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Is there a Link between Profit Share Rate of Participation Banks and Interest Rate?: The Case of Turkey

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Today, the sensitive side of national economies is financial sector. The main reason for this sensitivity is financial crises. This situation has increased the demand and orientation for Islamic finance as a substitute for the modern financial system. The Islamic finance is discussed as a real solution to financial crises because the Islamic finance methods and applications depend on real economic activities. Both this case and the distance that is taken by Muslim countries in recent years has increased the share of Islamic banking/finance in the world. Thus, it has been a long debate in Islamic finance literature to investigate the presence of dependency between profit share rate settled by participation banks and deposit interest rate offered in conventional banking. In this study, variables that affect profit share rate of participation banks and deposit interest rate of conventional banks are examined over the period between January 2006 and May 2015 in Turkey. Multiple regression analysis is made by OLS method and Granger Causality is applied. Empirical results are pointed out that interest rate on government security and foreign exchange rate are significantly effective on participation banks' profit share rate. In addition, the profitability of conventional banks, government security, and foreign exchange rate are significantly effective on deposit interest rate settled by conventional banks. Besides, Granger causality analysis stressed that there is bidirectional causal relationship between profit share rate and interest rate. The main reason for this link between conventional interest rate and profit share rate arises with the domiance of murabahah, simple buy and sell with term sale transactions, at Islamic financial institutions. The interest rate is a benchmark for participation banks to determine the profit share rate. To get rid of this dependency, Islamic financial institutions may tend towards mudarabah transactions.

Keywords: Islamic banking and finance, participation banks, banking system, rate of returns, profit share rate, interest

JEL: C32, C58, Z12

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1. Introduction and Brief History of Islamic Financial Institutions

The prohibition of interest in Islamic economics draws the broad contours of borrowing and lending[3]. Thus, Islamic financial instruments are shaped by this ban. Moreover, the Islamic shares should not contain the firms that are engaged in interest, alcoholic beverages, pork etc. Although many restrictions may seem, Islamic finance is spread on a wide spectrum. Because the flexibility of Islamic jurisprudence has led the Islamic societies to find many solutions to overcome prohibitions. These solutions are based on production and commercial due to interest rate ban.

In addition, the Islamic financial institutions and banks arise from the Middle East and Southeast Asia regions. Because, the interest-based system is prohibited in these regions by Islam, and direct these societies to alternative kinds of systems. Bahrain and Malaysia are the major hubs of the Islamic banking in the world. However, these kinds of banks appear not only in Islamic societies but also exist in non-Islamic societies. They spread across from these regions to Europe and United States in time (Ahmad and Noor, 2011, p. 1).

Dealing of interest is the major difference between the conventional banking and Islamic banking. Interest is mainly used in debt and finance in the conventional banking system. The all conventional banking system is based on debt money. There is a huge difference between the real money and the alleged money in the market because of money creation mechanism. Yamaguchi (2011) claims that this debt money system causes financial failures/crises in the economy. Thus, the Islamic finance can be a solution to these failures. Because, there is no fake money creation due to all transactions are depended on true commodities. Furthermore, sharing risk composes the fundamentals of the Islamic finance (Ng, Mirakhor, & İbrahim, 2015, p. 161). However, this is not valid for the modern conventional banking system. Islamic

[3] Surah Al-Baqarah, Quran (2:275) Those who consume interest cannot stand [on the Day of Resurrection] except as one stands who is being beaten by Satan into insanity. That is because they say, "Trade is [just] like interest." *But Allah has permitted trade and has forbidden interest.* So whoever has received an admonition from his Lord and desists may have what is past, and his affair rests with Allah. But whoever returns to [dealing in interest or usury] - those are the companions of the Fire; they will abide eternally therein.

banking system is similar to conventional banking system but it is mainly based on profit and loss sharing between the borrowers and banks (Khan and Mirakhor, 1987). So, the major component which is non-fixed-interest-rate regime forms all the transactions in Islamic banking. Islamic banks generally offer three main types of account for their clients; current account, saving account, and investment deposit account (Bessadet and Karema, 2009). In addition, there are five basic contracts in Islamic finance*: Mudarabah, Musharakah, Murabahah, Ijarah,* and *Salam* (Smaoui and Salah, 2011, pp. 3-4). Transactions in Islamic banking are mainly developed around these contracts. But, new halal Islamic banking products are launched with the developments in Islamic banking in time.

Despite the advantages of the Islamic banks over the conventional banks, there are also some weaknesses of these kinds of banks which include theoretical issues and operational issues. Islamic banking is strictly based on Sharia rules. Thus, practice in banking area cannot begin without handling Sharia issues. However, since the weak communication between the jurists and the financial engineers, issues can't be handled easily. Because, each group has a different language, method, and mentality. On the other side, Islamic banks should consider issues, risk management, internal audit, transparency etc., like conventional banks because of Basel II rules (Iqbal and Molyneux, 2005, pp. 105-122).

1.1. Islamic Financial Institutions in the World

We will not focus the history of Islamic finance and banking in this study. However, it can be said that the modern studies on Islamic finance were started at the beginning of the 1950s (Can, 2014). Addition to this, first modern applications of Islamic finance brought out in 1963 with the Mith Ghams Savings Bank administrated by Ahmad El-Naggar in Egypt (Wilson, 1983, p. 76). The other modern Islamic financial institutions were founded after Mith Ghams Savings Bank. However, it was known that there were cash waqfs (CWs) in Ottoman that operated as Islamic financial institutions since the 15th century. They met the demand for credit. The cash needs of artisans, merchants and other entrepreneurs were provided by CWs (Bulut, 2005, s. 450). They were operated with the methods (qardh[4], mudarabah[5], bidaa, murabahah[6],

[4] Interest-free loan also called as beatiful loan

istighlal[7], rental transformation, the remuneration from Awqaf-ı Humayun, istirbah at Kısmet-i Askeriyye Court) under the Islamic fiqh (Çam, 2014, s. 40). Thus, they can be accepted as pioneers of Islamic financial institutions. These waqfs have been successful in terms of both economic needs and charity services.

Table 1. Pioneers of Modern Islamic Financial Institutions in World

Institution	**Head Office**	**Founded**	**Ownership Status**
The Investment Corporation of Pakistan	Islamabad	1966	Private companies 75%, institutional investors 20%, public 5%
Nasser Social Bank	Cairo	1972	Egyptian state owned (100%)
Dubai Islamic Bank	Dubai	1975	Joint stock company with 10% Kuwait government share
Kuwait Finance House	Kuwait	1977	Kuwait government 49%, private investors 51%
Faisal Islamic Bank of Sudan	Khartoum	1977	Sudanese citizens and state institutions 40%, Saudi private citizens 40%, other nationals 20%
Faisal Islamic Bank of Egypt	Cairo	1977	Egyptian citizens and state institutions 51%, Saudi and other Arab nationals 49%
Jordan Islamic Bank for Finance and Investment	Amman	1978	Jordanian private investors 98,7%, Housing Bank 1.3%
Bahrain Islamic Bank	Manama	1979	Bahrain citizens, government and social security fund 30%, Kuwaiti interest 30%, Dubai Islamic Bank 5%, Saudi investors 35%
Iran Islamic Bank	Tehran	1979	Iranian merchants 100%

Source: (Wilson, 1983, p. 81)

[5] Trust financing partnership; a contract between a capital provider (r abbul mal) and an entrepreneur (mudarib) under which the rabbul mal provides capital to be managed by the mudarib and any profit generated from the capital is shared between the rabbul mal and mudarib according to mutually agreed profit-sharing ratio while financial losses are borne by the rabbul mal provided that such losses are not due to the mudarib 's misconduct, negligence, or breach of specified terms (Ng, Mirakhor, & İbrahim, 2015, p. 184)

[6] Sale and purchase contract where the acquisition cost and the mark-up are disclosed to the purchaser (Ng, Mirakhor, & İbrahim, 2015, p. 184)

[7] Collateral for borrowed cash from cash waqf used in the Ottoman period (Ng, Mirakhor, & İbrahim, 2015, p. 184)

The pioneers of modern Islamic financial institutions in World, especially in the Middle East were listed in Table 1. It was thought the first modern bank was founded in the 15th century. This situation shows the differences of mentality between civilizations. The interest ban can be considered as the reason of rapid developments in modern banking in West not in Islamic civilization. However, the Western countries noticed the great potential of Islamic economics and finance future and some of the Western banks started to found Islamic finance department that operated under Islamic principles in their own structure. Such as, London became one of the centers of Islamic financial institutions in the world (Khorshid, 2004, p. 15).

Although some people thought that there are suspicions about financing terrorist organizations, the demand for Sharia-complaint funds increased even post-September 11. These Islamic financial institutions spread through various countries from Bahrain to Malaysia, even in secular countries like England and Australia (Venardos, Islamic Banking & Finance in South-East Asia Its Development & Future, 2006, p. 25).

1.2. Participation Banking in Turkey

Modern Islamic financial institutions began to operate with the law that was accepted at 16.12.1983 in Turkey. This kind of institutions was named as Private Financial Institution or Private Finance House[8]. Taking capital flows of Middle Eastern countries into Turkey is the main goal of these institutions. On the other hand, there were other interest-free applications in Turkey before 1983. One of them was State Industrial and Workers Investment Bank (DESİYAB). This organization was run by the state. But, it did not continue using interest-free application. Thus, it can be thought as an unsuccessful attempt for Turkey(Karapınar & Doğan, 2015, pp. 24-25). First, Albaraka Türk Private Financial Institution have been founded to operate in 1985. Then, Kuwait Türk Awqaf Financial Institution established in 1989. After that, in chronological order, Anadolu Financial Institution in 1991, İhlas Financial Institution in 1995, and Asya Financial Institution in 1996 were established as Islamic institutions after the law.

[8] Özel Finans Kurumları in Turkish.

The approach of Turkey differs from the world about Islamic finance. Turkey does not prefer to use Islam and banking terms side by side. So, these financial institutions are called as participation banks generally not Islamic banks. Moreover, the Islamic financial institutions also use participation term rather than bank, like Al Baraka Participation, Vakıf Participation etc.

Four participation banks have been operated in Turkey for many years. This fact has curbed the development of Islamic banking in Turkey. On the other hand, the current government began to pay special attention to this area. Therefore, Ziraat Participation was founded in May 2015 with paid-in capital 675 million Turkish Liras[9] as a first state participation bank. Moreover, again, another state participation bank, Vakıf Participation was founded in February 2016 with paid-in capital 805 million Turkish Liras[10]. The studies about another state participation bank, Halk Participation are still ongoing. This shows that the ratio of participation banking over total sector will rise in time. Thus, Turkey can be found to catch the chance of being one of the interest-free financing sector centers. Turkey has a serious potential especially with its location to accumulate the capital that is distributed to secular Western countries. In this respect, the state's supports to participation banking sector is crucial.

1.3. The Existing Participation Banks in Turkey

There are six participation banks in Turkish banking sector now[11]: (1) Albaraka Türk Participation Bank, (2) Bank Asya, (3) Kuveyt Turk Participation Bank Inc., (4) Türkiye Finans Participation Bank, (5) Vakıf Participation Bank and (6) Ziraat Participation Bank.

[9] http://www.ziraatkatilim.com.tr/en/our-bank/Pages/about-us.aspx
[10] http://vakifkatilim.com.tr/hakkimizda/index.html
[11] The information is taken from Participation Banks Association of Turkey (TKBB)

Table 2. Shares of Participation Banks in Turkish Banking Sector

	January 2016
Collected fund	5,9%
Given fund	5,2%
Total assets	5,0%
Equity	4,0%
Net Profit	0,9%

Source: Participation Banks Association of Turkey

The total assets of participation banks are 119.804 million TL in January 2016. This means that the share of total assets of participation banks in total banking sector is 5,0%. The aim of Turkey is that reaching the share of participation banks in the total banking sector 15% in 2023.

2. Literature Review

It has been a long debate in Islamic finance literature to examine whether there is a correlation between profit share rate offered by participation banks and interest rate settled in conventional banking. Furthermore, there is a wide range of studies in the literature to stress the determinants of the volume of deposits settled in participation accounts and the factors influencing the profit share rate offered by participation banks both in Turkey and other Muslim societies in which participation banks operating. In this part of the paper, we aimed to mention briefly to these studies chronologically both in a single country and multi-country basis.

Haron and Ahmad (2000) examined the volume of participation accounts settled in Malaysian participation banks by using monthly data covering the period between January 1984 through December 1998. Results of their study highlighted that there is an inverse relationship between the interest rate offered by commercial banks and the volume of participation accounts. Thus, their findings revealed that the people who deposited their savings in participation accounts stimulated with the profit motive and they do not act the way compatible with Shariah doctrines.

Chong and Liu (2009) investigated the deposit rates in commercial banks and profit share rates in participation banks for the banks running in Malaysia during the period between April 1995 and April 2004. They utilized Engle-Granger error correction method to analyze the causal relationship between the deposit returns of participation and commercial banks. Results of their study pointed out that the Islamic investment rates are sensitive to changes in conventional interest rates settled by commercial banks in the long-term. Similarly, **Zainol and Kassim (2010)** analyzed the Malaysian banking sector with monthly data over the period January 1997 and October 2008. They concluded that Islamic banks' rate of return and deposit banks' deposit rate is co-integrated. Also, they revealed that there is a bi-directional causal relationship between rate of return and deposit interest rate.

Moreover, **Abduh et al. (2011)** investigated the dynamic relationship between the volume of participation accounts in participation banks and interest rate, profit share rate, production level, inflation and crisis in Malaysia. They used monthly data between January 2000 and December 2010 and employed co-integration test and vector error correction method. Their findings stressed that changes in interest rates, profit share rate, and production level growth is not significantly effective over the amount settled in participation accounts whereas inflation has a negative effect on participation accounts.

Aziz et al. (2014) aimed to point out the macroeconomic variables that influence the volume of participation accounts in Qatar by using quarterly data over the period between 2006 and 2013. They employed co-integration test and vector error correction methodology. Empirical results of their study highlighted that deposits in participation banks are not influenced by conventional banks' interest rate, Islamic banks' profit rate, and other macroeconomic indicators. **Cevik and Charap (2011)** investigated the correlation between profit share rate and commercial bank deposit rate in Turkey and Malaysia by gathering monthly data between January 1997 and August 2010. Empirical results of their study pointed out that profit share rate and deposit rate are co-integrated both in Turkey and Malaysia. Also, they revealed that there is unidirectional causal relationship between profit share rate and conventional interest rate. In addition, volatility of these two variables are highly correlated in Turkey and Malaysia.

Moreover, **Yusof et al. (2015)** analyzed the correlation between commercial bank deposit rate and participation banks profit share rate in GCC countries (Bahrain, Saudi Arabia, UAE, Kuwait, and Qatar) with 18 participation banks between 1998 and 2010. Empirical results of their study pointed out that, as it is expected and compatible with Sharia, deposit banks interest rates and profit share rate are not co-integrated in the long-run, and there is no correlation between these two in the short-term**. Meslier et al. (2016)** further analyzed the pricing behavior of commercial and participation banks in 20 countries which comprises dual banking system over the period between 2000 and 2014. They mentioned that conventional banks operating in dominant Muslim societies set higher prices to attract depositors. Also, empirical results of their study stressed that market power is not statistically significant for participation banks whereas commercial banks can set lower interest rates.

There are also some studies aiming to analyze the variables affecting deposits in commercial and participation banks in Turkey. **Ergeç and Arslan (2011)** examined the impact of interest rate shocks on the volume of participation accounts and deposits held by participation and commercial banks respectively in Turkey. They used monthly data for the period from December 2005 to July 2009 and employed vector error correction methodology. Empirically, they presented that deposits held by conventional banks respond negatively to a positive interest rate shock up to 4 months, then the response turns to positive whereas deposit in participation banks respond negatively to a positive interest rate shock up to 11 months. Briefly, they concluded that deposits held by participation banks are affected by interest rate changes.

Likewise, **Aysan et al. (2014)** analyzed the response of deposits settled in conventional and participation banks operating in Turkey to interest rate changes. They divided the depositors into five groups according to their deposit size and utilized panel vector autoregression method in order to display dynamic effects of interest rate shocks on deposits. Results of their study pointed out that in conventional banks, except largest owner group other deposit owner groups are not sensitive to interest rate changes. However, in participation banks except for smallest deposit holders, all respond significantly and negatively to interest rate shocks. Moreover, by using aggregated data in both banking forms, the amount of deposits settled respond negatively and

significantly to a positive interest rate shock. Furthermore, **Çetin (2014)** examined the relationship between deposits held in participation banks and financial variables in Turkey over the period between December 2005 and November 2013. Jonahsen co-integration test results displayed that, all the variables that are participation bank deposits, 3-month Libor rate, 1 ounce London gold price and Turkey's CPI are co-integrated in the long-term. Also, according to VAR analysis, 3-month Libor rate is more effective to explain the variation in the volume of participation bank deposits than the other variables.

In their study that analyzes the causal relationship between conventional banks deposit rate and participation banks' rate of return in Turkey, **Ergec and Kaytanci (2014)** used monthly data covering the period between 2002 and 2010. They performed Granger causality method and the results of their study stressed that time deposit interest rates are the Granger cause of the participation banks' rate of return. Briefly, it is concluded that participation banks are sensitive to changes in interest rates settled by conventional banks in Turkey. Currently, **Saraç and Zeren (2015)** further analyzed the long-run relationship between conventional bank time deposit rates and participation banks profit share rate by employing Maki co-integration test with multiple breaks and frequency domain causality tests over the period December 2001 and August 2013 for the banks operating in Turkey. Co-integration test results represented that rate of returns in two banking forms pegged together in the long-term. Also, frequency domain causality test results displayed the fact that there is a permanent causality runs from conventional bank deposit rate to participation banks' profit share rate.

3. Data and Methodology

Economic relationships generally include more than one independent variable.

In this study, two econometric models are constructed for modeling determinants of PSR (profit share rate of participation banks) for participation banking and IR (interest rate of deposit banks) for deposit banking. The main goal of this study is estimating coefficients of determinants of PSR and IR models based on OLS method. For this purpose, Eq. 6 and Eq. 7. are set up, respectively. These analyses are based on monthly time series data which cover the period of 2006M1-

2015M5 for Turkish banking sector. TREND is included to models as a linear time trend, ε is the error term. Description of data is represented in Table 1. Returns of GOLD, BIST (Borsa İstanbul, stock exchange), GS (government security), FX (foreign exchange rate), and PPB (net profit of participation banks) are the independent variables of Eq. 6. On the other hand, PDB (net profit of deposit banks) is included to Eq. 7 instead of the net profit of participation banks for estimating IR. PSR is calculated from average profit share rates of Albaraka Türk, Kuveyt Türk, Bank Asya, and Türkiye Finans[12].

$$PSR_t = \alpha + \beta_1 \Delta PPB_t + \beta_2 GOLD_t + \beta_3 BIST_t + \beta_4 GS_t + \beta_5 FX_t + \beta_6 TREND_t + \varepsilon_t \quad (2)$$

$$IR_t = \alpha + \beta_1 \Delta PDB_t + \beta_2 GOLD_t + \beta_3 BIST_t + \beta_4 GS_t + \beta_5 FX_t + \beta_6 TREND_t + \varepsilon_t \quad (3)$$

Table 3: Descriptions of Data

Abbreviations	Variables	Source	Unit
PSR	Profit Share Rate of Participation Banks	PBAT	Nominal monthly
IR	Interest Rate of Deposit Banks	CBRT	Nominal monthly
PDB	Net Profit of Deposit Banks	BRSA	Nominal monthly
PPB	Net Profit of Participation Banks	BRSA	Nominal monthly
GOLD	Return of Gold	TURKSTAT	Monthly real return (2003=100)
BIST	Return of Borsa İstanbul	TURKSTAT	Monthly real return (2003=100)
GS	Return of Government Security	TURKSTAT	Monthly real return (2003=100)
FX	Return of Exchange Rate	TURKSTAT	Monthly real return (2003=100)

Series are gathered from PBAT (Participation Banks Association of Turkey), CBRT (Central Bank of the Republic of Turkey), BRSA

[12] Ziraat and Vakıf Participation Banks are founded recently and the data is not sufficient for tests. The other issue is that Bank Asya had operations between the years 2006 and 2015. So, Albaraka Türk, Kuveyt Türk, Bank Asya, and Türkiye Finans are taken for correct test results.

(Banking Regulation and Supervision Agency), and TURKSTAT (Turkish Statistical Institute). All series are converted to seasonally adjusted monthly data in terms of real Turkish Liras. Census X-13-additive method is conducted for seasonal adjustments of series. Summary statistics that includes meanig, median, maximum value, minimum value, standard deviation, skewness and kurtosis of dependent and independent variables are displayed in Table 4.

Table 4: Descriptive statistics of the variables

Descriptive Statistics	**PSR**	**IR**	**PDB**	**PPB**	**GOLD**	**BIST**	**GS**	**FX**
Mean	0.22	0.13	17.26	0.80	0.81	0.30	0.33	0.00
Median	0.24	0.13	17.40	0.78	0.24	0.45	0.44	-0.32
Maximum	1.77	1.77	23.18	1.20	16.98	20.63	5.24	15.19
Minimum	-2.15	-2.22	10.94	0.32	-10.97	-27.79	-5.21	-5.93
Standard Deviation	0.60	0.63	3.00	0.23	4.48	6.58	1.45	2.91
Skewness	-0.33	-0.26	-0.08	-0.03	1.19	-0.51	-0.45	1.84
Kurtosis	4.39	3.97	1.89	1.90	5.76	5.96	5.25	10.08

4. Econometric Results

Stationarity of the variables is a very significant issue to estimate an econometric model in time series analysis. Estimation results may be spurious when the series have unit roots. This makes t-stats of coefficients higher than they should be (Granger and Newbold, 1974). Thus, stationarity of the variables is tested with Augmented Dickey-Fuller (ADF) Test and Phillips-Perron (PP) Test in this study. Unit root test results for constant and constant and trend models are displayed in Table 5.

Table 5: Unit root test results

	ADF Test		PP Test	
Variables	**Constant**	**Constant & Trend**	**Constant**	**Constant & Trend**
PSR	-7.09***	-8.27***	-7.02***	-8.25***
IR	-6.63***	-8.58***	-6.72***	-8.60***
PDB	-1.63	-4.09***	-2.14	-4.09***
PPB	-1.06	-2.38	-1.03	-4.44***
GOLD	-8.27***	-8.33***	-8.31***	-8.37***
BIST	-8.16***	-8.13***	-8.13***	-8.10***
GS	-6.31***	-6.50***	-6.04***	-6.01***
FX	-7.42***	-7.41***	-7.13***	-7.11***
ΔPPB	-12.91***	-12.87***	-18.69***	-18.81***
ΔPDB	-11.05***	-11.00***	-14.26***	-14.20***

Note: Δ denotes difference operator. *** denotes 1% significance level.

Empirical results suggest that PSR, IR, GOLD, BIST, GS, and FX are stationary at their level values (I(0)). However, PPB and PDB are stationary at their first difference (I(1)). So, stationary variables should use in the OLS method in this study.

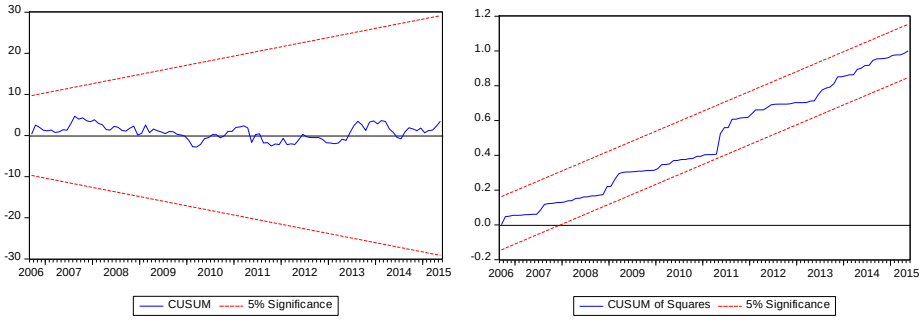
Econometric results of the PSR model is displayed in Table 4. Results suggest that GS and FX have a positive effect on PSR. A one-unit increase in return of government security leads profit share rate of participation banks to rise by 0.30 unit at 1% significance level. Moreover, a one-unit increase in return of foreign exchange causes profit share rate to increase about 0.04 unit at 5% significance level.

Table 6: Coefficients of PSR model

Variables	**Coefficients**	**t-Statistic**
C	0.44***	5.47
ΔPPB	0.87	1.24
GOLD	-0.01	-1.24
BIST	-0.00	-0.39
GS	0.30***	9.52
FX	0.04**	2.46
TREND	-0.00***	-4.76
Descriptive Statistics		
R^2	0.60	
Adjusted R^2	0.58	
Autocorrelation (LM Test)	1.26 [0.53]	
Heteroscedasticity (White	24.89 [0.58]	
Normality (Jarque-Bera	15.96 [0.00]	

Note: *** and ** denotes statistical significance at the 1% and 5% respectively. Figures in the square brackets are p-values.

Figure 1: CUSUM and CUSUMQ of PSR model



In order to test the presence of multicollinearity in the presented model we constructed correlation matrix in Table 7.

Table 7: Correlation Matrix for PSR Model

Variables	PPB	FX	GOLD	GS	BIST
PPB	1.00	0.18	0.18	-0.05	-0.14
FX	0.18	1.00	0.56	-0.40	-0.66
GOLD	0.18	0.56	1.00	-0.07	-0.39
GS	-0.05	-0.40	-0.07	1.00	0.55
BIST	-0.14	-0.66	-0.39	0.55	1.00

Furthermore, as an additional evidence to represent the lack of multicollinearity, centered VIF values are displayed in Table 8.

Table 8: Centered VIF Values for PSR Model

Variables	Centered VIF
PPB	1.04
GOLD	1.59
BIST	2.27
GS	1.61
FX	2.32

Both correlation matrix and centered VIF values demonstrated that there is no significant multicollinearity problem in the constructed PSR model.

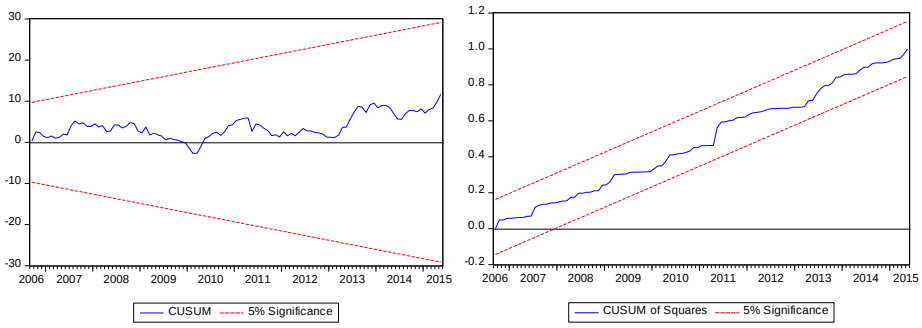
Results of IR model are showed in Table 5. Empirical results suggest that one-unit increase in PDB increases IR about 0.08 unit at 1% significance level. On the other hand, a one-unit increase in GS and FX both have a positive impact on IR about 0.30 unit and 0.05 unit at 1% significance level respectively.

Table9: Coefficients of IR model

Variables	**Coefficients**	**t-Statistic**
C	0.50***	6.42
ΔPDB	0.08***	3.13
GOLD	-0.01	-1.88
BIST	-0.01	-1.23
GS	0.30***	9.78
FX	0.05***	2.84
TREND	-0.00***	-7.08
Descriptive Statistics		
R^2	0.66	
Adjusted R^2	0.64	
Autocorrelation (LM Test)	0.69 [0.70]	
Heteroscedasticity (White Test)	25.72 [0.53]	
Normality (Jarque-Bera Test)	6.65 [0.03]	

Note: *** denotes statistical significance at the 1%. Figures in the square brackets are p-values.

Figure 2: CUSUM and CUSUMQ of IR model



All the estimated models above pass the diagnostic tests which include autocorrelation and heteroscedasticity successfully, except normality of disturbances. But, OLS is still BLUE (Best Linear Unbiased Estimators) if the disturbances don't have a normal distribution (Baltagi, 2008: 98). Furthermore, CUSUM and CUSUMQ fall within the lines at 5% significance level as seen in Fig. 1 and Fig. 2. So, both PSR and IR

models are effective with stable recursive residuals. Thus, these two models don't include structural breaks.

Similarly, to test the existence of multicollinearity problem in an employed IR model we examined correlation matrix and uncentered VIF values. Results are represented in Tables 10 and 11.

Table 10: Correlation Matrix for PSR Model

Variables	PDB	BIST	GS	FX	GOLD
PDB	1.00	0.01	-0.05	0.01	0.09
BIST	0.01	1.00	0.55	-0.66	-0.40
GS	-0.05	0.55	1.00	-0.40	-0.08
FX	0.01	-0.66	-0.40	1.00	0.56
GOLD	0.09	-0.40	-0.08	0.56	1.00

Table 11: Centered VIF Values for PSR Model

Variables	Centered VIF
PDB	1.02
GOLD	1.60
BIST	2.28
GS	1.62
FX	2.32

Empirical results of the two regression models stressed that GS and FX are significant for both IR and PSR. Thus, it comes to an issue that participation banks may use deposit bank interest rate as a benchmark so GS and FX are significant both for IR and PSR. Therefore, to test this prospect we also applied Granger causality test indicating the causal relationship between IR and PSR.

To apply Granger causality test employed variables must be stationary. Both of PSR and IR are stationary at a level so they are included with their I(0) values in causality analysis. Following two models are utilized to test the direction of causal relationship between PSR and IR (Granger, 1969).

$$PSR = \sum_{i=1}^{m} a_i PSR_{t-i} + \sum_{i=1}^{m} b_i IR_{t-i} + \varepsilon_i \quad (3)$$

$$IR = \sum_{i=1}^{m} c_i IR_{t-i} + \sum_{i=1}^{m} d_i PSR_{t-i} + \varepsilon_i \quad (4)$$

$$E[\varepsilon_i \varepsilon_s] = E[\varepsilon_i \varepsilon_s] = 0 \; and \; t \neq s \quad (5)$$

Granger causality test is sensitive to the selection of lag length. Suitable lag length is 4 in our analysis according to minimum Akaike Information Criteria (AIC). "m" represents the lag length in equations (4) and (5). Granger causality analysis tests causal relationship from IR to PSR by testing $H_0=b_1=b_2\ldots=b_m=0$ and from PSR to IR by testing $H_0=d_1=d_2\ldots=d_m=0$. If H_0 is not rejected then it is said that there is no causal relationship (Pamuk and Bektaş, 2014). Granger causality test is applied based on VAR model since PSR and IR are the variables that are I(0). Results of the causality test are summarized as follows:

Table 12: Granger Causality Test Results

The Way of Causality	H0 Hypothesis	Chi-Square Prob. Value	Result
PSR → IR	PSR is the Granger cause of IR.	0.002*	Do not reject H_0.
IR → PSR	IR is the Granger cause of PSR.	0.013**	Do not reject H_0.

Note: * represents 1% and ** represents 5% significance. →, shows the direction of causality.

Findings of the Granger causality test indicated that there is a bidirectional causal relationship between PSR and IR. Thus, it is reasonable to say that both PSR and IR can be used as a tool for forecasting of another variable.

5. Conclusion

Islamic banking and finance sector increases its importance for developing countries. The opportunities that it creates is crucial for economic development and growth for these countries. This sector provides economic and financial stability for developing countries because it depends on the real sector. It opens up opportunities for growth both financial and real sectors. Although Turkey had an important history about Islamic finance institutions as Ottoman cash waqfs, it met these opportunities very late. However, the recent developments show that Turkey notices the potentials and possibilities at this sector. The new participation banks that are founded by government, the educational developments at Islamic economic and finance, the aim of making Istanbul as a finance center etc. shows the Turkey's intentions about this sector. On the other hand, the participation banks in Turkey depend heavily on the conventional financial sector and its instruments. In this study, the OLS model shows that the return of government security affects the profit share rates of participation banks. This situation is not covetable for Islamic finance sector. One of the reasons for this situation is that the murabahah transactions are the most used instrument at Islamic institutions. This wide usage of murabahah prevents the strong relations between production industry as real sector and financial sector. If the mudarabah transactions can become widespread for the sector, this keeps Islamic institutions from being depended on conventional financial industries. It is normal for IR becoming benchmark for PSR, because murabahah is a simple purchasing and term sale transaction. Participation banks do not take initiative in determining profit for term sales. The interest rate of credit in the market is determinant for PSR. However, the mudarabah is related to the real sector and production. Therefore, this method will finance production. The profit from the production is different from the interest because it is variable. Even, the profitability is different in different sectors. The mudarabah, production-oriented, is not focused on consumption like murabahah. Mudarabah, known as venture capital in the modern financial system, can create a PSR as a benchmark for this sector with the spread of such transactions. The effect of exchange rates is originated from partnership structure of banks because many of them have foreign partners and the capital is closely related to exchange rate. In addition, financial integration is another reason for the effect of the exchange rate.

In conclusion, Turkey as a developing country has an aim to make Istanbul a financial center. Its historical background and natural borders show that Islamic capital can see the Turkey as a safe port. Thus, if the correct financial policies are applied in Islamic banking and finance sector, Turkey can be a unique choice for Muslim countries, Muslims and others that are willing to invest ethic financial instruments. The support of production-based financing instruments will also provide economic growth. Thus, both Turkey and investors will win.

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