The Role of Islamic Contracts Credits in Private Investment in Iran: An Application of Threshold Regression Approach

Mohammad Abdi Seyyedkolaee[1], Shahryar Zaroki[2] , Yousef Eisazadeh Roshan[3]

ABSTRACT

Investment is an important component of macroeconomics and an essential requirement in the economic development of any country. Due to the centrality of the banks in the financing system of Iran, the facilities granted by banks are one of the most important factors influencing the decisions of investors in the private sector. After the adoption of the law on interest-free banking, banking facilities under various contracts were received in two forms of partnership and exchange. The present research investigates the effects of contracts of partnership and exchange on private sector investment during 2001:1 - 2017:4 using the Threshold Regression (TR) approach. The results show that the impact of contracts of partnership and exchange on private sector investment is not constant and is highly dependent on the regime. Thus, if the investment is less than $313633 (first regime), the contracts of partnership do not have a significant effect and the contracts of exchange negatively affect the investment. In the range of $313633 to $347953 (the second regime), none of the variables has a significant effect. When investment varies between $347953 and $430885 (the third regime), only the contracts of partnership have a significant effect. In this case, the above-mentioned variable positively affects the private sector investment. Again, in the range of $430885 to $475389, none of the contracts can have a significant effect. As long as the investment is more than $475389, the contracts of partnership have a significant negative effect.

Keywords: Credits, Iran's Economy, Islamic Banking, Islamic Contracts, Private Sector Investment, Threshold Regression Model.

---

[1] Assistant Professor of Economics, University of Mazandaran, Iran, ✉ m.abdi.sk@umz.ac.ir.
[2] Associate Professor of Economics, University of Mazandaran, Iran, ✉ sh.zaroki@umz.ac.ir.
[3] Assistant Professor of Economics, University of Mazandaran, Iran, ✉ y.eisazadeh@umz.ac.ir.

1. Introduction

An important component of aggregate demand in macroeconomics is private investment. Private investment fluctuations cause instability in the economy as a whole. Private-sector economic activity is a topic that has always been at the heart of the economic debate in developing countries. Investment plays an important role in economic issues for two main reasons. First, the combination of corporate investment demand and household savings supply shows that depending on how much of the GDP is invested; different levels of living standards can be met in the long term. Second, due to the volatile nature of the investment, it can be an indicator of short-term economic changes and fluctuations in any society (Romer, 2012).

In developed countries, there are large financial markets, advanced stock markets, and many investment companies that finance investment projects, and from this perspective, the role of the money market and banks isgetting less important. However, bank loans and credits are often not considered as an influential variable on private sector investment. This is while in developing countries, due to the shortcomings of the capital market as well as the lack of expansion of the stock market of companies and economic institutions, it is not possible to provide investment resources for economic institutions from the capital market, issue shares and bonds and supply these resources through informal capital markets due to high-interest rates. Hence, not only larger institutions, but also smaller economic institutions gain a large share of the resources needed for investment through the money market and bank credits (Abbasinejad &Yari, 2008).

In Iran, due to the structural problems of the banking system and economic sanctions that have led to the inability to provide financial resources from international channels, the reliance of the economic system on the monetary-banking system has increased sharply and has caused a high impact of banking facilities interest rates on investment and consequently on macroeconomic variables in Iran (Abbasinejad &Yari, 2008).

In addition, lending is possible only in the framework of interest-free banking and Islamic contracts. Islamic banking includes various contracts. These contracts are mainly divided into two categories: contracts of partnership and exchange. Since banking in the Iranian economy is based on Islamic contracts, how the tools available in Islamic banking affect private sector investment as one of the important macroeconomic variables is an important criterion in evaluating Islamic banking, so that one can comment on the performance of Islamic banking based on it.

Accordingly, and considering the importance of the issue, the present research seeks to investigate the impact of Islamic contracts, including the contracts of partnership and exchange on private sector investment in the Iranian economy. In this regard, an attempt is made to answer two basic questions. First, do non-linear contracts of partnership and exchange affect private sector investment? And second, do contracts of partnership have a greater impact on private investment compared to the contracts of exchange? Therefore, after the introduction, a review of literature in this regard is presented. In the third part, the research model is specified and the threshold regression method is explained. The results of data analysis and model estimation are reported in the fourth section and the final section is dedicated to research findings.

2. Literature Review
Divisions of Contracts in Islamic Banking

Resources are used both commercially and productively in various economic activities of society. In the conventional banking system, banks' resources are mainly used for granting credits, production, and trade loans to natural persons and legal persons, discounting commercial documents, and participating in the capital

of productive and service-providing institutions. However, in the interest-free banking system, the distribution of the banks' resources is done through Islamic contracts. These contracts include practical methods based on which banks can adjust and provide the facilities required by customers in the framework of Islamic contracts and transactions. To this end, the law on interest-free banking operations and the bylaws and executive instructions of contracts have been approved by legal authorities (Mehrabi, 2014). Some of these Islamic contracts are mentioned below:

Qarz-al-Hasna: In the interest-based banking system, cash is provided to the customer in the form of loans or other types of interest-based facilities to be used. However, in interest-free banking, the needs of customers are met directly in the form of facilities granted by the bank. Qarz-al-Hasna contract is used to meet the essential needs of the people, such as marriage, house repair, etc. Qarz-al-Hasna bonds are securities that are issued under an interest-free loan agreement, according to which the issuer of the bonds owes the bondholders the amount of their nominal value and must pay them at the deadline. Although Qarz-al-Hasna bonds are considered interest-free loans under the contract and the issuer is not obligated to pay any interest, at the same time, the owners of these bonds enjoy material and spiritual benefits, including participating in the spiritual and otherworldly reward of granting Qarz-al-Hasna loan, preserving and saving a part of their property, using the securities as collateral in long-term transactions, and using lottery prize, etc. (Hadavinia, 2002).

Mudarabah: Mudarabah is a contract according to which the necessary capital and work are provided to carry out a business (purchase and sale of goods) based on a contract between a bank and a person (natural and legal). In this contract, the bank (Mudarabah) is the supplier of the required funds (Mudarabah capital) and the other party of the contract (agent) is responsible for performing all matters related to the subject of the Mudarabah contract. The profit from such a transaction is divided between the bank and the agent at the end of the work with a ratio based on the initial agreement.

Musharakah: Another financial instrument that can be used in the capital market of Islamic countries is Musharakah securities, issued in two forms based on the company's contract. First, the issuer of the bonds provides part of the capital needed to establish an enterprise or a profitable activity and provides the other part through the transfer of the bonds. Holders of Mushrakah bonds co-own the enterprise and activity with the issuer of the bonds in proportion to their capital and consequently receive a share of the profits. Second, the bond issuer manages the project and the economic activity on his own and absorbs all the capital required for his project and activity through the issuance of bonds. In this method, the issuer is the deputy of the shareholders who co-owns the activity and its profit. The publisher can enjoy the right of management as he deputy (Sabry Haroun, 1999). In Iran, Mushrakah contracts are of two types: civil Mushrakah and legal Musharakah. A civil Musharakah is a contract under which two or more natural or legal persons, including a bank, mix their cash or in-kind capital jointly for making a profit. Legal Musharakah is a contract under which the bank provides a part of the capital of the new equity institutions or buys a part of the shares of the existing equity institutions and thus have a share of their profits in this way (Nabi, et al., 2010).

Forward: Forward exchange in banking operations means forward purchasing of the manufactured products (agricultural and industrial) in cash by the bank at a certain price. When the producer lacks financial resources in financing part of his required working capital during the production of goods or products, he can solve his financial problem by forward selling a part of the production.

Fixed-Rate: To create the necessary facilities to be used in production and services, banks can provide three

categories of goods (first, raw materials, spare parts and tools; second, machinery, production facilities, and equipment; and third, housing fixed rates) and provide them for applicants through fixed rates. Fixed-rate means the assignment of a thing to a known price to another party, in such a way that all or part of the said price is received in equal or unequal installments at a certain deadline or deadlines.

Hire Purchase (Ijarah Muntahia Bittamlik/IMB): One of the most widely used methods by the bank customers who are engaged in production and service activities or are applying for banking facilities for housing, is hire purchase, which replaces several interest-based loans and credits commonplace in the past. This method is based on a hire purchase contract in which the lessee is required to own the same tenant (goods or property subject to lease) at the end of the lease term if the terms of the contract are met. Using this method, banks can take on hire purchase transactions to provide the necessary facilities for the development of various sectors of the economy, including servicing, agriculture, industry, mining, as well as housing (Mehrabi,2014).

Jo'aalah (Unilateral Contract): Another banking facility that is used as a tool in the Islamic banking system is Jo'aalah, according to which the forger or the employer is required to pay a certain amount for performing a certain action (according to the contract). The party who performs the act or work is called the agent or contractor. By using a Jo'aalah contract in the banking facilities, banks can expand and develop in matters related to industrial and agricultural products, trade, and services by arranging a contract as an agent or, when required, as a forger. Therefore, banks can meet the demand of customers who cannot meet their needs through other facilities by arranging a Jo'aalah contract.

The Factor: Another short-term tool by which banks can provide facilities for their customers is the factor.

Before the implementation of the interest-free banking law, the banking system used the factoring tool to discount commercial promissory notes. Commercial documents and papers purchased by banks must be genuine and derived from commercial transactions, and the holder of the promissory note must be credible so as not to damage the original amount and returnable interest. Banks are allowed to buy commercial documents and securities with a deadline of less than one year and at the time of purchasing the commercial documents and securities resulting from the commercial operations, they are free to buy them for less than the nominal amount (Mehrabi, 2014).

Direct Investment: Direct investment is the provision of all necessary capital for the implementation of production, commercial and servicing projects that are formed as equity institutions and are done by one or more banks.

Istisna: One of the financial tools that has been implemented in some Islamic countries includes securities designed based on the contract of Istisna (manufacture sale). Istisna is a contract according to which one of the parties of the contract, for a certain amount, undertakes the construction and delivery of a certain thing at a certain time to the other party. There are three points in the Istisna contract that distinguish it from other contracts. First, in the Istisna contract, the product in question (the subject of Istisna) is usually not available and the manufacturer manufactures and delivers it in the future. Second, in the Istisna contract, the manufacturer is responsible for the supply of raw materials and labor equipment. Third, usually at the time of concluding the contract, the full amount is not paid, but part of it is given as a prepayment. The other part is paid in cash or gradually until the delivery of the goods. However, sometimes part of it is transferred after the delivery of goods (Mosavian, 2012).

Murabaha Purchase: Murabaha purchase has been common among people since ancient times and it means

a transaction in which the seller informs the customer of the cost price of the goods (purchase price and its related costs), and then requests an additional amount or percentage as its benefits. In Murabaha's purchase, if the seller lies in stating the purchase price or its related costs, the customer can terminate the transaction. Murabaha's purchase can be in the form of cash or credit. If it is a loan, its interest rate is usually higher (Mosavian, 2012). Some Muslim thinkers have used the characteristics of Murabaha purchase to design securities called Murabaha bonds. In some Islamic countries, such as Malaysia, these bonds have also reached the stage of payment under the name of Islamic bonds (Salehabadi, 2006).

Investment Theories in Islamic Economics

Researchers of Islamic economics have paid serious attention to Islamic contracts by removing usury from the Islamic economic system. They implicitly believe that Qarz-al-Hasna (interest-free loans) alone cannot cover the investment on various projects because people who are trying to get their capital flowed are usually looking for profit, and this is aligned with religious rules, too (Rezaei, 2002).

In this regard, Sadr (1996), using the credit market of goods and services that are approved by Islam, has considered the supply and demand of capital goods in the form of credit as the cause of the emergence and determination of credit rates in the capital goods market and has introduced it as an investment opportunity cost. The point of equivalence of the loan rate and the ultimate return on the maximum investment is the present value of the net return on investment. An increase in the loan rate reduces the firm's demand for investment. Therefore, in the credit commodity market, the loan rate will be fixed and the investment relationship with it will be negative.

Tootoonchian (2000) considers the basis of the investment to be based on participation and realization of interest rates. According to this view, by denying interest rates in Islamic economics, the limiting factor of project implementation will be eliminated, and capital opportunity cost will be zero. In his view, the volume of investment in Islamic economics is increasing due to the lack of interest rates. The lack of interest rates in the decision-making process reduces the cost of producing goods at each stage of production. Increasing the volume of investment and, consequently, increasing employment and reducing the cost of production, and consequently, reducing the price of goods, are the positive effects of investment using the Islamic economics model in comparison with the economy of capitalism.

Ghahf (1997) considers the investment to be dependent on two factors: the expected rate of return on investment (R) and its cost (Q). The cost of investing, from the manager's point of view, is the amount that must be paid to the owners of the capital; That is, the share of any income and return on the project that goes to the owner of the capital is considered the cost of production.

$$Q = R.q \qquad (1)$$

q is the share of the owner of the capital and is determined in the Mudaraba market. Its amount depends on the available stock for investment and the managerial skills that determine the demand for funds. The equilibrium amount of the investment is determined at a point where the cost is equal to the return, so that:

$$R = Q = R.q \rightarrow q = 1 \qquad (2)$$

This relationship means that the manager has a demand for investment to the extent that the share of the owner of the capital reaches a maximum of 1.

While stating the difference between the interest rate and the profit rate, Ghahf (1997), explains that the growth and development of the Islamic economic

system depend on the elimination of interest and the obligation of zakat. The obligation of zakat causes the owners of the assets to increase their savings, at least to compensate for the amount they pay as zakat, and the sanctity of usury reduces the liquidity. As a result, savings increase and idle assets decrease (Rezaei, 2002).

Interest-Based and Interest-Free Banking Operations

Islamic banking is not solely based on religious sentiments and claims because many economic reasons are showing that the profit and loss sharing financial system leads to better aggregation of savings and better use of banks' financial resources in the best possible applications. Such a financial system also results in better income distribution and strengthens the spirit of partnership between money holders and savers. However, there is a negative spirit in the other financial systems. For a quarter of a century or more, Islamic banks in Islamic countries have sought to consolidate the savings of those who have avoided engaging with traditional banks because of their belief that interest is haram. In Islamic banking, obtaining interest (what is called usury) is forbidden, and bonds, long-term contracts, and special banking contracts are not similar to the common ones in the West, for example in American banks. Moreover, according to the laws of Islamic banking, a person cannot trade something that does not yet exist externally or is not owned by him. This is a factor that, according to some experts, reduces the risk of a domino-like collapse, such as what happened in the financial crisis in American and European banks. However, it should not be ignored that the relationship of Islamic banks with trade and commerce of other banking and financial systems is equally limited.

Islamic banks, on the other hand, obtain the interest they need to survive through entering into participatory agreements so that the bank enters into a project as a partner and receives a share of the profits. However, if the projects fail, the bank's assets are also lost. These banks have been successful in financing a large number of small and medium-sized projects through new financing instruments derived from Islamic contracts such as Murabaha, Ijara, Musharakah, etc. These projects, in the absence of Islamic banks, could not achieve the required financial resources in the existing banking system (based on creditworthiness and financial guarantees). However, supporting such projects is an important step in the process of economic and social development.

In all banking operations, the two operations of equipping resources and managing expenses are among the main banking operations that distinguish the bank as a financial unit from other economic units. The interest-free banking system is not an exception to this rule, and Islamic Bank, like other banks, uses the savings resources of a group of people to meet the financial needs of other groups. Thus, from the point of view of relying on the savings resources of society, there is no difference between traditional banking common in other countries and interest-free banking. However, what distinguishes interest-free banking from traditional banking is its nature and form. Behaviors are formed within the framework of the legal relationship that develops between the bank and the customer. Those banking operations that are subject to similar principles and rules, whether in the Islamic or non-Islamic environment, should not be different from each other, because those behaviors or legal relations between the bank and the customer are not in conflict with Islamic standards are accepted in the Islamic environment. Today, all over the world, the issue of microfinance is proposed and attempts are made to reconcile the expectations of banks (in terms of guarantees, etc.) with the financial needs of small projects and workshops. Recently, traditional banks have turned to finance small projects, with extreme caution and in cooperation with insurance companies and investment guarantee companies, and with

presenting a careful definition of small projects to minimize the risk of financing them. However, the entry of traditional banks is far from what Islamic banks have done in this regard, and there are still many opportunities for Islamic banks to play a more active and larger role by using financial instruments based on profit and loss sharing (Bank Melli Iran website).

In usurious banking, usurious loans are used and applicants apply for a loan by going to the bank. In its simplest form, the bank has no control over the quality of the loan, and a person with cash can use it in anything. It may enter the real market and buy goods for personal use, or it may provide intermediate goods or raw materials for its own workshop. Applicants make decisions considering which of the above-mentioned items are more profitable, and the commercial bank is trying to use its capital to make more profit. Banks usually do not enter the commodity market to buy goods, but enter the capital and money markets, because entering and leaving it does not cost much, while the conversion of goods in the real sector has many problems. Buying and selling bonds is a kind of using the same method of usurious lending and borrowing. Usurious banks discount securities. People who have long-term securities and need cash, by referring to the bank, discount the value of the securities according to the term and market interest rate. Bank buys the bond holder's claim by reducing a part of its amount, and according to that, the applicant's need for the funds is met and the bank enjoys a suitable profit. The promissory note is one of these bonds. The usurious bank sometimes creates credit in its current account for its well-accounted customers, that is, it allows them to use the credit of the current account to a certain extent and return it to the bank by calculating the interest. Thus, in providing services to loan applicants, usurious banks pay interest on short-term and long-term loans, discount securities, validate their current accounts, and buy securities, all of which involve the money market. In

the field of attracting financial resources, interest-based banks collect people's liquidity through opening saving accounts, checking accounts, and time deposits and pay interest on time deposits less than the interest rate of the loans (Mosavian, 2001).

According to Islamic banking law, contracts for which banks can pay their facilities are divided into two types of exchange and partnership. In some projects, Qarz e Hasna was tried to be used for interest-free banking, but in practice, Qarz e Hasna was never able to raise large sums of money and was limited to Qarz e Hasna institutions. However, in other projects, an attempt was made to use a contract of partnership, a Murabaha lease, a conditional lease, and an installment sale according to the situation of each community. At present, in most Islamic countries and some non-Islamic countries, non-usurious banks are active in collecting funds and granting facilities by using various contracts (Mirjalili, 1995).

An Overview of Interest-Free Banking in Iran

Until the victory of the Islamic Revolution of Iran in 1978, Iranian banking was based on conventional and interest-based banking. With the victory of the Islamic Revolution and the establishment of the Islamic Republic of Iran, two important changes took place in banking laws and legal relations. First, the Monetary and Credit Council removed interest from the banking system in 1979 and established the "secured interest and commission system" (Nabi, et al., 2010). The secured interest and commission system, which was implemented from the beginning of 1980, brought the following changes: From the beginning of 1980, obtaining interest on bank facilities and credits was eliminated and instead, the banks were asked to receive commissions for granting facilities and credits to natural and legal persons. The amount of commission was different in different cases, e.g., for housing, agriculture, industry, and mining sectors; it was determined by 4%, and for commercial and servicing sectors, it was

determined by 6% to 8% (Behmand & Bahmani, 2011). The secured interest and commission system had many jurisprudential and economic drawbacks, some of which are described below:

1. The legal nature of all types of saving accounts, checking accounts, and time deposits in interest-based banking was a kind of debt. The depositor, by opening an account and granting funds to the bank, actually lends to the bank. Therefore, paying any kind of overpayment to any name is usury. As a result, the secured interest rates of 7% or 8.5% for saving accounts and time deposits were just a change of the name of usury and profit to interest.

2. According to Islamic jurisprudence, banks, and institutions such as Qarz-al-Hasna funds, which provide facilities and credits to natural or legal persons, are allowed to receive a commission as a fee from the recipients of the facility for providing personnel, facilities, etc. This commission should be in proportion to the provision of services and in proportion to its costs and taking any kind of extra amount for providing facilities, although in the name of the commission, is usury and haram.

3. In the secured interest system, if it is based on real commission (i.e., facilities are provided at the rate of 1% or 2%), on the one hand, the bank will face a severe reduction in resources since it cannot pay any interest to depositors (most depositors take their funds from the bank to other monetary and financial markets or abroad), and on the other hand, due to the low cost of using the facility, the bank faces a large number of loan applicants. If the banks ask the facility applicant for a significant percentage as commission and pay it to the owner of the deposit, they can have sufficient resources and overcome problems in granting the facilities. However, in this case, only the name of the interest system has been changed and the system is still interest-based.

Due to the above-mentioned problems, the secured interest system did not last and the "law on interest-free banking operations" was introduced (Mosavian & Varmziari, 2013). In Iran, a fundamental step was taken to eliminate interest rates from the country's banking system by submitting a bill on interest rate elimination and compliance of banking operations with Islamic standards to the Islamic Consultative Assembly, which was approved by the assembly under the title of interest-free banking operations on August 30th, 1983 and by the Guardian Council on September 1st, 1983. It has been implemented since 1984 (Hedayati, et al., 2012). Financial institutions in Iran include commercial banks, insurance companies, savings, and Qarz-al-Hasna funds, pension funds, etc. These institutions, as financial intermediaries, make it possible to transfer savings from savers to borrowers. Therefore, a significant portion of society's savings is channeled through banks and financial institutions. After household income, loans provided by banks and financial institutions to households, institutions, and the government are the most important sources of community funding for the purchase of consumer goods and services, and investment for the construction of dams, highways, bridges, and the purchase of machinery, and tools (Saeedi, 2010).

A Review of Previous Studies

It should be noted that due to the novelty of Islamic banking, studies in this field have been less quantitative and experimental. The following are the most important studies that have examined the factors affecting investment.

Samsami &Tavakkoli (2012) examined the effect of interest-free banking on investment, economic growth, and inflation in Iran using a three-stage least squares method for the period 1959-2009. The results of their study show that the promulgation of the interest-free banking law did not have a significant effect on the variables of investment, economic growth, and inflation

in Iran. Moreover, the study shows that this inefficiency is due to non-compliance with the provisions of the law.

Monfared (2013) examined the effect of Islamic interest-free banking contracts on the growth rate of investment and employment in Iran. In this way, he used the data of the period 1984 to 2012 and the autoregressive model with distributed intervals. He concluded that the relationship between contracts and employment is a two-way causal relationship and the impact of contracts on the growth rate of investment is negative. Moreover, the most negative impact is on the growth rate of investment through a lease on the condition of ownership.

Hailu & Debele (2015) examined the impact of monetary policy on Ethiopia's private investment performance over the period 1975-2011. They used econometric techniques such as co-integration and error correction in the framework of the autoregressive model with distributed intervals. The results showed that private investment in the short term is positively and significantly affected by government investment, real production, and money supply, but negatively and significantly affected by the real exchange rate. Also, in the long term, government investment, real GDP, and money supply have a significant positive effect, while real exchange rates have a significant negative effect on private investment. In addition, real interest rates have no significant effect on private investment in both the short and long terms.

Tari (2016) investigated the effect of bank lending facilities in the form of mandatory and non-mandatory facilities on investment in industry, mining, and agriculture. The estimate was made using the investment model presented by Fry (1980) and the seemingly unrelated regression econometric model. The results show that if in the investment model, the variables of obligatory and non-obligatory facilities are used alone, the coefficients will be insignificant and if the total volume of facilities is considered, the coefficient of the

total volume of facilities (total of obligatory and non-obligatory facilities) will be significant. As a result, the amount of credit affects the investment in two parts. This indicates that due to the limited volume of controlled credits, credit control policies aimed at influencing economic sectors do not have a significant impact on economic sectors.

Kodithuwakku et al. (2016) considering the role of private investment in Sri Lanka, identified the factors influencing it in the economy of Sri Lanka from 1975 to 2015. Findings showed that real GDP growth, real exchange rate, inflation rate, budget deficit, foreign trade, foreign direct investment, and liberalization factor have a positive relationship with private investment. It was also found that among all of the independent variables, foreign direct investment is the most important factor influencing private investment in Sri Lanka.

Jafari Samimi et al. (2016), using Threshold Vector Autoregressive (TVAR) method, investigated the asymmetric effects of monetary policy and bank credit in the two regimes of high production and low production in Iran. The findings of this study showed that fitting a nonlinear model takes precedence over a linear model. In addition, the effect of monetary policy and banking credit on GDP in each of the regimes of high GDP and low GDP is different in terms of intensity and direction of impact; i.e., the effect of monetary policy and banking credit on the economy GDP is asymmetric and depends on regime change based on the GDP variable.

Batu (2016) assessed the determinants of private investment in nine African countries (Ethiopia, Zambia, Senegal, Sierra Leone, Ghana, Kenya, Lesotho, Malawi, and Nigeria). 8 variables were examined for analysis. The results show that national income, government investment, and the exchange rate are vital variables that affect the performance of the private investment. Other variables such as interest rates, credit, inflation,

international trade, and money supply are also important in explaining the performance of the private investment.

Alamolhoda (2018) in an article entitled "Islamic Banking and Risk, an Adaptive Analysis", while introducing the types of risks in Islamic banking, discusses the risk of each of the common contracts in this banking system. He believes that the nature and type of risk in Islamic banking, which arises as a result of the application of Islamic contracts, is different from conventional banking risks. Islamic banks have a double risk compared to conventional banking because, in Islamic economic thinking, a win-lose relationship is not acceptable. The economic behavior of the parties is such that while sharing the benefits, they jointly accept responsibility for possible losses. According to this view, in all Islamic contracts in the Islamic banking system, it is not possible to transfer the risk of any of its activities to the other party, and in general, it has a higher risk.

Caporale & Helmi (2018) examined the relationship between Islamic banking, credits, and economic growth in two categories of 7 countries (the first category, countries without Islamic banks; e.g., Argentina, Brazil, Chile, Costa Rica, Ecuador, Guatemala, and Peru; the second category, countries with a dual banking system including Islamic and traditional banks; e.g., Indonesia, Turkey, Iran, Singapore, Jordan, Tunisia, and Malaysia) using time series and panel data methods for the period 1993-2016. The existence of significant differences between the two sets of these countries indicates the distinctive features of Islamic banks. Time series analysis provides evidence of long-term causality on the part of credits to GDP in countries with Islamic banking. This has been confirmed by panel causality tests, although in this case, short-term causality also exists in countries without Islamic banking.

The difference between the present study and other studies is the separation of Islamic contracts into two parts: contracts of exchange and partnership and examining their impact on private sector investment in Iran. Furthermore, in this study, the threshold regression method has been used, which was not used in previous studies.

3. Methodology

According to the research literature, to answer the research questions, the regression equation is specified as follows:

$$I_t = (\alpha_{10} + \beta_{11}PC_t + \beta_{12}TC_t)I[q_t \leq \gamma](\alpha_{20} + \beta_{21}PC_t + \beta_{22}TC_t)I[q_t \leq \gamma] + e_t^* \qquad (3)$$

Where I is private sector investment, PC is the ratio of the contracts of partnership to total facilities, TC is the ratio of the contracts of exchange to total facilities. q is a threshold variable that divides observations into two parts. γ is also the value of the threshold variable.

Investment: In economic studies, the variable "Gross Fixed Capital Formation" is used as an alternative to the investment variable. Gross fixed capital formation includes the cost of purchasing (or production value at its own expense) capital goods by the private sector, public service producers, and nonprofit private service producers serving households minus the net sale of second-hand capital goods over an accounting period (usually one year). Capital goods are final and durable goods that are used in the production of new goods and services and their economic life and expected life is more than one year. In the National Accounts System of Iran, the formation of gross fixed capital is estimated separately in the fields of "business machinery and equipment" and "construction". In each of these fields, items are available separately for public and private use. According to the research topic, statistics related to the private sector are used.

Exchange Contracts: Exchange contracts have a fixed return and a fixed interest rate on the facility. Fixed-rate contracts, Jo'aaleh, IMB, and Qarz-al-Hasna are considered as part of these contracts.

Partnership (Cooperative) Contracts: Partnership contracts have variable returns in which the bank provides all or part of the capital required for economic activity (production, commercial or servicing) and finally, at the end of the activity, according to the contract with the economic owner, it has a share of the profit from this activity. Partnership contracts include civil partnership contracts, legal partnership contracts, Mudarabah, forward exchange, and direct investment (each of the above contracts is described in the theoretical literature section of the study).

Since the financial sector in the Iranian economy follows the real sector, the variables related to Islamic banking are assumed to be dependent on the status of the real sector of the economy (investment). Accordingly, an attempt has been made to examine the nonlinear effect of the contracts of partnership and exchange by making them dependent on the regime (the state of private sector investment). The spatial realm of the present research is the Iranian economy and the quarterly data of 2001: 1-2017: 4 have been used. The required information has been extracted from the Central Bank portal. The estimation method is based on the threshold regression approach which is described below.

According to economic theories, the behavior of some time series is nonlinear and inconstant over time. Therefore, to study such time series, it is necessary to use nonlinear methods. In nonlinear models, the reaction of one variable to changes in other variables is examined nonlinearly. In this connection, the threshold regression model can be used as a nonlinear model. In economic studies, the effect of one or more explanatory variables on the dependent variable is usually examined. However, for policy purposes, an important point is to estimate the values of the explanatory variable around which the effect of this variable on the dependent variable changes. This change can be in the form of intensifying or mitigating the effect of the explanatory variable on the dependent variable. Also, this change can be a change in the effect of the explanatory variable on the dependent variable. Such values that change the intensity or effect of the explanatory variable on the dependent variable are called critical values or threshold limits.

The threshold regression method seeks to answer the question of whether regression functions pass through all observations uniformly or can be broken down into separate groups (Komijani et al., 2015). In the following, the steps for estimating a threshold regression model based on what Hansen (1999, 2000) stated are reviewed.

Consider a regression model such as $Y_t = \theta X_t + e_t$. In the threshold regression approach, the model parameter is a function of the regime state in which it is located. In other words, the above model is broken down into the following two models:

$$Y_t = \theta_1' X_t + e_{1t} \; If \; q_t \leq \gamma \qquad (4)$$

$$Y_t = \theta_2' X_t + e_{2t} \; If \; q_t > \gamma \qquad (5)$$

Where q_t is a threshold variable that divides observations into two parts. Y is the dependent variable, X is the independent variable, e_{it} is the error term, and γ is the threshold variable value. The above model shows that as long as the threshold variable is smaller than the threshold value, the regression equation is consistent with Equation (4). When the threshold variable is greater than the threshold value, the regression equation is consistent with Equation (5). The virtual variable $I_t(\gamma)$ is defined as $I_t(\gamma) = \{q_t \leq \gamma\}$, where $\{,\}$ represents the function symbol. If $q_t \leq \gamma$, I = 1; otherwise, I = 0.

The optimal threshold value is obtained as follows:

$$\hat{\gamma} = \frac{argmin S_1(\gamma)}{\gamma} \qquad (6)$$

After checking for thresholds, the test is repeated to ensure the existence of a second threshold effect. Rejecting the null hypothesis of the F_1 test means that there is at least one threshold. Therefore, it is necessary

to consider the second threshold:

$$S_2^r = S(\hat{\gamma}_1, \gamma_2) \; If \; \hat{\gamma}_1 < \gamma_2 \qquad (7)$$

$$S_2^r = S(\gamma_2, \hat{\gamma}_1) \; If \; \gamma_2 < \hat{\gamma}_1 \qquad (8)$$

The second threshold estimator is as Equation (9):

$$\hat{\gamma}_2^r = \frac{argmin S_2^r(\gamma_2)}{\gamma_2} \qquad (9)$$

The null hypothesis states that there is only one threshold, and hypothesis one states that there are two thresholds.

4. Research Estimate Results
Unit Root Test

The results of the ADF unit root test for all model variables are reported in Table (1). It should be noted that the critical value is -2.92 at the confidence level of 95% for the state with cross-section and without trend, -3.5 for the state with cross-section and trend.

Table 1. Variable Unit Root Test Results*

Variable		In Level		Result in Level
		Statistic	Prob.	
I	Intercept	-1.65	0.45	Non-Stationary
	Trend and Intercept	-1.4	0.85	Non-Stationary
PC	Intercept	-0.72	0.83	Non-Stationary
	Trend and Intercept	-1.69	0.74	Non-Stationary
TC	Intercept	-1.62	0.46	Non-Stationary
	Trend and Intercept	-1.51	0.81	Non-Stationary

*All variables are seasonally adjusted before the unit roottest.
Source: Research Findings

According to Table (1), the variables are not stable. For the variables, a unit root test was performed considering their structural failure because the existence of a structural failure in a time series causes it to be unstable on the surface.

Table 2. Variables Stationary Test Results Considering Structural Failure

Variable	Failure Time	Failure Type	Statistic	Critical Value
I	2012Q$_1$	Intercept	-4.88	-4.86
PC	2006Q$_1$	Intercept	-4.27	-4.19
TC	2006Q$_1$	Intercept	-4.5	-4.44

Source: Research Findings

Since the test statistics are greater than the critical value at the confidence level of 95%, it can be said that all variables are at the stable level. Therefore, the stationarytest is not relevant for the first-order difference of the variables and the aggregate test.

Results of Model Estimation

In this section, the results of the model estimation are presented. First, the results related to the significance of the threshold and the estimation of the number of thresholds are stated. In the following, the coefficients

related to the variables are estimated and analyzed.

Threshold Nonlinearity Test and Thresholds Number Detection

Hansen test was used to test the nonlinearity of the model, the results of which are summarized in Table (3). The null hypothesis indicates the absence of a threshold and the existence of a linear model. If this hypothesis is rejected, the test will continue in the next steps to find the optimal number of thresholds. According to Table (3), considering the private sector investment as a threshold or transfer variable, the value of the F test statistic (96.38) is more than the critical value at the level of 5% (13.98). Therefore, the resulting threshold value (313633) is significant and the assumption of linearity of the studied model is rejected. In the next step, the search for the second threshold shows that when the private sector investment is greater than 313633, Equation (3) fails. The value of the test statistics confirms the existence of the second threshold (equal to 26.43). Furthermore, the value of the test statistic indicates that the effect of the independent variables changes again as long as the investment exceeds 347953. Accordingly, the significance of the third threshold (430885) is confirmed. Next, the existence of 3 thresholds against 4 thresholds is tested. According to the result, the existence of 4 thresholds cannot be rejected. Hence, the value 475389 is accepted

as the fourth threshold. In the last step, because the test statistic is smaller than the critical value for the fifth row of Table (3), it was found that the hypothesis of 5 thresholds is rejected. Therefore, concerning (3), private sector investment has 4 thresholds and follows 5 different regimes. Accordingly, Equation (3) was estimated using the threshold regression approach considering the above results, the results of which are presented in Table (3).

Table 3. Threshold Detection Test Results

Threshold Test	F-Statistic	Critical Value	Threshold Value
0 vs. 1	96.38	13.98	313633*
1 vs. 2	26.43	15.72	347953*
2 vs. 3	26.74	16.83	430885*
3 vs. 4	37.53	17.61	475389*
4 vs. 5	14.39	18.14	-

Notes: * Indicates that the threshold value is significant at the 5% level.

Source: Research Findings

Model Estimation Using the Threshold Regression Approach

Based on the results obtained from Table (3), the basic research model was estimated by the threshold regression approach, the results of which are presented in Table (4).

Table 4. Results of Threshold Regression Model Estimation

		Intercept	PC	TC
$I < 313633$	Coef.	-1770391	1448871	3176338
	Prob.	0.00**	0.07	0.00**
$313633 \leq I < 347953$	Coef.	135254	286110	-42933
	Prob.	0.24	0.16	0.62
$347953 \leq I < 430885$	Coef.	70064	387044	6568
	Prob.	0.07	0.00**	0.88
$430885 \leq I < 475389$	Coef.	43060	432270	67818
	Prob.	0.91	0.23	0.71
$I > 475389$	Coef.	588652	168978	-671437
	Prob.	0.37	0.79	0.00*
$R^2=0.99 \; \bar{R}^2 =0.98 \; D.W=1.98 \; Prob.(F\text{-}Statistic)= 0.00$				

Notes: * and ** Indicate that the threshold value is significant at 5% and 1% levels. Source: Research Findings

The results of estimating the threshold model in Table (4) indicate that, if the investment is less than 313633 (first regime), the contracts of partnership do not have a significant effect and the contracts of exchange negatively affect the investment. In the range of 313633 to 347953 (the second regime), none of the variables have a significant effect. When the investment is between 347953 to 430885 (the third regime), only the contracts of partnership have a significant effect, and positively affect the private sector investment. Again, in the range of 430885 to 475389, none of the contracts can have a significant effect. As long as the investment is more than 475389, the contracts of partnership have a significant negative effect.

5. Conclusions

Financial markets play an important role in advanced economies. These markets are responsible for financing large and profitable projects of enterprises. In a prosperous economy, firms have more liquidity and net worth, so they need fewer banking and credit facilities to finance their projects. Conversely, in times of recession and lack of liquidity, firms are forced to receive more facilities from credit institutions, in which case additional costs are imposed on them to finance projects. Under such circumstances, monetary policy can have a stronger impact on the real economy.

Financial institutions in Iran include commercial banks, insurance companies, saving and Qarz-al-Hasna funds, and pension funds. These institutions, as financial intermediaries, make it possible to transfer savings from depositors to borrowers. Therefore, a significant portion of society's savings is channeled through banks and financial institutions. Since the financing system in Iran is mainly bank-oriented, one of the most important factors influencing private sector investment decisions is the facilities granted by banks. After the approval of the interest-free banking law, the facilities can be received under various contracts. Contracts related to private sector investment can be divided into two general categories: partnership and exchange contracts.

The present research investigates the effects of the contracts of partnership and exchange on private sector investment during 2001:1 - 2017:4 using a threshold regression approach. The results show that the impact of the contracts of partnership and exchange on private sector investment is not constant and is highly dependent on the regime. So that, if the investment is less than 313633 (first regime), the contracts of partnership do not have a significant effect and the contracts of exchange negatively affect the investment. In the range of 313633 to 347953 (the second regime), none of the variables has a significant effect. When the investment is between 347953 to 430885 (the third regime), only the contracts of partnership have a significant effect. In this case, the above-mentioned variable positively affects the private sector investment. Again, in the range of 430885 to 475389, none of the contracts can have a significant effect. As long as the investment is more than 475389, the contracts of partnership have a significant negative effect.

Considering the non-linear effect of the contracts of partnership and exchange on private sector investment, it is suggested that the central bank use the results of estimating nonlinear models such as threshold regression to examine the effect of credit on real variables of the economy, including investment. Also, according to the empirical results of this article on the asymmetric effect of credit policies on investment and the dependence of the effect of these policies on economic conditions, it is suggested that monetary policymakers take into account the economic conditions of the country in making decisions to optimally affect the credit policies.

Identifying interest-free banking tools and products and using the experiences of other countries play an important role in the development and prosperity of Islamic banking and the evolution of the Iranian banking system. For example, countries such as Malaysia,

Bahrain, Kuwait, Pakistan, and Sudan use different approaches to Islamic banking products and services due to their different interpretations of sharia issues, which may have reciprocal consequences for the investment and trade of international Islamic tools. Therefore, homogeneity in Sharia interpretations leads to greater homogeneity of Islamic banking products and services and thus increases the demand and overall growth of the Islamic banking industry. Furthermore, innovation in Islamic banking services and products plays an important role in the development of the Islamic banking industry. To maintain the competitiveness, attractiveness, and innovation of the Islamic banking industry, it is necessary to create localization of Islamic financial products for exporters and investors.

REFERENCES

Abbasinejad, Hossein and Hamid Yari (2008). Examination of the Effect of Bank's Credit Rates on Private Sector Investment in Long-Term Horizon in Iran, *Tahghighat-E-Eghtesadi*, 42 (4): 139-158.

Alamolhoda, Seyyed Sajjad (2018). Islamic Banking and Risk, an Adaptive Analysis, *Journal of Financial Economics*, 12 (3): 69-86.

Bank Melli Iran,**https://www.bmi.ir/fa/pages/153/**, July 2020.

Batu, Muhdin Muhammed Hussen (2016). Determinants of Private Investment: A Systematic Review, International *Journal of Economics, Finance and Management Sciences*, 4 (2): 52-56.

Behmand, Mohammad and Mahmood Bahmani (2011). *Internal Banking-1 (Equipping Monetary Resources)* (6th Ed), Central Bank of Iran Publications, Higher Banking Institute of Iran, Tehran.

Caporale, Guglielmo Maria and Mohamad Husam Helmi (2018). Islamic banking, credit, and economic growth: Some empirical evidence, *International Journal of Finance & Economics*, 23 (4): 456-477.

Ghahf, Manzar (1997). *Introduction to Islamic Economics* (Translated by Abbas Arabmazar), Shahid Beheshti University Press, Tehran.

Hadavinia, Ali Asghar (2002). Qarz al-Hasna Bonds, *Quarterly Journal of Islamic Economics*, 1 (4): 83-104.

Hailu, Demilie Basha and Fikru Debele (2015). The Effect of Monetary Policy on the Private Sector Investment in Ethiopia: ARDL Co-Integration Approach, *Economics*, 4 (2): 22-33.

Hansen, Bruce E. (1999). Threshold effects in non-dynamic panels: Estimation, testing, and inference, *Journal of Econometrics*, 93 (2): 345-368.

Hansen, Bruce E. (2000). Sample splitting and threshold estimation, *Econometrica*, 68 (3): 575-603.

Hedayati, Seyyed Ali Asghar; Mahmood Bahmani; Ali Asghar Safari and Hasan Kalhor (2012). *Internal Banking Operations-2 (Resource Allocation)*, Central Bank of Iran Publications, Higher Banking Institute of Iran, Tehran.

Jafari Samimi, Ahmad; Amir Mansour Tehranchian; Mohammad Ali Ehsani and Zeynab Gholami (2016). The Effect of Monetary Policy and Banking Credits on Gross Domestic Product in Iran: A Threshold VAR Approach, *Journal of Monetary and Banking Research*, 9 (29): 373-404.

Kodithuwakku, D. S.; Yasasi W. Jayawardana; M. N. Jayawardhana; K. M. R. R. Muhandiramge and K. P. K. Dulani (2016). Study on the factors affecting private investments in Sri Lanka, *Journal of Social Statistics*, 22-34.

Komijani, Akbar; Naser Elahi and Masoud Salehi Rezveh (2015). Asymmetric Effects of the Monetary Policy on Inflation and Output Gap in Iran: A Threshold Approach, *Quarterly Journal of Economic Growth and Development Research*, 6 (21): 61-78.

Mehrabi, Leyla (2014). Analysis of Methods of Equipping and Allocating resources in the Islamic Banking System of

Different Countries, *Economic Journal*, 14 (3 & 4): 65-94.

Mirjalili, Seyyed Hasan (1995). *Evaluation Interest-Free Banking*, Ministry of Economic Affairs and Finance, Deputy of Economic Affairs, Tehran.

Monfared, Seyyed Khadijeh (2013). *Investigating the Effect of Islamic Contracts on Investment and Employment* (Master's Thesis), Payam Nour University, Babol, Iran.

Mosavian, Seyyed Abbas (2001). *Islamic Banking*, Monetary and Banking Research Institute, Tehran.

Mosavian, Seyyed Abbas (2012). *Islamic Financial Tools*, Publishing Organization of the Institute of Islamic Culture and Thought, Tehran.

Mosavian, Seyyed Abbas and Behzad Varmaziari (2013). Investigating the Effect of Interest-Free Banking on Economic Growth in Iran, *Quarterly Journal of Islamic Economics*, 48 (12): 29-52.

Nabi, Manouchehr, Sara Vafaei and Jaber Eftekhari Shahi (2010). *A Comparative Study of Islamic and Conventional Banking in Iran and Malaysia (with a Profitability Approach)*, The Second International Conference on Financial System Development in Iran 28 February to 2 March 2010, Technology Studies Center of Sharif University of Technology, Tehran.

Rezaei, Majid (2002). Investment Theories in Islamic Economics, *Islamic Economy*, 1 (4): 61-81.

Romer, David (2012). *Advanced Macroeconomics* (4th Ed), McGraw Hill, New York.

Sabry Haroun, Mohammad (1999). *Rulings of Financial Markets*, Dar Al-Nafees, Jordan.

Sadr, Seyyed Kazem (1996). *Eghtesa E SadreEslam*, Shahid Beheshti University Press, Tehran.

Saeedi, Parviz (2010). Evaluation of the Role of the Banking Network's Facilities in Economic Growth, *Journal of Economic Research*, Number 6 (Supplement), 167-193.

Salehabadi, Ali (2006). *Islamic Financial Markets*, Imam Sadegh University Press, Tehran.

Samsami, Hossein and Amir Hossein Tavakkoli (2012). The Effect of Conducting Interest-Free Banking on Investment, Economic Growth and Inflation in Iran, *Marifat E Eghtesad E Islami*, 3 (2): 77-96.

Tari, Fatollah (2016). The Impact of Banking Facilities on Investing in Industry, Mining and Agriculture Sectors, *Journal of New Economy and Commerce*, 11 (3): 51-71.

Tootoonchian, Iraj (2000). *Money and Islamic Banking and its Comparison with the Capitalist System*, Tavangaran Press, Tehran.

دور الائتمان المرتكز على أساس العقود الإسلامية في الاستثمار الخاص في إيران: دراسة تطبيقية باستخدام أسلوب (Threshold Regression)

محمد عبدی ستیکلایی[1]، شهریار زروکی یوسف[2] عیسی زاده روشن[3]

ملخص

يعتبر الإستثمار مكونا وركيزة أساسية في عملية التنمية الاقتصاد وضرورة تنموية لكل بلد. نظراً لارتكاز النظام المالي في ايران على المصارف فإن التسهيلات المصرفية تعتبر من أكثر العوامل المؤثرة على قرارات المستثمرين في القطاع الخاص. بعد تبني نظام الفائدة المجانية على القرض، أصبحت النسهيلات البنكية على اختلاف أشكالها تقدم إما على أساس المشاركة أو التبادل. تتناول هذه الدراسة آثار عقود المشاركة والتبادل على استثمارات القطاع الخاص خلال الفترة 2001.1-2017.4، باستخدام أسلوب انحدار العتبة (Threshold Regression Approach). تظهر نتائج الدارسة أن تأثير عقود المشاركة والتبادل على استثمارات القطاع الخاص لم تكن على وتيرة واحدة بل تعتمد بنسبة كبيرة على النظام المتواجد فإذا إذا كانت الاستثمارات أقل من 313633$ (النظام الأول)، لم يكن لعقود الشراكة الأثر الجيد ويؤثر بصورة سلبية على عقود التبادل الاستثماري، أما إذا كان الاستثمار 347953-313633 (النظام الثاني)، فإنه لا يوجد لعقود المشاركة أو التبادل أي أثر يذكر. وتظهر عقود المشاركة أثرا ايجابيا على الاستثمار عندما يتراوح حجم الاستثمار بين 430885-347953 (النظام الثالث). هذا وينعدم التأثير عندما يكون حجم النطاق يتراوح بين 475389-430885، بينما تؤثر عقود الشراكة سلبا على الاستثمار إذا كان حجم النطاق يزيد عن 475389$.

الكلمات الدالة: الصيرفة الإسلامية، العقود الإسلامية، استثمار القطاع الخاص، اقتصاد إيران، نموذج إنحدار العتبة، عقود المشاركة والتبادل.

[1] أستاذ مساعد، قسم الاقتصاد، جامعة مازندران، ايران، m.abdi.sk@umz.ac.ir ✉

[2] أستاذ مشارك، قسم الاقتصاد، جامعة مازندران، ايران، sh.zaroki@umz.ac.ir ✉

[3] أستاذ مساعد بقسم الاقتصاد جامعة مازندران، ايران، y.eisazadeh@umz.ac.ir ✉