

# A study on the asymmetric effects of oil and non-oil revenues on the financial development index in Iran

Moslem Jamshidi<sup>a</sup>, Sharareh Majdzadeh Tabatabaei<sup>b,\*</sup>, Seyed Nematollah Mousavi<sup>c</sup>

<sup>a</sup>Department of Law and Oil and Gas Contracts, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran

<sup>b</sup>Department of Management and Economics, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran

<sup>c</sup>Department of Agricultural Economics, Marvdasht Branch, Islamic Azad University, Marvdasht, Iran

(Communicated by Javad Vahidi)

---

## Abstract

Natural resources, especially crude oil, play vital roles in the economic development and sustainable growth of countries. Oil and non-oil resources are the main indices of government revenue for many economies worldwide [5] because economic programs, which are compatible with economic policies and oil prices, play central roles in the creation of a national domestic policy [13]. The present study aimed to investigate the asymmetric effects of oil and non-oil revenues on financial development in Iran. To this end, the nonlinear autoregressive distributed lag (NARDL) method was utilized from 1971-2018. The findings indicated that the positive and negative shocks of oil revenues had positive effects on financial development in the long term, and the positive and negative shocks of non-oil revenues had negative effects. On this basis, the government can play a more efficient intermediary role in mobilizing domestic savings and leading them towards productive investments in various economic sectors by playing a more active role in encouraging the expansion of credit for the financial sector.

Keywords: financial development, oil revenues, value added, the Nonlinear Autoregressive Distributed Lag (NARDL) method  
2020 MSC: 91G15

---

## 1 Introduction

Natural resources, especially crude oil, play vital roles in the economic development and sustainable growth of countries. Oil and non-oil resources are considered major indices of government revenue for many economies worldwide [5] because economic programs, which are compatible with economic policies and oil prices, play central roles in the creation of a national domestic policy [13]. Among natural resources, oil wealth determines the national economic policy and trade relations with other countries, especially import and export and balance of payments status in countries with oil resources [22]. Therefore, many independent countries, including Iran, rely heavily on the oil sector revenues to finance infrastructural projects and achieve sustainable development. However, there are concerns about sustainable oil wealth resulting from declining revenues during the recent global financial crisis, which has led all

---

\*Corresponding author

Email addresses: [jam\\_1364@yahoo.com](mailto:jam_1364@yahoo.com) (Moslem Jamshidi), [sh\\_tabamajd@yahoo.com](mailto:sh_tabamajd@yahoo.com) (Sharareh Majdzadeh Tabatabaei), [seyed\\_1976mo@yahoo.com](mailto:seyed_1976mo@yahoo.com) (Seyed Nematollah Mousavi)

oil nations to focus on developing non-oil activities. Due to the global financial crisis in 2008, many oil-dependent countries have realized the risks of global economic decline and its negative effect on their economic growth that can suddenly lead to social turmoil [1]. Therefore, these countries have realized the urgent need to diversify their revenue sources and reduce dependence on the oil sector [24].

The oil sector in the Middle East has a significant effect on economic development. The governments of Middle Eastern countries use the oil sector revenues to increase public employment, develop extensive infrastructures, increase huge investments, and develop foreign exchange reserves. Furthermore, the oil sector has involved oil-producing countries in the international economic order. The oil sector has a direct effect on the economic indices of oil-producing countries. Many researchers have found that oil price volatility in the last decade has had a great effect on macroeconomic activity, including domestic production growth, the rate of immigration into the country, the unemployment rate, and budget cuts in developed and developing countries. Oil revenues mainly affect the banking sector and financial system in these countries. Expenditures of oil governments for construction and huge infrastructure investments are highly dependent on oil revenues. Their banks are also very dependent on the development of these sectors. The channels of exposure to oil prices in the banking sector are through providing investment in real estate projects. Therefore, international oil price volatility leads to significant effects on the stability of the banking and financial systems in oil countries [7].

According to the OPEC report (2019), 65.4% of the world's proven crude oil reserves are located in the Middle East. With 266.26 billion barrels of crude oil reserves, Saudi Arabia is ranked second internationally and first in the Middle East. Iran ranks second with 155.6 billion barrels of crude oil reserves, followed by Iraq, Kuwait, the United Arab Emirates, and Qatar with 147.22, 101.5, 97.8, and 25.24 billion barrels respectively. Since the last drop in oil prices in the mid-2014, oil-producing and exporting countries have faced sharp declines in government expenditures and revenues. Low economic indices and large budget deficits in oil-exporting countries have forced governments to reform the economic structures and systems by developing the private sector and changing the direction from the oil sector to other sectors such as service, production, tourism, and technology sectors. Furthermore, the central banks of oil-dependent countries have advised all domestic and foreign banks to reduce their dependence on the oil sector to avoid various risks. The last phase of the long-term decline in oil sector revenues has prompted the governments of oil-producing countries to increase their debt by issuing international bonds and reform their tax systems by introducing new taxes such as value added tax. Many countries such as Qatar, the United Arab Emirates, and Kuwait have recently introduced the Value Added Tax (VAT) system to reduce the government budget deficit. It has been observed that Saudi Arabia increased its debt by about 73 billion dollars from December 2015 to the end of August 2016. This situation also exists in many other countries in the Middle East such as Kuwait, Iran, and Qatar [7].

According to the above-mentioned cases, financial and banking affairs are considered important for the development of other sectors. However, the development of bank credit is insufficient to classify a country as a developed country, but it is a reflection of long-term survival through providing competitive services to customers. All countries of the Persian Gulf region have recently made efforts to achieve sustainable development goals, but there have been few studies on the effects of oil and non-oil resources on financial development. Therefore, the present research sought to examine the effects of oil and non-oil revenue sources on financial development in Iran. The theoretical bases of oil and financial development are expressed as follows, and then the research background, and the introduction and estimation of the model are presented.

## 2 Oil and financial development

There are channels through which movements in crude oil prices may affect financial development in oil-exporting developing countries. Given that the economic activities in these developing economies largely depend on the price of crude oil [14, 17, 18, 25], the increase in the crude oil price provides the necessary financial resources for economic activities [18, 25]. The crude oil price is significantly affected by several economic and political factors in the international oil market [2]. In these countries, movements in crude oil prices affect financial costs [26] which in turn determine the level of economic activity and the demand for financial intermediary services. The ability of these economies to strengthen and develop the financial intermediary sector will be a function of the movement in the crude oil price [23].

Evidence indicates that movements in crude oil prices affect the economic status, which can affect the ability of financial intermediaries to expand their assets and make credit available to the private sector. In particular, oil price movements in the international crude oil market are caused by macroeconomic uncertainty in these economies [17], and the sudden profit, caused by the increase in the crude oil price, increases the economic rent and can make production factors away from economic-activities-stimulating institutions in the private sector [4]. Beck [4] and Nili and Rastad [21] identified financial intermediaries among influential institutions. Nili and Rastad [21] reported that the dominant

role of the public sector in the allocation of resources caused by the sudden increase in oil prices affected financial development, which weakened the private sector in oil-exporting countries [4]. Empirical evidence shows that the economies of oil-exporting countries have a lower level of financial development and provide less credit to the private sector even though they are more profitable and have more capital [23].

Hou et al. [8] explain that crude oil price volatility in the international oil market causes and increases the level of uncertainty in the development of oil-exporting economies and causes macroeconomic distortions which can force companies to reduce their investments. The macroeconomic uncertainty caused by the crude oil price volatility in the international crude oil market can affect the motivation of economic activities in the private sector and credit demand in the economy. It can create various economic units in the economy to store their savings in alternative investment channels outside the banking system to protect against macroeconomic distortions. Such a decision by households, firms, and other economic units in the economy may negatively affect financial performance, which depends significantly on the savings of various economic units to provide the necessary credit to invest in the economy for investors. Macroeconomic uncertainty resulting from changes in crude oil prices in the international crude oil market can also affect liquidity decisions and the risk of financial intermediaries in oil-exporting countries and may limit their ability to provide credit to the private sector. Beck et al. [4] and Naceur et al. [19] argue that the financial institutions' decisions on liquidity management and balancing risk and return may have a negative effect on their ability to make credit available to the private sector [23].

### 3 Research background

Khalilzadeh et al. [11] studied the role of oil revenues and banking sector credits with an emphasis on monetary policies in Iran's economy in a dynamic stochastic general equilibrium (DSGE) model. They used real seasonal per capita data from 1996 to 2017 and adjusted seasonal data, which were detrended with the help of the Hodrick-Prescott filter, and the calibration method was used to extract the values of the general equilibrium model parameters. The results confirmed the relative success of the simulated model compared with the realities of Iran's economy. The instantaneous response functions related to the government's oil income shock were examined on the variables, and the results indicated that any positive shock of the government's oil income would lead to the adoption of expansionary financial policies by the government, which would increase the income of households and at the same time stimulate the demand side and also increase the household deposits by increasing the amount of household consumption. The increase in the level of household deposits also means more financial resources for banks, which increases investment and production in firms by reducing interest rates and increasing the supply of bank loans.

Adeli and Rouhani [15] investigated the relationship between the multidimensional index of financial development in the stock market (extracted using the principal component analysis method) and the abundance of natural resources in some selected OPEC oil and gas member countries from 2000 to 2016 using the panel data method. The research findings indicated that there was a positive and significant relationship between financial development in the stock market and income from the export of resources. The estimation of the model indicated the negative effect of inflation and the positive effect of the government size and the degree of economic openness on the stock market development.

Kafaei and Rahmani [10] investigated the roles of oil revenues in the relationship between financial development and the economic growth of Iran, as well as the economic growth of the non-oil sector during 1971-2016 using the vector error correction model (VECM). Their results indicated that financial development had a positive effect on economic growth, but the effect of oil revenues and its sudden increase had a negative effect on this relationship and decreased it. In the second phase, the same model was estimated for the economic growth of the non-oil sector. The financial sector development had a high effect on the economic growth of the non-oil sector, and the jump in oil revenues had a low negative effect on this sector.

Dizaji et al. [6] examined the effects of political institutions on the relationship between oil revenues and financial development in countries with oil resources. In their study, they utilized the panel data approach to examine member countries of OPEC (The Organization of the Petroleum Exporting Countries) and OECD (The Organization for Economic Cooperation and Development in 1970-2003). The results indicated that oil revenues had a negative effect on financial development in both groups of countries. Democracy had a positive effect on financial development and could moderate the negative impact of oil revenues on financial development, indicating that the above-mentioned countries could diminish the negative effects of oil revenues on their financial system by improving the quality of institutions. The research results remained unchanged and stable despite the use of different control variables and different specifications of the model.

Joo et al. [9] examined the effects of the 2008 global financial crisis on the crude oil market. According to their findings, even though the oil market volatility remained the same after the crisis, the crisis changed the characteristics

of the unstable market and also negatively affected the characteristics of the market in terms of efficiency and long-term balance.

Lang and Auer [12] provided evidence of important determinants of oil prices, covered the effects of oil market shocks on the macro economy and the stock market, discussed the effects of financial markets on the performance and efficiency of the oil market, and finally, explained the methods of forecasting crude oil prices and volatility. Based on their findings, the oil price is determined by the interaction of several factors, which are strongly affected by economic and macro changes. For example, the production of shale oil decreases the power of the United States to import oil and increases the excess supply in the global markets. These structural changes in supply are combined with the influence of OPEC to increase global crude oil prices. Simultaneously, the nature of oil price shocks seems to have changed over time. While prices were high after the first and second oil crises, the First Persian Gulf War only led to a short-term increase in prices, and the recent tensions in the Middle East and North Africa resulted in a small premium for oil.

Al-Shabouri et al. analyzed the effect of oil and non-oil indices on the financial development of the Sultanate of Oman from 1978 to 2017. To this end, the proxy of oil rents was used for the oil sector and the value added of the industry, agriculture, forestry, and fishing for the non-oil sector, and the value added of services was used to determine the effects on financial development. The long-term results indicated that the value added of industry and mining had a negative and significant relationship with financial development in Oman. However, the value added of the oil and services sector improved financial development. The short-term relationship also indicated that the oil, agriculture, and service sectors had positive and significant effects on financial development.

Chaarani [7] investigated the effect of oil price volatility on the financial performance of the banking sector in 8 oil-producing and exporting countries in the Middle East (Saudi Arabia, United Arab Emirates, Qatar, Bahrain, Kuwait, Jordan, Oman, and Iran) from January 2012 to December 2017. The results did not show any similar effect of oil price volatility on the financial performance of the banking sector in each country. Oil price showed a direct and significant effect on the financial performance of the banking sector in Bahrain, Oman, and Iran, while the results did not show any direct effects of oil price volatility on the financial performance of the banking sector in Jordan, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates. The analysis also indicated that the economic size of each country and its diversity in non-oil sectors had a direct effect on the relationship between oil price volatility and the financial performance of the banking sector.

## 4 The model introduction

The present research used a new econometric framework called the nonlinear autoregressive distributed lag (NARDL) model. Given the empirical studies in this field, the above-mentioned method is the most suitable as it provides the possibility of examining the potential long-term and short-term asymmetry in the relationship between oil and non-oil resources and financial development. The desired model includes the short and long-term relationship between the variables and is formulated as follows:

$$DC_t = c_t + \alpha_1 ADD_t + \alpha_2 OIR_t + \varepsilon_t \quad (4.1)$$

where DC is the dependent variable and represents the granted domestic credit to the private sector by banks and is used as an index for financial development. ADD and OIR are the independent variables, and ADD is dedicated to the non-oil sector and covers the value added of the industry, agriculture, and service sectors. OIR also represents oil rent and is an index of the oil sector.  $\varepsilon$  represents the error term of the model.

Since the present research seeks to investigate the presence or absence of symmetry in the effects of oil and non-oil resources on financial development, we rewrite the equation by adding positive and negative analysis to equation (4.2):

$$DC_t = c_t + \theta_1 ADD_t^+ + \theta_2 ADD_t^- + \theta_3 OIR_t^+ + \theta_4 OIR_t^- + \varepsilon_t \quad (4.2)$$

where  $\theta_i$  is the vector of long-term coefficients.  $ADD_t^+$ ,  $ADD_t^-$  are a partial set of positive and negative changes in the non-oil index and  $OIR_t^+$ ,  $OIR_t^-$  are also a partial set of positive and negative changes in the oil index.

The further expansion of the model and attention to the study by Shin et al. [27] indicate that the nonlinear autoregressive distributed lag (NARDL) model for investigating the effects of oil and non-oil indices on the financial development is according to the Equation (4.3):

$$DC_t = \sum_{j=1}^p \phi DC_{t-j} + \sum_{i=0}^q (\theta_i^+ ADD_{t-i}^+ + \theta_i^- ADD_{t-i}^-) + \sum_{i=0}^q (\theta_i^+ OIR_{t-i}^+ + \theta_i^- OIR_{t-i}^-) + \varepsilon_t \quad (4.3)$$

where,  $\phi$  is the coefficient of the dependent variable lags,  $\theta_i^-$  and  $\theta_i^+$  are the asymmetric coefficients of the independent variable lags, and  $\varepsilon_t$  is the error term with a mean of 0 and variance of 1. The linear ARDL model can be obtained by limiting the parameters, then  $\theta^+ = \theta^-$ .

The necessary statistics and information are extracted from the World Bank database.

## 5 Stationarity of the variables

The unit root test should be performed on the variables before running the nonlinear autoregressive distributed lag (NARDL) model. Stationarity is a process in which the mean and variance are constant over time. In autoregressive distributed lag (NARDL) models, it should be ensured that none of the variables are stationary with degree (2). Table 1 shows the results of the Dickey-Fuller and Phillips-Perron tests. According to the results, the financial development and accumulated non-oil revenues are of the first degree and the accumulated oil revenues are of the zero degree.

Table 1: The results of the stationarity test

Symbol	Variable	Dickey-Fuller test	Phillips-Perron test
DC	Financial development	0.9998	0.9994
$\Delta$ DC	The difference in financial development	0.0001	0.0002
ADD	Non-oil revenue	0.1693	0.1132
$\Delta$ ADD	The difference in non-oil revenue	0.0002	0.0002
OILRENT	Oil revenue	0.0356	0.307

Source: Researcher's findings

Therefore, the results of the unit root test created an integration of  $I(0)$  and  $I(1)$  series; hence, the usual Engle-Granger and Johansen cointegration methods are not suitable. The characteristics of the data sets make it necessary to use the augmented ARDL model by McNown et al. [16]. This model can be applied to variables with different accumulation orders, i.e. a combination of  $I(0)$  and  $I(1)$ .

## 6 The bounds test

The bounds test is a conventional method for time series data within the framework of the NARDL model to determine the long-term relationship between the variables. According to the null hypothesis, under which there is no cointegration and long-term relationship, the F-test is higher than the upper bound test at a significant level of 10%; hence, the evidence indicates that there is a long-term relationship between oil and non-oil revenues with the financial development index.

Table 2: The results of the bounds test

$I(1)$	$I(0)$	Probability level	F-statistic
3.09	2.2	10%	3.54
3.49	2.56	5%	
3.87	2.88	2/5%	
4.37	3.29	1%	

Researcher's findings

## 7 The model estimation

Table 3 presents the results of estimating the short and long-term dynamic model. In the short term, the positive shock of oil revenues had a significant effect on financial development, but the negative shock was insignificant. The positive and negative shocks of non-oil revenues also had an effect on financial development.

In the long term, positive and negative shocks of oil revenues had positive effects, and positive and negative shocks

of non-oil revenues had negative effects on financial development. The significant long-term positive effects of oil revenues and the negative effects of non-oil revenues on financial development in Iran confirmed the high dependence of economic activities on oil revenues in oil-exporting developing countries. The results indicated that the increase in oil revenues provided financial resources for economic activities and created demand for financial services in Iran's economy.

As mentioned earlier, the positive oil shock had a positive effect on financial development in the long term. An increase in oil revenues through an increase in oil rent can lead to an increase in deposits in Iran's banking system and have a positive effect on the financial system's status. An increase in oil revenues may also lead to greater demand for loans, thereby improving the financial system. Furthermore, oil rents can expand the public sector and increase government expenses. This increases the non-oil budget deficit, which means an expansionary fiscal policy and an increase in government demand for goods and services which in turn increases the demand for money and also interest rates in other markets (including the informal market) and decreases interest rates in financial markets such as banks. The reduction of banks' interest rates increase credit, and thus the growth and development, and investment that ultimately improve financial development.

The findings indicate a positive effect of the negative oil shock on financial development in the long term. In other words, the reduction of oil prices also improves the financial system in Iran. Reducing oil revenues through reducing inflation can increase the ability of the financial sector to allocate resources and stimulate economic growth through capital accumulation. In other words, the reduction of inflation increases the return on investment and thus increases investment incentives and improves financial development.

The positive non-oil shock has a negative and significant effect on financial development in Iran in the long term. The reasons for the negative effect of non-oil revenues on financial development in Iran include a simple attitude towards exports (that is, only an emphasis on government support) and ignoring the roles of production factors, export stages, demand change, domestic consumption patterns, and similar cases that damage non-oil revenues and have a negative effect on financial development. The negative shock of non-oil revenues also has a negative and significant effect on financial development in the long term. The reduction of non-oil revenues decreases the rate of production and the injection of money into the banking system. In other words, the reduction of non-oil revenues decreases exports and foreign exchange, thereby decreasing domestic demand and production. The reduction of production decreases receiving facilities and loans from banks, and finally damages the financial development.

Table 3: Results of model estimation

<b>Short-term dynamic model (2.4.1.2.0)</b>				
<b>Probability</b>	<b>T-statistic</b>	<b>Standard deviation</b>	<b>Coefficient</b>	<b>Variable</b>
0.0000	12.46753	0.092004	1.147065	DC(-1)
0.0023	-3.346811	0.106136	-0.355217	DC(-2)
0.0001	4.647933	0.078259	0.363744	OILRENT_POS
0.9569	0.054479	0.105144	0.005728	OILRENT_POS(-1)
0.3257	-0.999776	0.051372	-0.051361	OILRENT_POS(-2)
0.0797	1.816447	0.058709	0.106642	OILRENT_POS(-3)
0.0000	16.37974	0.016649	0.272714	OILRENT_POS(-4)
0.2566	-1.157243	0.041851	-0.048432	OILRENT_NEG
0.0000	8.637524	0.036686	0.316877	OILRENT_NEG(-1)
0.0000	-11.67613	0.824227	-9.623783	ADD_POS
0.0020	3.389129	1.767928	5.991737	ADD_POS(-1)
0.0115	-2.699099	1.701777	-4.593265	ADD_POS(-2)
0.0354	-2.206915	0.957134	-2.112312	ADD_NEG
0.0000	10.09270	0.522754	5.276003	C
<b>Long-term model (2.4.1.2.0)</b>				
0.0000	12.61193	0.265682	3.350758	OILRENT_POS
0.0000	5.694884	0.226459	1.289656	OILRENT_NEG
0.0000	-14.34658	2.754375	-39.51586	ADD_POS
0.0140	-2.616221	3.878848	-10.14792	ADD_NEG
0.0000	12.54440	2.020572	25.34686	C

Source: Researcher's findings

## 8 Error correction model

Cointegration of economic variables provides statistical bases for using error correction models. The main reason for the popularity of the error correction model is the short-term volatility of the variables that are related to the long-term equilibrium values. The ECM coefficient indicates how much percent of the non-equilibrium of the dependent variable is adjusted and approaches the long-term relationship in each period. Table 4 presents the results of estimating the model. According to the results, the error correction coefficient is negative and indicates convergence toward long-term equilibrium. In other words, 20% of the non-equilibrium will be diminished and we will move toward long-term equilibrium in each period.

Table 4: Error correction model

ECT(-1)	Coefficient	Probability
	-0.20	0.0000

Source: Researcher's findings

## 9 Symmetry test

The symmetry test in the non-linear model investigates whether oil and non-oil revenues have symmetrical effects on financial development in the short and long terms. The null hypothesis of the Wald test indicates symmetry and the alternative hypothesis shows asymmetry. According to the results, oil revenues are asymmetrical in the short term and symmetrical in the long term but non-oil revenues are asymmetric in the short and long term.

Table 5: The Wald test results

Variables	Period	$x^2$ statistic	Probability	Status
Oil revenues	Short-term	16.46	0.0000	Asymmetric
	Long-term	0.43	0.6697	Symmetrical
Non-oil revenues	Short-term	9.99	0.0000	Asymmetric
	Long-term	9.73	0.0000	Asymmetric

Source: Researcher's findings

## 10 Stability test

The stability of the long-term coefficients along with the short-term dynamics is tested using the Cumulative Sum of Recursive Residuals (CUSUM) and the Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ). If the statistical diagram of CUSUM and CUSUMSQ remains within the range of a 5% significance level, all coefficients in the error correction model are assumed stable, but if the statistical diagram of CUSUM and CUSUMSQ exceeds the range of a 5% significance level, the coefficients are unstable in the error correction model [5]. The stability of the model can be confirmed as the diagrams are in the range of 5%.

## 11 The complementary tests

Table 6 presents the results of heteroscedasticity, autocorrelation, normality, and model specification tests. According to the results, the model lacks heteroscedasticity and autocorrelation but the normality is confirmed and the dependent form of the model is also correct.

Table 6: The results of the complementary tests

Test name	Normality test	Ramsey test	ARCH heteroscedasticity test	LM test
Probability level	0.91	0.35	0.30	0.17

Source: Researcher's findings

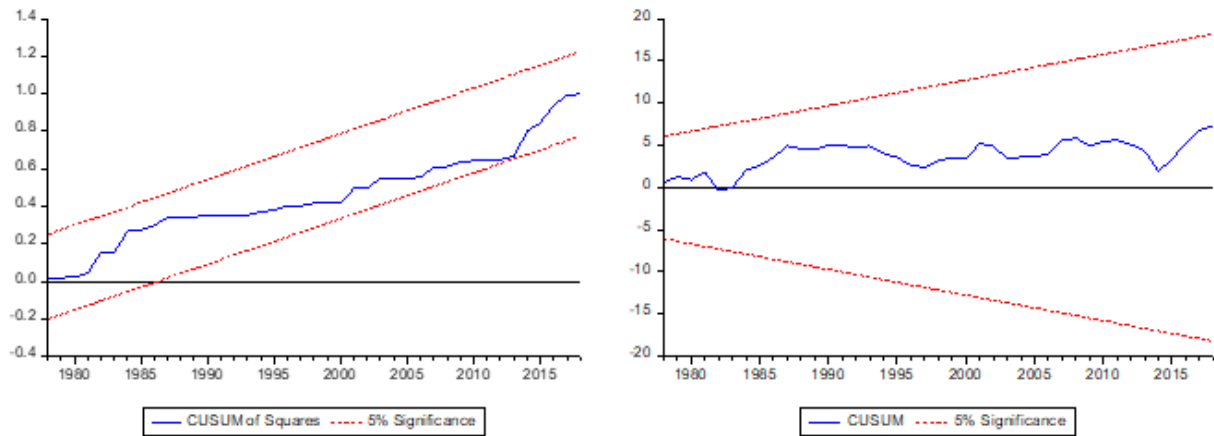


Figure 1: CUSUM and CUSUMSQ Source: Researcher's findings

## 12 Summary and conclusion

The oil sector has a significant effect on the economic development of Iran. The government uses the oil revenues to increase public employment, develop large infrastructures, increase macro investments, and develop foreign exchange reserves. Furthermore, the oil sector has integrated oil-producing countries into the international economic order. The oil sector has direct effects on the economic indices of oil-producing countries. Many researchers have reported that oil price volatility had a great effect on macroeconomic activity in the last decade such as domestic production growth, inflation rate, unemployment rate, and budget cuts in developed and developing countries. Oil revenues mainly affect the banking sector and financial system in Iran. Government expenditures for construction and huge infrastructure investments are highly dependent on oil revenues, and Iran's banks are highly dependent on the development of these sectors. The channels of exposure to oil prices in the banking sector are through providing investment in real estate projects. Therefore, international oil price volatility leads to significant effects on the stability of the banking and financial system in Iran. The present research investigated the asymmetric effect of oil and non-oil incomes on financial development. Based on the findings, oil revenues have positive effects and non-oil revenues have negative effects on the financial development index. The following suggestions are provided in this field:

- The need to strengthen various supervisory, institutional, and legal frameworks in Iran to build trust in the economy, reduce the dominance of the public sector in the allocation of resources due to the high dependence of the public sector on oil revenues, and strengthen the efficiency of the allocation and mobilization of resources in the financial intermediaries sector. Such a strategy can help reduce the dependence of the domestic economy on crude oil and strengthen financial development.
- Oil revenues cannot be the most dominant source of revenues to create a stable equilibrium in the long term despite its direct positive effect on financial development. A comprehensive strategy is necessary to diversify revenue sources by taking advantage of an active, complex, and developing financial sector. Therefore, there should be a coordinated and planned effort to develop the financial sector into a reliable, efficient, and long-term system for utilizing aggregate savings in productive investments.
- According to the results, the government should apply a balanced financial policy to maintain financial growth and domestic demand and improve the liquidity of the banking sector due to the increase in oil prices, the increase in world trade, the initiation of important structural reforms, and the trade improvement.
- The government can ensure sustainable economic growth and strengthen financial development by systematical development of the Islamic financial systems.
- Given that the main oil-exporting countries are exposed to a rapid drop in oil prices, these countries should make a significant effort to diversify and focus on the growth of the non-oil industry.
- The financial industry in Iran is facing the problem of low efficiency which shows the financial problem of private companies. Private companies, especially high-tech private companies, should receive more financial resources to encourage technical innovation.



- It is the responsibility of the country not to consider any kind of positive oil price shock as permanent in its expenditure pattern.

## References

- [1] A. Ajmi, R. Gupta, V. Babalos and R. Hefer, *Oil price and consumer price nexus in South Africa revisited: A novel asymmetric causality approach*, *Energy Explor Exploit* **33** (2015), no. 1, 63–74.
- [2] K.A. Alkhatlan, *Contribution of oil to the economic growth of Saudi Arabia*, *Appl. Econ. Lett.* **20** (2013), 343–348.
- [3] H. Basnet and K. Upadhyaya, *Impact of oil price shocks on output, inflation, and the real exchange rate: evidence from selected ASEAN countries*, *Appl. Econ.* **47** (2015), 3078–3091.
- [4] T. Beck, S. M. Maimbo, I. Faye and T. Triki, *Financing Africa: Through the crisis and beyond*, Washington, DC: The World Bank, 2011.
- [5] H.A. Bekhet and A. Matar, *Co-integration and causality analysis between stock market prices and their determinates in Jordan*, *Econ. Model.* **35** (2013), 508–514.
- [6] S. Faraji Dizaji, A. Teymouri and M.H. Mostafavi, *The effect of democracy on the relationship between oil revenues and financial development in oil-bearing countries*, *Energy Econ. Stud.* **58** (2018), 65–87.
- [7] H. El. Chaarani, *The impact of oil prices on the financial performance of the banking sector in the Middle East Region*, *Int. J. Energy Econ. Policy* **9** (2019), no. 5, 148–156.
- [8] Z. Hou, J. Keane, J. Kennan and D. Willem te Velde, *The oil price shock of 2014: Drivers, impacts, and policy implications*, Overseas Development Institute, Working Paper No. 415, 2015.
- [9] K. Joo, J. HwanSuh, D. Lee and K. Ahn, *Impact of the global financial crisis on the crude oil market*, *Energy Strategy Rev.* **30** (2020), 1–6.
- [10] M.A. Kafaei and T. Rahmani, *A study on the roles of oil revenues in the effects of financial sector development on the overall economic growth and the non-oil sector in Iran*, *Econ. Model.* **9** (2018), no. 1, 27–54.
- [11] J. Khalilzadeh, H. Heidari and S. Bashiri, *The roles of oil revenues and bank credits with an emphasis on the governance of monetary policies in Iran's production sector with an approach of the DSGE model*, *Quart. Econ. Res. Policy* **28** (2020), no. 94, 96–116.
- [12] K. Lang and B.R. Auer, *The economic and financial properties of crude oil: A review*, *North Amer.J. Econ. Finance* **52** (2020), no. C, 157–169.
- [13] S. Lardic and V. Mignon, *Oil Prices and Economic Activity: An Asymmetric Cointegration Approach*, *Energy Econ.* **30** (2008), 847–855.
- [14] F. Lescaoux and V. Mignon, *On the influence of oil prices on economic activity and other macroeconomic and financial variables*, *OPEC Energy Rev.* **32** (2008), 343–380.
- [15] M.H. Mahdavi Adeli and M. Rouhani, *The effect of abundance of natural resources on financial development in selected OPEC oil and gas countries (with emphasis on the multidimensional index of financial development in the stock market)*, *Financ. Knowledge Secur. Anal.* **12** (2019), no. 42, 71–83.
- [16] R. McNown, C.Y. Sam and S.K. Goh, *Bootstrapping the autoregressive distributed lag test for cointegration*, *Appl. Econ.* **50** (2018), no. 13, 1509–1521.
- [17] M. Mehrara, and K.N. Oskoui, *The sources of macroeconomic fluctuations in oil-exporting countries: A comparative study*, *Econ. Model.* **24** (2007), 365–379.
- [18] S. Moshiri, *Asymmetric effects of oil price shocks in oil-exporting countries: The role of institutions*, *OPEC Energy Rev.* **39** (2015), 222–246.
- [19] S.B. Naceur, M. Cherif and M. Kandil, *What drives the development of the MENA financial sector?*, *Borsa Istanbul Rev.* **14** (2014), 212–223.
- [20] F. Nasif Alshubiri, O. Ikbali Tawfik and S.A. Jamil, *Impact of petroleum and non-petroleum indices on financial*

- development in Oman*, *Financ. Innov.* **6** (2020), no. 15, 1–22.
- [21] M. Nili and M. Rastad, *Addressing the growth failure of the oil economies: The role of financial development*, *Quart. Rev. Econ. Finance* **46** (2007), 726–740.
- [22] J.C. Nkomo *Crude oil price movements and their impact on South Africa*, *J. Energy South. Afr.* **17** (2006), no. 4, 25–32.
- [23] C. Nwani, E. Iheanacho and C. Okogbue, *Oil price and the development of financial intermediation in developing oil-exporting countries: evidence from Nigeria*, *Cogent Econ. Finance* **4** (2016), 1–15.
- [24] G. Oladosu, *Identifying the oil price–macroeconomy relationship: an empirical mode decomposition analysis of US data*, *Energy Policy* **37** (2009), no. 12, 5417–5426.
- [25] J. A. Omojolaibi, *Crude oil price dynamics and transmission mechanism of the macroeconomic indicators in Nigeria*, *OPEC Energy Rev.* **38** (2014), 341–355.
- [26] T. Poghosyan and H. Hesse, *Oil prices and bank profitability: Evidence from major oil-exporting countries in the Middle East and North Africa (IMF Working Paper No. 09/220)*, Washington, DC: International Monetary Fund, 2009.
- [27] Y. Shin, B. Yu and M. Greenwood-Nimmo, *Modelling Asymmetric Cointegration and Dynamic Multipliers in a Nonlinear ARDL Framework*, *SSRN Electronic J.* **18** (2014), no. 4, 120–132.