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The Effect of Types of Capital on Brain Drain in the Selected Petroleum Exporting Countries

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EXTENDED ABSTRACT

INTRODUCTION

According to new growth theories, the role of highly skilled and elite workforce is very decisive in creating knowledge spillovers and economic growth. In addition to economic growth, achieving greater competitiveness in international markets also requires the use and increase of human capital. The migration of elites is one of the challenges that many countries have been facing for a long time and it is mentioned as one of the traumatic issues in the countries. With the departure of the elites from the developing countries, the scientific production capacity and the economic base of the immigrant-first countries are weakened and the competitive advantages of these countries are reduced. Developed countries such as the United States of America, despite their huge capital and high technical knowledge, attract elites and use them favorably in improving their technology. Therefore, in order to eliminate the technological gap between themselves and developed countries, developing countries and especially countries that are faced with an abundance of natural resources must provide the conditions for the effective activity of elites by eliminating the repulsive factors inside the country. Many models tried to be able to identify the factors affecting the migration of elites and to explain the effect of these components. In the meantime, considering that the elites are considered next to all kinds of capital, it is expected that the countries first take measures for the optimal use of all capitals and secondly, policies to guide economic activists to pay more attention to all kinds of capitals. have knowledge including elites. Considering the importance of the subject of the present study, by using econometric techniques and the method of generalized moments, which was proposed by Blundel and Bond (1998), and using Stata 15 software, to investigate the effect of different types of capital (human

capital, natural capital, foreign capital and physical capital) has studied the migration of elites in selected oil exporting countries during the period of 2008-2017.

METHODOLOGY

In this section, inspired by theoretical discussions and empirical studies, by introducing the variables of human capital, natural capital, foreign capital and physical capital, we explore the factors affecting the migration of elites during the period of 2008-2017.

Based on this, the variables used in the econometric model are as follows:

$$\text{(1)}$$

$$BD_{it} = f(BD_{i,t-1}, HC_{it}, FDI_{it}, PC_{it}, NC_{it})$$

In the following, the explanation of the dependent variable and explanatory variables will be discussed.

Elite migration (BD): Elite migration is the migration of skilled and highly skilled labor from developing countries to developed countries in order to achieve higher standards of living (Okoye, 2016). Elite immigration data is extracted from the American Statistical Yearbook of Immigration. In this study, the ratio of the number of elite immigrants to the population of the country of origin is used. The reason for choosing this variable instead of the number of elite immigrants is that the studied countries have a significant gap with each other in terms of population.

Human capital (HC): Human capital is the knowledge, skills, competencies and characteristics embodied in people that lead to the economic well-being of the individual and society (OECD, 2001). In this research, the per capita human capital variable has been used. Also, in this research, the data of the average years of education has been used as an indicator of human capital, extracted from the United Nations statistical database. According to theoretical foundations and empirical studies, it is expected that the impact of per capita human capital on elite immigration is positive.

Foreign Direct Investment (FDI): Foreign capital includes direct and indirect foreign investment. In this study, foreign direct investment per capita is used to show the effect of foreign capital on elite migration. The United Nations Conference on Trade and Development considers foreign direct investment as capital that implies long-term relations between the investor and the investee and brings the continuous control and interests of natural or legal persons residing in a country in a company outside the investor's home

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country (UNCTAD). , 1996). In this study, data extracted from the UNCTAD statistical database was used. According to theoretical bases, it is expected that the impact of foreign direct investment per capita on elite migration is negative.

Physical capital (PC): Physical capital is created by making changes in materials to shape tools that facilitate production and has a tangible and visible aspect. in this study, Klein's relation (1962) was used to estimate physical capital. According to this relationship, since investment is defined as changes in capital value, we have:

(2)

$$I = \frac{dk}{dt}$$

Therefore, capital accumulation can be achieved by integrating in the following form:

(3)

$$dk = Idt \qquad k = \int dk = \int Idt$$

In the above relation for integration, a secondary form for It should be considered. Here it is assumed that the integral factor can be estimated from another relation as follows:

(4)

$$Ln\ I_t = \alpha + \beta t + \varepsilon_t$$

By estimating the above regression using the ordinary least squares method, the following relationship is obtained by taking the antilogarithm.

(5)

$$I_t = I(0)\ e^{\beta t} + c$$

(6)

$$I(0) = e^{\alpha}$$

We put equation 5 in equation 3 to get capital accumulation:

(7)

$$K_t = \frac{I(0)}{\beta}\ e^{\beta t} + c$$

Therefore, considering the initial conditions, we will have:

(8)

$$K_0 = \frac{I(0)}{\beta}$$

Then we will have the following:

(9)

$$K_t = k_0 + \sum_{i=1}^{t}(I - D)_t$$

The latter relationship, known as Klein's (1962) formula, gives the net capital in each year. In this regard, Kt is the net value of capital at time t. K0 is the net value of capital in the base year, It is the value of gross investment at time t and Dt is the rate of depreciation of fixed assets at time t. In this research, 5% depreciation rate is considered for physical assets (Griliches, 1988). According to theoretical foundations, the effect of physical capital on elite migration can be positive or negative. In this research, per capita physical capital has been used, and the data related to it has been obtained from the statistical database of the World Data Bank and based on considerations according to Klein's formula (1962).

Natural capital (NC): The abundance index of natural resources is defined as the share of fuel and mineral exports to the total export of goods (World Bank, 2018). Due to the fact that the countries investigated in this study are countries that have more than 40% of their exports related to fuel and minerals, the abundance of natural resources per capita has been used as an indicator to show the effect of natural capital on elite migration. According to the theoretical foundations, it is expected that the effect of natural capital per capita in the studied countries on the migration of elites is positive. The data of this variable was extracted from the statistical database of the World Data Bank.

Intermittent elite migration (BDi,t-1): This variable is a dependent variable with an interruption period. One of the advantages of the GMM method is that it allows the dependent variable interval to be used as a suitable tool to control endogeneity (Baltagi, 2008).

Considering that the econometric equation is considered logarithmically, so if we express equation 1 explicitly. We will have the following equation:

(10)

$$lnBD_{it} = \beta_1 + \beta_2 \, lnBD_{i,t-1} + \beta_3 \, lnHC_{it} + \beta_4 \, lnFDI_{it} + \beta_5 \, lnPC_{it} + \beta_6 \, lnNC_{it} + \mu_{it} + \varepsilon_{it}$$

In the above equation, indices i and t represent the country and time, respectively, and the term μ is the specific characteristics of each country in the examined samples. To put it more simply, μ are the coefficients related to the virtual variables of sections and countries, which, if ignored, will show themselves in the error sentences and residuals (ε)

FINDINGS

The econometric findings of the study indicate that the impact of human capital on elite migration has been positive and significant. In fact, an increase in human capital means an increase in the number of elites, and if the necessary platforms for maintaining and employing specialized human resources are not provided, with the increase in the accumulation of human capital, the migration of elites will increase. Also, the effect of foreign direct investment on the migration of elites has been negative and significant, and through strengthening innovation as a result of knowledge spillover and stimulating changes in the production structure, foreign direct investment increases the demand for elite and specialized manpower and reduces the migration of elites. Also, according to the findings, the effect of natural capital on the migration of elites has been positive and significant, and the abundance of natural resources in these countries has led production and export to the extraction of natural resources and the sale of raw materials, and with the decrease in the demand for specialized labor, the grounds for increased migration It has created elites, and the effect of physical capital on the migration of elites has been negative and meaningless. In fact, the way to provide physical capital was through the internal technology channel and the use of expert personnel. But on the other hand, due to the nature of the studied countries, the foreign currency income from natural resources has led to a kind of rent of natural resources, which has caused capital import to be considered profitable. As a result of these effects, the effect of per capita physical capital on elite migration has been meaningless.

CONCLUSION

One of the questions that has existed in economics for a long time and has attracted the attention of thinkers in this field is why some nations are developed and others are less developed. In response to this question, theories have been formed that consider the difference in quality and quantity of human capital of countries as one of the important and main components. Accordingly, one of

The approaches to improve the growth and economic development of developing countries have also been identified as investment in human capital and the subsequent accumulation of elites. therefore,

A significant investment is made to train and provide these resources in developing and developed countries. According to new growth theories, the role of highly skilled and elite workforce is very decisive in creating knowledge spillovers and economic growth. In addition to economic growth,

achieving greater competitiveness in international markets also requires the use and increase of human capital. Despite this, while there is no doubt that there is a shortage of specialized and skilled manpower in less developed countries, the world economy has seen a large volume of skilled immigrants leave these countries during the last few decades.

Considering the key role of the elites in taking advantage of technological spillovers, creating innovation, economic growth, competitiveness, etc., we will provide policy recommendations to policymakers and economic decision makers in order to reduce the migration of elites:

- ✓ The importance of foreign capital is discussed both as physical capital and as a factor that forms a set of resources related to knowledge. On the other hand, according to the results, it has a negative and significant effect on the migration of elites in selected oil countries. As a result, it is suggested to expand and improve policies to encourage foreign direct investment, such as creating political and economic stability through creating stability in

- ✓ Plans, policies and economic decisions in such a way that economic activists see a clear vision in front of them, the necessary ground to gain the trust of investors is provided.

- ✓ Human capital, as a key element, increases the efficiency to the scale of production and increases the absorption capacity in the foreign capital sector, considering the positive and significant effect of human capital on the migration of elites in selected oil countries, it is recommended that the government Instead of exporting primary and raw materials, consider the production and export of products with high added value and prevent the departure of a large number of scientific elites through the use and employment of efficient human capital and elites in this field.

- ✓ Considering the positive and significant effect of natural capital on the migration of elites in selected oil countries that are rich in natural resources, it is suggested to always focus on improving the management of the abundance of natural resources and the government with well-considered policies to increase the foreign exchange earnings from the export of natural resources. In order to expand the human capital market, strengthen the scientific infrastructure and provide research facilities, etc., so as to reduce the migration of elites.

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