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Chapter 9
Predicting the Role of Islamic Banking on Sustainable Economic Development:
An Analysis for Turkey With ARIMA Model

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ABSTRACT

This chapter aims to predict the future of Islamic banking in Turkey. Three different Islamic banks operating in Turkey were taken to the scope of review. Within this framework, six different variables that are important for the banking sector have been identified. The data of these variables in the 2010-2018 period were analyzed by ARIMA method, and six different models were established. As a result, it is predicted that Islamic banking will grow in the future, and its profitability will increase. However, the ratio of non-performing loans is expected to increase, and capital is expected to decrease. Therefore, Islamic banks should be more cautious in this growth process. In this context, it is important to conduct an effective credibility analysis of customers to be loaned. This situation has a contributing effect on the sustainable economic development of the country.

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INTRODUCTION

Economic growth is one of the most important goals of a country. In an economically developing country, both trade is developing and new business opportunities are emerging. As a result, the profitability of the companies will increase (Afonso and Aubyn, 2019; Raju et al., 2020). In addition, the unemployment rate in the country will decrease. In summary, the quality of life of people living in the country will improve. Therefore, almost all countries are developing strategies to increase their economic growth (Dean et al., 2019; Pao and Chen, 2019; Roudi et al., 2019). For example, some of them give importance to technological infrastructure and research and development activities, while others try to attract the attention of foreign investors (Dinçer et al., 2019a).

The most important issue in this process is to ensure the efficiency and continuity of economic growth. If a country is growing economically, and this is not reflected in the citizens, economic growth in that country is ineffective (Ahmed et al., 2019; Klofsten et al., 2019). Therefore, it is important to ensure economic equality in the country. On the other hand, economic growth also needs to be continuous. In this context, while the country is growing economically, this situation should be provided by investments (Mardani et al., 2019; Arifovic et al., 2019; Klimek et al., 2019). In this way, the economic development of the country will be healthier (Dinçer et al., 2018a; Kalkavan and Ersin, 2019). In other words, it is important that a country grows more slowly and moderately rather than fast but unhealthy.

Another condition for countries to have sustainable economic growth is that they have efficient financial markets. In financial markets, those who have funds and those who need funds can come together. Those in need of funds can easily meet these needs through financial markets (Bekaert and Mehl, 2019; Buss and Dumas, 2019; Dinçer and Yüksel, 2018a). Thus, the amount of investment in the country increases significantly. Moreover, this situation will contribute to the decrease in the unemployment rate as it will create new employment opportunities in the country. In addition, those who have funds will also have the opportunity to earn income through financial markets (Hong et al., 2019; Zou and Deng, 2019; Huang et al., 2019). Based on these issues, the effective functioning of the financial markets in a country will help the economic development of the country.

There are many different players in a country's financial system. As mentioned in the previous paragraphs, those who own and need funds are the most important players in this system. In addition, the state is an important player in the financial system (Graydon et al., 2019; Dinçer and Yüksel, 2019). Government regulations and the control of the parties' compliance with these regulations will make a significant contribution to the effective functioning of the financial system. In other words, in order for the financial system to function effectively, the state assumes the role of trust mechanism (Bendickson and Chandler, 2019; Dinçer et al., 2019g). The parties that rely on the legal regulations in the country will play an active role in the financial system and this will contribute to the development of the national economy.

Another institution that has an important role in the financial system is the banks. Banks borrow these funds from individuals or institutions that own the money. Banks make interest payments to the counterparty for the deposits they collect when they are due. On the other hand, banks give these deposits as loans to the persons or institutions in need. They receive extra interest from the counterparty for these loans. As can be seen from these explanations, banks play a key role in the efficient functioning of the financial system (Dinçer et al., 2019b,c,d,e,f,h). In other words, in order for a country to have sustainable economic growth, it must first increase the efficiency of the banking sector.

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The first condition for the effective functioning of the banking system is that individuals and institutions invest their money in banks in a sense of trust. But some groups in the country are reluctant to invest their money in banks for a number of reasons (Dinçer and Yüksel, 2018b). This situation adversely affects the efficiency of the banking system. For example, interest income is banned in the Islamic religion. Therefore, those who are sensitive to these rules will not invest their money in banks. This will lead to a decrease in the amount of liquid money in the financial system. As a result, the effectiveness of the system will be adversely affected.

The Islamic banking system is a system in which banking activities should be carried out in accordance with the rules specified in the Islamic religion. This system has some differences compared to the traditional banking system. First, the prohibition of interest in Islamic religion does not exist in Islamic banking. In this system, customers deposit their money into the bank and wait until the agreed maturity. When the maturity date is reached, Islamic banks pay dividends to these depositors by taking into account the profit amount they obtain. In other words, customers do not know how much income they will earn on the date they deposit their money to Islamic banks (Ersin and Duran, 2017; Ersin and Yıldırım, 2015; Ersin and Yıldırım, 2016).

As can be seen from the definitions above, the Islamic banking system plays an important role in bringing the funds of people who are sensitive to Islamic religion to the financial system. This will contribute to the increase of liquid money in the financial system. As a result, the economy of the country will develop positively. Therefore, it is accepted that the effectiveness of the Islamic banking system makes a significant contribution to the continuity of the economic development of the country. This issue has been emphasized by many researchers in the literature (Caporale and Helmi, 2018; Gazdar et al., 2018). Therefore, for the economic development of the countries, the Islamic banking system needs to be effective especially in Muslim countries (Dinçer et al., 2019i).

In this study, it is aimed to estimate the future conditions of the Islamic banking system in Turkey. Within this framework, 6 different variables that are important for the banking sector have been identified. In addition, three different banks active in Islamic banking system in Turkey, were included in the study. The quarterly data for the period between 2010 and 2018 is used. These data were analyzed by ARIMA method and 6 different models were established. Estimations for 2019 and 2020 have been made by taking these models into consideration.

This study consists of 4 different parts. In the introduction, economic growth, financial markets and Islamic banking concepts are discussed. In the second part of the study, detailed information about Islamic banking system is given. In this context, the definition of Islamic banking and details of the system in Turkey are explained. In the third part of the study, estimates were made for the future of the system in Turkey. The last section deals with analysis results and solution suggestions.

THE CONCEPT OF ISLAMIC BANKING

General Information About Islamic Banking

Islamic banking provides services to its customers free from interest which giving and receiving interest in all transactions is forbidden by Islamic religious rules and the Arabic word riba is used for interest/usury. That prohibition of interest is fundamentally the main difference between Islamic banking system and conventional banking system. Although Islam prohibited interest earning business, profit and rental

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fees are regarded as legitimate earnings of trade. Islamic banking system prohibits interest as well as investing in unlawful business according to Islamic law such as alcohol, pork, pornography and gambling etc. (Lewis and Algaoud, 2001).

In classical economic theory, the most common definition for interest/usury is cost for use of money. However, in Islam usury is forbidden but trading is allowed. Islam allows market forces and market economy. Private ownership is acceptable but restricted with balance of society. Unhealthy and unmoral products are allowed to be sold through to make money in secular capitalism and those who have economic power are able to make decisions without restrictions which cause imbalances in society like interest, gambling, speculative transactions can be wealth of in the hands of few. By contrast with profit maximization is limited by social and moral values in Islamic banking system. Islamic financing system's main roof is based on interest-free fundamentals completely. These fundamentals are not only for financing model, but also for entire economic, social, political and cultural life of the society. The rules and methods have been developed and spread by Islamic scholars` opinions which are dependent on main principles of Islam (Usmani, 2001).

The basic principles of the Islamic financing instruments system can be described as follows (Algaoud and Lewis, 2007; Mannan, 1986, Warde, 2010):

- Prohibition of riba
- Risk sharing
- Transactions should be free from gharar (speculation or unreasonable uncertainty)
- Prohibition of maysir (gambling)
- Business and investment should be halal (legal, permitted activities according to Sharia)
- Bank activities should be informed to business partners (transparency)
- All activities should be in proportion to Islamic principles, with a special advice board of Sharia

History and Progress of Islamic Banking

Until second half of 20th century, "Money Trusts" and "Islamic Business Partnerships" were used instead of activities of banking institutions in Islamic lands. However, history of interest-free banking in today's sense has been very short. Theoretical framework begins with the years of 1940`s. The structure was formed by relationship of interest-free banking with profit-sharing. The term of Islamic economy was started to be used first after 1945. Thoughts and writings of scholars such as Qureshi, Mevdudi, and Sadr have provided important contributions to the development of this model. Both theoretical and practical studies had a reasonable increase after the next period of initial studies. By 1955, the Pakistani Mohammed Uzair, made the first research in particularly in Islamic Banking. After the movement of ideas, first Islamic Bank under the name "MYT-Gamr" was founded in 1963 in Egypt. Ahmed Neccar was affected by principles of "social development banking" in the history of German economy and attempted to unify that system with Islamic economic system. The Bank had been able to continue until 1967. The bank was established for Egyptian peasant in order to provide them financial resources for agricultural and trading necessity. However, it was a small enterprise, it contained financial activities such as banking, commercial partnership, insurance, barter and leasing. Thereafter Islamic Development Bank was established in Jeddah in 1974, started activity in 1975 and it is the first established bank still continuing its activities (Iqbal and Molyneux, 2016; Nagaoka, 2012).

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Table 1. Islamic Finance Sector (2017)

Sector	Billion (Usd)	Share (%)	Number of Institutions/Instruments
Islamic Banking	1721	71	505
Sukuk	426	17	2590 (outstanding)
Islamic Funds	110	4	1410 (outstanding)
Takaful	46	2	324
Other Islamic Financial Institutions	135	6	560
Total	**2438**	**100**	**1339**

Source: Thomson Reuters, 2018

A significant number of people didn't invest in conventional banks because of Islamic ban on interest-based bank system, and they often keep their savings in their hands rather than depositing them in the bank. With the Islamic banking, idle savings were brought into the economy. Pakistan, Iran, Saudi Arabia, Gulf Countries and partly Malaysia have been effective in the development of Islam banking. Furthermore, improvement of cultural, social and economic relationship among the Islamic countries and using surplus funds for economic revival is the one of the important factors to establish Islamic banks. The reasons for the emergence of Islamic banks are briefly religious, economic and social (Siddiqi, 2006; IFSB, 2018).

Religious Reasons: Interest and money trade are forbidden in Islam. Therefore, these have been the main factors of the establishment of interest-free banks.

Economic Reasons: As a result of funds of the rise in oil prices since the late 1970s, financial institutions such as Dubai Islamic Bank, Faisal Islamic Bank of Sudan, Faisal Islamic Bank of Egypt and Bahrain Islamic Bank went into operation within the framework of Islamic principles in order to make interest-free banking. First interest-free bank was established in Dubai in 1975 (Nagaoka, 2012).

Social Reasons: Interest-free banking system has been developed in least developed countries to eliminate the injustice and to integrate labor and capital into the system. In this system, capital owners gain and make loss only according to the rate of their capital and that prevents a capital flow among a particular well-of society like done in interest-based system. "Social state" approach would lead to the development of interest-free banking system in least developed countries and also all countries (Iqbal and Mirakhor, 1999).

Islamic Banking Market Overview in World and Turkey

Islamic finance sector consists of Islamic banking, Sukuk, Islamic funds, Takaful and other Islamic financial institutions (investment corporations, micro-finance establishments etc.) altogether five sub-sectors.

As it is shown in the table, Islamic banking ranks first with the largest share of %71 in Islamic finance sector. Islamic banking has been accelerating its trend of growth under the great attention from the world especially in last decades. According to Islamic Finance Development Report conducted by Thomson Reuters, there are more than 500 institutions in about 43 countries operating on interest-free banking system. The total volume of those funds is about USD 1,72 trillion at the end of 2017.

Iran has the largest share in the interest-free financial system in the world with 463 billion dollars. Saudi Arabia is second with 371 billion and Malaysia is third with 165 billion dollars. These countries

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Table 2. Shares of Global Islamic Banking Assets Across Countries (2017)

Country	Billion (USD)	Share (%)
Iran	463	34,4
Saudi Arabia	371	20,4
Malaysia	165	9,3
UAE	163	9,1
Qatar	90	6,1
Kuwait	87	6
Bahrain	75	5,1
Turkey	38	2,6

Source: Thomson Reuters, 2017; IFSB, 2018

are followed by Gulf countries such as Qatar, Kuwait and Bahrain respectively. Turkey is also considered one of the leading countries in this sector with 38 billion dollars. Dubai is critical to the Islamic banking sector in the Gulf region. Islamic banking attracts attention in Europe and in other developed countries. However Gulf countries have the most important share of interest-free banking, Islamic banking has being developing in the far Asia, especially in Malaysia, Indonesia, Bangladesh and Pakistan. Turkey is a fast growing country in Interest-free banking. Islamic banking is growing rapidly in Jordan, Lebanon, Sudan and Egypt, as well as in other North African countries. Central and South African countries also have good potential for interest-free banking, and many states in the region are interested in this issue (Erol et al., 2014; IFSB, 2018).

As a founding member of Islamic Development Bank, since 1975 In Turkey, Islamic banks has begun operations in 1985 and the number of institutions has increased to six in 1996. Over the next twenty years, the share of these institutions in the traditional banking sector was at most 3%. In 2006, the statute of Islamic banking institutions was changed and Special Financial Institutions became Participation Banks by regulations of law. Thus, participation banks have been allowed to finance real economic investments in line with the principles of interest-free banking according to Banking Regulation and Supervision Agency Law. Following this legal improvement, the share of Islamic banking in Turkish banking sector increased to 5.2% in 2009 (PBAT, 2009). As of 2019 there are six Islamic banks operating in Turkey; Albaraka-Türk, Kuveyt-Türk, Türkiye Finans, Ziraat Participation, Vakıf Participation and Emlak Participation (PBAT, 2019).

As quantified in the table, the share ratio of Participation Banking decreased slightly between 2013 and 2016. After 2018 with the participation of public based Islamic banks into the sector, Participation banking has started to grow again. The share of Islamic banking in Turkish banking sector has been around 5% for the last 15 years. It is clear that that ratio is insufficient for a country where the majority of its people are Muslims. This is an indication that Islamic banking activities and services are not performed adequately and effectively. Islamic banks should work on how to develop their partnership-based business units in order to support the real sector and train experts to provide quality services. In this way, it may be possible for them to enter into a socially more effective and sustainable development.

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Table 3. Share of Islamic Banking in Turkish Banking Sector

Year	Total Assets	Share %
2014	104,073	5.2
2015	120,252	5.1
2016	132,874	4.9
2017	160,136	4.9
2018	206.806	5.3

Source: PBAT, 2018; BRSA, 2019

MAKING PREDICTION ABOUT THE ROLE OF ISLAMIC BANKING IN TURKEY

As mentioned earlier, Islamic banking has an important role to play in the development of the country's economy. Therefore, in order to ensure sustainability in economic growth, it is very important that the Islamic banking system plays a more effective and active role. In this study, estimates are made for the future of the Islamic banking system in Turkey. In the analysis process, ARIMA (Autoregressive Integrated Moving Average) model was used. The ARIMA model is a three-parameter (p, d, q) prediction model. In this context, p indicates the degree of autoregressive model (AR), d gives information about the degree of difference for stasis, and q shows the degree of moving average (MA). In determining these parameters, firstly, the stationary analysis is performed. In this way, d parameter in the model can be determined. The other two parameters of the ARIMA model, p and q, are identified with the help of the ACF (Autocorrelation Function) and PACF (Partial Autocorrelation Function) graphs. The ARIMA model is a frequently preferred approach in many areas of the literature (Nath et al., 2019; Dumitru and Gligor, 2019; Eti et al., 2019; Ordóñez et al., 2019; Domingos et al., 2019).

In order to achieve this aim, 6 different variables were used for the banking sector. Quarterly data for the mentioned variables in the period 2010-2018 is taken into consideration. Using these factors, 6 different ARIMA models were established. In addition, estimations were made for 2019 and 2020 by considering these models. In the analysis process, three Islamic banks operating in Turkey and the Islamic banking sector is considered average. Within this framework, 4 different models were established for each variable. In the analysis process, unit root tests were performed first. Then, p and q values were calculated by using ACF (Autocorrelation Function) and PACF (Partial Autocorrelation Function) graphs. Details of these issues are given in the Appendix of the study. On the other side, the prediction results of the analysis are given below for each variable.

Prediction for the Asset Size

In the first stage of the analysis process of the study, an estimation was made for the total assets of the banks. Total assets represent all assets owned by the bank. In this context, the current assets of banks and their future receivables are evaluated under this heading. This value provides information about the size of the bank. Therefore, the increase / decrease of this value includes information that the bank has grown or decreased (Kishan and Opiela, 2000). This value was estimated for 3 different Islamic banks in Turkey and the industry average. These estimation results are given in Table 4.

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Table 4 gives information that it is expected to have higher size for these 3 Islamic banks. Similar to this situation, it is also obvious that Islamic banking in Turkey is expected to increase in the following two years.

Prediction for the Return on Assets (ROA)

The second variable considered in the analysis process is the return on assets. Return on assets shows how profitable a company is relative to its total assets. Banks collect deposits from those who have surplus funds and make these collected funds available to individuals and companies as loans. Therefore, these loans and receivables are included in the asset part of the balance sheet, since loans to customers represent banks' receivables. When this information is taken into consideration, return on asset indicates the extent to which banks made profit from these loans (Agusri et al., 2019; Kanter and Siagian, 2019). Estimates of future return on assets of Islamic banks and Islamic banking system in Turkey is given in Table 5.

As can be seen from Table 5, both the banks and the sector are expected to be more profitable in the future.

Prediction for the Bank Capital Amount

Capital refers to the money and goods placed by the founders of the company. Capital figures are important for banks in many respects. First of all, banks with high capital can increase their liquidity power and compensate for urgent deposit outflows during crisis and panic. On the other hand, having high capital may increase the credibility of banks (Schwert, 2018). Table 6 provides estimates of future capital figures for Islamic banks and the sector.

Table 4. Forecasting of Asset Size (2019-2020)

Banks	2019-2	2019-3	2019-4	2020-1	2020-2	2020-3	2020-4
Albaraka	44.621.035	45.774.578	46.744.078	47.796.447	48.811.503	49.843.359	50.867.651
Kuveyt Türk	78.068.432	79.986.485	81.904.539	83.822.592	85.740.645	87.658.699	89.576.752
Türkiye Finans	49.891.093	51.040.061	52.174.772	53.311.453	54.447.862	55.584.308	56.720.749
Islamic Banking (Average)	57.184.572	58.525.448	59.866.324	61.207.200	62.548.075	63.888.951	65.229.827

Table 5. Forecasting of Return on Asset (2019-2020)

Banks	2019-2	2019-3	2019-4	2020-1	2020-2	2020-3	2020-4
Albaraka	0,21	0,67	0,31	0,06	0,16	0,58	0,22
Kuveyt Türk	0,77	1,12	1,34	0,53	0,93	1,21	1,48
Türkiye Finans	0,16	0,49	0,84	0,21	0,08	0,40	0,73
Islamic Banking (Average)	0,44	0,71	0,82	0,21	0,44	0,74	0,83

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Table 6. Forecasting of Bank Capital (2019-2020)

Banks	2019-2	2019-3	2019-4	2020-1	2020-2	2020-3	2020-4
Albaraka	7,61	7,68	7,97	8,09	8,17	8,24	8,28
Kuveyt Türk	7,07	6,94	6,81	6,68	6,54	6,41	6,28
Türkiye Finans	8,90	8,76	8,62	8,48	8,33	8,19	8,05
Islamic Banking (Average)	7,69	7,55	7,41	7,26	7,12	6,98	6,83

Table 6 states that Albaraka is expected to have higher capital in the future. On the other side, other 2 Islamic banks (Türkiye Finans and Kuveyt Türk) will have lower capital in the future. This situation is similar for Islamic banking average of Turkey.

Prediction for the Off-Balance Sheet Items

Off-balance sheet transactions include matters not directly included in the balance sheet but affecting the profitability of the bank. Banks' off-balance sheet transactions mainly consist of non-cash loans and derivative products. Non-cash loans include commitments and letter of credits. On the other hand, derivative products consist of forward, future, swap and option transactions. Derivatives can be used mainly by banks for hedging purposes. Especially in recent years, a significant increase has been observed in off-balance sheet transactions of banks (Oktar and Yüksel, 2016; Kuldeep et al., 2018). Islamic banking sector and estimates of off-balance sheet transactions for banks in Turkey are shown in Table 7.

Table 7 indicates that Islamic banks are expected to use more off-balance sheet items in the future. However, this situation is different for Türkiye Finans. These results provide an important information for Islamic banking sector of Turkey. Financial derivatives are not preferred by Islamic banks due to doubts about their compliance with Islam. Therefore, this increase expectation is mainly directed to non-cash loans.

Prediction for the Non-performing Loan Ratio (NPL)

Non-performing loans indicate loans that customers cannot pay to banks. The legal process starts with regard to the loans that cannot be paid by the customers within the periods specified in the laws. These loans may cause significant losses for banks. Therefore, it is important that banks take certain measures. In this context, the past payment performance of the loan requesting customers should be analyzed in

Table 7. Forecasting of Off-balance Sheet Items (2019-2020)

Banks	2019-2	2019-3	2019-4	2020-1	2020-2	2020-3	2020-4
Albaraka	0,62	0,01	0,25	1,77	2,15	1,54	1,90
Kuveyt Türk	0,95	0,71	0,68	2,07	2,35	2,05	2,25
Türkiye Finans	0,23	0,31	0,37	0,56	0,76	0,16	0,18
Islamic Banking (Average)	0,64	0,13	0,15	1,64	2,05	1,48	1,60

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detail. In addition, the payment performance of the credit customers should be periodically controlled (Anastasiou et al., 2019; Dinçer et al., 2018b). On the other hand, not concentrating on a single sector while giving credit is one of the important measures that can be taken in this regard. Estimated results of the nonperforming loans for Islamic banks in Turkey in future were shared in Table 8.

Table 8 explains that nonperforming loans ratio is expected to increase for both Islamic banks and Islamic banking average in Turkey in two years period.

Prediction for the Liquidity Position

Liquidity is a vital issue for banks. The importance of this issue has been understood in recent financial crises. These crises have had an impact not only in developing countries but also in developed economies. It is seen that the banks, which do not have profitability problems in the related crises, also have problems due to the liquidity problem. Therefore, banks are required to periodically check their liquidity position (Jiang et al., 2019). Table 9 estimates the future liquidity situation of Islamic banks in Turkey.

Table 9 demonstrates that there is not an important change in the liquidity position of Islamic banks in Turkey.

SOLUTIONS AND RECOMMENDATIONS

The results of the study indicate that Islamic banks in Turkey will have higher size and become more profitable. On the other side, it is also concluded that nonperforming loans and capital amount are expected to be lower. This issue explains that Islamic banks should be very careful in this growing process. In other words, these banks should evaluate the credibility of the customers very effectively while giving credits.

Table 8. Forecasting of Non-performing Loan Ratio (NPL) (2019-2020)

Banks	2019-2	2019-3	2019-4	2020-1	2020-2	2020-3	2020-4
Albaraka	7,62	7,72	7,81	7,91	8,01	8,10	8,20
Kuveyt Türk	2,92	2,95	2,98	3,01	3,04	3,06	3,08
Türkiye Finans	5,72	5,81	5,87	5,92	5,97	6,02	6,07
Islamic Banking (Average)	5,24	5,26	5,28	5,30	5,32	5,34	5,36

Table 9. Forecasting of Liquidity (2019-2020)

Banks	2019-2	2019-3	2019-4	2020-1	2020-2	2020-3	2020-4
Albaraka	93,88	93,88	93,88	93,88	93,88	93,89	93,89
Kuveyt Türk	84,18	83,79	83,39	83,00	82,61	82,22	81,83
Türkiye Finans	111,69	112,02	112,35	112,68	113,01	113,34	113,67
Islamic Banking (Average)	97,28	98,99	99,76	100,10	100,25	100,32	100,35

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FUTURE RESEARCH DIRECTIONS

This study focused on the future of Islamic banking in Turkey. In order to achieve this aim, models have been established using ARIMA method. In future studies, it will be possible to make a comparative analysis using a different method. On the other hand, it was concluded that conducting this study on traditional banks will also contribute to the literature.

CONCLUSION

In this study, the future status of Islamic banking in Turkey has tried to forecast. For this purpose, 3 different Islamic banks (Albaraka, Kuveyt Türk, Türkiye Finans) and sector averages are taken into consideration. Six different variables (total assets, return on assets, capital, off-balance sheet items, nonperforming loans, liquidity) were determined for the banking sector. The stubble data for these variables were made using the quarterly data for the period 2010-2018. In this process, considering the ARIMA method, a separate model was established for each variable. Then, considering these models, future predictions were made.

According to the results, it is expected that the size of the Islamic banks will increase in two years period. Another important point is that, both the banks and the sector are expected to be more profitable in the future. On the other side, with respect to the capital amount, Albaraka is expected to have higher amount in the future whereas other 2 Islamic banks (Türkiye Finans and Kuveyt Türk) and Islamic banking average of Turkey will be lower. Moreover, it is also expected that more off-balance sheet items will be used in the future. However, nonperforming loans ratio is expected to increase for both Islamic banks and Islamic banking average in Turkey in two years period. The final significant point is that there is not an important change in the liquidity position of Islamic banks in Turkey.

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KEY TERMS AND DEFINITIONS

ACF: Autocorrelation Function.
ARIMA: Autoregressive Integrated Moving Average.
BRSA: Banking Regulation and Supervision Agency.
NPL: Nonperforming Loans.
PACF: Partial Autocorrelation Function.
UAE: United Arab Emirates.
USD: American Dollar.

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APPENDIX

Table 10. ADF Unit Root Test Results of Asset Size

Banks	P Values			d Value Results
	Level Value	First Difference	Second Difference	
Albaraka	0.9918	0.0000	-	1
Kuveyt Türk	0.9998	0.0010	-	1
Türkiye Finans	0.8838	0.0000	-	1
Islamic Banking (Average)	0.9906	0.0000	-	1

Table 11. The Details of ARIMA Models of Asset Size

Banks	p	d	q	R^2
Albaraka	1	1	1	0,987
Kuveyt Türk	0	1	0	0,989
Türkiye Finans	1	1	1	0,935
Islamic Banking (Average)	0	1	0	0,983

Table 12. ADF Unit Root Test Results of Return on Asset

Banks	P Values			d Value Results
	Level Value	First Difference	Second Difference	
Albaraka	0.8611	0.0001	-	1
Kuveyt Türk	0.1385	0.7144	0.0000	2
Türkiye Finans	0.6635	0.0153	-	1
Islamic Banking (Average)	0.6319	0.1354	0.0001	2

Table 13. The Details of ARIMA Models of Return on Asset

Banks	p	d	q	R^2
Albaraka	3	1	4	0,721
Kuveyt Türk	3	2	10	0,275
Türkiye Finans	3	1	5	0,750
Islamic Banking (Average)	3	2	10	0,408

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Table 14. ADF Unit Root Test Results of Bank Capital

Banks	P Values			d Value Results
	Level Value	First Difference	Second Difference	
Albaraka	0.0238	-	-	0
Kuveyt Türk	0.5217	0.0000	-	1
Türkiye Finans	0.2576	0.0000	-	1
Islamic Banking (Average)	0.3366	0.0000	-	1

Table 15. The Details of ARIMA Models of Bank Capital

Banks	p	d	q	R^2
Albaraka	1	0	7	0,445
Kuveyt Türk	0	1	0	0,823
Türkiye Finans	0	1	0	0,835
Islamic Banking (Average)	2	1	2	0,839

Table 16. ADF Unit Root Test Results of Off-balance Sheet Items

Banks	P Values			d Value Results
	Level Value	First Difference	Second Difference	
Albaraka	0.9687	0.9723	0.0001	2
Kuveyt Türk	0.9991	0.9978	0.0001	2
Türkiye Finans	0.9783	0.8870	0.0001	2
Islamic Banking (Average)	0.9845	0.8003	0.0000	2

Table 17. The Details of ARIMA Models of Off-balance Sheet Items

Banks	p	d	q	R^2
Albaraka	2	2	11	0,475
Kuveyt Türk	2	2	11	0,541
Türkiye Finans	2	2	11	0,399
Islamic Banking (Average)	2	2	11	0,477

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Table 18. ADF Unit Root Test Results of Non-performing Loan Ratio (NPL)

Banks	P Values			d Value Results
	Level Value	First Difference	Second Difference	
Albaraka	0.9952	0.0090	-	1
Kuveyt Türk	0.0088	-		0
Türkiye Finans	0.9285	0.0000	-	1
Islamic Banking (Average)	0.9097	0.0049	-	1

Table 19. The Details of ARIMA Models of Non-performing Loan Ratio (NPL)

Banks	p	d	q	R^2
Albaraka	1	1	1	0,931
Kuveyt Türk	1	0	2	0,627
Türkiye Finans	1	1	2	0,936
Islamic Banking (Average)	0	1	0	0,889

Table 20. ADF Unit Root Test Results of Liquidity

Banks	P Values			d Value Results
	Level Value	First Difference	Second Difference	
Albaraka	0.0030	-	-	0
Kuveyt Türk	0.0554	0.0006	-	1
Türkiye Finans	0.1469	0.0019	-	1
Islamic Banking (Average)	0.0451	-	-	0

Table 21. The Details of ARIMA Models of Liquidity

Banks	p	d	q	R^2
Albaraka	1	0	2	0,222
Kuveyt Türk	0	1	0	0,049
Türkiye Finans	0	1	0	0,643
Islamic Banking (Average)	1	0	2	0,417

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