



# The relationship between the effective interest rate and default risk of different types of Islamic contracts in banks (Case Study: Mehr-e Eghtesad Bank, Gilan Province)

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**Abstract:** *Today, one of the main problems of banks and financial and credit institutions is their overdue debts and outstanding facilities, because paid facilities have not repaid completely by customers and a part of facilities, as debts that have not yet been collected, will remain in accounts. In this study, the relationship between the effective interest rate and default risk of different Islamic contracts in the branches of Mehr-e Eghtesad bank in Gilan Province, in the period from 20<sup>th</sup> March 2013 to 19<sup>th</sup> March 2016 was investigated. Pearson correlation coefficient and panel data technique were used to test the hypotheses. According to the results of Pearson correlation coefficient, it was clear that in none of the Islamic contracts in sample bank, there is significant relationship between effective interest rate and default risk and also, the results of panel data technique showed that there is no significant relationship between effective interest rate and default risk in different Islamic contracts in sample bank.*

**Key words:** *Effective interest rate, Default risk, Islamic contracts*

## INTRODUCTION

The nature of financial activities dealing with concepts such as credit, payment systems and different financial institutions is at special risks. Credit risk, market risk and operational risk are three main risks that the banks face with them. Default risk is one of the most important risks of banking systems and the banks are always at default risk due to lending operation. The level of credit risk depends on the quality of bank assets, the quality of bank assets depend on non-currents claims and health and profitability of credit-receivers.

Another most important macroeconomic variables in the policy-making is interest rate. Some policy makers and specialists of Islamic economics, especially Iranian experts believe that increase in interest rate if facilities increases the costs of production and consequently, increases the prices and inflation (Mehregan et al., 2006). For financial institutions, interest rate is a very important concept, because it influences the lives of the people directly and has important results for the health of economy (Hedayati et al., 2001). The important and significant rates in banks are nominal interest rate and effective interest rate; nominal interest rate is a rate annually declared according to political and economic conditions by central bank and

effective interest rate can be estimated by dividing the received bank interest by the claims (Hajiha et al., 2012).

Accordingly, because of the importance of timely repayments of bank facilities, especially in the current economic times, among the various banking risks, credit risk is studied and in this study, the relationship between the effective interest rate and default risk in different Islamic contracts in Mehr-e eghtesad bank is examined.

## **2. Research literature**

### **2.1. Default risk**

In today's society, almost all people are so familiar with this concept and acknowledge that life is risky. In the common language, the risk is a hazard that will occur in the future due to uncertainty about the occurrence of the event and it is said that the higher, the level of uncertainty is, the higher, the risk is. According to Webster dictionary, risk is defined as "being exposed to hazard". According to the dictionary of investment, risk is defined as potential losses of investment that can be calculated.

Due to ongoing changes in environmental factors and economic systems, different risks daily affect the financial structure of the various institutions. Various institutions, including financial institutions and even the governments, face with certain risks according to the area of their performance. Non-financial risks have great effects on financial risks, this means that each of non-financial risks finally causes the changes in financial variables. In banking system, there are different risks: exchange rate risk, interest rate risk and default risk. Default risk or credit risk occurs when the borrower does not fulfill the obligation to the lender timely due to lack of ability or willingness. Credit risk is one of the most important risks that especially affect the monetary and financial institutions. Credit risk can arise from transactions in terms of quality of goods, the exchange, confidence and credibility of the parties. Accordingly, it is organized and covered by a section entitled "credit risk management". The duty of this section is to evaluate the risk from the stage of contracting out deal documents to the stage of transferring and implementing in a combination of assets (Ismaeilnejad, 2012). Therefore, the probability of the return of the principal and interest of the credit facilities is called credit risk (Hajiha et al., 2012). Because of the emphasis of Islamic banks on the participation of depositors at the risk and interest received from credit facilities, credit risk is very important. In the case of correct management and receiving required collateral, credit risk in Islamic banks is less than other banks. In other words, participatory nature of Islamic banks' activities reduces the credit risk due to its transmission to depositors. It should be noted that the influence of politicians and government officials on the management of banks increases the credit risk highly. In banks and financial institutions, this risk shows itself as following modes: (Ismaeilnezhad, 2012).

- The probability of the reduction of the ability to repay the principal and interest of facilities received by the customers.
- The probability of the failure to repay the principal and interest of facilities received by the customers.
- The probability of the deferred repayment of the principal and interest of facilities received by the customers.

### **2.2. Types of Islamic contracts**

Islamic contracts include leasing, civil partnership, forward purchase, sleeping partnership, hire-purchase and housing reward (Hajiha et al., 2012). A brief definition of these contracts are as follows (Iravanian et al., 2012):

Leasing: is a contract for assignment of asset at a specified price to other in order that all or part of the mentioned price will be received in equal or unequal installments in certain maturity.

Civil partnership: is a contract to combine the partner's contribution in cash or contribution not in cash with the bank's contribution in cash or contribution not in cash commonly to do specific work in the field of manufacturing, commerce and services to profit for a limited time according to the contract.

Forward purchase: is a contract for a cash forward purchase of products (industrial, agricultural and mineral) at a specified price.

**Sleeping partnership:** is a contract whereby one of the parties (the owner) is responsible for financing (cash) to the condition that the other party (agent) trades with it and they share the obtained profits (usurious interest- free banking operation law). In this contract, bank is a supplier of required funds and the other party, as the agent, is responsible for all affairs related to the sleeping partnership contract.

**Hire-purchase:** it is a contract of renting in which the condition is that if the tenant acts according to the conditions stipulated in the contract, he/she will be owner of the rented item. In this contract, the leasehold is determined based on total price, profits of bank and the time of hire-purchase.

**Housing reward:** according to this type of contract, the natural or legal person commits to pay the specified fee for doing certain work. The committed person is named forger and the person who does the work, is named agent. Reward is divided into two types of general and specific.

### **2.3. Effective interest rate**

Interest is a driving factor of capitalist economy. In other words, the capitalist economy is based on an interest system, which consists of a huge network of banks, monetary and financial organizations and institutions. Interest rate not only has impact on the entrance and exit of financial intermediaries from financial market, but, it also affects their income and expenses (Hedayati et al., 2001).

Interest rate is the price paid for borrowed resources. Interest rate is a very important concept, especially for financial institutions, because it directly affects the people's lives and has significant implications for the health of the economy. The important and significant rates in banks are nominal interest rate and effective interest rate (Hajiha et al. 2012).

According to usurious interest- free banking law, determining the interest rate for deposits and facilities at the beginning of the contract is not permitted. So, the central bank of Islamic Republic of Iran actually faces with the gap of interest rate and in order to resolve this problem, it determines the interest rate on account for different types of investment deposits and based on the term and the interest rate for facilities and different economic sectors. In this regard, central bank has actually replaced the interest rate with the interest rate on account of investment deposits and by determining the order of this rate (through the Council of Money and Credit) and declaring it to banks, it implemented the tasks of interest rate.

In recent years that central bank says what the monetary policies are in the banking system through political-regulatory package, the interest rate of exchange contracts is determined constant. About participatory contracts, it is decreed that the interest on account and expected interest are determined at the beginning of the period and on the basis of expected profitability of each project for the end of the fiscal year of the intended activity. This has led the costs of mobilizing the resources of bank to be greater than the determined interest rate for exchange contracts, so, the banks will try to maintain the marginal interest of mobilization and allocation of resources, which will have profitability for depositors and shareholders by changing their facility portfolios from exchange contract to participatory contracts. Since accounting the project is not possible for banks and actually, the practice of participation was not done and the banks and customers are not familiar with it, participatory contracts was actually turned into predefined rates and the banks have applied the rates higher than the rate of exchange contracts (Azizinezhad, 2012).

### **3. Research background**

Jameel (2014) has studied the factors affecting the outstanding facilities during 2000-2010. In this study, the effects of some specific ratios of bank such as the maturity term of loan, capital adequacy ratio, credit deposit ratio and the growth of GDP on outstanding facilities were measured. The results showed that there are negative relationships between all of these variables and outstanding facilities.

Clein (2013), in his study, has examined the outstanding facilities at banks in Central, Eastern and South Eastern Europe. He found that the level of outstanding facilities depends on both economic conditions and specific factors of banks. Outstanding facilities show reactions to macro-economic indices such as the growth of GDP, unemployment and inflation. Also, the analysis shows that banking system is influenced by real economic feedback.

Poudel (2012), in his study entitled "The impact of credit risk management on financial performance of commercial banks in Nepal", showed that all the factors of credit risk have inverse impact on financial performance of banks and oppositely, DR has a major impact on the performance of banks. This study

recommends the banks to implement the policies with the aim of reducing the credit risk of bank and also improving the profitability.

Boahene et al. (2012) have performed a study to show the relationship between credit risk and profitability of banks. The results showed that there are positive and significant relationships between the components of credit risk, outstanding facilities rate, net non-interest expenses before its provision as 1% of total net facilities and the profitability of banks. This shows that the banks in Ghana prefer high profitability without taking into account the high credit risk.

Kolapo et al. (2012) have examined the credit risk management and performance of bank in Nigeria using regression analysis with panel data. They argued that the impact of credit risk on the performance of the bank using the bank's return on assets as a measure of performance is temporarily the same in Nigeria. Increased outstanding facilities or loan losses reduce the return on assets, while increase in the total amount of facilities improves the profitability of the banks.

Khaleghifar (2013) has studied the factors affecting the credit risk of Eghtesad-e Novin in Kish Island. He used the logit model in his study and the results showed that with the use of this model, about 84.7% of facilities can be allocated to creditworthy customers.

Hajiha et al. (2012) have examined the relationship between the interest rate and credit risk of different types of credit facilities in the form of Islamic contracts in Agriculture Bank of Kurdistan Province and found that there is no significant relationship between the research variables, but panel data analysis showed that there is a significant relationship between interest rate and credit risk.

Ashraf Ahmadian (2012) has studied a research entitled "credit risk management: a challenge for financing in Iran's banking system" with the aim of formulating a model in order to reduce the gaps between the banking system and the private sector in the field of financing to examine the challenges from the perspective of the banking system on the one hand and economic firms on the other hand and finally, provided operational strategies to reduce the gaps between the banking system and the private sector in the field of financing and also, to improve financing process.

Safari et al. (2010) have examined the credit risk management of legal clients of commercial banks using data envelopment analysis (credit rating). They examined 27 explanatory variables such as financial and non-financial variables and finally, 8 of these variables were selected using factor analysis and Delphi method and entered into data envelopment analysis. The results showed that all indices, except one index, equity to total assets, were on the expected routs and they were statistically significant at the confidence level of 95%.

Arabmazar and Roeintan (2006) have examined the factors affecting the default risk of clients in Kesharvarzi Bank. In their study, they have identified 36 financial and qualitative variables and then, 17 of them which had significant impact on default risk were selected using logit analysis and separating the two groups of creditworthy customers and non-creditworthy customers and final model was fitted using them. The results showed that logit model is more powerful to estimate the factors influencing the default risk.

#### **4. Hypotheses and research model**

The aim of this study was to find an answer to this question "Is there a significant relationship between effective interest rate and default risk of different types of Islamic contracts in the branches of Mehr-e Eghteghad bank in Gilan Province?" Accordingly, main and secondary hypotheses have been proposed as follows:

Main hypothesis: there is a significant relationship between effective interest rate and default risk of different types of Islamic contracts in the branches of Mehr-e Eghteghad bank in Gilan Province.

Secondary hypotheses:

1. There is a significant relationship between effective interest rate and default risk of leasing facilities.
2. There is a significant relationship between effective interest rate and default risk of civil partnership facilities.
3. There is a significant relationship between effective interest rate and default risk of forward purchase facilities.
4. There is a significant relationship between effective interest rate and default risk of sleeping partnership facilities.
5. There is a significant relationship between effective interest rate and default risk of hire-purchase facilities.

6. There is a significant relationship between effective interest rate and default risk of housing reward facilities.

In order to examine and estimate the total model, simple linear regression analysis was used, the model was derived from the study by Hajiha et al. (2012) and it is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon_{it} \quad (\text{Model 1})$$

Where:

Y: dependent variable (effective interest rate)

X: independent variable (default risk)

$\beta$ : Constant coefficient

$\varepsilon_{it}$ : Residual

## 5. Population and sample

The population of this study included different credit facilities in the form of Islamic contracts in the branches of Mehr-e Eghtesad Bank in Gilan Province in the period from 20<sup>th</sup> March 2013 to 19<sup>th</sup> March 2016. The samples were selected by simple randomly sampling. Finally, 174 cases (including 26 cases of leasing, 42 cases of civil partnership, 47 cases of forward purchase, 27 cases of sleeping partnership, 23 cases of hire-purchase and 9 cases of housing reward) which were outstanding, were examined. The data extracted from the cases included: the amount of credits provided by banks to customers, the residual amount of facilities and interest received by bank.

## 6. Method

This study is applied research in terms of goal and it is descriptive in terms of nature. It is survey research in terms of method. The methodology of this study was ex post facto and the data of past was used. This study is descriptive trying to describe the relationships between the variables (dependent and independent) using statistical tests.

## 7. Research variables

In this study, default risk and effective interest rate are considered as independent variable and dependent variable, respectively that are calculated as follows:

$$\text{Default risk} = \frac{\text{sum of past maturity and outstanding claims}}{\text{loans}}$$

$$\text{Effective interest rate} = \frac{\text{interest received by bank}}{\text{claims}}$$

## 8. Hypothesis testing

In order to test hypotheses, firstly the research model, shown as follows, was estimated for each level of Islamic contracts separately and the results are shown in Tables 1-6.

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \varepsilon_{it}$$

**Table 1.** The results of the estimation of model 1 for leasing facilities

Variable	Estimated coefficient	t-statistic	p-value
C (intercept)	0.356	13.907	0.000
Default risk (X)	-0.061	-0.381	0.707

<b>R - Squared</b>	0.056
<b>Adjusted R - Squared</b>	0.035
<b>F-statistic</b>	22.145
<b>F (P-value)</b>	0.007
<b>Durbin Watson-statistic</b>	1.588

**Table 2.** The results of the estimation of model 1 for civil partnership facilities

<b>Variable</b>	<b>Estimated coefficient</b>	<b>t-statistic</b>	<b>p-value</b>
<b>C (intercept)</b>	0.801	31.807	0.000
<b>Default risk (X)</b>	0.026	0.214	0.832
<b>R - Squared</b>		0.021	
<b>Adjusted R - Squared</b>		0.024	
<b>F-statistic</b>		5.046	
<b>F (P-value)</b>		0.832	
<b>Durbin Watson-statistic</b>		2.109	

**Table 3.** The results of the estimation of model 1 for forward purchase facilities

<b>Variable</b>	<b>Estimated coefficient</b>	<b>t-statistic</b>	<b>p-value</b>
<b>C (intercept)</b>	0.484	13.620	0.000
<b>Default risk (X)</b>	-0.642	-3.627	0.524
<b>R - Squared</b>		0.056	
<b>Adjusted R - Squared</b>		0.035	
<b>F-statistic</b>		2.647	
<b>F (P-value)</b>		0.011	
<b>Durbin Watson-statistic</b>		1.882	

**Table 4.** The results of the estimation of model 1 for sleeping partnership facilities

<b>Variable</b>	<b>Estimated coefficient</b>	<b>t-statistic</b>	<b>p-value</b>
<b>C (intercept)</b>	0.718	81.050	0.000
<b>Default risk (X)</b>	0.024	0.366	0.717
<b>R - Squared</b>		0.055	
<b>Adjusted R - Squared</b>		0.034	
<b>F-statistic</b>		5.134	
<b>F (P-value)</b>		0.017	
<b>Durbin Watson-statistic</b>		1.960	

**Table 5.** The results of the estimation of model 1 for hire-purchase facilities

<b>Variable</b>	<b>Estimated coefficient</b>	<b>t-statistic</b>	<b>p-value</b>
<b>C (intercept)</b>	0.384	8.922	0.000
<b>Default risk (X)</b>	0.446	1.234	0.231
<b>R - Squared</b>		0.068	
<b>Adjusted R - Squared</b>		0.023	
<b>F-statistic</b>		12.525	
<b>F (P-value)</b>		0.001	
<b>Durbin Watson-statistic</b>		2.062	

**Table 6.** The results of the estimation of model 1 for housing reward facilities

Variable	Estimated coefficient	t-statistic	p-value
C (intercept)	0.485	3.706	0.000
Default risk (X)	-0.680	-0.473	0.650
R - Squared		0.031	
Adjusted R - Squared		0.107	
F-statistic		15.242	
F (P-value)		0.020	
Durbin Watson-statistic		2.242	

As shown in Tables 1 to 6, the results showed that in all Islamic contracts, the significance level of the variable of default risk is greater than 0.05; in other words, it can be said that in none of Islamic contracts, significant relationship was observed between the effective interest rate and default risk.

## 9. Conclusion and suggestions

In this study, the relationship between the effective interest rate and default risk of different Islamic contracts in the branches of Mehr-e Eghtesad bank in Gilan Province in the period from 20<sup>th</sup> March 2013 to 19<sup>th</sup> March 2016 was investigated. According to Pearson correlation coefficient and panel data analysis, it was obvious that in none of the Islamic contracts of sample bank, there is significant relationship between the effective interest rate and default risk; this means that increase or decrease in default risk (independent variable) has no impact on effective interest rate (dependent variable). According to the research findings, following suggestions are offered:

1. As the results of hypothesis testing showed, the default risk has no impact on effective interest rate and other parameters have impact on the effective interest rate of different types of Islamic contracts. Given that in Iran, the criteria of determining the interest rate of facilities are developed as order by the Council of Money and Credit, one of the pillars of the Islamic Republic of Iran's Central Bank and the interest rate is not determined on a competitive basis, so, it cannot be expected that the effective interest rate changes because of the impact of default risk. So. It is recommended to sample bank to identify and assess other parameters affecting the effective interest rate.
2. Given that the criteria of determining the interest rate of facilities are not freely available to the banks. The banks can increase the interest earned from lending and thus increase their income by reducing the costs of attracting and allocating deposits (resources).

## 10. Limitations

1. The main limitation of this study is limited sample size due to the lack of direct access to information on all credits provided to customers in the branches of Mehr-e Eghtesad Bank in Gilan province, 174 cases of facilities in the form of Islamic contracts were studied that the sample size of each type of facilities was not equal and this is another limitation.
2. Other factors affecting the effective interest rate, such as market interest rates, inflation rates, exchange rates and the industry index and economic growth were not included in this study; therefore, generalization of results to all banks will be limited.
3. Sensitivity of bank officials to provide financial information of customers and the lack of awareness of the experts of credits sector about the methodology led the time of performing this study to be so long.

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