



# Investigating the Relationship between the Facility Interest Rate and the Bank Deposit Interest Rate in Iran

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## ABSTRACT

The facility interest rate is one of the most important macroeconomic variables. The bank facility interest rate is associated with other macro-economic variables, one of which is the bank deposit interest rate. Using the time series data of the 1973-2017 period and the simultaneous equation system, the researchers estimated four equations using the three-stage least squares method. The result of estimation of the equation's indicate that there are (i) a significant positive relationship between the bank deposit interest rate and the facility interest rate in the Iranian economy during this 45-year period,(ii) a significant positive relationship between the facility interest rate and the deposit interest rate,(iii) a significant positive relationship between the liquidity level and the inflation rate, and there is a positive and relatively significant relationship between the exchange rate and the inflation rate, (iv) a significant positive relationship between the facility interest rate and the credit risk

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## 1 Introduction

Several factors affect the facility interest rate, one of which is the deposit interest rate. The quantitative and exact determination of the relationship between the facility interest rate and the deposit interest rate is based on econometric theories and models. However, it has not been determined quantitatively and precisely what factors affect the facility interest rate and the deposit interest rate. Obviously, the most important indicators of the money market are the deposit interest rate and facility interest rate. The bank facility interest rate can affect the price index by influencing the prime cost of products and production costs, and by affecting the demand for investment in the private sector and affecting the total demand. All banks are after profits and have extraordinary features that make them profitable. Banks are places to which economic activists refer and upon which these economic activists' operations depend; this gives banks an exceptional position for profitability. One of the duties of the Monetary and Credit Council is determining the facility interest rate in ratio to the deposit interest rate and the expected interests of banks. If the deposit interest rate and expected interests of banks are lower than the inflation rate and the interest rate on the capital market, the banking system will have a problem in attracting deposits, which will lead to a reduction in the ability of banks to grant facilities [5]. The main issue in Iran is the different way of calculating the deposit interest rate and facility interest rate. There are no clear formula for determining the facility interest rate and the calculation of instalments and deferred loans. Adding constraints and limitations has led to a slightly different way

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of calculating the facility interest rate and repayment of instalments in banks. With regard to bank deposit interest rate in Iran, the Central Bank determines the rate of interest on long-term deposits by announcing a circular to banks and credit institutions, but the facility interest rate is decided following the deposit interest rate. An important issue in estimating the interests from banks' facilities and turning them into deposit interests is the very fundamental considerations in determining the margin of the interest rates of banks. This margin is determined at a level that not only the operating costs and risks of banks can be covered, but also strong policy considerations for improving the financial structure of banks can be observed. In other words, the legal considerations arising from the legal requirements of non-usury bank operations, along with the performance of the economic sectors are considered on the one hand, and the operational efficiency of banks and regulatory programs are considered in order to maintain the common standards to strengthen the financial power of banks on the other hand, the provisional interest rates on bank deposits and the minimum expected interest rates of banks' facilities are neither based on the terms and conditions of non-usury bank operations determined by the Money and Credit Council, nor are they based the market mechanism and supply and demand. Therefore, the deposit interest rate and facility interest rate of banks may always be higher or lower than the balance point, and one of the problems arising from uncertainty of the interest rates on deposits and bank facilities is illegal capital flight from the country [20].

## 2 Theoretical Bases

The bank facility interest rate is a function of the deposit interest rate and the deposit interest rate is a function of inflation. Reduction of the bank facility interest rate can lead to economic prosperity when it leads to the reduced rates of facilities given to manufacturing banks [18]. The mandatory reduction of the deposit interest rates can make the granting of facilities to the manufacturing sector when it leads to a decrease in the flow of resources into the banking system. On the other hand, after a decrease in the deposit interest rates, one should expect an increase in the level of liquidity in the country, which will in turn lead to an increase in the general level of prices and inflation. A continuous increase in the general level of prices or in the purchasing power of money is among the most serious economic problems. With the emergence of sharp inflationary pressures, price fixing is regarded by economists as the main objective of economic policies. In addition, the efforts of developing countries over the past decades to reach higher growth rates have generally been associated with a high inflation rate. On the other hand, the influence of exchange rate fluctuations is among the most important determinants of the price of raw materials, intermediate goods, capital equipment and final products, and with regard to the high dependence of production and consumption on imports, it seems that it affects the formation of inflationary pressures[24].The exchange rate variable has manifested itself as a key factor in economic policy and the impact of its fluctuations on inflation has become one of the current economic debates [14].On the other hand, the bank facility interest rate has a significant effect on inflation so that an increase in the bank facility interest rate would result in an increase in the cost of capital use, which leads to higher production costs. With an increase in the production costs, the total supply curve is shifted to the left, causing an increase in inflation [9]. One of the important variables associated with the facility interest rate is the credit risk variable. Basically, banks provide lower interest rates for well-established households and firms with lower risk of non-payment. Moreover, an increase in interest rates also reduces borrowers' ability, thereby increasing the probability of non-

payment. Besides, an increase in the facility interest rate would increase the risk of the basket of facilities in terms of moral hazard and adverse selection problems. Moral hazard is a situation in which one party has two different behaviors in situations where that person is or is not protected against the risk. This person tends to take less caution when the risk of the project is directed to another. In banking, adverse selection problems increase the risk of default on borrowers. On the other hand, it occurs when the information of the two parties to a transaction has not been distributed symmetrically. In such a situation, banks face customers whose projects have a risk that exceeds the bank's expected risk for the project [15].

### **2.1 The Concept of Facility Interest Rate**

Interest rate is a global term and it is used throughout the world. Interest is some money paid to a capital owner for compensation. Someone who borrows money should pay interest, which includes the current interest rate in the country, plus the bank's expenses; it is in fact a kind of minimal compensation of utility. Whenever our capital is not enough for us to supply our housing, cars and other needs, we will return to banks to borrow some money and solve our problems, and we will also pay interest in return for it. This is the process that puts forward the issue of interest and involves the depositor and the bank in it, because the bank is not a charity firm; rather it has stockholders whose satisfaction and benefits must be met. Moreover, it has a lot of conventional costs that must be provided. The interest rate is usually calculated and announced for a one-year period, and it is considered to be for a one-year period when its period is not specified. There are various interest rates for various loans, such as: fixed investment loans, mortgage loan, working capital loans, short-term and long-term borrowings from the government and so on [19].

### **2.2 The Concept of Deposit Interest Rate**

Deposits are funds deposited to banks by a legal entity or natural person in accordance with the rules and regulations of the bank. The bank deposit interest rate is determined in accordance with the current rules and regulations and based on the provisional interest rates. Deposits are regarded as a profitability tool for banks and play an important role in the country's economic development by granting facilities to different sectors, with costs such as interests paid to depositors, administrative and organizational costs, and so on, which will reduce the profitability of banks if they are not used optimally. *Vadiéh* (the Persian word for deposit) literally means a sum of money deposited to others to keep it. *Vadaeh* is its plural form. Some think it is derived from the verb form "vada", meaning "abandoned". Some others think it is derived from (Veda al-shei-Yada), meaning silence and establishment. This is because the deposit is abandoned to and settled beside the creditor. Some consider it to be derived from (da'ah), meaning comfort and convenience. This is because it seems that a deposit is conveniently available for the creditor and does not undergo any change or use.

### **2.3 The Relationship between the Facility Interest Rate and the Bank Deposit Interest Rate**

One of the most difficult and most important banking issues in all countries of the world is setting the facility interest rate and the deposit interest rates of bank customers. This is so important that some-

times even a tenth of a percent change in the rate setting affects the country's economy considerably. The facility interest rate and deposit interest rate are both a function of the country's economic situation, inflation expectations, and government programs. The studies of banking history conducted in Iran before and after the Islamic Revolution indicate that the deposit interest rate and the facility interest rate or their minimum and maximum are set mandatorily by the Money and Credit Council. The announced rates are inflexible and the banks are obliged to comply with them. The facility interest rate is a function of the deposit interest rate, which in turn is a function of the inflation rate. The facility interest rate and the deposit interest rate are significantly correlated, so that some banking and economic experts in Iran argue that the reduction of the deposit interest rate has no sense when this rate decreases but the bank facility interest rate does not decrease for economic activists, the public and the set of economic activities. A period of time should be considered for banks in order for them to be able to operationalize the facility interest rate after the reduction in the deposit interest rate.

The banking industry in Iran was changed from the conventional banking into the Islamic banking after the adoption and notification of the law of usury-free banking operations. In Islamic banking, the facility interest rate is initially obtained based on the real rate of return of the economy (in the case of cooperative and exchange contracts), then the deposit interest rate is determined (after deduction of the attorney's fees). However, the deposit interest rate is a determinant factor in the facility interest rate in conventional banking. In Islamic banking, the facility interest rate (which is derived from the real sector of the economy) is the determinant of the deposit interest rate. In other words, in the context of the causal relationships of economic variables, the deposit interest rate is the cause (explanatory variable) and the facility interest rate is the effect (dependent variable), while in Islamic banking, the facility interest rate is the cause and the deposit interest rate is the effect.

## 2.4 Literature Review

In a research Jobst and Lui [10] concluded that the interest rates were lower than zero and less than what was supposed to be. Although interest rate cuts affect the profitability of banks, the reduction of bank interest rates have at some points a strong effect on asset value and a stronger effect on total demand. Calcagnini et al. [4] investigated the impact of guarantees on banking interest rates in 120 Italian banks by focusing on three different types of customers: firms, producer households and consumer households by focusing on three different types of customers: firms, producer households and consumer households. There is a positive relationship between interest rates and guarantees, and banks use guarantees as a motivational mechanism to reduce the opportunistic behavior of borrowers occurring after a transaction. Popescu [12] carried out a study, based on the generalized method of moments, concluding that the monetary policy Taylor-type rule shows that the short-term interest rate changes set by the Central Bank of the Central and Eastern European Countries (Czech, Slovenia and Hungary) follow the changes in the nominal short-term interest rates of the euro area. Li Suyuan [13] Using the Vector Error Correction Model (VECM) for the period of 2003 -2012, Li Suyuan concluded that there is a relationship between the variables and this relationship is negative in the long run and positive in the short run. His research contributed to improving investment and economic growth in Jiangsu State in China. Agrwal [2] investigated liberalization hypothesis in Indonesia, Thailand, South Korea and Malaysia and evaluated the result positively. So there are two categories of studies and experiences. Latin American countries and some countries, such as Turkey have had unsuccessful and

costly experiences, while East Asian countries have had a successful experience. Marius [16] performed a research in a small open emerging economy. Based on data for Romania, their results confirmed the theoretical predictions on the interest rate - exchange rate relationship during turmoil or policy changes. In the short term, the relationship is negative, confirming the sticky-price models, and over the long term, the relationship is positive, confirming the Purchasing Power Parity theory. At the beginning of the turmoil, the exchange rate movements generally take the lead over the interest rates for the first month, but the monetary authorities take the lead afterwards. Their results revealed that in a small open emerging economy with a direct inflation targeting monetary policy regime, the relationship between exchange rates and interest rate is fundamentally different from that in an advanced economy, and that we should consider the interest rate in order to achieve the monetary policy goal. Franz [7] used the VAR model to examine the effects of monetary and financial policies on interest rate in three countries Czech, Hungary and Poland. But it concludes that there is no meaningful relationship between Interest rate and Inflation rate in these countries. Mohammadi and Sajjadi [17] performed a study entitled "The Relationship between the Inflation Rate and the Bank deposit interest rate in Iran using the Cointegration Test and Johansen & Juselius Method", and found that there is a positive relationship between the inflation rate and the nominal interest rate in the long run and there is a negative relationship between the level of bank deposits and the inflation rate. They also found that the long-term interest rate has a significant positive effect on the long-term deposit and that the short-term deposit interest rate has a significant positive effect on the level of short-term deposits.

Samsami and Khademi [22] investigated the effect of granted facilities and bank interest rate on the private sector's investment in Iran using the Autoregressive Distributed Lag (ADL) model and the error correction model (ECM), finding that the variables of investment, growth Gross domestic product, oil revenue, and bank credits have a positive relationship with private investment, and that the facility interest and inflation rates have an inverse relationship with private investment. Soheili and Khadivi [23] investigated the interaction between the bank facility interest rate and the inflation rate in Iran during the period of 1974- 2011, and concluded that in Iran, like in most other countries, the inflation rate changes can account for the nominal interest rate of facilities in the long run. The behavior of economic agents in Iran is a function of the nominal interest rate of facilities rather than the actual rate of facilities. Nazarian and Hamzei [20] investigated the impact of monetary policies on the granted facilities of banks Based on the profitability of banks using the OLS Method and Generalized Moments and based on the economic data of the country, including the real exchange rate and the rate of facilities granted by banks and credit institutions during the years 1988-2011, indicating a significant positive value for the coefficient of bank profitability; a positive relationship for bank measurement, monetary conditions and economic growth rate; and a negative relationship for asset, liquidity and capital of banks.

Yousefi [25] investigated the plan of rationalization of the bank facility interest rates. His results show that, given that the margin of interest is high in Iran and it is rooted in deferred debts, high inflation rate and high bank costs, appropriate policies should be adopted and mandatory actions should be avoided in order to reduce these three variables. Keshavarz et al. [11] investigated the effect of monetary policy on the bank interest rate in Iran during the period of 1973-2006 using the OLS method, and examined the effect of monetary policy through the liquidity level. Based on estimation, they found that the bank facility interest rate has a significant negative relationship with the liquidity level.

Also, the bank facility interest rate has a direct significant relationship with the national income and the consumer price index. Akhlaghi et al. [1] investigated the relationship between the banking interest rate and the inflation rate based on Vector Regression Model to show that the bank interest rate and inflation rate have a significant relationship in the long run, and fluctuations in the bank interest rate and the inflation rate have a causal relationship with each other. To achieve their goals, they used the vector auto-regressive model, the error correction model and WALD and Granger tests and found that there was a significant relationship between the bank deposit interest rate and the inflation rate in the long run, but in the case of the causal relationship between these two variables, causality is from the deposit interest rate to the inflation rate.

Esmaeili et al. [6] evaluated the relationship between the bank facility interest rate and deferred bank loans and concluded that deferred bank claims are one of the issues commonly reflected in the performance of banks. In this study, they showed that there is a significant relationship between the bank facility interest rate and an increase in doubtful accounts in different sectors. Jefreh et al. [9] investigated the declining trend in the bank facility interest rate and its role in the inflation index in the period of 1997 -2007. They used the vector autoregressive method in their study and used the error correction model to estimate the short-term relationship between these two variables. They showed that the relationship between the facility interest rate and the inflation index in the long run is significant and a decrease in the bank facility interest rate decreases the inflation rate, while such a relationship is insignificant in the short run so that a decrease in the bank facility interest rate has a small effect on the reduction of the inflation rate. Gahsemi and Sarlak [8] concluded that the phenomenon of the financial crisis is not a new phenomenon around the world. The structure of the economy may face a financial crisis. The transaction information was collected from the stock exchange in the five year period of 2011-2015. Eviews software was used to analyze the data and test the hypotheses. What can be said in the overall conclusion of the testing the hypotheses is that the financial crisis effects the conservative accounting and transparency of banks. Balouei [3] found that the statistical population includes of banks listed on theran stock exchange during the 2009 to 2016. The results indicate positive significant impact of financial structure and the banks. Moreover, the results show that capital intensity and the size significantly moderate the relation between financial structure with ROA and ROE. Saadat [21] showed that according to the research result and the fact that Taylor rule was successful in some developed and developing countries, it can be redefined in the framework of the Interest free banking of Iran. It can also be used as a highly flexible policy and Inflation control.

### 3 Methodology, Databases and Statistical Data

Considering the theoretical foundations presented in the second part of the paper, the research hypotheses are as follows:

**The main hypothesis of the research:** there is a significant positive relationship between the facility interest rate and the deposit interest rate.

**Sub-hypotheses of the research:**

There is a significant positive relationship between the facility interest rate and the inflation rate.

There is a significant positive relationship between the facility interest rate and credit risk.

All the time series data used by the Central Bank were collected in this research. The research was conducted during the period of 1973 – 2017. The variables used in the research included the facility interest rate in the five sectors of exports, commerce and services, housing and construction, industry and mining, and agriculture, and the average facility interest rate in these five sectors has been used. The bank deposit interest rate also includes the short term interest rates on bank deposits. Another variable is the inflation rate, and the index of prices for goods and services in urban areas has been used. Credit risk is another variable that has been used from the total amount of deferred debts, overdue debts, and doubtful accounts in billion Rials. The liquidity level is another variable used in the research, which is equal to the sum of money and quasi money that consists of the total amount of banknotes and coins in the hands of the people, plus demand and time or saving deposits collected from the Central Bank. The last variable is the exchange rate. The exchange rate in the free market has been used in the present research.

### 3.1 The Simultaneous Equation System

The models used in most applied studies consist of only one equation. These models have a dependent or endogenous variable (Y) and one or more explanatory variables (X) in which the direction of causality is from X to Y. On the other hand, one of assumptions of the classic model is that the explanatory variables are non-random or exogenous. However, such conditions may not be fulfilled in some cases and an endogenous variable may be a function of other endogenous variables, which itself requires the presentation of another equation. Therefore, we face a system of equations instead of one equation. For example, suppose that the  $y_1$  and  $y_2$  relationship is as follows:

$$Y_{1t} = \alpha_1 + \beta_1 x_t + \gamma_1 Y_{2t} + U_t$$

$$Y_{2t} = \alpha_2 + \beta_2 x_t + \gamma_2 Y_{1t} + U_t$$

The  $y_1$  and  $y_2$  relationship is a dual relationship. An important feature of the system of the above equations is that these two variables, in addition to being the dependent variables, appear as the explanatory variables. This means that  $y_1$  and  $y_2$ , which are functions of  $u$  (error terms), are random variables that have appeared in the role of explanatory variables. On the other hand, in the first equation  $y_2$  is a function of  $u_1$ , which means violation of another classical assumption, because  $y_2$  is a function of  $y_1$  based on the first equation, and  $y_1$  is a function of  $u_1$  according to the first equation. So if  $u_1$  changes, it will cause a change in  $y_2$  by means of  $y_1$ . Thus, the OLS estimators will be inconsistent. We can use two methods to estimate the simultaneous equations system: single-equation method and system method. Single-equation methods include ordinary least squares methods, indirect least squares method, instrumental variable method, two-stage least squares method, and Limited Information Maximum Likelihood method. System methods include: Three-stage least squares and Full Information Maximum Likelihood method. In single-equation methods, each of the equations is estimated only with respect to the constraints of that equation and without regard to the constraints of other equations. However, in system methods, all of the information present in the system of equations is used to estimate the coefficients. The three-stage least squares estimation method has been used in this research. Single-equation methods are consistent but not asymptotically efficient. That is,

following an increase in the sample size, their bias and variance tend to zero, so they are consistent, but they are not efficient because they lack the minimum variance. The reason that they are asymptotically efficient is their ignoring the correlation of the error terms of equations. Considering the theoretical foundations presented in the research and the existence of a theoretical relationship between the variables of the research, the system of simultaneous equations consists of the following four equations:

$$\text{IRF} = \beta_0 + \beta_1 \text{IRD} + \beta_2 \text{INF} + \varepsilon_0$$

$$\text{IRD} = \beta_3 + \beta_4 \text{IRF} + \beta_5 \text{INF} + \varepsilon_0$$

$$\text{INF} = \beta_6 + \beta_7 \text{M2} + \beta_8 \text{ER} + \beta_9 \text{IRF} + \varepsilon_0$$

$$\text{CRISK} = \beta_{10} + \beta_{11} \text{IRF} + \varepsilon_0$$

Where:

IRF=Facility Interest rate

IRD= Deposit Interest rate

INF= Inflation rate

M2= liquidity

ER= Exchange rate

CRISK= Credit risk

The first equation relates to the facility interest rate, which has been considered a function of the deposit interest rate and the inflation rate based on the theoretical basis of the research. The second equation relates to the deposit interest rate, which is a function of the inflation rate and the facility interest rate. The third equation relates to the inflation rate, which is a function of the liquidity level and the exchange rate (dollar) and the facility interest rate. The fourth equation relates to credit risk, which has been considered a function of the facility interest rate. The system of the above equations is estimated simultaneously using the three-stage least squares method. In the simultaneous equation method, the goodness of fit metrics for regression such as coefficient of determination,  $f$ , standard error, etc. are not used a lot.

### 3.2 Descriptive Statistics of the Research Variables

Table 1 presents the descriptive statistics of the research variables, which we will briefly explain below. The descriptive statistics of the facility interest rate variable indicates that the skewness is positive; that is, the distribution is skewed to the right, which differs significantly from the normal distribution in terms of asymmetry. The positive kurtosis coefficient also indicates that the distribution of the variables is greater than the normal distribution and the data are centred around the average. The other variables in the research also have a positive skewness as well as a positive kurtosis coefficient.



**Table 1:** Descriptive statistics of the research variables

variable	Mean	Median	Maximum	minimum	Standard deviation	skewness	kurtosis	Jarque-Bera	probability
IRF	0.13	0.13	0.19	0.08	0.037	0.078	1.53	4.06	0.13
IRD	0.08	0.08	0.16	0.06	0.023	1.87	6	46.3	0.00
INF	18.4	16.5	49.4	6.9	8.51	1.32	5.30	23	0.00
M2	771585	35865	7823846	203	1674842	2.88	11.02	183	0.00
ER	815.66	403	4200	10	1141.7	1.80	5.08	32.5	0.00
CRISK	7.58	1.21	38.7	0.10	12.2	1.54	3.76	18.9	0.00

Source: Findings of the research

### 3.3 The Unit Root Test

The time series of the variables used in the research (1973-2017) was subjected to the augmented Dickey–Fuller (*ADF*) stationary test. The results of this study are presented at the level of 0.05 in Table 2.

**Table 2:** Results of the ADF test at the data level

variable	Critical value	ADF statistic	Test result
IRF	-3.5	-1.65	non-stationary
IRD	-3.5	-2.35	non-stationary
INF	-3.5	-4.47	stationary
M2	-3.54	-0.43	non-stationary
ER	-3.51	-0.29	non-stationary
CRISK	-3.5	-8.35	stationary

Source: calculations of the research

These results reveal that the four variables of facility interest rate, deposit interest rate, liquidity level and exchange rates are non-stationary, whereas the two variables of inflation rate and credit risk are at the stationary level. So, we use the first-differencing Dickey Fuller test for non-stationary variables. As shown in Table 3, these four variables are stationary with first-order differencing.

**Table 3:** Results of the ADF test with first-order differencing

variable	Critical value	ADF statistic	Test result
IRF	-1.94	-5.9	stationary
IRD	-1.91	-7.75	stationary
M2	-1.95	-3.61	stationary
ER	-1.94	-3.06	stationary

Source: calculations of the research

### 3.4 Co integration Test

It's worth noting that the use of difference of variables causes the loss of information about the main values of the variables. In order to solve this problem, we should use the cointegration test. We use the Johansen & Juselius test to examine the cointegration of the model. The null hypothesis means that there is no cointegration. The results of this study confirm the cointegration at the level of 0.05. Therefore, the null hypothesis as to the lack of cointegration is rejected.

**Table 4:** The results of the Johansen & Juselius cointegration test

Maximum Eigen value test	Effect test	Relationship
63.47 (0.00)	93.89 (0.00)	No relationship
23.50 (0.02)	30.42 (0.04)	A maximum of one relationship
6.74 (0.52)	6.91 (0.58)	A maximum of one relationship

Source: calculations of the research

## 4 Results and Findings

The three-stage least squares method is a method that considers and estimates the structural equations of a coherent pattern simultaneously. Since the estimate is done using the Huber White option in the Eviews9 software and with this option we no longer need autocorrelation report, we have skipped the report. The results of estimation of the simultaneous equations system in the study using the 3SLS method are presented in Tables 5-8.

**Table 5:** Results of estimation of the first equation (facility interest rate as the dependent variable)

variable	coefficients	Standard deviation	t-statistic	prob
Intercept	10.75	1.13	9.5	0.00
Deposit interest rate	0.78	0.18	43.4	0.00
Inflation rate	-0.22	0.05	-4.2	0.00

Source: calculations of the research

The results of the estimation of the interest rate equation show that the intercept is significant and has a positive coefficient. This means that the facility interest rate will have a positive value if the explanatory variables are involved. The coefficient of the deposit interest rate is positive and significant, which indicates a positive and significant relationship between the deposit interest rate and the facility interest rate. The coefficient of the deposit interest rate is 0.78, which indicates that an increase in the deposit interest rate by one unit (percent) results in an increase in the facility interest rate by 0.78 (percent). The inflation rate has a significant and negative coefficient, with its value being about -0.22, which indicates that an increase in the inflation rate by one unit (percent) leads to a decrease in the facility interest rate by 0.22 units (percent). As the interest rate is decided in Iran as a mandatory order, it is not unlikely that the results of the relationship between the facility interest rate and the inflation rate are inconsistent with Fisher's theory.

**Table 6:** Results of estimation of the second equation (deposit interest rate as the dependent variable)

variable	coefficients	Standard deviation	t-statistic	prob
intercept	-13.6	1.45	-9.37	0.00
facility interest rate	1.27	0.02	43.9	0.00
Inflation rate	0.28	0.06	4.31	0.00

Source: calculations of the research

The results of the estimation of the second equation show that the intercept has a negative and significant coefficient. This means that, where explanatory variables are not involved, the deposit interest rate has a negative value. The facility interest rate has a positive and significant coefficient, which indicates that as the deposit interest rate is positively correlated with the facility interest rate, the facility interest rate is also positively correlated with the deposit interest rate and it has a value of 1.27 units (percent). This value shows that during this 45year period in the Iranian economy, a one-unit increase in the facility interest rate has led to an increase in the deposit interest rate by 1.27 units. The coefficient of the inflation rate in the second equation is positive and significant, with a value of 0.28. This value suggests that a one-unit increase in the inflation rate leads to an increase in the deposit interest rate by 0.028units.

**Table 7:** Results of estimation of the third equation (inflation rate as the dependent variable)

variable	coefficients	Standard deviation	t-statistic	prob
intercept	58.9	16.39	3.6	0.00
liquidity level	1.39	5.27	2.63	0.00
exchange rate	0.002	0.00	1.57	0.11
facility interest rate	-3.37	1.35	-2.49	0.01

Source: calculations of the research

The results of the third equation show that the intercept in this equation is positive and significant. In other words, the inflation rate has a positive value if explanatory variables are not involved. The liquidity coefficient is positive and significant, indicating a positive and significant relationship between the liquidity level and the inflation rate, which is consistent with the mentioned theory. Its value is about 1.39, which indicates that an increase in the liquidity level by one unit leads to an increase in the inflation rate by 1.39 units.

The exchange rate has a positive and somewhat significant coefficient, indicating a positive correlation between the exchange rate and the inflation rate. Its value is 0.002, which indicates that a one-unit increase in the exchange rate leads to an increase in the inflation rate by 0.002 unit. The facility interest rate also has a significant negative relationship with the inflation rate. The facility interest rate has a coefficient of -3.37, indicating that a one-unit increase in the facility interest rate result in a decrease in the inflation rate by 3.37 units. As noted above, as the interest rate is decided in Iran as a mandatory order, it is not unlikely that the relationship between the facility interest rate and the inflation rate is negative rather than positive.

**Table 8:** Results of estimation of the fourth equation (credit risk as the dependent variable)

variable	coefficients	Standard deviation	t-statistic	prob
intercept	-68.8	13.8	-5.25	0.00
facility interest rate	5.9	0.97	6.06	0.00

Source: calculations of the research

The results of the last equation show that the intercept has a negative and significant coefficient, which indicates that the credit risk is negative if no explanatory variables are involved.

The facility interest rate has a positive and significant coefficient, which suggests that a one-unit increase in this rate results in an increase in the credit risk by 5.9 units, meaning that an increase in the facility interest rate will increase the probability of non-repayment by borrowers.

## 5 Conclusion and Suggestions

The main purpose of the present study was to find out the relationship between the facility interest rate and the deposit interest rate. The results of investigating the relationship between the facility interest rate and the deposit interest rate, inflation rate and credit risk confirm the existence of a significant positive relationship of the deposit interest rate and credit risk with the facility interest rate, while no positive relationship was found between the facility interest rate and the inflation rate. The results of investigating the relationship between these variables using system equations and the three-stage least squares method indicate that there is significant positive relationship between the facility interest rate and the deposit interest rate, which confirms the main hypothesis of the research. However, there is a significant negative relationship between the facility interest rate and the inflation rate, which rejects the second hypothesis of the research. It was also found there was a significant positive relationship between the interest rate and credit risk, which confirms the third hypothesis of the research. Typically, many people invest in economic activities that have a stable and clear status, resulting in mass production, more competitive activities and lower profits. In contrast, activities associated with a number of risks, such as new and innovative activities, are similar to monopoly markets, and have more expected profits due to the presence of more manufacturers and, with regard to this logic, there exists a kind of direct empirical and psychological relationship between risk taking and profit expectation. This means that the more profit a person seeks, the more risks he/she will face. Therefore, managing and designing various types of bank deposits, a comprehensive banking system can also respond to the needs of those who seek to store and transfer funds and get involved in spiritual rewards and in civil and industrial development, and can meet the needs of those who intend to earn profits and earnings (with different spirits in terms of risk acceptance). It is also suggested that monetary and banking policy makers use the balanced and stable combination of interest rates, currencies and inflation in a coordinated, lasting and durable manner in the medium term for the regulation and implementation of large-scale policies including monetary policies. It should be noted that neglecting the balance of these rates puts the national economy in the process of imbalance, which disturbs the consolidation of the financial sector to the loss of the real sector and to the benefit of the hidden economy.

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