The Relationship Between the Facility Interest Rate and Three Main Variable of the Money Market in Iran (1986-2017)

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ARTICLE INFO	ABSTRACT
	The bank interest rate is one of the most important macroeconomic variables in each country economic. The purpose of this paper is find the relationship between the facility interest rate and three main variable of the money market in Iran. This issue for equations the interest rate facility, the interest rate of deposit, inflation and credit risk utilizing the model simultaneous equation system and method three-stage least squares estimated. Results show that in this 32year period the interest rate of the facility with the interest rate on deposits is one of the most important macro- banking variable has a positive and significant relationship. So that with an increase in interest rate on deposits, the interest rate of facility also increases. It was also determined the interest rate of facility with inflation has a negative and significant relationship. This expresses with increasing inflation, the facility interest rate decreases. Because in Iran the rate of interest determined as an order, this result is not expected. The interest rate of facility and credit risk have a positive and significant relationship, which represents it when the interest rate of facility increases, likelihood of nonpayment increased by borrowers. Also, inflation rate with liquidity and exchange rate has a positive relationship which is consistent reality.

1 Introduction

In Iran, the rate of bank interest is not determined by the intersection of supply and demand for financial resources, but is determined in an order by the Council of Money and Credit in different parts of the economy and the state of the economy. In a market-driven economy, the main interest rate is the creation of a balance between the supply of financial resources and the demand for resources.

The interest rate is the factor that finances savings on the one hand and, on the other hand, allocates the repossessed equipment efficiently to different uses.

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 [13]. The main issue in Iran is the different way of calculating the deposit interest rate and facility interest rate. There is no clear formula for determining the facility interest rate and the calculation of installments and deferred loans. Adding constraints and limitations has led to a slightly different way of calculating the facility interest rate and repayment of installments 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 [1].

Hypotheses Research:

The Facility Interest rate has a significant relationship with the Deposit Interest rate and the Inflation and Credit risk. Introduction of research variable:

Facility interest rate: This refers to the interests of facilities in the 5 sectors of exports, commerce and services, housing and construction, industry, and mining and agriculture, which are used in as the average interest rate of facilities in these five sectors.

Deposit interest rate: The bank deposit interest rate includes interest rates on bank deposits in the short run.

Inflation rate: The index of prices for goods and services in urban areas has been used.

Liquidity level: This 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.

Exchange rate (dollars): This is equal to the price of dollar in the free market.

Credit risk: A variable used from the total amount of deferred debts, overdue debts, and doubtful accounts in billion Rials.

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. 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 [9]. 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. 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.

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 Banks use a specific formula to determine their loan interest rates. The most important factor in determining interest rates is the base rate. Other variables involved include. The interest rate is similar to the price of other goods, depending on the amount of credit demand for its supply on the market. In other words, if the amount of the loan offered is higher than the demand for the loan, then the interest rate will decrease. An important factor in determining interest rates is inflation. Because if the interest rate is lower than the inflation rate, then the purchasing power of the future creditor is less than the amount you pay now. The inflation rate reduces the purchasing power of money, so that for one percent increase in inflation, it actually means a one percent reduction in the amount of commodity that can be bought with future money. For this reason, the creditor tries to maintain the minimum purchasing power of his money, taking into account the inflation rate at the interest rate.

Risk means more uncertainty means more risk. Risk is a factor that affects not only interest rates, but also makes interest rates different in different transactions, such as the risk of the creditor's inability, the probability that due to the inability of the creditor, the timely repayment of the principal and debt cannot be considered one of the components of credit risk.

In liquidity risk, if the securities purchased by the bank are not immediately available for sale, then the liquidity risk of the bonds will increase. In the banking literature, buying securities means lending to bond issuers.

The risk of maturity is also a risk factor, since securities that are maturing earlier than other securities are less risky. This makes long-term bonds available at higher interest rates. Of course, coupons that are paid to their holders during certain periods through coupons are more valuable than non-coupon securities. Because in non-coupon bonds, the holder must wait until the maturity of the bonds to receive a profit.

2.2 Fisher's Effect

Fisher's effect is expressed in such a way that a unit of increase in expected inflation (π) results in a unit increase in nominal interest rates and the real interest rate, which plays a major role in shaping the behavior of investment and postponing, remains constant. A very important result of Fisher's work is that monetary policies are neutral, although they generate inflation and inflation expectations, but they cannot affect the real variables of the economy. Therefore, one can consider Fisher's effect as one of the most important results of the classical doctrine and display it in the form of a classic model. Fisher's theory was once again considered by economic theorists in the early 1970s, as the coincidence of rising inflation and nominal interest rates was one of the important features of the economists of the 1970s. This growing interest has led to the formation of several categories of ideas about the effect of inflation on nominal interest rates. First, theorists such as Mandel considered the effect of Wealth on Fisher. According to Mandel's theory, the increase in the expected inflation rate will reduce the real money longevity and, as a result, wealth will increase. Reducing wealth will reduce consump-

tion and increase remittance, which reduces real interest rates. Mandel's theory suggests that an increase in expected inflation would reduce real interest rates. And the effect of expected inflation on the nominal interest rate is less than one. This relationship is known as the Mandel effect:

$$i= r+\beta\pi \qquad \beta < 1$$

Mandel's effect on this subject implies that inflationary changes and, as a result, monetary policy are non-negative. Second, Tobin investigated the effect of liquidity on Fisher. According to the Keynes liquidity theory, inflation expectations in the short run will reduce real interest rates. Tobin generalizes this theory in the framework of the long-term growth model. He argued that a steady increase in the expected inflation rate would reduce the real money balance and, as a result, increase the cost of maintaining money or prevailing liquidity and leads to the transfer of real balances to real capital in the basket of individuals, this transfer reduces the production of Capital 7 and decreases as a result of the real rate [16, 22]. Third, theorists such as, Tanzi have considered the effect of tax on income on Fisher. According to these theorists, if we assume that the income tax is earned on the nominal interest, then this real interest rate after the tax forms the economic behavior and the real interest rate before the tax .

$$i(1-t) = r^*+\pi$$

The final rate of taxation, which is imposed on all individuals equally, and allows a certain amount between zero and one. In this case, we need to correct the effect of Fisher, a unit of increase in expected inflation, maintains the real interest rate, and the nominal interest rate increases over the expected inflation rate.

$$i= r+\beta\pi \ , \beta > 1$$

The implicit implication of these ideas is that monetary policies and changes in the inflationary expectations derived from them cannot produce real effects. Fourth, Tanzi added the effect of the business cycle to Fisher's relationship and examined its short-term effects. In his opinion, in the short run, Fisher's effect is affected by economic fluctuations, but in the long run, with the disappearance of these fluctuations, the one-to-one correspondence between the nominal interest rate and the inflation rate persists [21]. The difference between the above ideas only summarizes how real interest rate changes are. Opinions that confirm the effect of Fisher suggest that real interest rates remain constant and that monetary policy is neutralized And against the ideas that confirm the effect of Mandel, they confirm the real interest rate cuts and, as a result, the real effects of monetary policy, the macro variables But regardless of this fundamental difference in the theories, which all belong to the years prior to 1990, many economists accepted classical ideas as an explanation of the economy in the long run And among the effects of Fisher, introduced in the classical theory of interest, is the importance of explaining the long-term behavior of nominal interest rates and the neutrality of monetary policy in the long run. Fisher's work, coupled with the theory of money, can well illustrate the relationship between neutrality of money, inflation rate and nominal interest rates.

2.2.1 Money Supply

Nominal interest rate→ Inflation →Price level

The supply of money is influenced by various factors that is supposed to be an externality for simplicity and is determined by the central bank. The supply of money in general is equal to the monetary base multiplied by the coefficient of money multiplication .Therefore, money supply changes when the monetary base or the multiplier of money changes. The base of money, known as high money, equals the central bank's debt to private sectors (banknotes in the hands of the people) and banks (banknotes and bills to banks). According to the definition of the central bank balance sheet, the monetary base is equal to the net amount of the bank's foreign and domestic assets. In other words, the monetary base can be considered a means of payment that the central bank purchases using its various financial assets . But the multiplier coefficient of money equals the size of money-based monetary changes. The multiplication factor in this sense changes for a unit of change in the monetary base of several units of money.

2.2.2 Money Demand

According to the theory of money supply and money demand, the level of price equilibrium determines. Thus, a one percent increase in the rate of growth of the volume of money will lead to a one-percent increase in the inflation rate and according to Fischer, a one percent increase in inflation triggers a one percent rise in nominal rates. But since the nominal interest rate is the cost of keeping money, it in turn affects the demand for money. Finally, according to the theory of money, equilibrium of supply and demand is also established. This equilibrium can be represented by the following equation:

$\frac{M}{P}$=L (r+π,y)

But for a more precise answer to the question of how a monetary policy affects nominal interest rates, We should look at the horizons of our time . In the long run, as the Fisher effect shows, with a monetary policy, for example, a decrease in the growth of the volume of money, the nominal interest rate decreases. But in the short run, with the assumption of full price stickiness, a monetary contraction policy can lead to a decline in the real balance of money and, consequently, an increase in nominal interest rates. Empirical observations confirm both the long-term effects and the short-run effect of monetary policies as described [15].

2.3 Literature Review

Li Suyuan [12] conducted a study entitled "The effect of interest rates on investment: empirical evidence of Jiangsu Province in China, and he chose this state because the largest investment capacity in China belonged to it. Using the Vector Error Correction Model (VECM) for the period of 2003 -2012, he 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. Popescu [13] carried out a study entitled "Analysis of the Behavior of Central Banks in Setting Interest Rates: The Case of Central and Eastern European Countries", 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 inter-

est rates of the euro area. In a paper entitled "Negative Interest Rate Policy (NIRP): Implications for Monetary Transmission and Bank Profitability in the Euro Area", Jobst and Lin [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, Farabullini, and Giombini [4] conducted a study entitled " Loans, Interest Rates and Guarantees: Is There a Link?", in which they 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. Aggarwal [3] performed a study entitled" Interest Rates and Investments, and a different assessment of the financial liberalization hypothesis", in which they 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. Mohammadi and Sajjadi [14] 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. Akhlaghi et al. [2] 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. Nazarian and Hamzei [17] 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. 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. Esmaeili et al. [7] 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. Yousefi [23] 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. Dalvand [6] Studying the Role of Marketing Intensity on the Relation of Financial Leverage and Firm Function. His results show that, this study is performed between 2012 and 2016 and 103 firms are studied in this research. The independent variables in this research are financial leverage and marketing intensity. The dependent variable is firm evaluation that Tobin's Q is used for evaluating this variable. For evaluating the research variables, Eviews 9 software is applied. The research findings illustrate there is not a U relation between financial leverage and firm function and marketing intensity is not a moderator between these two variables. Dehghanfard [5] Inflation, Operating Cycle, Cash Holding, Her result show that , In this study for testing the hypothesis is used of linear regression and correlation. To analyse data and test hypotheses is used of Eviews software. After designing and testing hypotheses for each main hypothesis, it was concluded that inflation and operational cycle has not a significant impact on the level of firm's cash holding. The results show no significant effect of inflation through the operating cycle on cash holding. Izadikhah [8] Improving the Banks Shareholder Long Term Values by Using Data Envelopment Analysis Model, His result show that, Given the rapid development of the banking sector, it is reasonable to expect that the performance of banks has become the center of attention among bank managers, stakeholders, policy makers, and regulators. In order to maximizing the share-holders' satisfactory level, two bank efficiency measurement approaches, i.e. the production approach and the user cost approach, which are financial evaluations, are employed. The evaluations are done by means of data envelopment analysis method. The proposed methodology is run on the 15 privet bank branches in Markazi province. By using this approach, four regions that show the various performances are obtained. In addition, the status of returns to scale for each bank branch is calculated.

3 Research Methodology

In this research, all the data used by the Central Bank time series have been extracted. . The variables used in the research include the rate of utility interest in the five sectors of exports, commerce and services, housing and construction, industry, and mining and agriculture, which is used in the average interest rate of the facility in these five sections. The interest rate on bank deposits also includes interest rates on bank deposits in the short run. The other variable is the inflation rate, which is used by the index of prices for goods and services in urban areas. Credit risk is also a variable that has been used

from the total amount of deferred claims, deadline claims, and suspected receipts to billion Rials. Other variables included in the study, which is the liquidity of the sum of money and quasi-money that the sum of notes and coins in circulation plus deposits of non-visual visit plus deposits (term) which is the Are withdrawn from the central bank. The last variable is also the exchange rate. In this research, the exchange rate in the free market has been used. Simultaneous equations are different from single-equation models, in which there are more than one dependent variable and more than one equation. A unique characteristic of the simultaneous equations is that the dependent variable in an equation is an explanatory variable in the other equation of the system. Therefore, these explanatory variables are dependent, stochastic, and are usually correlated with the components of the equation distortion in which they are entered as explanatory variables. In such cases, the classical least squares method cannot be applied due to the incompatibility of the resulting estimates. In other words, the above estimates, regardless of the sample size, will never amount to real values. It is worth mentioning that the system of simultaneous equations of triangular least squares is more efficient than the system of two-stage least squares simultaneous equations and does not take into account the assumption of the independence of the wastes. Equally, the system of simultaneous equations of three-stage least square is suitable only for equations that are over-defined.

To estimate the system of simultaneous equations, there are two methods: single-equation method and system method. Single-equation methods include ordinary least squares methods, indirect least squares Rossesh, instrumental variable method, two-stage least squares method, and maximum exponential method with limited information. System methods include: Three-stage least squares and a maximum-precision view with complete information. In equation-one methods, each of the equations is estimated only with respect to the constraints of the equation and without regard to the constraints of other equations. But in systemic systems, all available information in the system of equations is used to estimate the nullity [18]. In this research, three-stage least squares estimation method has been used. Single-equivalence methods are consistent but not asymptotic. That is, by increasing the sample size, their bias and variance tend to zero, so they are compatible, but they do not have the efficiency because they have no minimum variance. The reason for their inability is to ignore the correlation of equations error sentences.

Regarding the theoretical foundations presented in the research and the existence of a theoretical relationship between the variables of the research of the system of simultaneous equations, the four equations are as follows.

$$IRF = \beta_0 + \beta_1 IRD + \beta_2 INF + \varepsilon_1 \tag{1}$$

$$IRD = \beta_3 + \beta_4 IRF + \beta_5 INF + \varepsilon_2 \tag{2}$$

$$INF = \beta_6 + \beta_7 M2 + \beta_8 ER + \beta_9 IRF + \varepsilon_3 \tag{3}$$

$$CRISK = \beta_{10} + \beta_{11} IRF + \varepsilon_4 \tag{4}$$

Which we have in the above equations:

Facility Interest Rate=IRF

Deposit Interest Rate=IRD

Inflation=INF

The volume of liquidity=M2

Exchane Rate =ER

CR=Credit Risk

4 Result and Analysis

The first equation relates to the interest rate of the facility, which according to the theoretical foundations is a function of the rate of interest on deposits and the inflation rate. The second equation refers to the rate of interest on deposits, which is a function of the rate of inflation and interest rate of the facility. The third equation refers to the inflation rate, which is a function of the volume of liquidity and the exchange rate (dollar) and the rate of interest on the facility. The fourth equation is related to credit risk, which is a function of the rate of interest on the facility.

4.1 Data and Test Results

The system of the above equations is estimated simultaneously with the three-stage least squares method. In the simultaneous equation method, good criteria for fitting regression such as (coefficient of determination, f, standard error, etc.) are not widely used.

Table 1: Descriptive Characteristics of Research Variables

probability	Jarque-Bera	kurtosis	skewness	Standard deviation	minimum	Maximum	Median	Mean	variable
0.35	2.08	1.84	-0.2	3.23	9	19	13.8	14.4	IRF
0.00	19.09	5.05	1.6	2.45	6	16	8	8.34	IRD
0.00	12	4.7	1.24	9.11	9	49	17.7	19.7	INF
0.00	57.9	7.9	2.31	1906089	10172	7823846	1763245	1083758	M2
0.00	3.6	1.4	1.4	1219.3	74	4200	822.5	1134.6	ER
0.00	6.33	2.55	1.06	12.9	0.77	38.7	2.85	10.5	CRISK

Source calculations of the research

The descriptive character in Table 1 shows that the utility benefit rate has a negative skew, which indicates that the distribution has a left-handed chip, which is not comparable to normal distribution in terms of similarity. The elongation coefficient also indicates that the distribution of variables is longer than the normal distribution and the data are centred around the mean. The descriptive character of the rate of interest on deposits indicates that this variable has a right hand side, since the coefficient of skewness is positive, which, in terms of a similarity, differs significantly from normal distribution. The positive coefficient of elongation also indicates that the distribution of all variables is longer than the normal distribution, and the data is centred around the mean. The time series of the variables used in the research (1986-2017) 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

Test result	ADF statistic	Critical value	Variable
non-stationary	-1.65	-2.6	IRF
non-stationary	-2.3	-3.2	IRD
stationary	-4.2	-3.5	INF
non-stationary	-0.22	-3.2	M2
non-stationary	-0.25	-2.7	ER
stationary	-8.3	-3.4	CRISK

Source: calculations of the research

With this in mind, it is clear that four variables are interest rates, interest rates on deposits, volatility and currency exchange rates. But the two variables are inflation and credit risk at the level of mana. So we make Dickey Fuller with a differential load for non-negative variables. As shown in Table 3, these four variables are varied with a differential load.

Table 3: Results from ADF with first order difference

Test result	ADF statistic	Critical value	Variable
stationary	-5.2	-1.5	IRF
stationary	-7.5	-1.2	IRD
stationary	-3.2	-1.5	M2
stationary	-3.1	-1.9	ER

Source: calculations of the research

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

Maximum Eigen value test	Effect test	Relationship
47.76 (0.00)	85.18 (0.00)	No relationship
20.67 (0.05)	37.42 (0.00)	A maximum of one relationship
15.85 (0.02)	16.74 (0.03)	A maximum of one relationship
0.89 (0.34)	0.89 (0.34)	A maximum of three relationship

Source: calculations of the research

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 co integration test. We use the Johansen & Juselius test to examine the co integration of the model. The null hypothesis means that there is no co integration. The results of this study confirm the cointegration at the level of 0.05. Therefore, the null hypothesis as to the lack of co integration is reject Table 4. The results of the Johansen & Juselius co integration test.

4.2 Results of the model estimation and findings of the research

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 Eviews 9 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	15.04	0.94	15.89	0.00
Deposit interest rate	0.38	0.07	5.26	0.00
Inflation rate	-0.19	0.03	-5.69	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 is0.38, which indicates that an increase in the deposit interest rate by one unit (percent) results in an increase in the facility interest rate by 0.38 percent. The inflation rate has a significant and negative coefficient, with its value being about-0.19, which indicates that an increase in the inflation rate by one percent leads to a decrease in the facility interest rate by 0.19 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	-0.26	7.14	-3.37	0.00
facility interest rate	2.01	0.45	4.41	0.00
Inflation rate	0.30	0.06	5.05	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 2.01 percent. This value shows that during this 30-year period in the Iranian economy, a one Percent increase in the facility interest rate has led to an increase in the deposit interest rate by 2.01units. The coefficient of the inflation rate in the second equation is positive and significant, with a value of 0.30. This value suggests that a one Percent increase in the inflation rate leads to an increase in the deposit interest rate by 0.30 Percent.

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

variable	coefficients	Standard deviation	t-statistic	prob
intercept	63.88	17.02	3.75	0.00
liquidity level	8.92	5.09	1.75	0.04
exchange rate	0.0001	0.0009	0.14	0.88
facility interest rate	-3.11	1.15	-2.70	0.00

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 about8.92, which indicates that an increase in the liquidity level by one Billion Rials leads to an increase in the inflation rate by 8.92 percent. The exchange rate has a positive and meaningless coefficient, indicating a positive correlation between the exchange rate and the inflation rate. Its value is0.0001, which indicates that a one unit (ten Rials) increase in the exchange rate leads to an increase in the inflation rate by 0.002 (Percent) unit. The facility interest rate also has a significant negative relationship with the inflation rate. The facility interest rate has a coefficient of-3.11, indicating that a one percent increase in the facility interest rate result in a decrease in the inflation rate by 3.11percent. 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	-49.4	35.4	-1.40	0.01
facility interest rate	4.17	2.41	1.72	0.04

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 percent increase in this rate results in an increase in the credit risk by 4.17billion Rials, meaning that an increase in the facility interest rate will increase the probability of non-repayment by borrowers.

5 Conclusion
The main purpose of the present study is to find out the relationship between the facility of interest rate and some important variables of the money market. The results of the study of the relationship between the facility interest rate with the deposit interest rate, inflation rate and credit risk confirm the existence of a positive and significant relationship between the deposit interest rate and credit risk with facility interest rate, but there is a positive relationship between the facility interest rate and rejected the inflation rate. The results of the study of the relationship between these variables, in the form of system equations with a three-stage least squares method, indicate that there is a positive and significant relationship between the facility interest rate and the deposit interest rate, but between the interest rate and the rate of interest Inflation is a negative and significant relationship. It was also found that there was a positive and significant relationship between the facility interest rate and credit risk in the study period. Typically, many people invest in economic activities that are stable and clear. As a result of production, it becomes massive and more competitive, resulting in lower profits. In contrast to activities that involve a series of risks and risks, like new and innovative activities, due to the lack of manufacturers, they are much more likely to be monopolized than the monopoly market and, according to this logic; there is a direct empirical and psychological relationship between risk taking and profit expectations. That is, the higher the person seeks for more profit, he has to accept more risks. Therefore, a comprehensive banking system with the management and design of various types

of bank deposits can also respond to the needs of those who seek to store, transfer funds and participate in spiritual rewards and participate in civil and industrial development, and also needs those who Along with some of these goals, they want to make a profit (And with different morale for accepting risk). Another suggestion is that monetary and banking policy makers in the regulation and implementation of large-scale policies, including monetary policies, should combine balanced and stable interest rates, currencies and inflation in a coordinated, lasting and durable manner in the medium term To be It should be noted that neglecting the balance and composition of these rates puts the national economy in the process of imbalance that would put the financial sector back to the real loss and benefit of the hidden economy.

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