Investigating the relationship between economic and financial factors of decision-making units and bank facilities in the form of Islamic contracts with Emphasis on Oil Price and Monetary Policy Shocks

Effect of Economic-Financial Factors on Islamic Contracts of Iran with Emphasis on Oil Price and Monetary Policy Shocks

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Abstract

The extant study was conducted to explain the mechanism of economic-financial factors affecting Islamic contracts of Iran with emphasis on oil price shocks using Structural Autoregressive Regression (SVAR) during 1986-2019. According to estimated SVAR results, an oil price shock caused a 5% and 1% decline in production and employment rate, respectively. The results also indicated that one shock imposed by the oil price shock led to a 7% reduction in Islamic facilities in Iran, and one shock caused by liquidity led to a 9% rise in Islamic facilities and loans. In terms of the effect of oil price fluctuations on Islamic banking contracts, it could be explained that increased government budget or government expenditures, including current and construction expenditures caused by higher oil prices and incomes, along with growing banking credits and loans led to higher aggregate demand. On the other hand, the rigidity of aggregate supply resulting from technical and infrastructural constraints led to imbalance and wide supply-demand gap, and inflationary pressures. In other words, an increase in real efficiency contributes to higher production costs and inflation rates, which in turn causes liquidity withdrawal from banks and investment in other profitable markets. Furthermore, in case of increased real efficiency, only those who can spend the received loans in speculation and intermediation transactions can receive and repay the loans. Under such circumstances, banks must monitor the transaction more because such loans cannot be repaid through productive activities. The aforementioned factors cause ambiguous effects of real efficiency on investment, production, and Islamic loans.

Keywords: Economic Factors, Financial Factors, Oil Shocks, bank facilities in the form of Islamic contracts, SVAR Model ،JEL Classification: C24, E52, G12, G32, G19

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1. Introduction

Banks are responsible for solving the problems caused by asymmetric information in the credit market. Therefore, they have a central role in the financial system. Because of this specific role of banks, some cannot access the credit market, unless such a connection is established through the banking system. As the most important growth and development means, banks play a vital role in the management of countries.

In general, banks play an effective role in economic and growth development, as well as the actualization of prospect goals and five-year plans of Iran by attracting liquidity and granting loans. Furthermore, bank facilities serve as manufacturers' capital supplement that affects investment and output growth of the country. Hence, economic growth cannot be achieved without financial development. Accordingly, the successful economic growth of a country depends on its sound banking system. The banking system is true as an intermediary institute that optimally links resources surplus to financial consumption surplus. Sufficient investment and finance in economic sectors are required to pave the way for economic growth and development; hence; banks can regulate economic growth by directing saving towards manufacturing investments through granted facilities (Dabbagh, 2015). Due to its operational and interactive nature with economic sectors in the market of goods and services, Islamic contracts can be used as a driving force and a productive tool to direct and organize the real sector of the economy. The requirement for the proper functioning of Islamic contracts is to use these tools in a precise and legal framework. There are closer connections between investment return and deposits in the Islamic banking system because banks can accept investment deposits based on the profit-sharing principle and grant loans to economic bodies that need financial facilities. Because assets have been created to meet investment needs in the real economic sector, financing return is transferred from cost to profit to allow determining financing return rate based on the efficiency of the real economic sector. Therefore, the real economic sector determines the return rate on the financial sector, not vice versa, in theoretical issues of the Islamic financial system. However, the interest system is the main base of the lending process in the financial system of capitalism, and the credit sector forms independently from the real sector so that each sector follows its way and goals. Therefore, these two markets may have different growth rates because the financial market may experience higher growth rather than goods and services markets and vice versa. Nevertheless, these two sectors are matched in the

real profit-based financial system, so that financial market growth depends on the real sector growth. It is theoretically proved that the independence of two credit and real sectors in an interest rate-based system causes investment reduction, while the dependence of the credit sector to the real sector in Profit and Loss Sharing theory increases investment, employment, and expansion of loans distribution. Patrick (2008) assumes that the relationship between financial development and economic development depends on the development degree of each country. In the first development stages, improved financial services, expansion of new financial instruments, and change in financial structure lead to economic growth, while financial changes follow demand in the net stages of economic development. In the latter case, demand for newer financial instruments and services becomes determinant of sustainable development of countries. Therefore, financial depth or development is one of the preconditions of economic growth and development of countries. According to evidence, countries with lower financial depth cannot allocate the financial resources to needs efficiently. In some cases, these countries do not have access to appropriate financing tools and cannot collect sufficient resources. From viewpoint of economic scholars, it is necessary to develop the financial sector of countries because an efficient financial sector plays a fundamental role in equipping investment with financial resources, encouraging foreign capital entrance and mobilization, optimizing resources allocation mechanism, and creating competitive space (Farahmand, 2014). In the economies like Iran, the lending market is based on banks due to their undeveloped capital markets, i.e., firms and investors cannot make a direct connection with investors (suppliers of borrowable funds) by selling stocks or bonds to finance their required financial resources. Therefore, the only option for investors is for banks to finance in the formal market. In this case, the only option for investors in the informal market is borrowing with a higher interest rate. Because the Iranian economy relies on the bank, banks play a vital role as the most important element of the monetary market. In expanded financial markets, banks and financial institutions do more activities so economic development depends on the role of banking and monetary markets. Banks are the main financial resource providers in real economic sectors (industry, agriculture, and service) that not only do their main function (providing and allocating resources optimally and presenting various services to customers) but also earn income and profit like other economic institutions. Lending and granting loans and money to people or institutions play a significant role in financing various economic activities. Grant and loans affect the employment of manufacturing entities and job opportunities directly and indirectly. The injected

loan and credit to working capital increase employment in short term due to fixed capital volume, while loan and credit flow converts to fixed capital bringing technological changes in the long term. If the mentioned changes are neutral, employment remains fixed and it changes employment, otherwise. Therefore, the positive impact of the accurate and optimal application of loan and credit flow, in theory, includes increased investment, production, income, and employment (Tayebi et al., 2010). Accordingly, the extant study aims to examine the impact of economic-financial factors on Islamic contracts of Iran to indicate the relationship between financial-economic factors and Islamic contracts. In this case, it is shown how much the financial and economic indicators affect the Islamic contracts and performance of the banking system of Iran. The case has been investigated by using the SVAR model.

2. Literature Review

2.1. Financial-Economic Factors and Granted Loans by Banks

Oil export revenue in Iran constitutes a considerable part public budget and has an indirect effect on other economic activities. Some economic experts assume that oil income is the most underlying variable in economic performance. On contrary, other experts refer to other policymaking variables in addition to oil revenues that affect expansion and recession cycles of the economy. The latter experts concentrate on economic policymaking. The problems caused by the single-product economy and high dependence on oil revenues put the economy under the pressure of external factors, such as global oil price fluctuations. Accordingly, the non-actualization of oil revenues predicted by the government, which is the sole owner of this sector, not only affects the implementation of various projects and the whole economy but also level negative effects on the future of the economy, plans, and projects causing many problems for economic sectors. Due to the instability of the oil price market under the effect of international political-economic and military evolutions over recent decades as well as the dependence of the Iranian economy on oil revenues, the economy of Iran is vulnerable to impulse oil price shocks. The mentioned problem affects the formation of economic activities among different walks of society and their welfare. Continuity of this feature in Iran's economy, especially over recent two decades implies the necessity of considering this issue in all policies made for the economy.

Moreover, the interest rate of banks can affect the price indicators by influencing the price of products, production costs, demand for investment in the private sector, and aggregate demand. On the other hand, the interest rate of loans is affected by the inflation rate. According to Fisher Theory, a change in inflation rate leads to the same change in nominal interest rate in long term. In other words, banks have to increase the interest rate when the inflation rate rises to keep the value and purchasing power of their assets granted as loans. Increased demand for investment that is created to meet the pressure of demand for goods and services in midterm causes an increase in demand for production factors and costs. Moreover, the inflation resulting from cost pressure added to the inflation caused by demand pressure causes an extra increase in the total price index of consumer goods and services. The increased petrodollars increase government expenditure covering the developmental needs of the country because oil revenues are public revenues that are not obtained from the production of goods and services of the domestic economy. On the other hand, the increased net foreign assets of the central bank lead to a higher monetary base and liquidity, which in turn shift the aggregate demand curve upwards and increase the general price level.

2.2. Public Sector's Deposits Granted Loans Status in Iran

Table 2.1. Public sector's annual investment deposits based on bank groups (%)

Year	Commercial banks	Specialized banks	Private banks and non-bank credit institutions
2001	25	10	-
2002	20	10	-
2003	20	10	15
2004	20	10	15
2005	17	10	17
2006	17	10	17
2007	17	10	17
2008	17	10	17
2009	17	10	17
2010	15	10	15
2011	15	10	15
2012	15	10	15
2013	15	10	15
2014	15	10	15
2015	13.5	10	13.5
2016	10-13	10	10-13
2017	10-13	10	10-13
2018	10-13	10	10-13

2019	10-13	10	10-13
Central Bank of Islamic Republic of Iran; Economic Studies and Policies- Monetary Statistics			

According to statistics of the central bank, the government had no deposit in private banks until 2002, while received loans from the private banks during these years. Therefore, the government received a major part of the loans without making any deposit in bank sources. Moreover, public deposits have had ascending trend although experienced some fluctuations within different periods. There has been an extraordinary increase in deposit volume of government in banks in the first year of new governments. Public deposits have a minor share in total deposits of banks constituting about 4% of the whole deposits. This ratio is higher in commercial and specialized banks; accordingly, the ratio of public deposit percent to whole deposits in specialized and commercial banks has reached 10% and 10-13%, respectively. However, the decision made by the government about depositing in private banks led to only 2% of the whole deposits made by the government, which reached 0.5% in 2015.

Table 2.2. The remaining share of loans granted to the public sector relative to total assets of banks (%)

Year	Total banks and non-bank credit institutions	Commercial banks	Specialized banks	Public banks and non-bank credit institutions
2006	10.45	11.86	2.9	23.86
2007	8.88	10.10	3.32	5.75
2008	7.79	9.22	2.92	2
2009	6.36	8.02	1.57	2.77
2010	5.37	6.70	1.58	3.28
2011	4.87	6.66	1.7	0.24
2012	4.71	6.31	2.82	0.77
2013	5.62	7.92	2.99	5.49
2014	6	8.5	3.91	5.84
2015	6.37	9.93	6.16	5.04
2016	7.31	10.8	6.88	6.14
2017	6.31	10.53	7.54	4.67
2018	7.40	12.15	11.52	4.74
2019	7.18	11.68	12.28	4.53
Central Bank of Islamic Republic of Iran; Economic Studies and Policies- Monetary Statistics				

As seen in Table above, public sector's facilities have a high share in 2006 but this value experienced a descending trend in next years until reaching the lowest rate in 2011. However, this rate has had an ascending trend from 2012 until now. In terms of specialized banks, the share of these facilities had considerable growth in 2008 so that this rate reached from 1.57 in 2008 to 12.28 in 2019 that was not an optimal change because specialized banks must finance economic firms based on their specialties not increasing the share of public finance of governmental companies. This is not an appropriate case for the economy since banks must finance the public sector instead of financing the non-governmental sector. In this case, private sectors and economic firms gain less benefit from banking resources, i.e., the economic sector that can produce and create jobs may lose its ability due to lack of access to financial resources to provide working capital and economic development.

2.3. Loans Granted to Banks based on Economic Sectors

Table 2.3 has reported loans based on the thousand billion Rls and share of each sector, including domestic trade, services, and others, agriculture, mine and industry, building, housing, and export in the remaining rate of loans in the considered year as well as their share growth compared to last year.

Table 2.3. The remaining share of loans granted to non-governmental sector to banks and credit institutions based on different economic sectors (%)

Year	Domestic trade, services, and others	Total percentage	Growth percentage	Agriculture	Total percentage	Growth percentage	Mine and industry	Total percentage	Growth percentage	Building and housing	Total percentage	Growth percentage
2010	53766.7	20.28	-	50243.4	18.95	-	81470.6	30.74	-	72462.4	27.34	-
2011	85510.5	22.93	59.04	62974.9	16.89	25.34	121267.4	32.52	48.85	94641.9	25.38	30.61
2012	127506	24.7	49.11	82763.8	16.03	31.42	172643.3	33.44	42.36	121264.5	23.49	28.13
2013	197980.1	27.42	55.27	55.27	15.54	35.57	228133.2	31.6	32.14	168757.6	23.37	39.16
2014	324254.4	31.68	63.78	151333.4	14.79	34.87	293126.7	28.64	28.49	239277.1	23.38	41.79
2015	489662.8	35.39	51.01	202033.4	14.6	33.5	373560.	27	27.44	297236	21.48	24.22
2016	523554.7	34.43	66.92	217073.8	14.27	7.44	403639.3	26.54	8.05	349084.2	22.95	17.44
2017	592002	33.94	13.07	244395	14.01	12.59	456670.7	26.18	13.14	423865.6	24.3	21.42
2018	821532.9	34.07	38.77	286077.6	11.86	17.06	600814.4	24.92	31.56	67051.9	27.95	59.02
2019	1086474.8	35.11	32.25	336225	10.86	17.53	705134.9	22.79	17.36	933794.2	30.17	38.53
2020	1315339.6	36.49	21.06	372734.7	10.34	10.86	775740.2	21.52	10.01	110.663.2	30.71	18.52

Central Bank of Islamic Republic of Iran; Economic Studies and Policies- Monetary Statistics

Trade and service sector received the highest share of loans; this sector constitutes the highest amount of GDP and employment due to its higher profitability. Since trade and service sectors have been integrated, the share of these two sectors in received loans has been reported as an integrated rate. However, the trade sector has the lowest contribution in employment and the highest share of facilities due to the allocation of resources based on the banks' profits and ignorance of the productivity rate of economic sectors. Moreover, housing, building, and agriculture sectors have less contribution from received loans compared to the employment rate. If employment is considered as an equity benchmark to distribute bank resources, despite the high contribution of agriculture in employment, it has the lowest contribution in received loans. Hence, loans have been distributed unequally in the agriculture sector. If the contribution of met domestic value added is chosen as equity benchmark in the distribution process, loans have been distributed in the industry and mine sector unequally. It is recommended to consider the weight index of employment and contribution of net domestic value added to achieve distributive equity and distribute bank resources between economic sectors based on these two indicators.

2.4. Background

2.4.1. Foreign Studies

Ayu Effendi (2020) studied the impact of oil prices and macroeconomic on the Islamic banking performance in OPEC member countries. Findings indicated that every country had different characteristics so that it could have a different impact on the performance of Islamic banking. In addition, Islamic banking does not influence oil prices and macroeconomic conditions because the market share of Islamic banking in the country is very small when compared to conventional banking. This means that the industry in the oil business uses funds in conventional banking is greater than in Islamic banking. Yun et al. (2019) examined the impact of the macroeconomy on the profitability of Islamic banks. Findings indicated a positive influence of GDP growth rate, inflation, exchange rate, oil price, any money supply on profitability. Moreover, findings showed that oil price, GDP, and inflation were the most important factors towards profitability, while exchange rate and money supply were of the lower importance. This finding suggests policymakers and regulators discover alternative resources to restore the economic and financial

system. Islamic bankers may organize their marketing strategies to reduce the intensity of macroeconomic variables. Jayson (2020) conducted a study entitled "efficiency of Islamic banks during the financial crisis: An analysis of Middle Eastern and Asian countries" to measure the efficiency level of Islamic banks using data envelopment analysis by adopting the intermediation approach pointing that the world economy is still suffering from the severe global financial crisis that caused the failure of several banks. This has encouraged economists worldwide to consider alternative financial solutions, and attention has been focused on Islamic banking and finance as an alternative model. Hence, this study examined the efficiency level of Islamic banks during the financial crisis specifically in Middle Eastern and Asian countries (79 Islamic banks). The findings explained that Islamic banks were able to sustain operations through the crisis. However, the study also showed that the majority of these Islamic banks were scaling inefficiently. Most of the scale inefficient banks were operating at decreasing returns to scale. This study also found that both profitability and capitalization were the main determinants of Islamic banking efficiency. Miyon (2020) studied the relationship between Financial Islamic Banking Development (FIBD) and the economic growth (EG) of Jordan. Two models have been formulated to indicate this relation within the context of VECM[1] framework. For this purpose, FINC[2] and DEPT[3] are used as a measure of FIBD, while RGDP (Real GDP) is used as an indicator of EG. The results show that there is bi-directional long-run Granger causality between RGDP and FINC reflecting a positive contribution of Jordanian Islamic banks in financing the process of Jordanian social and economic development. The relation appears to be unidirectional relation between RGDP and DEPT running from RGDP to DEPT reflects the excess liquidity problem that all Jordanian Islamic banks suffer from it. With regarding short-run causality there are not any significant relations between FIBD and EG. Alqahtani and Mayes (2017) studied the financial stability of Islamic banking and the global financial crisis during the period 2000–2013 using a panel model for 76 banks. According to results, when the financial shock spread to the real economy during the later phases of the crisis, Islamic banks suffered a significantly higher level of financial instability than conventional banks. This result holds for large banks but not for small Islamic banks. Small Islamic banks demonstrated

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[1] Vector Error Correction Model
[2] Total Finance of Jordanian Islamic Banks
[3] Total Jordanian Islamic Time and Saving Deposits

relatively better handling of the economic downturn than large Islamic banks, supporting the argument that Islamic banks are more stable when they operate at a small scale.

2.4.2. Iranian Studies

Avani et al. (2021) carried out an empirical analysis of banking stability in Islamic and conventional banking systems by using data from 7 countries with the highest level of Islamic banking level and 8 countries with conventional banking for the years 2008 to 2018, in the form of a regression model of the panel data family to test the hypothesis of direct relationship between Islamic banking penetration, and banking stability. The results obtained from the analysis of research data indicated that the establishment of Islamic banking and increasing the penetration of Islamic banking had a positive and significant effect on banking stability, and therefore countries with Islamic banking experienced more banking stability than countries with conventional banking. Moradi et al. (2020) studied the effect of macroeconomic and management quality variables on the profitability of Islamic banks using the structural panel VAR approach to 13 private banks in Iran for the period 2006 to 2016. The results indicated that the percentage of coverage of liquidity and the ratio of Non-performing loans to the total loan as internal bank variables had a negative effect, and the growth of GDP as the external variable had a positive effect on the profitability components. Moghadam (2019) conducted a study entitled "effect of interest-free banking on the economic growth of Iran" using data of 2011-2018 by using the autoregressive distributed lag model. The results indicated that the coefficient of Islamic banking finance and capital accumulation of banks equaled 0.15 and 0.24, respectively; i.e., one unit rise in mentioned indicators led to 0.15 and 0.24 units rise in economic growth, respectively. The results also showed the significant impact of interest-free banking on economic growth in Iran that could be used as an important point for policymaking. Amjadi (2019) studied the effect of conducting interest-free banking on investment, economic growth, and inflation in Iran. The research results in which the regression method of 3SLS was used showed that passing this law has exerted no significant effect on the variables of investment, economic growth, and inflation in Iran. Furthermore, the studies on the implementation method of interest-free banking showed that this inefficiency was ascribed to refraining from implementing the purport of law. The results of this model also confirmed this outcome. Nazarpour and Salimi (2016) studied the effect of using the participatory contracts in non-

usury banking of Iran in two bust and boom regimes. Results showed that the extent to which the economy faces bust phase for the study period is 15 periods in contrast with 9 periods of the boom; as a result, the risk of using participation-based contracts will go up under such circumstances. Furthermore, since expectations play an important role in deciding on an investment, any form of economic instability can have a negative impact on investment, production, and employment.

Because previous studies have not examined the research subject directly, the extant study was conducted to examine the impact of economic-financial factors on Islamic contracts. In terms of the Iranian economy's dependence on oil revenues and its vulnerability to oil and monetary policy shocks, the results of the present study indicate whether the obtained results are matched with previous foreign and Iranian studies or not. It can also show the extent of the effect of economic-financial factors on Islamic contracts. To do so, the SVAR model was designed to analyze results for Iran's economy from 1986 through 2019.

3. Methodology

Blanchard and Bernanke (1986), Sims and Watson (1986) developed the SVAR model by taking into account the theoretical constraints on the simultaneous effects of shocks; then, Blanchard and Quah (1989), Clarida and Gali (1994), and Ashli and Great (1996) identified the impulse response functions (IRFs) by applying theoretical constraints to the long-run effects of the shocks. Therefore, unlike unrestricted VAR models, which identify structural shocks implicitly and personally, SVAR models are explicitly based on economic logic and employ economic theories based on the constraints. In other words, model stability depends on the durability or mortality of the shock's effects on the error term. If the effect of shock on the error terms disappears over time, the model will be stable; and if the effect is durable, the model will be unstable. It is worth noting that a stable model is also stationary meaning that the first and second moments of the model are not functions of time. Therefore, the main relationship between the reduced and structural forms in the SVAR model will be as follows:

(1) $$A\varepsilon_t = BU_t$$

Where, ε_t and U_t represent error terms of the reduced form and structural error terms, respectively. Both ε_t a U_t re vectors with (K×1) dimensions; A and B indicate matrixes with (K×K) dimensions. According to Blanchard (1989), Giannini (1992), and Sims (1986), the simultaneous correlation between variables can be explained by two square invertible matrixes A and B. Structural equations of the following matrix were designed based on the economic circumstances of Iran:

$$
(2) \quad
\begin{bmatrix}
\varepsilon_{OILSH} \\
\varepsilon_{EX} \\
\varepsilon_{DEXO} \\
\varepsilon_{INV} \\
\varepsilon_{PRO} \\
\varepsilon_{LIQRISK} \\
\varepsilon_{COL}
\end{bmatrix}
= A(L) \times
\begin{bmatrix}
U_{OILSH} \\
U_{EX} \\
U_{DEXO} \\
U_{INV} \\
U_{PRO} \\
U_{LIQRISK} \\
U_{COL}
\end{bmatrix}
$$

We will have the extensive form as follows:

$$
(3) \quad
\begin{bmatrix}
\varepsilon_{OILSH} \\
\varepsilon_{EX} \\
\varepsilon_{DEXO} \\
\varepsilon_{INV} \\
\varepsilon_{PRO} \\
\varepsilon_{LIQRISK} \\
\varepsilon_{COL}
\end{bmatrix}
=
\begin{bmatrix}
a_{11}(1) & 0 & 0 & 0 & 0 & 0 \\
a_{21}(1) & a_{22}(1) & 0 & 0 & 0 & 0 \\
a_{31}(1) & a_{32}(1) & a_{33}(1) & 0 & 0 & 0 \\
a_{41}(1) & a_{42}(1) & a_{43}(1) & a_{44}(1) & 0 & 0 \\
a_{51}(1) & a_{52}(1) & a_{53}(1) & a_{54}(1) & a_{55}(1) & 0 \\
a_{61}(1) & a_{62}(1) & a_{63}(1) & a_{64}(1) & a_{65}(1) & a_{66}(1)
\end{bmatrix}
\times
\begin{bmatrix}
U_{OILSH} \\
U_{EX} \\
U_{DEXO} \\
U_{INV} \\
U_{PRO} \\
U_{LIQRISK} \\
U_{COL}
\end{bmatrix}
$$

Where the left matrix represents a logarithmic difference of dependent variables. The right side of the equation indicates the square matrix of A(L), which includes some polynomials based on the lag operator. For instance, the element on row i and column j of the A(L) matrix equal a_{ij}(L) that

represents response i of the variable to j of the structural variable. E=[Uij] vector includes those sentences with the structural bias that are defined as follows:

U_{OILsh} : Oil price shocks

U_{EX} : Exchange rate shocks

U_{DEXO} : The shocks related to the coefficient of dummy variable if sanctions on oil export

U_{INV} : Investment shocks

U_{PRO} : Production shocks

U_{LIQ} : Liquidity shocks

U_{COL}: Shocks related to Islamic contracts.

According to Blanchard-Quah's (1989) approach, identification of structural shocks is done by imposing some constraints on the long-run effects of socks on some of the variables.

4. Model Estimation and Analysis of Findings

4.1. Introduction to SVAR Model

When the stationary state of variables is identified then the first step is finding the optimal lag length in autoregression models. To determine the lag length herein, Schwarz-Bayesian information criterion (SC), Akaike information criterion (AIC), Final Prediction Error (FPE), Hannan-Quinn information criterion (HQ), and Likelihood Ratio (LR) were used. Results of Table 1 indicate that the applied criteria of LR, FPE, AIC, and HQ found the second lag as the optimal lag of this model while the first lag is selected as the optimal lag based on SC criterion. Ultimately, since SC follows the principle of parsimony and pays more attention to reducing parameters or soothing the system to a rather better fit, it will be more proper for a small sample size, particularly

the sample size selected in this study. Hence, optimal lag one is chosen as the optimal lag of the model.

Table 1. Determining the optimal lag in the VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	25.6532	-	3.84e-10	-1.96532	-1.879563	-1.98652
1	278.632	368.8652	3.21e-15	-13.78563	-10.89562*	-11.63528
2	355.0763	70.98652*	1.40e-15	-15.365324*	-10.56325	-14.65874*

Reference: research findings note: * represents the lag selected by the criterion

4.2. Circle unit root test

Since the ADF test showed that variables are non-stationary at the level and in part two, SC selected lag 1 as the optimal lag, the model was estimated as vector error correction with one lag. To ensure the lack of regression spurious, a unit root test was performed for the whole regression model. If the SVAR model is not stable, the results will not be reliable. To assess the stability of the estimated model, an AR chart is used. This diagram indicates the inverse characteristic roots of an AR process. If absolute values of these roots are smaller than one unit is and placed inside of the unit circle, the estimated SVAR model is stationary. The AR model figure shows that all inverse characteristic roots are inside of the unit circle and the SVAR model estimated for these models meets the stationary term.
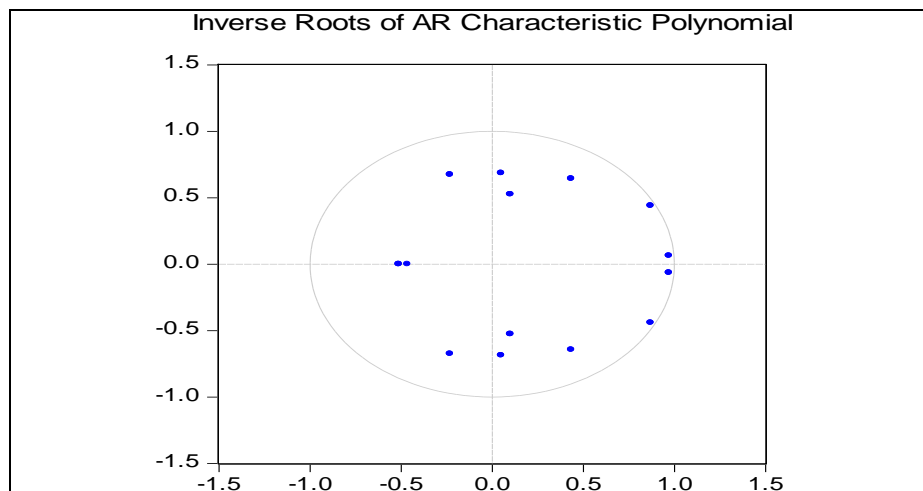
Diagram 1. Circle unit root test

4.3. Results of model estimation

Results of the SVAR model have been reported in Table 2 to examine the effect of explanatory variables on investment, production, and employment. This Table indicates the system of structural shocks and summarized form shocks. In Table 2, @e1 represents the oil price shocks, @e2 represents the exchange rate shocks, @e3 indicates dummy variable of sanctions on oil exports, @e4 represents investment shocks, @u5 includes production shocks, @u6 represents liquidity shocks, and @u7 indicates shocks related to Islamic loans. Results of model estimation have been reported in the table below.

Table 2. Estimation of long-run equilibrium of the model

Structural VAR Estimates

Sample (adjusted): 1986-2019

Structural VAR is just-identified

	Coefficient	SD	t-value	Prob.
Coefficient of oil shocks in exchange rate equation C(2)	-0.001240	0.001534	-0.808421	0.4190
Coefficient of oil shocks in oil exports equation C(4)	-0.001613	0.003777	-0.426995	0.6695
Coefficient of exchange rate shocks in oil exports equation C(5)	-0.000757	0.000550	-1.376746	0.1689
Coefficient of oil shocks in investment equation C(7)	-0.043721	0.018416	-2.374041	0.0185
Coefficient of exchange rate shocks in investment equation C(8)	-0.263492	0.129147	-2.040247	0.0426
Coefficient of oil export shocks (under the effect of sanction) in investment equation C(9)	-0.534278	0.148415	-3.599896	0.0004
Coefficient of oil shocks in production equation C(11)	-0.032026	0.011313	-2.830963	0.0047
Coefficient of exchange shocks in production equation C(12)	-0.003391	0.001362	-2.488900	0.0130
Coefficient of oil export shocks (affected by sanction) in production equation C(13)	-0.058184	0.032826	-1.772507	0.0766
Coefficient of investment shocks in production equation C(14)	-0.083095	0.034048	-2.440482	0.0148
Coefficient of oil shocks in liquidity equations C(16)	-0.027486	0.024662	-1.114508	0.2653
Coefficient of exchange shocks in liquidity equation C(17)	0.096583	0.036193	2.668563	0.0077
Coefficient of oil export shocks (affected by sanction) in liquidity equation C(18)	-0.324881	0.080793	-4.021129	0.0001
Coefficient of investment shocks in liquidity equation C(19)	-0.008775	0.003759	-2.334085	0.0198
Coefficient of production shocks in liquidity equation C(20)	0.037131	0.017607	2.108900	0.0361
Coefficient of oil shocks in Islamic loans equation C(22)	-0.070487	0.029601	-2.381250	0.0181
Coefficient of exchange shocks in Islamic loans equation C(23)	-0.621092	0.069411	-8.948064	0.0000
Coefficient of oil export shocks (affected by sanction) in Islamic loans equation C(24)	-0.255406	0.054505	-4.685903	0.0000
Coefficient of investment shocks in Islamic loans equation C(25)	-0.067772	0.038360	-1.766739	0.0787

Coefficient of production shocks in Islamic loans equation C(26)	-0.125751	0.035196	-3.572898	0.0004
Coefficient of liquidity shocks in Islamic loans equation C(27)	-0.097123	0.018198	-5.337057	0.0000

Reference: research findings

Results of estimation of the SVAR model indicated that most of the underlying coefficients affecting Islamic loans were significant and consistent with the economic conditions of Iran. The underlying variables analyzed in the SVAR model include shocks imposed by oil price, monetary policy, exchange rate, and oil exports on investment production and Islamic loans in Iran. Accordingly, a shock imposed by oil price led to a 3% rise in production, a 4% decline in investment, and a 7% reduction in Islamic loans. Furthermore, a shock imposed by liquidity led to 9% rises in Islamic loans.

In terms of the effect of oil price fluctuation on the Islamic bank contract, it can be explained that increased public budget or government expenditures, including non-performing and construction budgets caused by increased oil revenues along with growing bank credits and loans, lead to higher aggregated demand. On the other hand, inflexibility of the aggregated supply limit caused by technical and infrastructural constraints leads to imbalance and wide demand-supply gap and emergence of inflationary pressures. In other words, real efficiency caused higher production costs and inflation rates, which in turn excluded liquidity from banks causing investment in other profitable markets. On the other hand, in case of increased real efficiency, only those who can spend the received loans in speculation and intermediation transactions can receive and repay the loans. Under such circumstances, banks must monitor the transaction more because such loans cannot be repaid through productive activities. The aforementioned factors cause ambiguous effects of real efficiency on investment, production, and Islamic loans. Because durable products serve as money alternative assets, the increased price levels lead to a decline in value and purchasing power of durable goods, as well as purchasing power of money; therefore, the

opportunity cost of money storage will increase, and liquidity inflows from production and moves towards profitable markets such as housing market. Increased currency incomes pave the way for importing raw and intermediate materials because import directly depends on national income and increase production within a time lag. However, a more rapid increase in demand rather than supply and output causes inflation. In case of reduced currency income, fewer raw and intermediate materials are imported shifting the aggregate supply curve to the left, reducing output, and increasing general price levels. On the other hand, because government expenditures are rigid sticking downwards due to budget commitments of the government, the case causes budget deficit and borrowing from the central bank or selling public bonds to finance the budget. The mentioned process expands the monetary base and liquidity shifting aggregate demand to the right side and causing inflation. Therefore, increased (decreased) oil revenues lead to an increase (decrease) in currency incomes and subsequent inflation. In both cases, however, inflation results from liquidity for different reasons. Moreover, higher oil prices and oil revenues can affect the GDP and employment by increasing aggregated demand or government expenditures or expanding aggregate supply (increasing total public and private investment, paying banks' loans, importing capital products, new technology, etc.). Increased oil price and subsequent rise in oil revenues or currency incomes lead to an increase in foreign assets and a higher monetary base as one of the resource items. In this case, the money supply rise exceeds the monetary base rise through the multiplication factor of money creation. Moreover, it can be stated that in cased of increased demand for money due to higher national income resulting from oil revenues, the central bank must expand the money supply to stabilize interest rate and prevent the effect of changes in money demand on the interest rate. In case of reduced oil revenues, the budget deficit resulting from budget obligations of the government causes borrowing from the central bank, which in turn leads to an increase in monetary base and liquidity. Therefore, both increased and decreased oil revenues expand monetary based and liquidity by increasing foreign assets and government debts, respectively. Accordingly, both increased and decreased oil revenues always expand the money supply.

4.3.1. Impulse Response Functions

Impulse response functions (IRFs) and analysis of variance (ANOVA) must be assessed to analyze the results of long-run equilibrium results for the SVAR model. In other words, the SVAR model presents two robust instruments for the analysis of economic fluctuations, including IRF and ANOVA. Therefore, after estimating the SVAR model, the results of IRF and ANOVA can be assessed. An IRF expresses the effects of a standard deviation of a shock to indigenous variables of a model. For the model used in this research, the response of Islamic loans to an impulse or sudden change has been illustrated in Diagram 2 considering the size of one standard deviation in each indigenous variable of the model, including oil price, liquidity, foreign exchange, oil exports, investment, and production. The horizontal axis indicates the time (annual periods), and the vertical axis shows the growth rate of changes in the variable.
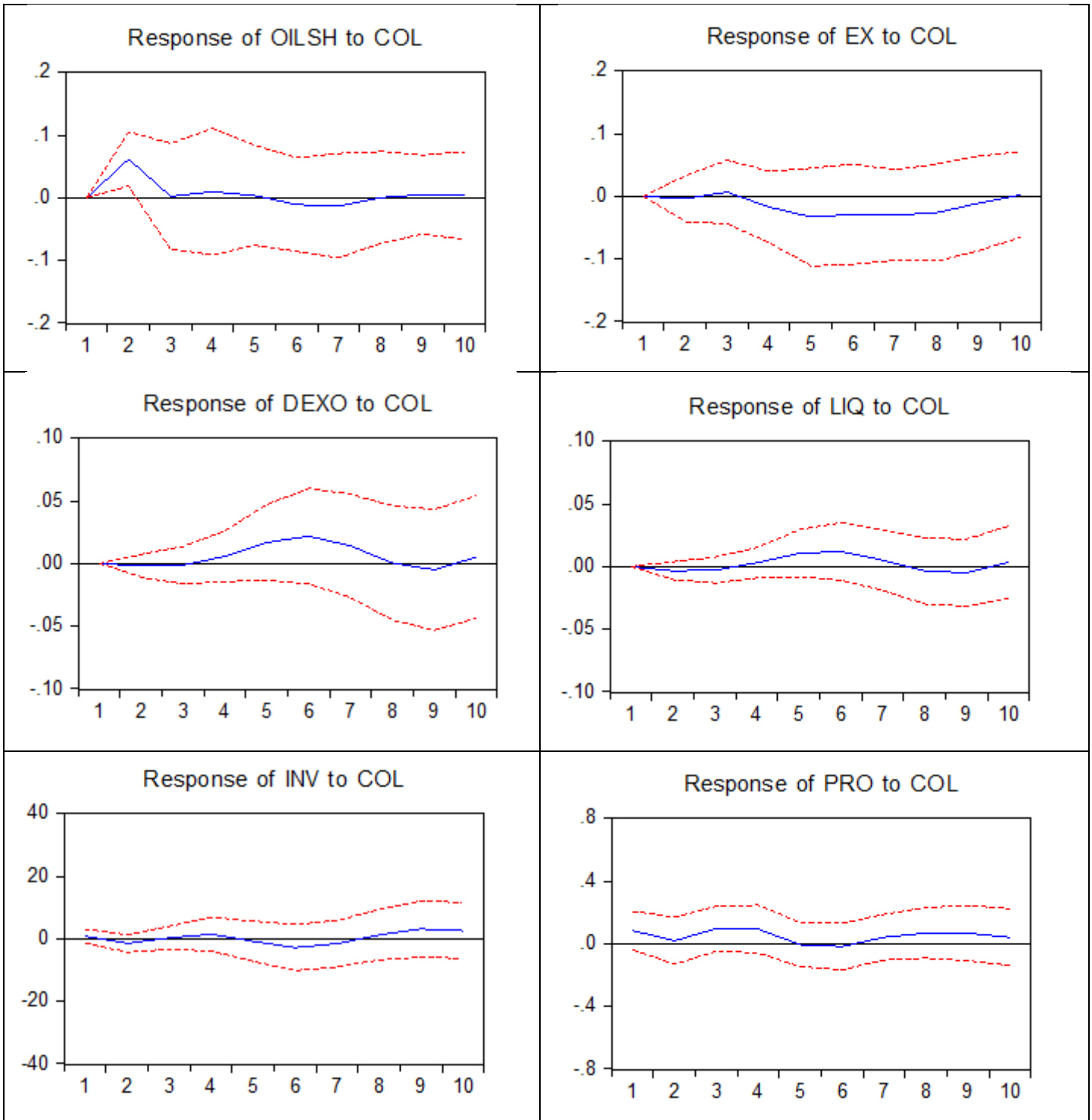
Diagram 2. Results of impulse response functions of the model Reference: research findings

According to the results of IRFs (Diagram 2) for the model, the effect of shocks imposed by the exchange rate, investment, oil exports, liquidity, and production on the Islamic loans has been

descending during the first two periods then effect follows its ascending process. In other words, the graphical process of oil price in Iran and the oil shocks occurring worldwide may make Iran's economy shows the response to positive oil shocks rather than negative ones. However, it is asked whether this positive shock of increased oil price leads to the real sector of the economy or not. According to the results of the impulse response function of the first variable (oil price shock), increased oil price only in the first two periods leads to a rise in Islamic loans then follows its descending process and tends to zero in long term. In other words, the effect of oil revenue on Islamic loans in Iran is shown in the investment of oil revenues, which increase physical capital and production. In periods of increasing oil price, investment and output will be increased and when there is a decline in oil revenues, the Islamic loans will be reduced. However, the issue of Iran's economy is about the unmanaged oil revenues that have been spent on short-run investments instead of long ones that will result in inflation and liquidity.

4.3.2. Analysis of Variance (ANOVA)

Analysis of variance of variables has been done in this part based on the estimated model, and obtained results are reported in Table 3 in which column S.E represents the prediction error of relevant variables during different periods. Since this error is measured based on the error of the previous year and the source of this error stem from the change in current values and future shocks, this rate will be increased over time. According to the results of Table 3, the standard error of the first period equaled 0.18, equaled 0.23 in the second period, and experienced an increase through time. The next columns indicate the variance percent caused by the sudden change or a specific shock. The third column indicates that although 100% and 75.94% of the changes in the first and second periods have stemmed from oil price shocks, 65.78% of changes in this index was related to the shocks of oil price shocks, 0.51% to the foreign exchange rate, 0.87% to oil exports shock under the effect of sanction, 0.59% to investment shock, 19.02% to production shock, 9.26^ to liquidity shock, and 3.93% to Islamic loans shock. Among variables, oil price, production, and liquidity shocks had the highest explanatory power, respectively, to explain changes in the model during the studied period. This is a justifiable result in Iran's economy, which was analyzed in this study. In this case, increased oil revenues have not been managed well, and investments have been spent on short-run expenditures instead of long resulting in inflation and liquidity. Hence, a part

of investment has remained useless, and the lower production has led to lower investment, less output, fewer Islamic loans, and a higher inflation rate.

Table 3. ANOVA of Model

		Shock 1	Shock 2	Shock 3	Shock 4	Shock 5	Shock 6	Shock 7
Period	S.E.	OIL	EX	DEXO	INV	Pro	LIQ	COL
1	0.181260	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	
2	0.231126	75.94659	0.563009	0.567968	0.329330	12.58465	6.437775	3.570674
3	0.248410	65.78881	0.517787	0.876240	0.595461	19.02158	9.263494	3.936627
4	0.260913	62.66349	1.920552	2.162141	2.785918	17.39086	8.914524	4.162512
5	0.278765	55.12993	3.760639	5.153992	5.442409	15.64262	11.02259	3.847823
6	0.286334	52.25864	4.001141	7.707393	5.165402	15.23242	11.98552	3.649487
7	0.299857	49.97008	3.925163	8.403591	6.986352	15.24188	11.62427	3.848660
8	0.323019	47.81948	4.602348	7.951929	8.136860	15.09877	11.03348	5.357134
9	0.340281	45.72489	5.921123	7.728349	8.366719	14.84689	11.00997	6.402056
10	0.351861	43.72467	7.973919	7.448516	8.860858	14.47266	10.74255	6.776825

Reference: research findings

5. Conclusion and Recommendations

The purpose of the present study was to examine the effect of economic-financial factors on Islamic contracts of Iran considering the impact of oil price shocks. Following recommendations have been proposed based on the obtained results.

1. Results of SVAR model estimation indicate that increase in liquidity volume and physical capital within the first periods leads to a reduction in Islamic loans but after several periods of rising liquidity and physical capital decline in Islamic loans. As it was mentioned, increased oil revenues have not been managed well, and long-run investments have been spent on short-run expenses, which cause inflation and higher liquidity. The mentioned issues should be solved by governments.

2. It is usually stated that instability and high liquidity must be prevented to stabilize prices and the economy because the liquidity growth exceeding production growth causes inflation and higher prices based on the quantity theory of money. However, liquidity level and money creation in the economy, as well as optimal liquidity-to-GDP ratio depend on the structure of each economy and technological complexities of goods and services over the construction process. Hence, it is not possible to set a certain level of liquidity and money creation as a general rule for any economy because the quantity of liquidity and money creation in each economy depends on the structural and technical status of the economy and products, speculative attacks, and currency market pressure. Therefore, it is necessary to set expansionary monetary policies based on exchange rate stabilization or non-stabilization.

3. Structural and administrative difficulties in addition to international economic sanctions cause many problems in the implementation of investment projects and plans. Banks may prevent using participatory contracts due to some problems, including accurate and continuous regulations, costly process of regulation due to expert fees, possible collusion between supervisor and project manager, lack of transparent surveillance indicators, partners' worries about information disclosure due to possible abuses in some cases, sophisticated rules, and regulations about jurisprudential nature and rules of participatory contracts and their inconsistency with conventional banking mechanism, technical risks of manufacturing, economic and industrial activities, the inability of conventional money market to implement participation-based contracts, inability of bank accounting standards to track deposits from customers' depositions to payment of interest and withdrawal based on activities, bank's shareholders' pressure to gain more profit, and depositors' pressure to gain higher interest on bank deposits. The aforementioned issues make banks determine and calculate the minimum expected profit when signing the contract without paying attention to the facts about participation cases or actualized profit or loss. In this case, banks ask customers to pay interest on a deadline. Therefore, the participatory contract may serve as a transactional contract signed based on the fixed profit.

4. It is suggested that policymakers apply their policies during the economic recession caused by oil shocks because of the potential capacities of production during these cycles. If the policies are made in this period, the recession will disappear. Therefore, it is recommended

to the central bank consider the effect of oil shocks on the efficiency of the banking system of Iran during expansions and recessions to fulfill macroeconomic goals.

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