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

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ABSTRACT

Objectives: "The present research aims to investigate the effects of partnership and exchange contracts on private sector investment from Q1 2001 to Q4 2017.

Methods: The study employed the Threshold Regression (TR) approach to analyze the impact of Islamic contracts, separated into exchange and partnership contracts, on private sector investment in Iran.

Results: The results show that the impact of partnership and exchange contracts on private sector investment is not constant and varies depending on the investment regime. Specifically: When investment is less than $313,633 (first regime), partnership contracts do not have a significant effect, while exchange contracts negatively affect investment. In the range of $313,633 to $347,953 (second regime), none of the variables have a significant effect. When investment ranges between $347,953 and $430,885 (third regime), only partnership contracts have a significant effect, positively impacting private sector investment. Between $430,885 and $475,389, none of the contracts have a significant effect. For investments exceeding $475,389, partnership contracts have a significant negative effect.

Conclusions: The study concludes that it is necessary to localize Islamic financial products for exporters and investors in a way that maintains the competitiveness, attractiveness, and innovation of the Islamic banking industry.

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

1. Introduction

An important component of aggregate demand in macroeconomics is private investment. Fluctuations in private investment can cause instability in the economy as a whole. Private-sector economic activity has always been a central topic in economic debates in developing countries. Investment plays a crucial role in economic issues for two main reasons. First, the interplay between corporate investment demand and household savings determines the long-term standards of living, depending on the proportion of GDP that is invested. Second, due to its volatile nature, investment can signal short-term economic changes and fluctuations in any society (Romer, 2012).

In developed countries, large financial markets, advanced stock exchanges, and numerous investment companies play a significant role in financing investment projects, making the role of money markets and banks less critical. However, in developing countries, where capital markets are underdeveloped and stock markets for

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companies and economic institutions are limited, investment resources are often raised through the money market and bank credits, rather than through the capital market, due to high-interest rates. Thus, both large and small economic institutions rely heavily on money markets and bank credits for their investment needs (Abbasinejad & Yari, 2008).

In Iran, structural issues within the banking system and economic sanctions, which have restricted access to international financial resources, have led to an increased reliance on the monetary-banking system. This reliance has heightened the impact of banking facility interest rates on investment and, consequently, on macroeconomic variables in Iran (Abbasinejad & Yari, 2008).

Additionally, lending in Iran is conducted within the framework of interest-free banking and Islamic contracts. Islamic banking encompasses various contracts, which are primarily categorized into partnership and exchange contracts. Since banking in the Iranian economy is based on Islamic contracts, it is crucial to understand how these contracts impact private sector investment, one of the important macroeconomic variables, to evaluate the performance of Islamic banking.

Accordingly, this research aims to investigate the impact of Islamic contracts—specifically partnership and exchange contracts—on private sector investment in the Iranian economy. The study addresses two fundamental questions: First, do non-linear partnership and exchange contracts affect private sector investment? Second, do partnership contracts have a greater impact on private investment compared to exchange contracts? Following this introduction, a review of relevant literature is presented. The third section specifies the research model and explains the threshold regression method. The results of data analysis and model estimation are reported in the fourth section, and the final section is dedicated to the research findings.

2. Literature Review

Divisions of Contracts in Islamic Banking

Resources are used both commercially and productively in various economic activities within society. In the conventional banking system, banks' resources are primarily utilized for granting credits, production and trade loans to individuals and legal entities, discounting commercial documents, and participating in the capital of productive and service-providing institutions. However, in the interest-free banking system, the distribution of banks' resources is conducted through Islamic contracts. These contracts include practical methods by which banks can adjust and provide the facilities required by customers within the framework of Islamic transactions. To this end, the law on interest-free banking operations, along with bylaws and executive instructions for these contracts, has been approved by legal authorities (Mehrabi, 2014). Some of these Islamic contracts are outlined below:

Qarz-al-Hasna: In the interest-based banking system, cash is provided to customers in the form of loans or other types of interest-bearing facilities. In contrast, interest-free banking meets customers' needs directly through facilities granted by the bank. The Qarz-al-Hasna contract is used to address essential needs, such as marriage or home repairs. Qarz-al-Hasna bonds are securities issued under an interest-free loan agreement, where the issuer is obligated to repay the bondholders the nominal value of the bonds at maturity. Although Qarz-al-Hasna bonds are considered interest-free loans under the contract and the issuer is not required to pay any interest, bondholders benefit materially and spiritually. These benefits include participating in the spiritual and otherworldly rewards associated with granting a Qarz-al-Hasna loan, preserving and safeguarding a portion of their property, using the securities as collateral in long-term transactions, and participating in lottery prizes, among others (Hadavinia, 2002).

Mudarabah: Mudarabah is a contract in which the

necessary capital and labor are provided to conduct a business (such as the purchase and sale of goods) based on an agreement between a bank and an individual or entity. In this contract, the bank (Mudarabah) supplies the required funds (Mudarabah capital), while the other party to the contract (the agent) is responsible for all aspects related to the Mudarabah business. The profits from the transaction are divided between the bank and the agent according to a ratio agreed upon at the outset of the contract.

Musharakah: Another financial instrument used in the capital markets of Islamic countries is Musharakah securities, which are 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 engage in a profitable activity and raises the remaining capital through the issuance of bonds. Holders of Musharakah bonds co-own the enterprise or activity with the issuer in proportion to their capital contributions and consequently receive a share of the profits. Second, the bond issuer manages the project and absorbs all the required capital through the issuance of bonds. In this case, the issuer acts as the representative of the shareholders who co-own the activity and its profits. The issuer retains management rights as their representative (Sabry Haroun, 1999). In Iran, Musharakah contracts come in two types: civil Musharakah and legal Musharakah. A civil Musharakah is a contract where two or more individuals or entities, including banks, pool their cash or in-kind capital jointly to generate profit. Legal Musharakah involves a bank providing part of the capital for new equity institutions or purchasing shares in existing equity institutions, thereby gaining a share of their profits (Nabi et al., 2010).

Forward: Forward exchange in banking operations refers to the forward purchase of manufactured products (agricultural and industrial) in cash by the bank at a predetermined price. When a producer lacks the financial resources to cover part of their working capital during production, they can address this issue by forward selling a portion of their production.

Fixed-Rate: To facilitate the production and provision of services, banks can supply three categories of goods through fixed-rate agreements: (1) raw materials, spare parts, and tools; (2) machinery, production facilities, and equipment; and (3) housing fixed rates. Fixed-rate agreements involve assigning an asset to another party at a known price, with all or part of the price being paid in equal or unequal installments at specified deadlines.

Hire Purchase (Ijarah Muntahia Bittamlik/IMB): One of the most widely used methods by bank customers involved in production and service activities, or those seeking banking facilities for housing, is hire purchase. This method replaces several interest-based loans and credits previously common. It is based on a hire purchase contract where the lessee is required to own the leased asset (goods or property) at the end of the lease term, provided the contract conditions are met. Banks use this method to facilitate transactions necessary for the development of various economic sectors, including services, agriculture, industry, mining, and housing (Mehrabi, 2014).

Jo'aalah (Unilateral Contract): Another banking facility used in the Islamic banking system is Jo'aalah. In this contract, the employer is required to pay a certain amount for performing a specific action, as stipulated in the contract. The party who performs the action or work is called the agent or contractor. By utilizing a Jo'aalah contract, banks can expand and develop their activities related to industrial and agricultural products, trade, and services, either as an agent or, when needed, as an employer. Consequently, banks can address the needs of customers who cannot meet their requirements through other facilities by arranging a Jo'aalah contract.

The Factor: Another short-term tool used by banks to provide facilities to their customers is factoring. Before the implementation of the interest-free banking law, the

banking system used factoring to discount commercial promissory notes. The 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 to avoid compromising the original amount and returnable interest. Banks are permitted to buy commercial documents and securities with a maturity of less than one year, and when purchasing these commercial documents and securities resulting from commercial operations, they can buy them for less than their nominal amount (Mehrabi, 2014).

Direct Investment: Direct investment involves providing all necessary capital for implementing production, commercial, and servicing projects that are formed as equity institutions and are carried out by one or more banks.

Istisna: One of the financial tools implemented in some Islamic countries is based on the Istisna contract (manufacturing sale). Istisna is a contract in which one party undertakes to construct and deliver a specific item to the other party at a certain time for a predetermined amount. Three aspects distinguish the Istisna contract from others. First, the product in question (the subject of Istisna) is usually not available at the time of the contract and will be manufactured and delivered in the future. Second, the manufacturer is responsible for supplying the raw materials and labor equipment. Third, typically, the full amount is not paid at the time of contracting; instead, part of it is given as a prepayment, and the remaining amount is paid either in cash or in installments until the delivery of the goods. Sometimes, part of the payment is made after the delivery of the goods (Mosavian, 2012).

Murabaha Purchase: Murabaha purchase has been common since ancient times and refers to a transaction where the seller informs the customer of the cost price of the goods (including the purchase price and related costs) and then requests an additional amount or percentage as profit. In a Murabaha purchase, if the seller provides false information about the purchase price or related costs, the customer has the right to terminate the transaction. Murabaha purchases can be made in cash or on credit, with the interest rate on credit typically being higher (Mosavian, 2012). Some Muslim thinkers have used the characteristics of Murabaha purchases to design securities known as Murabaha bonds. In some Islamic countries, such as Malaysia, these bonds have been issued 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 needs for various projects because individuals seeking capital are usually looking for profit, which is also aligned with religious rules (Rezaei, 2002).

In this context, Sadr (1996) has analyzed the credit market for goods and services approved by Islam. He 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 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. Consequently, in the credit commodity market, the loan rate will be fixed, and the investment relationship with it will be negative.

Tootoonchian (2000) bases investment on participation and the realization of interest rates. According to this view, by eliminating interest rates in Islamic economics, the limiting factor of project implementation will be removed, and capital opportunity cost will be zero. He argues that the volume of investment in Islamic economics increases due to the absence 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 production costs and prices, are positive effects of investment using the Islamic economic model compared to a capitalist economy.

Ghahf (1997) views investment as dependent on two factors: the expected rate of return on investment (R) and its cost (Q). From the manager's perspective, the cost of investing is the amount that must be paid to the capital owners. Specifically, 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 will have a demand for investment to the extent that the share of the capital owner reaches a maximum of 1.

While discussing 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 encourages asset owners to increase their savings, at least to compensate for the amount they pay as zakat. Additionally, the prohibition of usury reduces 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; many economic reasons show that the profit and loss-sharing financial system leads to better aggregation of savings and more effective use of banks' financial resources. Such a financial system also results in better income distribution and strengthens the spirit of partnership between money holders and savers. Conversely, traditional financial systems often lack these benefits. For over a quarter of a century, Islamic banks in Islamic countries have aimed to attract savers who avoid traditional banks due to their belief that interest is haram. In Islamic banking, earning interest (usury) is forbidden, and bonds, long-term contracts, and special banking agreements differ significantly from those commonly used in Western banks, such as those in the United States. Moreover, Islamic banking laws prohibit trading in items that do not yet exist or are not owned by the trader. This regulation, according to some experts, helps reduce the risk of a domino-like collapse, similar to what occurred during the financial crises in American and European banks. Nonetheless, it should be noted that Islamic banks face limitations similar to those of other banking and financial systems in terms of trade and commerce.

Islamic banks obtain the necessary financial resources through participatory agreements, entering into projects as partners and sharing in the profits. However, if the projects fail, the bank also risks losing its assets. Islamic banks have been successful in financing many small and medium-sized projects using new financing instruments derived from Islamic contracts, such as Murabaha, Ijara, and Musharakah. These projects, which might not have secured the necessary financial resources through the existing credit-based banking system, benefit significantly from Islamic banks. Supporting such projects is a crucial step in economic and social development.

In all banking operations, the processes of resource allocation and expense management are key functions that distinguish banks as financial entities from other economic units. The interest-free banking system is no

exception; Islamic banks use the savings of one group of people to meet the financial needs of others. From the perspective of relying on societal savings, there is no fundamental difference between traditional banking and interest-free banking. What sets interest-free banking apart is its nature and form. Banking behaviors are shaped within the legal framework established between the bank and the customer. Banking operations subject to similar principles and rules should not differ between Islamic and non-Islamic environments, provided they do not conflict with Islamic standards.

Currently, microfinance is a global issue, with efforts to align banks' expectations (regarding guarantees, etc.) with the financial needs of small projects and businesses. Recently, traditional banks have begun financing small projects with extreme caution, often in collaboration with insurance and investment guarantee companies, and with careful definitions of small projects to minimize financing risks. However, traditional banks' involvement remains limited compared to the proactive role Islamic banks have played in this area. There are still many opportunities for Islamic banks to expand their role by utilizing financial instruments based on profit and loss sharing (Bank Melli Iran website).

In usurious banking, loans are provided with interest, and applicants apply for loans by visiting the bank. In its simplest form, the bank has no control over how the loan is used; a person with cash can use it for any purpose. They may enter the real market to buy goods for personal use, or they may purchase intermediate goods or raw materials for their own business. Applicants make decisions based on which option appears more profitable, while the commercial bank aims to maximize its profit through its capital. Banks generally do not buy goods directly; instead, they engage in the capital and money markets, where entering and exiting is less costly compared to the complexities of trading in the real sector. The purchase and sale of bonds represent a similar method to usurious lending and borrowing. Usurious banks discount securities, allowing individuals with long-term securities who need cash to visit the bank, which discounts the securities' value based on the term and market interest rate. The bank buys the bondholder's claim at a reduced amount, thus meeting the applicant's need for funds while earning a profit. Promissory notes are examples of such securities. Occasionally, usurious banks create credit in the current accounts of well-accounted customers, allowing them to use the credit up to a certain limit and repay it with interest. Thus, usurious banks provide services such as paying interest on short-term and long-term loans, discounting securities, validating current accounts, and purchasing securities, all of which involve the money market. To attract financial resources, interest-based banks gather people's liquidity through savings accounts, checking accounts, and time deposits, paying interest on time deposits at rates lower than those on loans (Mosavian, 2001).

According to Islamic banking law, the contracts through which banks can provide facilities are divided into two types: exchange and partnership. Although Qarz-e-Hasna (interest-free loans) was initially attempted for interest-free banking, it has been ineffective in raising substantial sums and remains limited to specific institutions. Instead, other contracts such as partnership agreements, Murabaha leases, conditional leases, and installment sales are utilized depending on the context of each community. Currently, in most Islamic countries and some non-Islamic countries, non-usurious banks operate by collecting funds and providing facilities through various contracts (Mirjalili, 1995).

An Overview of Interest-Free Banking in Iran

Until the victory of the Islamic Revolution in Iran in 1978, Iranian banking was based on conventional, interest-based systems. Following the revolution and the establishment of the Islamic Republic of Iran, two significant changes occurred in banking laws and legal relations. First, in 1979, the Monetary and Credit Council

removed interest from the banking system and introduced the "secured interest and commission system" (Nabi et al., 2010). Implemented from the beginning of 1980, this system brought the following changes: the elimination of interest on bank facilities and credits, replaced by commissions for providing these services to individuals and businesses. The commission rates varied by sector; for housing, agriculture, industry, and mining, it was set at 4%, while for commercial and service sectors, it ranged from 6% to 8% (Behmand & Bahmani, 2011). The secured interest and commission system had several jurisprudential and economic drawbacks, including the following:

1. The legal nature of all types of savings accounts, checking accounts, and time deposits in interest-based banking was essentially a form of debt. When a depositor opened an account and provided funds to the bank, they were effectively lending to the bank. Therefore, any form of overpayment, regardless of its name, was considered usury. As a result, the secured interest rates of 7% or 8.5% for savings accounts and time deposits merely represented a renaming of usury and profit as interest.
2. According to Islamic jurisprudence, banks and institutions like Qarz-al-Hasna funds, which provide facilities and credits to individuals or businesses, are permitted to charge a commission for providing services, such as personnel and facilities. This commission should be proportionate to the services provided and their costs. Any additional amount charged for providing facilities, even if labeled as a commission, constitutes usury and is considered haram.
3. In the secured interest system, if the commission is set at a very low rate (e.g., 1% or 2%), the bank may face a severe reduction in resources because it cannot pay interest to depositors. Consequently, many depositors may move their funds to other financial markets or abroad. Simultaneously, the low cost of facilities attracts a high number of loan applicants. To manage this, banks might request a significant commission from facility applicants and pay it to depositors to maintain adequate resources. However, this merely changes the name of the interest system without addressing its inherent nature.

Due to the aforementioned problems, the secured interest system was discontinued, and the "Law on Interest-Free Banking Operations" was introduced (Mosavian & Varmziari, 2013). In Iran, a fundamental step to eliminate interest rates from the country's banking system was taken with the submission of a bill to eliminate interest rates and ensure compliance with Islamic standards. This bill was approved by the Islamic Consultative Assembly on August 30, 1983, and by the Guardian Council on September 1, 1983, and 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, and more. These institutions, as financial intermediaries, facilitate the transfer of savings from savers to borrowers. As a result, a significant portion of society's savings is channeled through banks and financial institutions. Beyond household income, loans provided by banks and financial institutions to households, businesses, and the government represent a crucial source of community funding for purchasing consumer goods and services, as well as for investments in infrastructure projects such as dams, highways, bridges, and the acquisition 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 relatively limited in quantitative and experimental scope. The following are some of the most significant studies that have examined the factors affecting investment:

Samsami and Tavakkoli (2012) investigated 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. Their study found that the implementation of the interest-free banking law did not have a significant impact on investment, economic growth, or inflation in Iran. The authors attributed this inefficiency to non-compliance with the provisions of the law.

Monfared (2013) explored the effect of Islamic interest-free banking contracts on the growth rate of investment and employment in Iran. Utilizing data from 1984 to 2012 and an autoregressive model with distributed lags, Monfared concluded that there is a two-way causal relationship between contracts and employment, while the impact of contracts on the growth rate of investment was found to be negative. Notably, the most pronounced negative effect on investment growth was associated with lease contracts with an ownership condition.

Hailu and Debele (2015) assessed the impact of monetary policy on private investment performance in Ethiopia for the period 1975-2011. Employing econometric techniques such as co-integration and error correction within the framework of an autoregressive model with distributed lags, their results indicated that private investment in the short term is positively and significantly influenced by government investment, real production, and money supply, but negatively affected by the real exchange rate. In the long term, government investment, real GDP, and money supply have a significant positive effect on private investment, while real exchange rates have a significant negative effect. Additionally, real interest rates were found to have no significant impact on private investment in either the short or long term.

Tari (2016) investigated the effect of bank lending facilities, both mandatory and non-mandatory, on investment in the industrial, mining, and agricultural sectors. The analysis utilized the investment model presented by Fry (1980) and the seemingly unrelated regression econometric model. The results indicated that when the variables for mandatory and non-mandatory facilities are considered individually in the investment model, their coefficients are insignificant. However, when the total volume of facilities (combining both mandatory and non-mandatory) is considered, the coefficient becomes significant. This suggests that credit affects investment in two distinct parts. Consequently, due to the limited volume of controlled credits, credit control policies aimed at influencing economic sectors do not have a significant impact on these sectors.

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

Jafari Samimi et al. (2016), using the Threshold Vector Autoregressive (TVAR) method, investigated the asymmetric effects of monetary policy and bank credit in high and low production regimes in Iran. Their findings demonstrated that a nonlinear model is more appropriate than a linear model. Additionally, the impact of monetary policy and bank credit on GDP varies in terms of intensity and direction depending on the GDP regime. This indicates that the effects of monetary policy and bank credit on GDP are asymmetric and dependent on regime changes 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. Eight variables were examined in the analysis. The results revealed that national income, government investment, and the exchange rate are crucial factors influencing private investment performance. Other variables such as interest rates, credit, inflation, international trade, and money supply also play significant roles in explaining private investment performance.

Alamolhoda (2018), in an article entitled "Islamic Banking and Risk: An Adaptive Analysis," introduced the types of risks associated with Islamic banking and discussed the risks of various common contracts within this system. He argues that the nature and type of risk in Islamic banking, arising from the application of Islamic contracts, differ from conventional banking risks. Islamic banks face a double risk compared to conventional banks because, according to Islamic economic principles, a win-lose relationship is unacceptable. The economic behavior of the parties involved is such that they jointly accept responsibility for possible losses while sharing benefits. This view holds that, in Islamic contracts, it is not possible to transfer risk to another party, resulting in a generally higher level of risk.

Caporale & Helmi (2018) examined the relationship between Islamic banking, credit, and economic growth across two categories of countries: (1) those without Islamic banks, including Argentina, Brazil, Chile, Costa Rica, Ecuador, Guatemala, and Peru; and (2) those with dual banking systems, incorporating both Islamic and traditional banks, such as Indonesia, Turkey, Iran, Singapore, Jordan, Tunisia, and Malaysia. Using time series and panel data methods for the period 1993-2016, the study found significant differences between these two groups of countries, highlighting the unique features of Islamic banks. Time series analysis provided evidence of long-term causality from credit to GDP in countries with Islamic banking, which was further confirmed by panel causality tests. In contrast, short-term causality was also observed in countries without Islamic banking.

The difference between the present study and others lies in the separation of Islamic contracts into two categories: contracts of exchange and contracts of partnership. This study examines their impact on private sector investment in Iran. Additionally, this study employs the threshold regression method, which has not been used in previous research.

3. Methodology

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

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

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 measure for investment. 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 used in the production of new goods and services, with an economic life and expected lifespan of more than one year. In the National Accounts System of Iran, gross fixed capital formation is estimated separately in the fields of “business machinery and equipment” and “construction,” with items available separately for public and private use. For this study, statistics related to the private sector are utilized.

Exchange Contracts: Exchange contracts offer a fixed return and a fixed interest rate on the facility. These include fixed-rate contracts, Jo’aalah, Ijarah Muntahia Bittamlik (IMB), and Qarz-al-Hasna.

Partnership (Cooperative) Contracts: Partnership contracts have variable returns, where the bank provides all or part of the capital required for economic activities (production, commercial, or servicing). At the end of the activity, according to the contract with the economic

owner, the bank receives a share of the profits. Partnership contracts include civil partnership contracts, legal partnership contracts, Mudarabah, forward exchange, and direct investment (each of these 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 state of the real sector (investment). Therefore, this study attempts to examine the nonlinear effects of partnership and exchange contracts by making them dependent on the regime (the state of private sector investment). The spatial focus of this research is the Iranian economy, using quarterly data from 2001 to 2017. 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 variable over time. Therefore, to study such time series, nonlinear methods are necessary. In nonlinear models, the response of one variable to changes in other variables is examined in a nonlinear manner. In this context, the threshold regression model can be used as a nonlinear approach.

In economic studies, the effect of one or more explanatory variables on the dependent variable is typically analyzed. However, for policy purposes, it is crucial to estimate the values of the explanatory variable around which the effect of this variable on the dependent variable changes. This change can manifest as either an intensification or a reduction in the effect of the explanatory variable on the dependent variable. Additionally, this change may involve a shift in the nature of the effect itself. These values, which alter the intensity or nature of the effect of the explanatory variable on the dependent variable, are referred to as critical values or threshold limits.

The threshold regression method aims to determine whether regression functions apply uniformly across all observations or if they can be divided into separate groups (Komijani et al., 2015). The following steps for estimating a threshold regression model are based on the methods described by Hansen (1999, 2000).

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 verify the existence of a second threshold effect. Rejecting the null hypothesis in the F_1 test indicates that at least one threshold exists. Consequently, it is necessary to investigate the presence of a 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):

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

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 for the case with cross-section and without trend, and -3.5 for the case with cross-section and trend, both at a 95% confidence level.

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. A unit root test was performed for the variables, accounting for potential structural breaks. Structural breaks in a time series can lead to apparent instability.

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 exceed the critical value at the 95% confidence level, it can be concluded that all variables are at a stable level. Therefore, the stationarity test is not applicable 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 significance of the threshold and the number of thresholds are discussed. Subsequently, the coefficients related to the variables are estimated and analyzed.

Threshold Nonlinearity Test and Detection of the Number of Thresholds

The Hansen test was used to assess the nonlinearity of the model, with results summarized in Table 3. The null hypothesis indicates the absence of a threshold and the presence of a linear model. If this hypothesis is rejected, further steps are taken to determine the optimal number

of thresholds.

According to Table 3, considering private sector investment as a threshold or transition variable, the F test statistic value (96.38) exceeds the critical value at the 5% level (13.98). Therefore, the threshold value (313,633) is significant, and the assumption of linearity in the model is rejected.

In the next step, the search for a second threshold reveals that when private sector investment exceeds 313,633, Equation (3) does not hold. The test statistic confirms the presence of a second threshold (26.43). Furthermore, the test statistic indicates that the effect of the independent variables changes again when investment exceeds 347,953. Thus, the significance of the third threshold (430,885) is confirmed.

Subsequently, the existence of three thresholds versus four thresholds was tested. The result indicates that the existence of four thresholds cannot be rejected. Hence, the value 475,389 is accepted as the fourth threshold. In the final step, because the test statistic for the fifth threshold is smaller than the critical value in Table 3, the hypothesis of five thresholds is rejected.

Therefore, for Equation (3), private sector investment has four thresholds and follows five different regimes. Accordingly, Equation (3) was estimated using the threshold regression approach based on these results, with the findings 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-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 a crucial role in advanced economies, being responsible for financing large and profitable projects undertaken by enterprises. In a prosperous economy, firms typically have more liquidity and net worth, reducing their reliance on banking and credit facilities to finance projects. Conversely, during recessions or periods of low liquidity, firms are forced to seek additional facilities from credit institutions, which imposes extra costs on them. Under such circumstances, monetary policy can exert a more pronounced impact on the real economy.

In Iran, financial institutions include commercial banks, insurance companies, savings and Qarz-al-Hasna funds, and pension funds. These institutions, as financial intermediaries, facilitate the transfer of savings from depositors to borrowers, channeling a significant portion of society's savings through banks and financial institutions. Since the financing system in Iran is predominantly bank-oriented, one of the key factors influencing private sector investment decisions is the facilities provided by banks. Following the approval of the interest-free banking law, these facilities can be obtained under various contracts. Contracts related to private sector investment can be broadly categorized into two types: partnership and exchange contracts.

This research investigates the effects of partnership and exchange contracts on private sector investment during the period from Q1 2001 to Q4 2017 using a threshold regression approach. The results indicate that the impact of these contracts on private sector investment is not constant and is highly dependent on the regime. Specifically, when investment is less than 313,633 (first regime), partnership contracts do not have a significant effect, while exchange contracts negatively impact investment. In the range of 313,633 to 347,953 (second regime), none of the variables have a significant effect. When investment is between 347,953 and 430,885 (third regime), only partnership contracts have a significant effect, positively influencing private sector investment. In the range of 430,885 to 475,389 (fourth regime), none of the contracts have a significant effect. For investments exceeding 475,389 (fifth regime), partnership contracts have a significant negative effect.

Given the non-linear effects of partnership and exchange contracts on private sector investment, it is recommended that the central bank utilize the results of nonlinear models, such as threshold regression, to assess the impact of credit on real economic variables, including investment. Additionally, considering the empirical results on the asymmetric effect of credit policies and their dependence on economic conditions, it is suggested that monetary policymakers account for the country's economic conditions when making decisions to optimize the impact of credit policies.

Identifying and utilizing interest-free banking tools and products, along with learning from the experiences of other countries, are crucial for the development and success of Islamic banking and the evolution of the Iranian banking system. For example, countries such as Malaysia, Bahrain, Kuwait, Pakistan, and Sudan employ various approaches to Islamic banking products and services based on their interpretations of Sharia issues, which may influence investment and trade in international Islamic financial tools. Therefore, achieving greater homogeneity in Sharia interpretations can lead to more uniform Islamic banking products and services, thereby boosting demand and overall growth in the Islamic banking industry. Furthermore, innovation in Islamic

banking services and products is vital for the industry's development. To remain competitive and attractive, it is necessary to localize Islamic financial products for exporters and investors.

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

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ملخص

الهدف: تهدف هذه الدراسة آثار عقود المشاركة والتبادل على استثمارات القطاع الخاص خلال الفترة 2001.1-2017.4.

المنهجية: طرق البحث: استخدمت الدراسة منهج عتبة الانحدار (TR) (Threshold Regression Approach) نتيجة لفصل العقود الإسلامية إلى قسمين: عقود التبادل وعقود الشراكة، ولدراسة أثرها على استثمار القطاع الخاص في إيران.

النتائج: أظهرت نتائج الدارسة أن تأثير عقود المشاركة والتبادل على استثمارات القطاع الخاص لم تكن على وتيرة واحدة بل تعتمد بنسبة كبيرة على النظام المتواجد فإذا كانت الاستثمارات أقل من 313633$ (النظام الأول)، لم يكن لعقود الشراكة الأثر الجيد ويؤثر بصورة سلبية على عقود التبادل الاستثماري، أما إذا كان الاستثمار 313633-347953 (النظام الثاني)، فإنه لا يوجد لعقود المشاركة أو التبادل أي أثر يذكر. وتظهر عقود المشاركة أثرا ايجابيا على الاستثمار عندما يتراوح حجم الاستثمار بين 347953-430885 (النظام الثالث). هذا وينعدم التأثير عندما يكون حجم النطاق يتراوح بين 430885-475389، بينما تؤثر عقود الشراكة سلبا على الاستثمار إذا كان حجم النطاق يزيد عن 475389$.

الخلاصة: خلصت الدراسة إلى ضرورة توطين المنتجات المالية الإسلامية للمصدرين والمستثمرين بما يحافظ على تنافسية وجاذبية وابتكار الصناعة المصرفية الإسلامية.

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

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