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THE FEASIBILITY OF ECONOMIC DIVERSIFICATION AND ITS IMPACT ON INVESTMENT IN HUMAN CAPITAL

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Abstract
In this research, the short-term and long-term feasibility of economic diversifications and their impact on investment in human capital were estimated using time series data and a self-explanatory model with extended breaks and an error correction mechanism. The results of the estimation of the long-term and short-term models indicated that the elasticity of the human capital variable in the short-term and long-term was positive and significant. Considering human capital's positive and significant role in the gross domestic product (economic growth), the government should try to increase investment in this sector and improve workforce quality. Of course, it should also be stated that with the accumulation of human capital, not only humans' capital will directly cause economic growth, but its accumulation and optimal use will also increase the productivity of other factors, which is the indirect and endogenous effect of human capital on growth. It brings the economy. Also, considering the much more significant effect of oil exports than non-oil exports on economic growth and the instability in the income from such exports, non-oil exports should be strengthened and expanded. In addition, due to the negative coefficient of the imported variable, the composition of imported goods should be revised, and more attention should be paid to the import of intermediate and capital goods that strengthen domestic production and positively affect the country's economy.

Keywords: Feasibility, Economic diversifications, Human capital.

Introduction

Human capital has played an important role in explaining the economic growth of advanced industrial countries. It is said that an essential part of these countries' economic growth is due to human capital development. Human capital complements physical capital and makes physical capital more appropriate to be used. (Dargahi and Qadiri, 2012).

The importance of human capital in promoting growth and productivity is one of the most important topics that has been the focus of economic experts. It can be said that achieving economic growth has been one of the concerns of economists in recent decades and it requires the creation of some unique mechanisms, which include the human capital index and globalization among these unique mechanisms in the economic field. While economic growth originates from human capital, most resource-oriented countries lack essential human capital as natural capital. Globalization helps countries to discover the benefits of trade openness, because globalization reduces the economic risk of countries. At the same time, the increase

in capital flow caused by the opening of the economy may allow producers to take advantage of the diversified portfolio of assets to invest in low-risk projects that lead to economic growth. (Emadzadeh, 2017). A specific change in the economic growth of the developing countries of this research in the studied time frame leads to a more significant increase and improvement of the indicators related to globalization compared to developed countries. This result can be due to empty capacities and more potential in developing countries compared to developed countries, which usually have economies at full capacity and do not have the power to increase growth. In other words, it can be said that the changes in globalization variables and human capital affect the economic growth of developed countries more than developing countries. (Rabiei, 2018). In this research, the feasibility of economic diversifications and its impact on investment in human capital is discussed.

2-Literature

The literature related to the effect of human capital on the economic growth of countries is vast literature, and different researchers inside and outside the country have tried to investigate the effect of this factor on economic growth using different models and methods. Elmi (1381) investigated the effect of human capital and government spending on human capital on Iran's economic growth. He used Mincer's income function to investigate the effect of human capital on people's income at the micro level. The results showed that the gender of the working person, his years of experience and his level of literacy in urban and rural communities have a positive and significant effect on the income from his job. At the macro level, using the Lucas model, he examined the effect of human capital on the average literacy level of the workers on the GDP. According to the results, this effect was evaluated positively. Houshmand et al. (2007) investigated the role of human capital in the economic growth of Iran by using the human capital model of Mankiw, Romer and Weil. In this study, the average number of years of education was used to indicate human capital. This study showed that in the short and long term, the elasticity of production for human capital is greater than the elasticity of production concerning the physical capital of the public and private sectors. Rabiei (2008) investigated the effect of innovation and human capital on economic growth in Iran using Romer's endogenous growth model. The results of this study showed that, respectively, intermediate goods, labor, human capital, physical capital, and import of machinery increase production in Iran's economy. Using combined data,

Kong (2006) estimated South Korea's growth model using human capital. This study used the index of education costs as human capital. Based on the results of this research, the hypothesis of non-decreasing returns to human and physical capital in South Korea has not been confirmed. Taki and Tanaka (2009) investigated the effect of different educational systems and the diversity of human capital on economic growth. The results showed that in natural conditions and if the manufactured goods have sufficient substitutability and the companies have the necessary expansion, the diversity of human capital that is caused by income inequality will always reduce the GDP of the next period. In contrast, the diversity of human capital due to different abilities can increase GDP. Kotaridi and Stangos (2010) studied the effect of foreign direct investment on economic growth using non-parametric methods and considering the nonlinear effects of the level of primary income and human capital. The results

of this study showed not only the nonlinear effect of human capital in the presence of foreign direct investment flow but also proved that FDI flow has an increasing effect on the economic growth of middle-income countries and a double effect on the growth of high-income countries. By examining various studies, it is clear that in almost all studies, the positive effect of human capital on economic growth has been proven, But the extent of its impact depends on the economic structure of the country under study, the combination of selected variables and the estimation method. In addition, various indicators have been used in various studies to investigate the effect of human capital. In this study, the variable of the number of employed people with a university education is used as a substitute for human capital. This index is used because, firstly, these people have a direct role in the production process, and secondly, it is possible to use other indicators, such as government spending on education, due to the high population and the increasing number of unemployed people with higher education, does not lead to correct results.

3-Method

The framework of the model used in this research is based on the model of Lucas (1988). In his study, he has examined three models: a) growth model with emphasis on the accumulation of physical capital and technical changes; b) growth model emphasizing the accumulation of human capital through knowledge acquisition; c) Growth model emphasizing the accumulation of expert human capital through on-the-job learning. Among these three models, the model that emphasizes the role of human capital through the acquisition of knowledge has attracted a lot of attention (Inanlu, 2016)

The growth model of Lucas (1988) which is also used in the study of Remo (1995) is based on the following neoclassical production function in terms of the stock of human capital:

$$Y=f(k,l,HK) \quad (1)$$

where Y is gross domestic product, K is physical capital, L is labor force and HK is human capital. In this model, it is assumed that human capital is an accumulative input with constant returns to scale, as a result, its final production (which determines the necessary motivation to spend time on education) is constant. This production function is in the Cobb-Douglas form and is defined as follows, assuming a constant return to scale:

$$Y=AK,L,HK \quad (2)$$

A represents the technology parameter and reflects how each country can convert inputs into output. By taking the logarithm of both sides of the above function, we will reach the following linear pattern:

$$Ln_{yt}=LnA+lnk+lnl \quad (3)$$

In addition to the factors mentioned in the Lucas model, in each country, according to its specific conditions, other factors also affect the process of economic growth. So the basis of the model used in this research for Iran will be the following model:

$$L=(K,L,Z) \quad (4)$$

where Y: total real output in the economy; A: total production technology; L: total labor force; K: physical capital; and Z: other factors that will affect economic growth. t also indicates different years in this function (Taqvi & Mohammadi, 2015); But regarding variable Z, one

should ask which variables Z includes and what factors should be included in Iran's production function in addition to physical capital, human capital, and labor force?

In response, many factors that have been effective in Iran's economic growth can be mentioned. But due to the greater importance of some of these factors, we have considered the variables of oil export, non-oil export and import in the production function instead of Z. In order to investigate the effect of human capital on Iran's economic growth, the criterion provided by Mankiw, Romer and Weil [8] (1992), i.e. the number of effective workforces with university education, was used. The general form of the used model, which is the basis for estimating and estimating the factors affecting Iran's GDP, is as follows:

LGDP=(LK ,LL, LHC, LX, NO, LX ,O,LM) (5)

where LGDP: logarithm of Iran's gross domestic product; LK: the logarithm of the physical capital stock of the country; LL: logarithm of the total working force of the country; LHC: the alternative variable of human capital (number of employed people with university education); LXNO: logarithm of non-oil exports; LXO: the logarithm of oil exports and LM: the logarithm of Iran's imports. The data used in this study from 2000 to 2022 were obtained from various publications of Central Bank of Iran, Iran Statistics Center and PDS Economic Information Bank.

4-Finding

In order to check the stationary of the time series of this study, the generalized Dickey-Fuller test was used. The results of this test showed that except for the human capital variable, which is at a stationary level, other variables are non-stationary and become stationary with one order of differentiation. Therefore, considering that there is a combination of I(0) and I(1) variables in the pattern, the existence of a co-occurrence relationship between the variables should be investigated using the appropriate method. The dynamic form of the model used in this study to investigate the effect of human capital on Iran's economic growth is as follows:

where, the number of optimal intervals for model variables is C: latitude from the origin, DU57: virtual variable of revolution and DU5968: virtual variable of imposed war.

The results obtained from the estimation of the dynamic growth model which was presented in the form of equation , through the Schwartz-Bayesian rule and considering a maximum of 2 interruptions, are reported in Table No. (1).

Table 1- The results using the ARDL method (1,1,0,1,0,0,1).

P	t	Std	coe	V
0/013	2/73	0/19	0/54 **	LGDP)-1(
0/005	3/19	0/11	0/36 ***	LK
0/019	2/53	0/10	0/27 **	LK(-1(
0/054	2/06	0/06	0/13 *	LL
0/038	2/27	0/06	0/14 **	LHC
0/305	1/13	0/07	0/08	LHC(-1(
0/114	1/58	0/08	0/13	LXNO
0/084	1/86	0/12	0/22 *	LXO
0/715	-0/36	0/05	-0/02	LM
0/052	-2/05	0/05	-0/11 *	LM(-1(
0/224	1/28	1/57	2/01	C
0/046	-2/14	0/04	-0/1 **	DU57
0/091	-1/73	0/10	-0/18 *	DU5968
	%88	%86	892/22	

In order to test the existence of a long-term relationship between the variables of the model, the edge test provided by Pesaran et al. (1996) was used, and the value of the calculated F statistic was 4.316, which is higher than the critical value due to the fact that the calculated F statistic , the null hypothesis that there is no long-term relationship is rejected. These results are reported in Table (2).

Table 2: The results using the ARDL(1,1,0,1,0,0,1) method.

P	t	Std	coe	V
0/002	3/52	0/16	0/56 ***	LK
0/051	1/99	0/36	0/71 *	LL
0/038	2/27	0/06	0/14 **	LHC
0/067	1/85	0/07	0/14 *	LXNO
0/028	2/25	0/27	0/61 **	LXO
0/101	-1/62	0/06	-0/09	LM
0/059	1/89	2/86	5/18 *	C
0/138	-1/52	0/12	-0/18	DU57
0/097	-1/69	0/13	-0/21 *	DU5968

The results of this table show that in the long term, with a ten percent increase in physical capital, the GDP will increase by 5.6%. The labor force logarithm variable has the greatest impact on Iran's economic growth in such a way that a ten percent increase in the labor force will increase the gross domestic product by 7.1%, which is mostly due to the fact that production is used in most sectors of Iran's economy. The low coefficient of non-oil export can be attributed to the lack of attention to the role of this type of export compared to oil export. The oil income variable after labor has the greatest effect on Iran's economic growth; so that a ten percent increase in oil exports will increase the GDP by 6.1%. The effect of import variable on economic growth is negative, but statistically insignificant. The reason for the negative effect of imports on GDP should be found in the composition of imported goods, in such a way that a high percentage of the value of imports has always been allocated to the import of consumer goods.

The existence of co-occurrence between a set of economic variables provides a statistical basis for the use of error correction models. These patterns are increasingly popular in experimental work. The main reason for the popularity of error correction models is that they relate short-term fluctuations of variables to their long-term equilibrium values (Nofarsti, 2018). The results of estimating the coefficients of the error correction modelcan be seen in Table (3).

Table 3: The results of estimating the coefficients of the error correction model.

P	t	Std	coe	V
0/031	2/32	0/11	0/26	dLK
0/052	2/06	0/16	0/33 *	dLL
0/038	2/27	0/06	0/14 **	dLHC
0/113	1/58	0/08	0/13	dLXNO
0/082	1/86	0/12	0/22 *	dLXO

0/712	-0/36	0/05	-0/02 ***	dLM
0/222	1/28	1/57	2/01 **	dC
0/044	-2/14	0/04	-0/1 **	dDU57
0/089	-1/72	0/10	-0/18 *	dDU5968
0/026	-2/59	0/19	-0/49 **	dECT(-1(

As can be seen in table (3), physical capital, labor force, human capital and oil export have a positive and significant effect on GDP in the short term. While the effect of non-oil exports on GDP growth is positive; But it is statistically meaningless. The effect of imports on economic growth is statistically insignificant and negative in the short term.

5-Conclusion

The discovery and cultivation of experienced human resources is not only the responsibility of education and universities, and it does not end with the beginning of work. We need extensive culture building to pay attention to human resources in organizations and to understand the necessity of training these forces. Unfortunately, today, for whatever reason the organization decides to reduce costs, the first saving happens in employee training. Many managers have neglected the importance of paying attention to the growth of their organization's human resources due to the high unemployment rate. While they are the managers who complain about the low quality of the employees' work and their lack of loyalty to the organization. Maybe they don't know that these two need to create space and appropriate processes for the development of human resources. It is not possible to empower human resources in the organization without paying attention to important factors such as motivation, training planning, creating horizontal and vertical growth process of people and determining the career path, properly evaluating performance and paying attention to the results of these evaluations, supporting the culture of creativity and encouraging new ideas. Increasing the efficiency of human resources in the organization is no longer the social responsibility of organizations; it is a necessity that will cause irreparable losses to the organization if ignored. Paying attention to improving the level of skills and knowledge of employee's leads to increasing the productivity of employees and as a result increasing the income of the organization. It also improves the quality of the services provided and increases the domestic and foreign market share, and finally improves the level of skill and knowledge of the workforce at the community level. With the breadth of our perspective, we realize that when all organizations strive to increase the skills and capabilities of their employees, they both reduce the loss of their human resources and if skilled human resources leave your organization for other companies, in front of someone who takes their place.

Policymakers and the government should plan and implement the following solutions to promote human capital and achieve sustainable economic growth and development:

- Providing facilities for public education at all levels of the country for free is one of the good ways to develop human resources and ultimately increase the GDP.
- Holding educational seminars and presenting programs to improve the capacity of employees of government institutions and offices.

-Increasing investment in youth and equipping them with the necessary skills to reduce unemployment and its social effects.

- Strengthening human resources and management skills for the growth of manufacturing companies.

-The government's extensive support for the private sector and reducing obstacles to its activities; Because the private sector is the most important factor for reducing unemployment and creating jobs.

-Increasing health, education and other social services costs in the national budget by the government.

-Establishing universities, schools, public libraries and research centers.

-Implementation of literacy programs at the level of villages and remote areas of the country.

-Investing in the communication sector and providing facilities for citizens to access the Internet and social networks. It should be remembered that mass media also play an important role in public awareness in the society.

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