

Evaluating the Efficiency of Banks in Using Islamic Financial Instruments

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ABSTRACT

Due to the provision of different financial and credit services, the banking industry has a decisive role in countries' development and economic growth and is described as the economy's driving force, accelerator, and balancer. The concept of efficiency more defines the concept of banks' performance. Therefore, the present study evaluated the efficiency of Islamic financial instruments in Iranian banks. This research is descriptive in terms of data collection and practical in terms of purpose. The statistical sample included 6 banks listed on the Tehran Stock Exchange from 2012 to 2020. This study was conducted by the DEA method to evaluate the efficiency of Islamic financial instruments in Iranian banks. According to the study results, the efficiency is strong and close to 1 in the whole period of the study. In addition, in terms of the weight of input and output variables, the return on assets variable from the output variables and the liquidity variable from the input variables have more weight and higher efficiency than other variables. Therefore, it is concluded that liquidity is much more effective among Islamic financial instruments in Iranian banks than other instruments.

Keywords: Efficiency, Islamic Financial instruments, Bank.

Introduction

Banks and financial institutions are defined as economic enterprises. In these economic enterprises, the general public can deposit money related to their business or make other repayable funds and credits for their accounts. It is possible to apply banking activities in all banks and credit institutions, including withdrawing deposits or other repayable entities from the public and granting credit for their accounts. This definition discloses the characteristics of the banking sector and credit institutions: a) banking operations that result from taking deposits or other repayable funds from the people. b) applying the activities mentioned by the law of non-acceptance of intermediaries in the case (Postolache, 2014).

The concept of banks' performance is depicted by efficiency and effectiveness because effectiveness indicates how goals are achieved. Efficiency refers to how resources are used economically to achieve a goal. It is possible to divide them into two important performance dimensions: internal reasons (efficiency) and external reasons (effectiveness) for specific performance parts. Therefore, performance is known as a

function of the efficiency and effectiveness of the activities performed. Banks are required to use leading indicators to have better performance. Lagging indicators state only historical events, but leading indicators provide the conditions for performance improvement (Mehrmanesh and Ghasemi, 2017).

The Islamic financial system is a network of financial markets, institutions, and financial instruments. These networks make it easy to transfer funds between households, enterprises, and the government based on Islamic principles and provide economic growth. According to Islamic principles, financial assets are exchanged in Islamic financial markets and are dependent on profit and loss sharing (Nikomram and Foroughnejad, 2013). It is required to provide the financial resources for this development with technology development in various fields. Nowadays, the financial system plays a role in financial intermediation and cash flow management in the economic system. Islamic financial system discusses the relationship between the grantors and recipients of facilities in this system and its interaction with Islamic norms. According to the Islamic financial system principles, the funds' circulation should be based on Islamic criteria (Darabi and Ash'ari, 2013). Based on the Islamic banking laws, resources are provided in the Iranian banking system by:

- Attracting current and savings account deposits, which are called proprietary resources.
- Attracting time deposits, which are called advocacy resources.

Nowadays, there is competition between banks and non-bank credit institutions to attract more resources. Therefore, it is very important to dominate the components affecting the provision of financial resources and increase the efficiency of banks. Attracting financial resources is the most important mission of the bank. In addition, it affects the proper regulation of money circulation and the establishment of a correct monetary and credit system appropriate to the long-term and short-term plans of the country (Hedayati et al., 2004). The new management system has three dimensions: strategy, focus approval, and organization. Eventually, the strategy leads to operational levels such as market, social and environmental performance, customer satisfaction, trust and acceptance, finance, goals, and results. Some banks have been in the top position of the country's banking system by applying such policies (Abbas Gholipour, 2012). Therefore, the bank pays attention to banks' efficiency in improving performance customer satisfaction. The Islamic financial instruments are exclusively effective in the country's financial system. Islamic financial instruments solve many problems of financing various economic sectors of the country (Hassanzadeh and Ahmadian, 2012). Evaluating the efficiency of these instruments is an important issue for the country's banking industry due to the necessity of Islamic financial instruments' implementation in the Iranian banking system. Therefore, the present study evaluated the Islamic financial instruments' efficiency in Iranian banks. Islamic financial instruments aim to use Sukuk. Investors can convert their securities into company shares (borrower) at certain intervals using Bank Sukuk (Mesbahi Moghadam et al., 2015).

Literature and research background:

In this section, the research literature is dedicated to financial stability in Islamic banks and its comparison with conventional banks. The research literature has discussed the effectiveness of Islamic financial instruments after examining financial stability. There is still a limitation in the research literature on Islamic financial instruments despite the rapid growth of Islamic banking in Islamic countries. In the last decade, researchers and academics have been more interested in Islamic banking research to find a sustainable and flexible model of financial mediation (Beck et al., 2013; Ibrahim, 2015). Compared to conventional banks, there has been an increasing amount of empirical literature investigating Islamic banks' financial stability. Cihak and Hesse (2010) are the first researchers who examined the difference in financial stability between Islamic and conventional banks from 1993 to 2004. They used the Z-Score as an indicator of financial stability. As a result, they concluded that large Islamic banks are less stable than conventional large banks and small Islamic banks are more financially stable than conventional small banks.

Beck et al. (2013) examined Islamic and conventional banks' financial stability and asset quality in 22 countries between 1995 and 2009. They studied on assess financial stability, which shows less financial stability of Islamic banks than conventional banks. Kabir et al. (2015) concluded that Islamic banks are less stable than conventional banks when the Z-Score measures stability. In addition, Paltrinieri et al. (2020) indicated that Islamic banking is less stable than conventional banking. Mollah et al. (2017) showed that

Islamic banks have more financial stability than conventional banks. Baele et al. (2014) and Pappas et al. (2017) concluded similar results. Bourkhis and Nabi (2013) used a sample of 32 Islamic and conventional banks from 16 countries from 1998 to 2009. In addition, they showed that it is impossible to distinguish Islamic banks' stability from conventional banks. Abedifar et al. (2013) also showed similar results from 1999 to 2009. In addition, Safiullah and Shamsuddin (2018) and Bitar et al. (2020) showed that Islamic banks do not show a statistically significant difference compared to conventional banks when the Z-Score measures financial stability. There is significant literature on the efficiency of Islamic banks. These studies investigate the differences between technical and cost efficiency and profit between Islamic and conventional banks. In some studies, Islamic banks have been more efficient than conventional banks due to technology optimization, cost minimization, and profit maximization. (El-Gamal and Inanoglu, 2005; Al-Muharrami, 2008; Hassan and Abdul-Majid, 2011; Azad et al., 2016; Batir et al., 2017; Alqahtani et al., 2017). In some researches, Islamic banks are less efficient than conventional banks (Abdul-Majid et al., 2010; Abdul-Majid et al., 2011; Srairi 2010; Mobarek and Kalonov, 2014; Wanke et al., 2016; Safiullah and Shamsuddin, 2019; Safiullah and Shamsuddin, 2020). In some researches, Islamic banks are also as efficient as conventional banks (Grigorian and Manole, 2005; Mokhtar et al., 2006; Mohammad et al., 2008; Jones et al., 2014; Chaffai, 2019).

In recent years, Sukuk financial instrument has been one of the new popular financial instruments, especially in Islamic countries. Sukuk is a financial instrument that finances government spending and investment (Samsudin, 2008). There are two types of Sukuk: Sukuk, the basis of debt, and stocks. Sukuk exchange occurs in the secondary market. Two points are considered in the Sukuk issuing. First, no floating or fixed interest rate is considered. Second, its value is based on the value of the contract assets.

There is much difference between Sukuk and traditional financial instruments. Wilson (2008) and Miller et al. (2007) discuss that the Sukuk has the traits of the bond. According to Cakir & Raei (2007), Sukuk has a different structure from securities, and when it is added to a fixed income portfolio, it reduces the risk. Wilson (2004) indicates that Sukuk bonds are used to finance firms and are kept as assets in banks' portfolios because Sukuk has higher liquidity than loans. Islamic banks can transact in the interbank market by issuing Sukuk bonds when they can not take a loan from the interbank market at interest rates. Islamic banks try to keep Sukuk as a financial instrument and exchange it in the secondary market.

Izzeldin et al. (2021) conducted a study entitled "Convergence of efficiency in Islamic and conventional banks by a panel analysis of Islamic and conventional banks from 23 countries from 1999 to 2014". This study showed a positive relationship between the alignment of the two types of banks and financial depth, transparency, economic stability, and the country's banking centrality. Safiullah (2021) investigated the financial stability efficiency of Islamic and conventional banks. He concluded that Islamic banks have an efficiency of 5.30% compared to conventional banks. The findings seem meaningful when the stability efficiency of Islamic and conventional banks is examined in terms of country and geographical areas. Asmild et al. (2019) investigated the performance patterns of Islamic banks during the global financial crisis in Bangladesh. According to data envelopment analysis (DEA) for Bangladeshi banks from 2001 to 2015, the banks' performance during the crisis is different from normal conditions.

Much research has been conducted based on Islamic financial instruments inside the country. Khosravi (2019) conducted a study entitled "Designing New Financial Instruments Based on Islamic Sovereignty in the Banking System." According to the results, financial instruments diversification is one of the most important factors affecting financial markets' development and efficiency. Various financial instruments need to be drawn to achieve this goal. In addition to economic, legal, and technical studies of financial instruments, their compliance with jurisprudential standards should also be investigated to design financial instruments in Muslim countries. Rajaei Baghsiaei et al. (2015) conducted a study entitled "effect of Islamic financing instruments (participatory and exchange) on the profitability of private banks in Iran" The results showed a direct relationship between participatory contracts (Mudaraba and civil partnership) and the profitability of banks.

On the other hand, there is no significant relationship between exchange contracts with banks' profitability (return on assets index). Hassanzadeh and Ahmadian (2012) conducted a study entitled "The Impact of Islamic financial instruments on investment growth." To predict the capacity of Sukuk, they used two

scenarios (total Sukuk issued in the world and Sukuk issued in Islamic countries). They showed that the economic development index positively and significantly relates to investment. An important and efficient financial instrument for converting assets into securities is called Sukuk.

Literature and research background shows that less research has been performed on Islamic financial instruments in domestic and foreign research. In addition, the effectiveness of these tools is not studied so far in domestic research. Therefore, there are aspects of innovation in domestic and foreign research.

Research methodology:

This research is practical and descriptive in terms of purpose and data collection. This study's statistical population includes all banks listed on the Tehran Stock Exchange from 2012 to 2020. The sample size was obtained through screening sampling. The following filters are applied to determine the statistical sample size:

1. The subject's financial reporting year has to be finished on March 20 of each year.
2. The selected subject should not change the financial reporting year (2012-2013) during the research period.
3. The trading price of the shares of the company in question should not have experienced a stoppage of trading for more than 4 months in the main and sub-markets of the capital market.
4. The selected subject in the desired period should have access to financial information related to the research's dependent and independent variables.

According to the developed filters, the following banks were selected for this research 1- Karafarin Bank, 2- Parsian Bank, 3- Eghtesad Novin Bank, 4- Sina Bank, 5- Mellat Bank, and 6- Saderat Bank of Iran.

In this study, data envelopment analysis or DEA was used to obtain the efficiency of Islamic financial instruments in the studied banks. A company's input and output combinations are considered a function in microeconomics and production. Sometimes, this function is called a "production function." Different combinations of input values and variables can be considered to get the most output. In this case, we are privileged a technology that leads the company or factory to optimal production.

Farrell proposed the original idea for data envelopment analysis in 1957. Later, Abraham Charles, William Cooper, and Edward Rhodes used this idea. In addition, it was possible to use several variables as input and output in data envelopment analysis. This technique is mostly used to evaluate the efficiency of production or service units due to the simplicity and effectiveness of the analytical method in DEA

Figure (1) shows that the input and output values are measured between several units, and their ratio or efficiency is calculated. The productivity is calculated based on a fraction, in which the nominator is the output (outputs), and the denominator is the inputs (input). Therefore, the ratio of output to input is efficiency or productivity. The efficiency or productivity is always less than 1 because the amount of input is always greater than the output. This amount is sometimes a percentage. These diagram points show the decision-making or production units. Thus, the points of this graph with the highest productivity have the units with the lowest value on the horizontal axis and the highest value on the vertical axis. Units S1 to S4 are consequently on the line and curve with the best efficiency. This line or curve is called the best line or curve for "best practical performance." Each unit's productivity also may differ from the actual value based on standards and calculations in the ideal space. The "Theoretical efficiency" curve is also created by connecting the ideal productivity points.

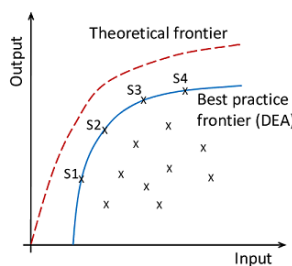


Figure (1) Input and output in DEA method

Therefore, the data envelopment analysis method is a mathematical planning model to evaluate the efficiency or optimization of decision-making units with multiple inputs and outputs. Researchers are interested in performance measurement or optimization due to its importance in evaluating the performance of a company or organization. A decision unit efficiency is defined as the ratio of output to input. Efficiency is defined and calculated as follows if a decision unit uses multiple inputs to generate multiple outputs.

$$e_j = \frac{\sum_{r=1}^s u_r y_{rj}}{\sum_{i=1}^m v_i x_{ij}} \quad (1)$$

Where e_j : DMUj efficiency, y_{rj} : output r , x_{ij} : Input i , u_r : output weight, v_i : input weight of i . The efficiency is based on the obtained number. If the efficiency number is zero, efficiency is inefficient. There is poor efficiency when the number is close to zero. There is a relatively strong efficiency when the number is close to one. Number one also shows a strong efficiency.

The following equation obtains the total weight of the outputs:

$$u_r^* = \frac{\sum_{j=1}^n u_r y_{rj} e_j}{\sum_{j=1}^n e_j} \quad (2)$$

Where u_r^* : Output characteristic weight, u_{rj} : The output weight of r belongs to DMUj, and e_j : DMU efficiency. In the characteristic weight of the outputs, the formed ratio depends on the efficiency (Saati and Shayesteh, 2012). Table (1) describes the input and output variables for evaluating the efficiency of Islamic financial instruments. DEA method selected total loans, other assets, profitability, total interest-free income, deposit amount, Sukuk issuance, domestic financing, and liquidity as input variables and asset growth, asset returns, and profitability as output variables for evaluation efficiency. Therefore, Sukuk and interest-free income are the Islamic financial instruments in this study.

Table (1) Input and output variables in research

Input variables	Output variables
Total loan	Asset growth
Other profitable assets	
Total interest-free income	Return on assets
Deposit amount	
Sukuk issuance rate	Profitability
Internal financing	
liquidity	

Source: Tutunchi et al. (2012); safiolla (2021); Samsudin (2008)

4-Findings:

According to Table (2), this section investigates the descriptive statistics of input and output variables, including mean and standard deviation. The average of the variables indicates the centrality of data from 2012 to 2020 for statistical sample banks. The value of standard deviation also indicates data scattering.

Table (2) Descriptive statistics of research variables

Variable	Average	Standard deviation
Total loan (billion Rials)	35470811	325.52
Other profitable assets (billion Rials)	36253255	552.154
Interest-free income growth (growth rate)	0.15	1.02
Deposit amount (billion Rials)	48394841	89.12
Sukuk issue (billion Rials)	140805	41.85
Internal financing (billion Rials)	6895252	52.80
Liquidity (growth rate)	0.025	0.901
Asset growth (growth rate)	0.89	0.598
Return on assets (growth rate)	0.197	0.102
Profitability (growth rate)	0.26	0.129

Source: Research Findings

In the next stage, the DEA method studied the efficiency of Islamic financial instruments in Iranian banks from 2012 to 2020. According to the results obtained in Table (3) and Figure (1), the efficiency is strong and close to 1 in the whole study.

Table (3) Efficiency of Islamic financial instruments in Iranian banks

Period	Efficiency	Description
Total	0.998	Relatively strong efficiency

Source: Research Findings

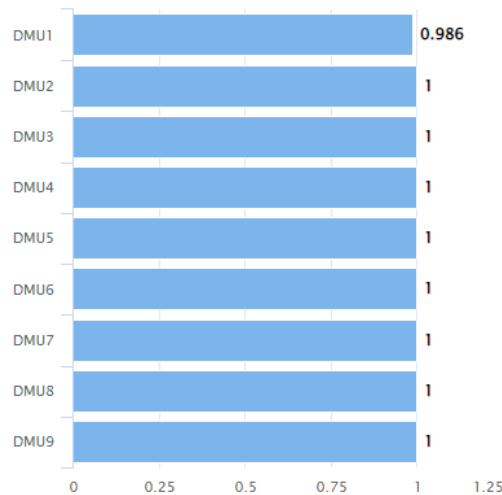


Figure (2) Efficiency of units in different periods

Table (4) presents the weight of output variables (asset growth, asset return, and profitability). According to the results, the weight of return on assets is higher than other variables.

Table (4) Weight of output variables

	Asset growth	Asset return	Profitability
Weight	0.371	2.262	0.718

Source: Research Findings

In addition, Table (5) shows the weight of input variables (total loans, other profitable assets, total interest-free income, deposit amount, Sukuk issue, domestic financing, and liquidity). It is observed that the weight of all input variables is zero except total interest-free income and liquidity. Therefore, it is concluded that only the liquidity variable has worked optimally and efficiently in the period under study among the input variables.

Table (5) Weight of input variables

	Total loans	Other profitable assets	Total interest-free income	Deposit amount	Sukuk issue	Domestic financing	Liquidity
Weight	0	0	0.17	0	0	0	5.389

Conclusion and Discussion

Due to different financial and credit services, the banking industry has a decisive role in countries' development and economic growth and is described as the economy's driving force, accelerator, and balancer. The concept of efficiency more defines the concept of banks' performance. Efficiency shows how resources are used economically to achieve a goal. Return evaluates the efficiency of each system. Therefore, banking system efficiency is measured through its return for shareholders and depositors. Thus, the present study aimed to evaluate the efficiency of Islamic financial instruments in Iranian banks. This

study emphasizes Islamic financial instruments, especially Sukuk. The DEA method was used in this study from 2012 to 2020 to evaluate the efficiency of Islamic financial instruments in Iranian banks.

This study's results showed that the efficiency is strong and close to 1 in the whole period of the study. Regarding the weight of input and output variables, the return on assets variable from the output variables and the liquidity variable from the input variables have more weight and more efficiency than other variables. Therefore, it is concluded that liquidity is much more efficient among Islamic financial instruments in Iranian banks than other instruments. Based on the results, the liquidity of financial instruments is at an optimal level, and the assets held in banks are likely to change to liquidity with a high conversion rate. In the period under study, Iranian banks' Islamic financial instruments such as total loans, other profitable assets, total interest-free income, deposits, Sukuk issuance, and domestic financing did not have effective performance. Iranian banks' Islamic financial instruments have generally been efficient in terms of efficiency during the study.

It is observed that the studied banks are efficient in fulfilling their financial commitment due to the efficiency of liquidity. Financial commitment includes the ability to meet a financial commitment, finance when needed, finance at cost-effective costs, and the bank's ability to obtain sufficient liquidity to pay the debts.

The efficiency of the banking system can be greatly increased when the liquidity of assets is increased. Therefore, based on the results, Iranian banks are suggested to maintain their assets to have a higher liquidity power to increase their efficiency. The banks are also suggested to take the necessary actions to increase the return on assets to increase their efficiency. As a result, banks can increase their profitability based on their total assets. One of the important goals of the banking industry is creating value for banks, including Islamic banks. Special attention should be paid to the structure of assets and liquidity because they are one of the most important decisions of bank managers that play a major role in banks' efficiency. Therefore, it is possible to manage liquidity as Islamic financial instruments by strategies such as holding high-liquidity securities, using the liquidity gap analysis between cash inflows and outflows, obtaining short-term credit lines for critical situations, developing cooperation, and liaising with banks to maintain the bank's liquidity efficiency.

Future research is suggested to calculate the efficiency of Islamic financial instruments in Malaysian banks and compare them with the present study results.

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