactions in the short term, but, through the PLS principle, they are supposed to encourage medium and long-term investments. However, encouraging long-term investments requires an improvement of the short-term exchanges. The fact that the Islamic bank is perfectly correlated with the real activity is not enough, because this financial structure has to be sufficiently liquid to facilitate the short-term transactions, which stimulates the investments and the physical capital accumulation in the long run.

4. Theoretical model, measures and data

The theoretical specification of the Islamic finance economic growth relationship in Malaysia has been founded on the basis of the neoclassical production function augmented by some indicators of Islamic financing. Thus, the capital[15] and the labor force[16] are used in this paper as the control variables of the economic growth. The construction
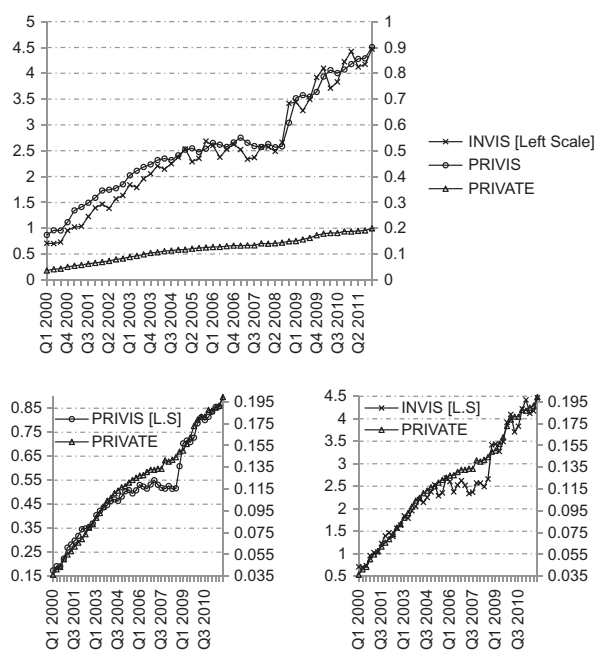
Figure 2. Development Indicators of the Islamic Banking Sector in Malaysia.
Sources: BNM / IFS / Department of Economics-Malaysia / Authors' Calculations.

of Islamic finance indicators has been inspired by the analyses of Goldsmith (1969)[17], King and Levine (1993a and 1993b), Levine (1993, 1997 and 2005)[18] Galindo and Micco (2004), Ammar-Ayachi et *al.* (2011)[19], Abu-Bader and Abu-Qarn (2008) and Furqani and Mulyany (2008).

To estimate Islamic bank contribution in financing the economy, we use the following indicators: "PRIVATE", "PRIVIS" and "INVIS". The latter are, respectively, defined as being the ratio of the outstanding loans granted by Islamic banks to the total outstanding bank loans (Islamic and non-Islamic) granted to the private sector,[20] as the ratio of the bank loans granted to the private sector by Islamic banks to the GDP and as the ratio of the loans granted by the Islamic Financial Intermediaries to private investments. The "PRIVATE" ratio allows measuring Islamic banks' contributions in financing the economy. The "PRIVIS" ratio, which approximates the "PRIVY" ratio proposed by Levine (1997),[21] is used as a measure of Islamic banking sector development. Regarding the "INVIS" ratio, which enables us to complete the "PRIVIS" ratio, it allows to assess the contribution of Islamic financial intermediaries in the capital accumulation of the economy.

Concerning the case of the Malaysian economy, the dynamics of these indicators during the period 2000:1–2011:4 are presented by the following graphs:

As standard practices, we use the real GDP (on Purchasing Power Parity (PPP)) to measure the real income level. Several sources have been used for data collecting purposes, namely: the Department of Statistics Malaysia for the GFCF (Gross Fixed Capital Formation) and for the GDP, the Central Bank of Malaysia (Bank Negara Malaysia)

for the Islamic bank financing,[22] the International Financial Statistics for the labor force, and the Oxford Economics (via Datastream) for the CPI (Consumer Price Index) and for the PPP-based real GDP. We have also used Thomson-Reuters to get the series of the MYR/USD exchange rates necessary to express all the aggregates in US Dollar. All the series are in quarterly frequency, ranging over the period extending from the first quarter of 2000 to the fourth quarter of 2011.

5. Econometric results and interpretation

To estimate the impact of Islamic bank finance on the economic growth in Malaysia, we use, as mentioned above, a neoclassical production function augmented by indicators of Islamic bank finance. This function is specified as follows:

$$LY_t = \lambda_1 + \lambda_2 LX_t + \lambda_3 LW_t + \lambda_4 LK_t + U_t \qquad (1)$$

Where Y stands for the real income measured by the PPP-based GDP, X is an indicator of Islamic bank financing depth measured by the ratios "PRIVATE", "PRIVIS" or "INVIS", W is the labor force, and K, replaced by the GFCF, is the variation of the physical capital stock. L denotes the natural logarithm of variables. U is a stochastic term.

The KPSS and the ADF tests show that all the variables of model (1) are integrated of order 1.[23] This integration degree allows us to use the Johansen's procedure to test the existence of potential cointegration vector(s) or long-run relationships between the variables of model (1). For each Islamic financing indicator, Table 2 shows the existence of a single long-run relationship between this indicator, GDP, investment and labor.

The econometric results in Table 2 show that the long-term growth elasticity in Malaysia is not so sensitive to the different indicators of Islamic bank financing. In fact, a 1% increase of any Islamic financing indicator allows a growth increase in Malaysia by a percentage that varies between 0.148% and 0.206% only. This economic result can be explained by the fact that the non-participatory (Mark-up) Islamic bank financing, usually of short term, dominates (75%) the participatory (PLS) instruments (25%), generally of long term. Moreover, we believe that the elasticity of the Malaysian economic growth with respect to the capital stock is biased because the economy in question is not highly capital-intensive as it is the case with the industrialized countries.

The existence of a long-term relationship between the variables of model (1) allows us, in accordance with Engel and Granger representation theorem (1987), to formulate the following structural model with an error correction term as follows:

$$\Delta LY_t = \alpha_0 + \sum_{j=1}^{3} \alpha_j \Delta LY_{t-j} + \sum_{j=0}^{3} \beta_j \Delta LK_{t-j} + \sum_{j=0}^{3} \gamma_j \Delta LW_{t-j}$$
$$+ \sum_{j=0}^{3} \lambda_j \Delta LX_{t-j} + \delta ECTX_{t-1} + V_t \qquad (2)$$

The variable X expresses an indicator of Islamic bank financing which can be either "PRIVATE," "PRIVIS" or "INVIS." The variable ECTX expresses the residual terms or deviations from the GDP equilibrium calculated three times

Table 2. Cointegration analysis between GDP, GFCF, labour and an indicator of Islamic financing.

	λ_{trace} test				λ_{max} test			
Null hypothesis	r=0	r≤1	r≤2	r≤3	r=0	r=1	r=2	r=3
Alternative hypothesis	r≥1	r≥2	r≥3	r=4	r=1	r=2	r=3	r=4
The variable "PRIVATE" as an indicator of Islamic bank financing								
LR statistic	54.98	20.17	9.68	3.29	24.81	15.48	8.39	3.29
Critical values	40.17	24.27	12.32	4.12	24.15	15.79	11.22	4.12
	LY		LK		LW		LPRIVATE	
Long-term relationship	–1		0.709		0.524		0.187	
The variable "INVIS" as an indicator of Islamic bank financing								
LR statistic	49.35	18.17	12.05	3.75	31.17	16.12	6.30	3.75
Critical values	40.17	24.27	12.32	4.12	24.15	15.79	11.22	4.12
	LY		LK		LW		LINVIS	
Long-term relationship	–1		0,758		0,423		0,148	
The variable "PRIVIS" as an indicator of Islamic bank financing								
LR statistic	57.66	20.40	10.82	3.60	27.26	14.57	10.21	3.60
Critical values	40.17	24.27	12.32	4.12	24.15	15.79	11.22	4.12
	LY		LK		LW		LPRIVIS	
Long-term relationship	–1		0,690		0,534		0,206	

by considering, firstly, the indicator "PRIVATE," secondly, the indicator "INVIS" and thirdly the indicator "PRIVIS."

Three error correction equations (equations A, B, and C, see table 3) have been estimated, each of them contains an Islamic financing indicator (PRIVATE in equation A, PRIVIS in equation B, and INVIS in equation C). Table 3 shows the econometric results.

In econometric terms, equations A, B and C reveal neither a problem of autocorrelation, as shown by the LM statistics, nor a problem of conditional heteroskedasticity, as evidenced by the ARCH test statistics, and not even a problem of linearity, as shown by the Ramsey test. These statistical results allow us to conclude that these estimators are efficient and, therefore, the t-statistics turn out to be reliable. The test of Jarque and Bera proves the normality of the shocks, which make possible the use of the student test.

Economically, the econometric results shown in Table 3 enable us to draw several empirical remarks. First, we note that all the adjustment forces are negative, between 0 and 1, in absolute value, and are statistically significant. This indicates the existence of an adjustment process towards the equilibrium of the GDP. Second, we notice that the estimated adjustment coefficient in equation "A" is significantly greater than those of equations "B" and "C." This means that in equation "A," 71% of the GDP deviations are corrected, which is not the case in equations "B" and "C," where we observe a correction process estimated to 31% and 43% respectively. Thus, we can conclude that the inclusion of Islamic indicator "PRIVATE" in equation "A" induces an adjustment process that is more significant than those observed in equations "B" and "C," where "INVIS" and

"PRIVIS" are used. This can be explained by the structure of Islamic bank finance indicators that we have constructed.

Indeed, the outstanding Islamic loans, appearing in the numerator, represent the common point for the entire Islamic bank finance development indicators proposed in this paper. The denominator, however, differs from one indicator to another. The indicator "PRIVATE" is deflated by the total of the bank loans while the ratios "PRIVIS" and "INVIS" are deflated by the GDP and GFCF respectively. The construction of these indicators indicate that the bank loans, as used in "PRIVATE," have been more active in correcting the GDP equilibrium than the other variables considered in the denominators of "INVIS" and "PRIVIS."[24] The evolution of these bank loans is more important and volatile than the dynamics of the macroeconomic aggregates used in the other two indicators (GDP and the GFCF). This volatility of bank loans seems to give more dynamics to the "PRIVATE," which explains the fact that the adjustment mechanism of the GDP to the equilibrium is more important in equation "A" than those in equations "B" and "C."

Furthermore, we notice that the short-term effect of the different variables of Islamic bank finance seems to be more important than the long-term effect. This econometric result is in line with the economic reality in Malaysia, as Islamic banks engage much more in non-participatory activities (see Table 1) whose impact is, generally, of a short-term nature.[25] This has been confirmed by our econometric estimation since the GDP short-term elasticities are greater than those estimated in the long term. Table 3 shows that the estimated growth elasticity with respect to PRIVATE equals 0.365 much greater than the long-run one, which equals 0.187.

Table 3. Equations of the Economic Growth (Dependant Variable: ΔY, Estimation by MCO: 2000Q1–2011Q4).

Regressors	Coefficients of equation A		Coefficients of equation B		Coefficients of equation C	
Intercept	0.0033	(0.580)	0.0100	(2.063)	0.0012	(0.233)
ΔLY_{t-1}	0.1922	(0.085)	0.0416	(0.437)		
ΔLK_{t-3}			0.0840	(1.560)		
ΔLK_t	0.3747	(8.880)	0.3376	(8.709)	0.6317	(7.546)
ΔLW_{t-3}	0.2251	(1.396)				
ΔLW_{t-2}	0.2555	(1.460)				
ΔLW_{t-1}	0.2182	(1.106)				
ΔLW_t	0.2907	(1.730)	0.4041	(2.529)	0.2272	(1.479)
$\Delta LPRIVATE_t$	**0.3651**	(3.023)				
$\Delta LPRIVIS_{t-2}$			**0.3553**	(3.511)		
$\Delta LPRIVIS_{t-1}$			−0.3736	(−3.817)		
$\Delta LINVIS_{t-2}$					−0.0609	(−1.705)
$\Delta LINVIS_{t-1}$					−0.1449	(−2.954)
$\Delta LINVIS_t$					**0.3355**	(4.429)
Error Correction Term (ECT)						
$ECTX_{t-1}$	−0.7179	(−8.317)	−0.3188	(−3.369)	−0.4363	(−3.618)
Statistics and Residual Tests						
R^2	0.8268		0.8389		0.8399	
DW	1.8576		2.4150		1.5850	
LM (1) F-statistic	0.0233	[0.879]	6.2928	[0.016]	0.6560	[0.423]
LM (2) F-statistic	0.4638	[0.632]	3.0691	[0.059]	0.5881	[0.560]
ARCH (1) F-statistic	0.3362	[0.565]	3.1443	[0.083]	4.6510	[0.036]
ARCH (2) F-statistic	0.2674	[0.766]	1.4221	[0.253]	2.0005	[0.148]
RESET (1) F-statistic	1.1770	[0.285]	0.3931	[0.534]	4.0173	[0.052]
RESET (2) F-statistic	1.9686	[0.155]	0.8379	[0.441]	2.3852	[0.106]
Jarque-Bera test	1.3167	[0.517]	1.1710	[0.556]	0.8970	[0.638]

6. Conclusion

In this paper we have attempted to estimate the impact of Islamic bank finance on the economic growth in Malaysia over the period from 2000Q1 to 2011Q4. A neoclassical production function augmented by some indicators of Islamic bank finance has been the theoretical framework for our empirical investigation. The unit root tests show that all the variables are integrated of order 1. The test of Johansen-Juselius (1990) has shown the existence of a single cointegrating relationship between the GDP, the investment, the labor force and the indicator of Islamic bank finance. Hence, an error correction model has been constructed to estimate the economic growth elasticity with respect to the different Islamic bank finance indicators. Based on the estimated long-term relationship, the elasticities of the GDP to the three Islamic finance indicators (PRIVATE, INVIS and PRIVIS) are equal to 0.187, 0.148 and 0.206% respectively. These estimated elasticities show that, in the long-term, the GDP in Malaysia is not sensitive to Islamic financing. The presence of a cointegrating vector between the variables in question has enabled us to specify an error correction model whose estimation has allowed us to identify the short-term elasticity of economic growth with regard to Islamic finance indicators. The estimation of such a model shows short-term Islamic financing/economic-growth elasticities which are more important than the long-term elasticities. With respect to the different Islamic financing indicators, these short run elasticities turn around 0.35. This economic result can be explained by the structure of Islamic bank financing that marginalizes the PLS-based instruments. This turns out to be consistent with the economic reality in Malaysia, since Islamic banks engage much more in non-participatory activities whose impact is, generally, of short-term. The estimated ECM model has also shown negative and statistically-significant adjustment forces for the different indicators of Islamic financing. This result allows us to confirm the presence of an adjustment process towards the equilibrium level of the GDP. This process is more important in the equation where the variable "PRIVATE" is used as an indicator of Islamic finance development.

Notes

1. PLS stands for Profit and Loss–Sharing.
2. It is worth mentioning that Darrat (1988) has clearly indicated, in his paper, that his choice for Tunisia as a study case was only due to the availability of data.
3. See footnote 18.
4. Although the paper of Furqani and Mulyany (2009) used an ECM model, their econometric results remain inconsistent since the statistical properties of this type of models are asymptotic as these authors used only 34 observations.
5. This fund which provides for pilgrimage enjoyed a legislative support. It is a non-financial institution charged by deposits collection from those wishing to make the pilgrimage, and it is committed to invest the funds collected in sectors that respect the *Shariah*. All Malaysian who wish to make the pilgrimage have to go through *Tabung Haji*. For more details see Kahf, M., (2004) and Chong, B.S., and Liu, M.H., (2009).
6. Affin Islamic Bank Berhad, Al Rajhi Banking & Investment Corporation (Malaysia) Berhad, Alliance Islamic Bank Berhad, AmIslamic Bank Berhad, Asian Finance Bank Berhad, Bank Islam Malaysia Berhad, Bank Muamalat Malaysia Berhad, CIMB Islamic Bank Berhad, Hong Leong Islamic Bank Berhad, HSBC Amanah Malaysia Berhad, Kuwait Finance House (Malaysia) Berhad, Maybank Islamic Berhad, RHB Islamic Bank Berhad, Standard Chartered Saadiq Berhad, Public Islamic Bank Berhad, OCBC Al-Amin Bank Berhad.
7. On November 12, 1998, the Central Bank of Malaysia (BNM) issued a circular to replace the SPTF term (*Skim Perbankan Tanpa Faedah*) used since 1993 by the term SPI (*Skim Perbankan Islam*).
8. These Banks have had their license in accordance with the *Banking and Financial Institutions Act* (BAFIA) adopted by the parliament in 1989, as a substitution to the Finance Companies Act of 1969 and the Banking Act of 1973.
9. The mandate of this authority is to ensure the stability and the solvency of the Islamic financial service industry by the development of new standards compliant with the Islamic Financial Institutions, and by the harmonization of the practices in the financial industry. Along with the revision of Basel in 2005, the IFSB issued two regulatory standards on capital adequacy and risk management by the Islamic Financial Institutions (See Hesse, et al., 2008:180 and Warde, 2000:130).
10. This projection has been made by the authors.
11. The authors consider that the development of the Islamic finance will have a positive impact on the economic activity.
12. Chapra (2008) argued that poverty reduction is a necessary step for economic development.
13. Despite the fact that moral hazard is among the most significant risks in the PLS contracts (Bacha, 1997; Bjorvatn, 1998; al-Jarhi, 2007; Sugema *et al.*, 2010), it does not explain, by itself, why the Islamic banks marginalize this type of contracts. Moral hazard is a general problem and it is not exclusively specific to the Islamic banks: banks,

whether Islamic or Conventional, are exposed to such a risk. However, the problem [moral hazard] is particularly serious in the developing countries where the systematic holding of a regular accounting is rare and/or where companies, and for reasons of tax evasion, keep several accounts. As a result, the monitoring cost that the Islamic bank has to pay to verify the real profitability of the project is very high in comparison with the cost that traditional banks bear, said Bjorvatn (1998). The result is a decline in the share of the real asset-backed long-term financing based on the PLS.

14. The obligation of backing by a real asset helps to eliminate most unproductive and speculative transactions that involve *gharar* (high uncertainty) and *qimar* (bet), indicates Chapra (2008). This favors the accumulation of physical capital which, in turn, stimulates the economic activity. Iqbal and Mirakhor (1987) indicate that this theory has not been empirically validated by the facts. In practice, Islamic banks are reluctant to invest in long-term projects and prefer to fund short-term projects. This can be explained by the fact that "the long-term" is unknown and unpredictable (Chapra, 2003). By focusing on financing the working capital and trade in the short-term, the Islamic banks marginalize the financing of the long-term investment projects, thus reducing the economic growth and development prospects.

15. In theory, the Islamic finance is perfectly correlated with the real economy as any financial transaction must be backed by a real asset rather than by an imaginary or notional one (Chapra, 2008). This principle is of paramount importance for the structuring of certain products such as sukuk (the name given to the *Shariah compliant* Bonds). For this reason, we include, in the same way as Abu-Bader and Abu-Qarn (2008) and Fuqani and Mulyany (2008), the ratio of investment to the GDP (denoted K in the econometric specification) in the economic growth specification.

16. As the labor force is the main factor that explains and justifies the wealth creation and capital accumulation by the individuals in Islam (Touba, 2006; Martan, 2001), we include the labor force as an exogenous variable to explain the dynamic of the economic activity.

17. To measure the financial development, Goldsmith (1969) uses the assets value of the financial intermediaries divided by the Gross National Product (GNP), under the assumption that the financial system size is positively correlated with the quality of the supplied financial services. He found a strong correlation between financial development and economic growth for 35 countries studied over the period 1866-1963.

18. King and Levine (1993a; 1993b) and Levine (1997 and 2005) have investigated the relationship between financial development and economic growth for a panel of 80 countries over the period 1960-1989. They have used four measures of the financial development level. For instance, to measure the size of the financial intermediaries, they have used the "DEPTH" ratio, which is equal to the financial system's liquid liabilities divided by

the GDP. They found a strong correlation between this ratio and the real GDP per capita.

19. Ammar-Ayachi *et al.* (2011) have used the ratio of broad money (M3) divided by the GDP to measure the size of the Islamic financial intermediaries. This is not adequate to measure the size of the Islamic finance because their sample, consisting of 15 countries, has included 12 countries that have adopted the mixed system—i.e. countries with Islamic and "non-Islamic" financial intermediaries.

20. King and Levine (1993) and Levine (1997) have used the ratio of credits allocated to the private companies to the total of the domestic credits (while subtracting the loans granted to banks).

21. The purpose of the financial system is to finance the economic activity through the financing of the private economic agents. Galindo and Micco (2004) have found that the State led banks do not facilitate the growth of the manufacturing industries which depend on external financing. Levine (1993 and 1997) also considers that if the *raison d'être* of a financial system is to fund the government, then it will be no more effective in the fulfillment of its functions, because the financial systems that grant more credits to the private firms are more active in the search for private information, in the monitoring of the funded projects, in the risk management, in the mobilization of savings and in facilitating transactions. For this reason, King and Levine (1993a,b) and Levine (1997) use the "PRIVY" ratio, which is equal to the credit granted to the private sector divided by the GDP, as a measure of the development of the financial system.

22. We gathered the data on the Islamic bank financing from Tables 1.18.1, 1.19.2 and 1.19.3 available on the website of the BNM.

23. The unit root test results are not submitted in the paper but can be provided by the authors upon request.

24. The exogeneity test has also shown that "PRIVATE" is weekly exogenous, which indicates that this indicator contributes to the GDP adjustment process but it does not undergo an adjustment process. This econometric result is available upon request.

25. As explained above, the engagement of the Islamic banks in the short-run activities is not conforming to the PLS principles of the Islamic finance.

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