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The Impact of Natural Resources Economic's Dependence and Institutional Quality on Health in Iran (A Comparison Between Several Developed and Developing Oil Exporting Countries)

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Abstract

The abundance of natural resources in a country is considered a blessing and led to increased growth and development, but in others it has appeared as a disaster and led to a decrease in investment in sectors such as health as an important factor of economic growth and rights, but in others it has appeared as a curse of resources and led to a decrease in investment in sectors such as health as an important factor of economic growth and rights. The present article uses the Autoregressive-Distributed Lag (ARDL) method to investigate the effect of oil dependence on life expectancy index as a health index in Iran during the period 1984-2017. The results showed that in the long run, the effect of oil rents as an indicator of dependence on natural resources on life expectancy in Iran has been inversed U-shaped. In other words, to a certain extent, the rent of oil resources has had a positive effect on life expectancy, but with the increase of dependence on oil resources, this effect has become negative. Then, to analyze the effect of institutional quality on the relationship between dependence on oil resources and health outcomes, the estimation results for Iran with three developing countries with poor institutional quality including Saudi Arabia, Bahrain and Kuwait, and three developed countries with strong institutional quality Norway, Canada and the United States were compared. The results showed that in countries with poor institutional quality, the relationship between oil rents and life expectancy is the same as in Iran, but in countries with strong institutional quality, oil rents have been ineffective on life expectancy. Therefore, the degree of development and institutional quality of the country is effective in turning oil rents into a blessing or a calamity.

Keyword: Health, Dependence on Natural Resources, Life Expectancy, Institutional Quality.

JEL Classification: E02, J10, Q34, I10.

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1. Introduction

Health has a positive impact on economic growth by increasing productivity and life expectancy. therefore, longevity leads to increasing people's savings and thus increasing investment and economic growth (Weil & et al, 2005). The Studies about the impact of natural resource dependence on health has ambiguous result. While some studies such as El Anshasy and Katsaiti (2015) and Cotet and Tsui (2013) have shown the positive effect of dependence on natural resources on health. Others, such as Sterck (2016), De Soysa and Gizelis (2013), have concluded the negative impact of this component on health. On the other hand, the study of Madrimov and Li (2019) showed that there is an inverse U-shaped relationship between on natural resources dependence and health. Therefore, this study examines and compares whether the effect of oil dependence on health, along with the two indicators of institutional quality (corruption and democracy), has U- inverted shape, or not. For this purpose, 4 oil-rich developing countries, and 3 developed countries with strong institutional quality were selected and then the results were compared.

2. The relationship between dependence on natural resources and health

The impact of health from the natural resource's dependence can be viewed from three channels: 1- The first channel is economic growth, Chambers & Guo, (2009); Gylfason, (2006) show that the natural resource dependence has possitive effect on economic growth. So by improving the economic growth, the survival rate of infants and life expectancy would be increased (Cole, 2019). In contrast, mavrotas, Murshed & Torres (2011) showed that greater dependence on natural resources leads to reduced economic growth, and therefore can have a negative impact on health. 2- Another factor that affecting health in natural resource dependent countries is health spending in the public sector. Abundance of natural resources could be an important source of government revenue, leading to increase public health spending, thereby helping to improve health (El Anshasy and Katsaiti, 2015). On the other hand, it is possible that in such countries, natural resource would be considered as an important asset for economic growth, so government ignore human capital (health and education) as one of the important factors affecting growth (Aljarallah, 2020).Therefore this negative relationship between natural resource dependence and health expenditures can lead to the negative impact of on natural resource dependence on health. 3-A potential channel through which natural-resource dependence may affect health through the quality of institutions. The effect of on natural resource dependence on government institutions can be attributed to the possibility of rent-seeking behaviors of government institutions due to the existence of sufficient sources of wealth. So this rent-seeking behaviors would affect health system negatively (Madrimov and li, 2019). On the other hand,

Maderimov and Li (2019) showed that the effect of natural resources dependence on health is inverted U-shaped. the reasons for this relationship is the non-linearity of the relationship between natural resource dependence and economic growth (Ampofo & et al, 2020), and also the nonlinearity of the effect of natural resource dependence on the institutional quality (Couttenier, 2009). According to the existing theoretical foundations on the relationship between natural resource dependence and health, this study examines whether this relationship for selected oil-rich countries is inverted U-shaped or not.

3. Model

The following model is implemented for investigating the relationship between oil rent and health in Iran and other countries in question.

$$LLI_t = \beta_1 + \beta_2 LGDPP_t + \beta_3 LCOR_t + \beta_4 LDEMOC_t + \beta_5 LOIL_t + \beta_6 {LOIL_t}^2 + \xi_t \quad (1)$$

In Equation (1), the LGDPP refers to the logarithm of GDP per capita at constant price in 2010, the LCOR is logarithm of the corruption index introduced by the International Country Risk Guide (CRG), which it is between zero and six. The number 6 means that the country is free from corruption and the number zero means complete corruption in the country. LLI is the logarithm of life expectancy, LDEMOC is the logarithm of the index of democracy (polity2 index from in the PolityIV index database). For estimating equation, the Autoregressive-Distributed Lag (ARDL) regression method is used.

4.Estimation Procedures

To derive the short-run and long-run impacts of the natural resource dependence on health, this study applies the autoregressive distributed lag (ARDL) model. The ARDL framework (Pesaran et al., 2001; Pesaran & Shin, 1999) is an appropriate choice in this study for dealing with variables that are integrated of different orders: I (0) or I (1) or a combination of both. Checking the order of integration of variables is a precondition for any cointegration technique. For this purpose, the augmented Dickey–Fuller (ADF) unit root test is applied. The probability values are given in parentheses. The results of the unit root tests are reported in Table 1. All these variables are integrated of order one, I (1) for Iran and different orders of integration: I (1) and I (0) are found for other countries. The results of regressions for long run and short run are presented in table 3 and 4. Table 2 shows Cointegration Bound Test Results.

Table 1-Results of Unit Root

Bahrain	Canada	USA	Kuwait	Norway	Saudi Arabia	Iran	Variable
-2/8737 (0/1931)	4138/1- (8335/0)	1937/4- (0118/0)	5884/4- (0045/0)	3927/3- (0967/0)	-2/22 (0/4605)	-2/5853 (0/2888)	L(oil)
-2/8454 (0/1926)	-5522/0 (9740/0)	1349/5- (0110/0)	-5558/4 (005/0)	-8763/2 (1826/0)	-2/2531 (0/4468)	-2/4393 (0/3540)	L$(oil)^2$
-1.248206 (0/8832)	-2179/2 (4641/0)	-6579/1 (9007/0)	4486/1- (8268/0)	-8948/0 (9446/0)	3802/3 (0/0715)	-3/3852 (0/0707)	L(GDPP)
-3/61886 (0/0477)	-6252/1 (7606/0)	-8019/0 (9552/0)	-0635/3 (0404/0)	-7610/1 (7058/0)	3207/0 (9978/0)	-1/7610 (0/6952)	L(LI)
-0/8673 (0/9840)	-1975/1 (8935/0)	-2593/4 (010/0)	-1587/2 (4957/0)	-9120/5 (0001/0)	-1/4132 (8376/0)	-0/1626 (0/9919)	L(DEMOC)
-1/9761 (0/5917)	-1857/3 (1052/0)	-5807/2 (2908/0)	-6047/2 (2808/0)	-7654/1 (7846/0)	-4132/1 (8376/0)	-3/3711 (0/0694)	L(COR)
-6/2349 (0/0001)	-8419/6 (000/0)	-	-	-9172/6 (000/0)	-9416/5 (0002/0)	-7/1194 (0/000)	ΔL(oil)
-5/7569 (0/0002)	-0597/9 (000/0)	-	-	-0546/7 (000/0)	-8571/5 (0002/0)	-6682/6 (000/0)	Δ$L(oil)^2$
-3/2487 (0/0009)	-7064/3 (0415/0)	-6729/32 (000/0)	-0523/6 (0001/0)	-0730/3 (0385/0)	7626/8- (000/0)	-2813/4 (0098/0)	ΔL(GDPP)
-	-6762/7 (000/0)	-4236/5 (0006/0)	-	-0361/9 (0000/0)	-4045/3 (0188/0)	-8372/4 (0044/0)	ΔL(LI)
-3/8922 (0/0242)	-7937/3 (01316/0)	-4600/5 (0006/0)	-6274/5 (0003/0)	9881/3- (0195/0)	-8532/3 (026/0)	-6191/4 (0043/0)	ΔL(COR)
-4/7312 (0/0033)	-8125/3 (0289/0)	-	-1855/4 (0123/0)	-	-	-8532/3 (0267/0)	ΔL(DEMOC)

6. Conclusion

The result of regression in table (3) showed that GDP per capita, oil rent, oil rent square, corruption control index and democracy index has a significant effect on life expectancy for Iran. Also, the GDP per capita, oil rent, oil rent square has significant effect on health for all developing countries (Bahrain, Kuwait and Saudi Arabia). The result for all developing countries in this study confirmed the inverted U-shaped. But the result of the regression for Norway, USA and Canada showed that there is no relationship between oil rent and health. The impact of democracy for Iran, Canada, Norway, USA and Bahrain has positive effect on health. And the impact of corruption has Negative and significant effect on health for Iran, Bahran And Norway in long run. GDP per capita has positive impact on health for selected countries in this study.

Table 2. Cointegration Bound Test Results

contries	F statistics
Iran	146/58
Norway	9/43
Saudi Arabia	803/594
Bahrain	12/3017
USA|	4/4670
Kuwait	18/3988
Canada	9/7292

Table 3. The Short- and Long-Run Results of Resource Rents on health

Canadian coefficients (0,0,0,0,0,1) ARDL	Norwegian coefficients (0,0,0,0,0,1(ARDL	Coefficients of the United States (0,0,0,0,0,1) ARDL	Saudi coefficients (1, 0, 0, 0, 0, 0) ARDL	Bahrain coefficients (0,1, 1, 2, 1, 2) ARDL	Kuwit (1 ,2,3,1,3,2) ARDL	Iran (2,2,2,2,2,2) ARDL	Variable
Long Run							
2036/0 (7257/9)	2531/0 (7575/6)	1826/0 (0468/3)	0456/0 (9967/1)	3870/0 (8695/19)	1715/0 (3952/5)	0976/0 (4458/4)	L(GDPP)
7840/0 (668/8)	4994/0 (1387/2)	8073/0 (3473/3)	-5743/2 (8637/0)	0456/0 (0370/2)	-0045/0 (2005/1-)	0039/0 (6391/ 3)	L(DEMOC)
-0040/0 (5879/0-)	-0386/0 (9316/0-)	-3985/0 (09889/0)	1894/0 (2131/2/1)	3985/0 (2295/4)	5072/1 (1473/11)	1069/0 (6958/2)	L(oil)
-0049/0 (6932/1-)	0144/0 (9309/0)	0111/0 (3878/1-)	-0285/0 (2068/2-)	-0178/0 (4449/2-)	2050/0 (6122/12-)	-0178/0 (6120/ -2)	L$(oil)^2$
-01318/0 (3165/0-)	2422/0 (7186/5)	0895/0 (0804/1)	0019/0 (8637/0)	3538/0 (2078/2)	-0664/0 (9832/1-)	0191/0 (2358/ 3)	L(COR)
-	1587/3 (0779/2)	-	-	-	- -	1587/3 (17/2588)	C
-	-	-	-	-	-	00526/0 (11/9746)	Trend
Short Run							
-	0323/0 (5482/2)	-	-	7809/0 (323/7)	0520/1 (4216/20)	7221/0 (17/4225)	ΔL(LI(-1))
02888/0 (4996/2)	-	0069/0 (1664/1)	0031/0 (9563/1)	0003/0 (4190/2)	0003/0 (9628/1)	0013/0 (0/9333)	ΔL(GDPP)
-	-	-	-	-	-0001/0 (7507/1-)	0075/0- (-5/1345)	ΔL(GDPP(-1))
-	-	-	-	-	-0005/0 (2138/5-)	-	ΔL(GDPP(-2))
-0006/0 (5709/0-)	-0049/0 (1397/1-)	-•/ 0013 (1664/1-)	0129/0 (0584/2)	0045/0 (4088/2)	0069/0 (4840/3)	0045/0 (1/5353)	Δ$L(oil)$
-	-	-	-	-	0001/0 (6754/1)	0014/0- (-1/9039)	Δ$L(oil(-1))$
-0007/0 (9080/1-)	0018/0 (1645/1)	-0004/0 (8779/1-)	0019/0 (073/2-)	-0007/0 (5762/6-)	-0007/0 (5762/6-)	0007/0- (1/4419)	Δ$L(oil)^2$

-	-	-	-	-0007/0 (5762/6-)	-0009/0 (4418/3-)	0003/0 (2/1067)	$\Delta L(oil)^2$
-00187/0 (3203/0-)	0309/0 (4983/2)	0034/0 (8366/0)	0001/0 (2817/1)	0001/0 (5549/0)	-00004/0 (1914/0)	0001/0 (0/3537)	ΔL(COR)
-	-	-	-	-	-0001/0 (9694/2-)	0009/0- (1/8926)	ΔL(COR(-1))
-	-	-	-	-	0004/0 (6971/1)	-	ΔL(COR(-2))
-	-	0305/0 (6615/2)	-1754/0 (6407/13-)	-	0016/0 (9341/3)	0001/0 (1/9130)	ΔL(DEMOC)
-	-	-	-	-	-	0009/0 (-1/2457)	ΔL(DEMOC(-1))
-	-	-	-	-	-	0004/0- (6/7512)	trend
-1418/0 (8394/2-)	-1275/0 (1544/2-)	-0378/0 (9832/1-)	-06812/0 (3495/19-)		-0073/0 (9593/4-)	0942/0- (-8/2156)	ECM
9958/R^2=0	*9940*/R^2=0	*9916*/R^2=0	$R^2 = 0/9998$	$R^2 = 0/999$	$R^2 = 0/999$	$R^2 = 0/999$	

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