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Investigating the performance of Islamic banking compared to conventional banking in the selected countries

Asghar Abolhasani Hastiani*^{ORCID}, Mino Amini Milani**, Alireza Sharif Moghaddasi***, Rahim Bayat****

* Professor of Economics, Department of Economics, Faculty of Economics, Management and Accounting, Payam Noor University, Tehran, Iran.

Email: a.abolhasani@pnu.ac.ir

^{ORCID} [0000-0002-9986-4735](https://orcid.org/0000-0002-9986-4735)

Postal address: Iran, Tehran, Farmaniyeh, North Dibaji St., postal code 1953633511

**Assistant Professor of Economics, Department of Economics, Faculty of Economics, Management and Accounting, Payam Noor University, Tehran, Iran.

Email: m.amini@pnu.ac.ir

***Assistant Professor of Economics, Department of Economics, Faculty of Economics, Management and Accounting, Payam Noor University, Tehran, Iran.

Email: a.sharifmoghaddasi@pnu.ac.ir

****Ph.D.student of Economics, Department of Economics, Faculty of Economics, Management and Accounting, Payam Noor University, Tehran, Iran. (Corresponding author)

Email: rahimbayat@student.pnu.ac.ir

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EXTENDED ABSTRACT

INTRODUCTION

Unlike conventional banking, whose the main goal is to maximize profits based on the loans granted, Islamic banks operate based on the laws and rules of Islamic jurisprudence, in which the use of interest is prohibited. It was precisely due to this characteristic of Islamic banking that many experts were hesitant about its continued existence when the first Islamic bank was established in 1963 and predicted that interest-free banking would not last long. Despite these doubts, Islamic banks are now the fastest growing and developing financial industry in the world.

The basic question here is whether Islamic banking can meet the monetary and banking needs of the economy despite conventional banking? Do Islamic banks have the necessary stability and efficiency? In general, factors such as the ceiling of granted loans, rate of return on assets, rate of return on shares, value of bank assets, different types of bank expenses and various other factors can cause differences in the efficiency and performance of banks. Answering to these questions requires investigating the performance of Islamic banking compared to conventional banking.

In order to investigate the performance of Islamic banking compared to conventional banking, we used four different approaches: Data Envelopment Analysis (DEA), Stochastic Frontier Analysis (SFA), Markowitz Model, and Capital Asset Pricing Model (CAPM). DEA approach is one of the non-parametric methods based on mathematical methods and linear programming to measure the efficiency of decision-making units. In contrast, SFA is a parametric method based on econometrics and production function estimation to evaluate the efficiency of decision making units. Then we used the Markowitz model to obtain the optimal rate of return of banking stocks and unsystematic risk, as well as CAPM to find the optimal rate of return of banking stocks and systematic risk.

METHODOLOGY

In order to evaluate the technical efficiency of banks based on DEA and SFA methods, the input and output variables of each model have been introduced, which include three input variables and three output variables in DEA method and three input variables with an output variable in SFA method. In the next stage, the following steps were taken to perform the Markowitz model optimization process:

- 1) Some classes of the assets that are considered to be invested must be selected and according to the limitations of the Markowitz model and considerations related to the selection of variables, and collection of the research statistical sample, during developing the appropriate mathematical and statistical model, the optimization process is performed.
- 2) Expected returns are estimated for each class of assets.
- 3) The risk of each class of assets is estimated.
- 4) The process of optimization and graphical structure are performed to find the efficient frontier, based on which, the set of efficient and profitable assets is determined.

By implementing the mentioned steps and using the time series data related to the rate of return on shares of each of the banks from 2012 to 2020, the average and standard deviation related to the rate of return on the assets of each of the banks in both Islamic and conventional banking systems was measured and then the efficient frontier curve was extracted for Islamic and conventional banks. Finally, to apply the CAPM and calculate the systematic risk of banks, the value of bank shares was used for this purpose. Due to the statistical limitations in this field where the necessary data was not available

for all 40 investigated banks, and on the other hand it was necessary to use the monthly return rates of these data, therefore subject to the DEA and SFA results, 5 banks from the Islamic banking system and 5 banks from the conventional banking system were selected. Then, according to the data of the monthly stock returns of each of these 10 banks since the second month of 2012 through the end of 2020 with 107 observations, the performance of both banking systems based on the CAPM and estimating the systematic risk rate for each bank was compared. For this purpose, we considered the regression model as $R_{i,t} = \alpha_i + \beta_i R_{Mt} + \varepsilon$ Where $R_{i,t}$ is the rate of return for asset i during period t , R_{Mt} is the rate of return for the market portfolio M during t , α_i (also called excess return) is the difference between estimated return and expected return, β_i is the beta coefficient and ε is the error term. To estimate above regression for the selected banks, we used the monthly return rates of the MSCI global index as R_{Mt} , since the beginning of 2012 through the end of 2020 and the monthly stock return rates as $R_{i,t}$ for each of the banks. First, this regression was performed for the portfolio of Islamic banks and conventional banks, and then we repeated it for each selected bank, and accordingly, the beta coefficients related to the stock portfolio of conventional and Islamic banks, as well as each of the selected banks, were calculated.

FINDINGS

The average efficiency of Islamic banks in data DEA and SFA models was evaluated as 74% and 56.15% respectively, and for conventional banks as 69.5% and 48.13% respectively. By implementing the Markowitz model during the period 2012-2020, the average and standard deviation of Islamic banks' stock returns were calculated as 0.76% and 4.09% respectively, and for conventional banks as 0.68% and 6.35% respectively. Next, by developing ten optimization problems, ten pairs of optimal stock returns and their corresponding risk rates were calculated for each of the two Islamic and conventional banking systems, and accordingly, the efficient frontier curve for each of these two systems was extracted. The average correlation coefficients of stock return rates for two Islamic and conventional banking systems were calculated as 40.4% and 44.1%, respectively, which indicates the lower amount for the Islamic banking system compared to conventional one. Finally, so as to implement the CAPM for measuring the beta coefficient for Islamic and conventional portfolios, firstly this regression was estimated

for the portfolios of Islamic banks and conventional banks. The results are compiled in Table No. (1).

Table1. Beta coefficient estimation for Islamic and conventional portfolios

Source: Research results

Islamic and conventional portfolios n=107	β	α	$R^2(\%)$
The portfolio of Islamic banks	0.28	0.007	29.2
The portfolio of Conventional banks	0.58	0.022	37.5

Then, by estimating similar regressions for each of the selected banks' stock returns based on the MSCI global index, the beta coefficients for each of the banks were also estimated, and the results are compiled in Table No. (2).

Table2. Beta coefficients for Islamic and conventional banks

Source: Research results

Name of the bank	β	α	$R^2(\%)$
Al Baraka	0.45	0.02	16.7
Islamic Development Bank	0.18	0.01	43.6
Al-Doha Bank	0.16	0.005	60.7
OFFIN BANK MALAYSIA	0.37	0.01	25.4
Al Rajhi Bank	0.135	0.004	29.7
BPM	0.57	-0.02	62.9
Deutsche Bank	0.73	-0.008	22.5
HSBC	0.23	0.003	78.7
Intesa Sao Paulo	0.72	-0.004	27.01
Sweden Bank	0.34	-0.001	11.2

Source: research findings

CONCLUSION

The findings related to the implementation of two models of DEA and SFA showed that based on both models the performance of Islamic banks is more efficient compared to the conventional banks. With regard to implementation of the Markowitz model, it was also determined that the Islamic banking system had a better performance than the conventional banking system in

terms of higher stock returns and less risk related to stock returns during the period under review. The calculation of the average correlation coefficients of stock return rates for two Islamic and conventional banking systems also indicates that its level is low for the Islamic banking system, and therefore means more diversity of the examined assets in the composition of the asset portfolio of Islamic banks compared to conventional banks. By calculating the beta coefficients related to the stock portfolio of each of the two banking systems based on the CAPM, it was observed that this coefficient is lower for Islamic banks than for conventional banks, and therefore, the shares of Islamic banks compared to conventional banks have lower systematic risk.

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