

The Analysis of Economic Growth in the Countries Member of Islamic Conference with the Emphasis on the Role (Export diversification, Human Capital, Research and Development, Openness and Financial Development) (2000-2009)

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ABSTRACT

The determination of the effective factors on economical growth rate of the countries was always taken into attention by economists and policy makers. In the theories presented in economical growth, some factors as Export diversification, research and development, human capital are emphasized and considering the openness of the economy and financial development in growth models, we can deal with achieving high growth of economy. In this study, analysis of economical growth in Islamic conference countries are studied by emphasis on the role (Export diversification, human capital, research and development, openness of economy and financial development) (2000-2009) by econometric technique of panel data. The results show that the effect of Export diversification, human capital, research and development, openness of economy and financial development were positive and significant. The results of the study showed that for higher economical growth of the investigated countries, a strategic view should be prevalent in Export diversification variables, human capital, research and development, openness of economy and financial development.

KEYWORDS: Export diversification; human capital; research and development; economical growth; panel

INTRODUCTION

Determining the effective factors on economical growth rate of the countries was always considered by economists and policy makers. Preliminary studies considered the main reason of difference in economical growth rate in different physical factors of production and technology. But theoretical and empirical studies after decade 1950 showed that the main source of the growth rate of the countries in addition to physical capital is the different human capital (Mosavi Jahromi, 2000).

In addition to physical capital and human capital, some factors as foreign trading, research and development and financial development of the countries affect their economical growth. Also, the countries with powerful human capital can have more goods and better quality and will have great share in foreign trade.

One of the factors increasing the productivity and higher growth rate is the skills and empowerment of labor force. Indeed, increasing the knowledge and skills of people is the required conditions for elimination of economical drawback, unused capacities and creating required motivations for progress. Today, the role of abilities and human skills are affecting most of the economical activities via different kinds of instructions. In other words, investment plays important role on human capital as growth motivator in all economical sectors namely foreign trade of each economy.

Today, research and development have direct effect on innovation, productivity, quality, life standard level, market share and other factors effective in increasing the competitiveness of the organizations. By emergence of globalization, technology-attaining methods are changed and new methods are provided giving the opportunity to achieve the researches in different levels in countries and organizations.

Export diversification growth can affect production growth from various aspects. Export has positive effects on non-export section via more efficient managements and advanced productive technologies. Finally it leads into

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economical growth of the countries and it is natural that economical growth can increase the vision of the saving to scale in exporting countries and lead into the improvement of assignment efficiency or dynamic competition.

By the necessary of Export diversification, human capital, research and development, openness of financial development for attaining specialized skills in better attraction of the technologies transferred in trading, increasing production abilities and their effect on economical growth, the effect of these variables on economical growth in member countries of Islamic conference organization are considered.

The effect of Export diversification on economical growth

The development of export is raised in the form of external policies in foreign trading and is related to preliminary goods, semi-built and built goods that can have great share of foreign trading and global markets. In addition coping with the deficit of the payment level, providing relative benefit in producing export products, efficiency and increasing the productivity of production factors, optimized use of the existing facilities, the increase of the competition between the producers, quality improvement of the products, using high level of advanced technology, exchange, attracting foreign investment and extension of local markets are the benefits of export development (Komeijani, Mirjalili, 2001).

Theoretical basis of Export diversification is based on endogenous growth model as the Export diversification from initial goods to high technology goods and high-skill goods lead into more growth. Because trading these goods compared to primary goods lead into productivity and the effect of spillover (Herzer and Lehnman, 2006). The effect of spillover is due to the growth of technology and skill with positive effects on economical growth (learning via acting and learning via export). For example, Mengistae and Pattillo's (2004) empirical analysis revealed that efficiency (TFP) of exporting manufacturers is 17% higher than for non-exporting firms due to the effect of learning via action.

In endogenous growth models, the importance of learning via action in factory sections are considered as an effective factor on economical growth (Matsuyama, 1992). Here Export diversification can lead into knowledge spillover via new methods of production, skill in management, new marketing methods and increasing potential profit of new industries. Producing a wide set of export products as the dynamic effect of Export diversification on per capital income growth is considered. Agosin (2007) presents a model of Export diversification and economical growth in which the countries could increase their relative benefits via producing new goods and exports to develop their technology.

Based on economy literature, the effect of Export diversification on economical growth is consisting of some aspects and most important of them are divided into four parts:

Income effect: Variety increases the flexibility of macro economy and gives the manufacturers the flexibility to rapidly reduce with the opportunities created by market and applying reasonable policies. Also, variety with multiple assignment can increase export income considerably and help the income growth rate.

Productivity effect: Variety can lead into learning to adjust with the opportunities and this leads into the spillover of management and technological skills. In addition, the variety of the production, increases the consumption variety and all these characteristics lead into the growth of permanent productivity.

Multiplier Effect: As the result of responding the growing variety in the demand of consumer, variety in the production leads into a kind of movement from traditional goods to valuable goods. In addition, the new production systems are mostly the best capital and create the demand for bigger values of the inputs. Thus, in terms of providing the inputs, the high value productions compared to low value productions are strongly related to other economy sections and create more multiplier effect on income.

Knowhow Spillover Effect: There are potential benefits of variety based on knowhow and technology spillover. These spillovers increase industrial growth for public welfare and the required skills for adaptability with the changes of more production. Also, it resulted into improved relations of the trade of increasing competition in export productions (Nouri, 2010).

The effect of human capital on productivity of production factors and economical growth

In explaining the economical growth rate of industrial countries, human capital had important role and it is said that important share of economical growth of these countries is due to the development of human capital. Human capital is complementary to physical capital and it causes that physical capitals are used suitably. The experience of advanced countries and various studies regarding the economical growth of the countries over the time or among the countries showed that explanation of economical growth rate of the countries doesn't attain good results only via common factors such as capital and labor and human capital should enter growth models as the main variable (Taqavi, 2005). Economical growth is not only dependent upon the size and amount of human capital, but also it is dependent upon its productivity. The improvement of the quality of human capital cause that on one hand the labor agent gets more skillful and knowledge and technology is improved to make the capital agent more efficient. It is

observed that developing efficiency and productivity in both production factors are due to education and the progress of technical knowledge. (Salehi, 2002). If all the physical factors for production including capital, raw material, etc exist, the only factor to change them is human capital and the knowledgeable labor (human capital) can help the improvement of goods quality and can play the role of planner and director. Today, the role and importance of human capital in production process are the most important factors of production. In the recent half century, a great amount of the progress of developed countries depends upon the change in their specialized human capital. One of the most important indices in determining the activity and economical growth of each society is labor productivity index and the productivity of labor force is not improved unless with education, establishment of knowledge in labor force that is human capital (Tayebe, 2003).

If human capital is highly educated, the mobility of labor force and employment will be increased. The more the education of labor force, the improvement of the quality of labor force in increasing the production will have more influence.

Viewing the human civilizations, we can find that the role of human being is evolved from simple labor force (physical work) to human capital (knowledge and skill) as the most important productions factor such that people increase the quality of their human capital because they believe that more production is dependent upon skillful and knowledgeable human capital. Indeed, labor force with high education is change and innovation agent and this increases the competitiveness power in international markets. Thus, increasing the skills and specializations of human capital is one of the reasons of technological progress and improving the productivity of production factors.

Lundvall (2000) believed that knowledge is the main source of modern economy and learning is a valid process. Innovation performance of a country depends upon the nature and the relationship between the agents including private and public institutions, research institutions and universities. Today, economical activities were mostly knowledge-based and the growth in industries is with highly advanced technology. Ascending demand is considered for skillful people and investment on knowledge is considered economical motivation.

Most of the economists believe that investment on human capital is the main reason of low economical level in developing countries and when these countries didn't improve education, sciences and knowledge and increasing the professional skills, the efficiency of labor force and capital will be low and economical growth is done with low costs. Indeed, it can be said that physical capital is productive when the country has required values of human capital. Indeed, increasing knowledge level and people skills is the required condition for elimination of economical problems and unused capacities and creating required motivations for progress (Taqavi, 2005).

The effect of human capital in growth models

After the common growth models couldn't determine all aspects of economical growth, the views of some economists such as Lucas, Romer, etc considered the role of human capital. The experience of advanced countries and various studies regarding the economical growth of the countries over the time and among the countries showed that explaining economical growth rate via common factors such as capital and labor don't give good results and human capital should enter growth models as the main variable (Taqavi, 2005).

Human capital and Romer model

In two recent decades, most of the economists to answer the question that what is growth motor, raised their questions regarding the endogenous growth space. This group of comments instead of emphasis on growth that is occurred due to improvement of technology (exogenous factor) is occurred automatically and without model and emphasize on recognizing economical forces behind the technology and development. Here, technology improvement and economical growth process is considered as economical endogenous product. Romer model by introducing the new ideas by researchers inclined to use mostly of innovations, make the technology development endogenous. The aim of the design of this model is explaining this fact that why and how the advanced countries have permanent growth. But growth instability is considered in developing countries. This model states that how technology borders are extended to outside continually.

In Romer model, production function explains investment and work reserve combination for producing a product with thoughts reserve:

$$Y = K^\alpha \cdot (A \cdot L_y)^{1-\alpha} \tag{1}$$

In the above equation, α is a variable ranging between 0, 1. For technology definite level, production function (1) shows constant return to scale for L_y (product production factor) and K. when thought (A) is considered as one of the production data, in this case we will observe the multiple nature of scale to all production factors. Namely, this multiple output to scale is the result of uncompetitive nature of the thoughts.

In Romer model, \dot{A} shows knowledge reserve or thoughts that are innovated over the history to the present time and if A is the symbol of new thoughts generated in definite section of time. In the most simple manner of model, A is equal to the number of people that try to discover new thoughts. It means that:

$$\dot{A} = \bar{\delta} \cdot L_A \quad (2)$$

L_A (the generation of new thoughts) human capital is used as the agent of generating new thoughts or it is the agent of production generation. Thus, the economy is encountered with the limitation of human capital as ($L=L_y+L_A$). If thought generation is expressed as thought reserve, we have:

$$\bar{\delta} = \bar{\delta} \cdot A^{\lambda} \quad (3)$$

It is possible that average research productivity is dependent upon the number of people who discover new thoughts at each time interval. One of the ways to raise this issue is that instead of L_A , we can enter L_A^{λ} in new thoughts generation function, where λ is between zero and one. Thus, considering this fact the general equation of thoughts production function is as follows:

$$\dot{A} = \bar{\delta} L_A^{\lambda} A^{\lambda} \quad (4)$$

Equations (2), (3) are the most important aspects of economical growth modeling based on human capital (Sadeqi, 2004).

Human capital and Lucas model

Lucas is one of the contemporary economists having considerable studies in economical growth fields and investigated the effective factors on formation of economical growth. Here, he presented a model in 1988 in which the considerable importance of education in economical growth is shown. Lucas is inspired by neoclassical growth model and used Arrow (1962), Romer (1986) techniques. The general framework of the work in endogenous growth model of Lucas is such that human and physical investments are entered into the function as input and it is assumed that human capital is an accumulative input with constant output to scale. He believed that physical and human capital accumulations are important in formation of the production power of a country and determining its development. But investment factor in human capital is the main reason for the formation of the other. Lucas defined the trained human capital as follows:

$$H = \mu \cdot h \cdot N \quad (5)$$

Where

H: Labor skill

μ : A part of non-leisure time that is dedicated to the work

$1-\mu$: A percent of non-leisure time that is dedicated to education

N: Simple labor

Thus, production function is equal with:

$$Y = A k^{\beta} (\mu \cdot h \cdot N)^{1-\beta} \quad (6)$$

Y is production, K is the invoice of physical capital and A is production technology area. The above production function compared to physical and human capital reserve has constant output to scale. Lucas considers the manner in which external effects exist for human capital. It means that any persona working with another one with higher human capital is more productive than before. In this case, per capital production function is as follows:

$$y = A \cdot k^{\beta} (\mu h)^{1-\beta} h_a^{\gamma} \quad (7)$$

h_a^{γ} : Average human capital. The existence of this external benefit of human capital increases the homogeneity degree of production function from $(2-\beta)$ to $(2+\gamma-\beta)$. As is shown in Lucas model (1988), the ascending trend of the output to the scale is due to the effects of human capital that is considered a motivating force for positive economical growth (Moradi, 2005).

Research and development, and economical growth

Research and development are the main basis of innovation and technical changes in production process and it has important role in increasing the production capacities of the society or its economical growth. To show this role, a non-linear model of production function based on theoretical form of Cobb - Douglas is used.

$$Y=f(L,K,R) \quad (8)$$

$$y=aL^{\beta L} K^{\beta K} R^{\beta R} \quad (9)$$

in this equation, y is total real production, L labor, K the data of capital accumulation rate and R is the costs of research and development meaning the capital reserve or technical knowledge. If we take total differentiation of two

sides of the equation (9), by some changes equation 10 indicated the effective factors on economical growth is achieved*.

$$\dot{y} = \beta_L + \alpha_K \left(\frac{dk}{y} \right) + \alpha_R \left(\frac{dR}{y} \right) \quad (10)$$

BL is production inclination to labor force, α_K, α_R are final production of capital and final production of the costs of research and development called the rates of real output of capital accumulation and technical knowledge.

By adding the constant element and the sentence 10, the suitable equation for the estimation of the effects of research and development costs on economical growth are achieved as equation 11.

$$y = A + \beta_L i + \alpha_K \left(\frac{IK}{y} \right) + \alpha_R \left(\frac{IR}{y} \right) + U \quad (11)$$

In this equation, research and development costs are introduced as a percent of gross domestic production or real production of economy (Hassanzadeh, 2001).

Financial development

Financial development is one of the politics recommended by most of the economists to achieve economical development. The history of financial development dates back to the time when shumpeter (1912) referred to the importance of the role of money and credit in economical development process and considered financial development necessary for economic growth. Since then, financial development has dedicated important part of economical issues. The important thing for the counties is the relationship between the financial development and economical growth.

Based on the study of King and Levine (1993), financial development cause that the best investment plans are selected and big plans are financed via the equipment of small resources. Second, financial tools are extended and third, the rewards or innovations are provided for new methods. Thus, financial development helps via the creation and development of the institutions, tools and financial markets to investment process and economical growth. Also, financial brokers by transferring local and foreign saving to investing institutions and efficient use of financial resources, are effective on investment process and economical growth.

Efficient financial systems by identifying good opportunities of business, equipment of saving, variety of risk and easy exchange of goods and services develop investment opportunities. On the other hand, increasing the efficiency in financial system by improving the resources assignment, investment improvement and rapid capital accumulation provided the higher economical growth. Also, efficient financial systems reduced the barriers of foreign financial providing and by easy access conditions of production and industry units to foreign investment extended foreign investment and provided the opportunity for the development of economical growth.

FOREIGN REVIEW OF LITERATURE

Ferrantino, Pines (1997) conducted a study titled "Export diversification and dynamic structure of growth process" in Chile. By the data of Chile country (1963-1991) and variance criterion, tradition, variation and structural change in export and regression models they found that at the middle of 1970s, economical growth was with Export diversification. They used the following index for ranking the export of goods group in terms of variety degree.

$$C_{it} = \frac{\sum_{t=t_0}^t e_{it}}{\sum_{t=t_0}^t e_{it}} \quad i=1,2,3,\dots,n \quad (12)$$

Nominator showed the sum of dollar value of exports of i^{th} group from t_0 to t^{th} . The denominator is equal to the sum of dollar value of the export of i^{th} group from t_0 to the end of t_1 . This function is zero for the first year and one for the final year.

* $y=f(L,K,R)$

$dy = f_L \cdot dL + f_K \cdot dK + f_R \cdot dR$

$dy = f_L \cdot \frac{dL}{L} + f_K \cdot \frac{dK}{K} + f_R \cdot \frac{dR}{R}$

$\frac{dy}{y} = f_L \cdot \frac{L}{y} \cdot \frac{dL}{L} + f_K \cdot \frac{K}{y} \cdot \frac{dK}{K} + f_R \cdot \frac{R}{y} \cdot \frac{dR}{R}$

$f_L \cdot \frac{L}{y} = \bar{A}_L, f_K = \bar{A}_K, f_R = \bar{A}_R, \frac{dy}{y} = y, \frac{dL}{L} = \dot{L}, \frac{dK}{K} = \dot{K}, \frac{dR}{R} = \dot{R}$

$\dot{y} = \bar{A}_L \cdot \dot{L} + \bar{A}_K \cdot \dot{K} + \bar{A}_R \cdot \dot{R}$

In this equation, \dot{L}, \dot{y}

are economical growth rate and growth rate of labor, $\frac{dL}{L}, \frac{dK}{K}, \frac{dR}{R}$ and \dot{K} shows the total investment and \dot{R} (dR) indicates R&D costs and in this mode is considered a criterion for measuring the change in storing the knowledge of society.

Edwards (1998) in a paper titled “openness, productivity and growth” by using 9 various criteria of openness, trade direction of openness and total productivity growth, investigated the factors for 93 countries during 1960-1990. He showed that there is a positive correlation between the growth of total productivity of the factors and trade openness and stated that the countries that take trading free policy, accumulate the global knowledge with rapid growth and high rate.

Miller & Y padhyay (2000) carried out a study titled” openness of economy, trade direction and human capital on total productivity of productions factors” for developing and developed countries. They found that human capital in both countries had positive and significant effect on total productivity of total factors. In poor countries, human capital with open economy has mutual relationship to achieve positive effect on total productivity of factors.

Funk,Ruhwdel (2000) conducted a study titled” production variety and economical growth” for OECD countries and the following model was used for 18 countries by panel data method during 1989-1996:

$$Y_{it} = \alpha_i + \delta_i T + \beta IY_{it} + \gamma \Delta PV_{it} + \varepsilon_{it} \quad (13)$$

Where all the variables are evaluated compared to the indices of USA. It means that Y_{it} is per capita production of the country to USA, IY_{it} is investment to USA, ΔPV_{it} production variety to USA and T is trend variable. Here the classification of export and import goods is considered based on ³Standard International Trade Classification (SITC) 6-digit codes. Finally, they conclude that production variety in these countries is one of the effective factors on economical growth.

Ben Hammouda,et al (2010) in a paper titled “ Growth, productivity and variety” investigated the relationship between economical growth, productivity and variety for African countries. Their results showed that the development of variety leads into the improvement of total productivity among other factors of production in the economy of African countries. They recommended that African countries can increase their economical growth via increasing total productivity of factors via encouragement policies of variety.

REVIEW OF LITERATURE IN IRAN

It seems that the studies that dealt with the effect of Export diversification on economical growth are very limited and while the lack of study regarding the effect of Export diversification on productivity is observed. Qatmiri, Samadi (1997) by portfolio model planned Export diversification in Iran. By decomposition method that is a mathematical method, it is said that the goods that are on the priority in planning the export, they have the least effect on the variance of export incomes or have the maximum role in creating the stability of exchange incomes. This study is conducted based on the major export goods during 1342-1367 with the average of price growth of export goods. In this study, Iran handmade carpet had the lowest variance inclination of portfolio and it means that had the maximum share in the mentioned period in the lack of stability on exchange incomes.

Mirshojaei (1997) conducted a paper titled “Instability of export on economical growth of OPEC countries”. He computed the concentration of non-oil exports by concentration index of Hirshman. Non-oil export divided the non-oil export to four sections of traditional, agriculture, industry, mineral and metal rocks. The required period was during 1338-1371. The required index is used as:

$$C_i = \sqrt{\sum_{i=1}^n X_i^2} \quad i=1,2,3,4 \quad (14)$$

Where X_i is the share of each of export sections of total export. His computations showed that during the previous years before 1352, the concentration index was descending but after these years, it was ascending. In the early revolution years (1359-1361), the role of agriculture and traditional was more but after that after the encouraging of industrial policies of Iran, the ascending trend of concentration in traditional section is reduced. Finally, it is concluded that goods concentration is one of the instability factors of export in Iran. Samadi (2002) in a research titled” Export diversification and economical growth in Iran” investigated the structure of non-oil export and tested the effect of Export diversification on economical growth during 1347-1377 in 17 industries (major items of non-oil export). He benefited some indices of investigating the export structure with regression models.

The results revealed the following items: 1. In the export combination of Iran, high rate of variety is occurred. 2. Export diversification and economical growth in most years were in line with each other.

Komeijani and Memarnejad (2004) investigated the quality of human capital and research and development in economical growth via endogenous economical growth models. They explained one of the endogenous economical growth models, Romer technology endogenous change growth (1990) and created a model for Iran economy growth and estimated it for the investigated time period (1378-1337) by self-explanation with ARDL. The results prove the positive effect of human capital, physical capital, the income of oil-export on economical growth and negative effect of inflation and virtual variable of Islamic Revolution. Due to limited volume of research and development costs and low ratio of non-oil costs to GNP and its traditional and non-factory structure, there was no significant relationship between two variables of research and development and non-oil export with economical growth.

Amini and Hejaziazad (2008) in a research analyzed the role of human capital and research and development in improving the productivity of the total factors in Iran economy with the emphasis on the ratio of employers with high education as the replacement of human capital of education type, state research and development capital, the ratio of practical production to potential production as the index of using the capacities. Their model estimation results by time series statistical data during 1383-47 by self-explanation model with ARDL showed that in long term, the state research and development capital, the ratio of the employees with high education and operation rate of the capacity of the positive and significant effects on operation will be increased.

Estimation model and data

The current paper by temporary data and time series with panel data investigated the analysis of economical growth in Islamic conference organization during (2000-2009).

Another point is the estimation method of this function based on logarithm models and in terms of econometric can present reliable, and high efficient results (Gojarati, 2006)

The general form of the production function is as follows:

$$Y_{it} = A_{it} K_{it}^{\alpha} L_{it}^{\beta} \quad (15)$$

Where, Y is gross domestic production, A productivity area, K capital invoice, L labor, α , β show input inclinations of production factors estimated directly by calculating the introduced production function and i, t show the time and country. The development of productivity via international trading, education, research and development and improving human capital are considered such that this factor can compensate the inclination of final output of capital to the decrease. Also, the influence of trading on total productivity of production factors and economical growth will be strong when it is with the accumulation of human capital in a country. In other words, using trading for the countries with more skill compared to the countries with less skill is more.

$$A_{it} : TFP_{it} = f(DIV_{it}, HC_{it}, open_{it}, R\&d_{it}, FD_{it}) \quad (16)$$

$$A_{it} : LnTFP_{it} = \beta_0 + \beta_1 LnDIV_{it} + \beta_2 LnHC_{it} + \beta_3 Lnopen_{it} + \beta_4 LnFD_{it} + \beta_5 LnR\&d_{it} + \varepsilon_{it}$$

In order to enter the effective factors on total productivity area of production factors in growth model, it is required to take logarithm of equation (15) and replace equation (16). Thus, equation (17) is achieved.

$$LnY_{it} = Y_0 + Y_1 Ln DIV_{it} + Y_2 Ln HC_{it} + Y_3 Ln Open_{it} + Y_4 Ln FD_{it} + Y_5 Ln R\&d_{it} + \alpha Ln K_{it} + \beta Ln L_{it} + \varepsilon_{it} \quad (17)$$

Where ID is Export diversification. In this study to investigate the Export diversification of the countries, the data of United Nations Conference on Trade and Development is used. The normalized Herfindahl-Hirshman index is under the international classification of three-digit SITC. The normalized Herfindahl-Hirshman index is calculated as:

$$H = \frac{\sqrt{\sum_{i=1}^n \left(\frac{X_i}{X}\right)^2} - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}} \quad (18)$$

n=The number of export goods

X_i = export value of a good-group

X= value of total export

The changes are ranging between 0, 1 and at the best condition, this value approaches zero and it shows that the combination of the export of the country is concentrated in most of the goods and variation is increased. In the worst case, this index approaches 1 indicating that the combination of the export is concentrated in minimum number of the goods and variety was less.

HC: It is human capital index. Human quality characteristics including education, specialization, knowledge, information, innovation and creativity are a kind of capital. In other words, human capital is the positive changes created by investment in human being and increase the welfare of human or improve the productive capacity of people in the society (Alavirad, Nasirizadeh, 2001). Those labor force with high education are potentially the cause of change and innovation and this increases the competition power in international markets. Thus, increasing the skills and specializations of human capital is one of the reasons of technology progress and improving the productivity of production factors. In this study, based on BenHamuda et al study, registration rate index of high school was used as the replacement of human capital index.

Open: It is openness degree of economy. Openness of the economy shows the competitiveness having positive effect on economical growth. There are many indices for replacement of openness degree variable. In this study it is achieved of the ratio of the sum of export and import to gross domestic production $\left(\frac{Export + Import}{GDP} \right) \times 100$

The most important benefit of this index is the easy computation and easy access to the required data of various countries to compute it in intercountry studies.

FD: It is financial development index. Financial development is developing the system or financial sector including the markets, institutions and financial tools. The financial sector is the second aspect of economy. The optimized performance of economical system in the society is dependent upon two real and financial, strong sections. Financial markets with good structure reduce information and exchanges costs and improve the resources assignment and increase long-term economical growth. In this study, based on the study of BenHamuda et al, local credit index for private sector is used as the replacement of financial development index.

K: It is capital inventory index. One of the most important factors in economical growth of the countries is capital that plays an important role besides human capital in economical growth. Capital inventory is called the set of the capital goods measured by unit assessment criterion. In other words, capital goods such as factories, machineries, buildings, etc are assessed by a common measurement unit and a criterion of physical capital inventory is achieved. Investment increases the capital inventory and each year, a part of capital inventory is deducted. In this study, Perpetual Inventory Method is used to estimate the capital inventory.

L: Labor force is one of the important factors of production playing important role in economical development. Developing countries benefit of considerable labor force while, the capital is a rare factor and is dependent upon advanced and industrial countries. In this study, total population of labor force are used in the investigated countries.

R&d: is research and development index. Today, research and development activities are the main basis of innovation and continually they are prepared for new demands. These demands are the stimulus of investment and guarantee the economy growth. In this study, research and development costs are used as a percent of gross domestic production as the replacement of research and development index.

Equation 17 is estimated for the analysis of economical growth in Islamic conference countries during 2000 to 2009. Empirical results: The analysis of economical growth in Islamic conference group during 2000-2009.

Heteroskedaticity test

Considering the important effect of Heteroskedaticity on estimation of standard deviation of the coefficients and statistical inference issue, it is required that before dealing with any estimation, the existence of Heteroskedaticity test is questioned. Table (1) shows the results of Heteroskedaticity test of economical analysis in Islamic conference test during 2000 to 2009. For equality variance regarding panel data, Likelihood-ratio test was used. The investigation of chi-square statistics of the tests showed that null hypothesis of variance equality is rejected in all the tests and the problem of Heteroskedaticity test is observed in the model.

Table 1: The result of Heteroskedaticity test for the equation of economical growth

Equation	Test LR	
	prob	value
(17)	0.0000	141.78

Source: Research findings

As one of the methods of removing the problem of Heteroskedaticity is the estimation of the model by Generalized Least Squares (GLS), to estimate the mentioned equations, GLS method is used. The result of the estimation after removing the problem of Heteroskedaticity is shown as follows.

Economical growth analysis

The mode on which economical analysis is based is:

$$\ln Y_{it} = \gamma_0 + \gamma_1 \ln DIV_{it} + \gamma_2 \ln HC_{it} + \gamma_3 \ln Open_{it} + \gamma_4 \ln FD_{it} + \gamma_5 \ln R\&d_{it} + \alpha \ln K_{it} + \beta \ln L_{it} + \nu_{it}$$

The results of the above model are shown in Table 2. At first, to determine the type of estimation, F- Leamer test is used that shows that by estimating, panel data with constant is used.

Table 2: The result of Equation (17)

Independent variables	Coefficient	t statistics	p-value
Intercept	8.8549	3.58	(0.000)
lnk	0.11630	3.61	(0.000)
lnl	0.63905	6.99	(0.000)
Lndiv	-0.6893	72.1	(0.085)
Lnhc	1.1117	3.87	(0.000)
LnR&d	0.06918	4.51	(0.000)
lnopen	0.50795	94.3	(0.000)
lnfd	0.63205	95.6	(0.000)
F Leamer :41.59 (0.000)R²:0.86			

Source: Research findings

The result show physical capital had positive and significant effect on economical growth in Islamic conference group. Such that one percent increase in physical capital increased 0.11% increase in economical growth. It is obvious that equipment of human capital with more capital is an important factor in good background to increase the local production power and fulfill the high growth of production.

Labor force has positive and significant effect on economical growth in Islamic conference group. Such that 1% increase in labor population caused the increase of 0.63% in economical growth.

Export diversification had positive and significant effect on economical growth of Islamic conference group and its negative symbol is compatible with theory. It means that by increasing variety based on reducing concentration in export products, economical growth is increased such that 1 % increase in Export diversification by reducing instability in exchange incomes and removing the exchange limitations lead into economical growth.

Human capital had positive and significant on economical growth of Islamic conference group such that 1% increase in growth of education costs with considering other conditions constant, 1.17% increase in economical growth is observed. Indeed, the costs on education is considered a kind of investment in human capital and investment in human capital is with increasing the skills and specializations of labor and increasing its abilities can increase the efficiency of using materialistic capitals and improve the quality and quantity of production.

Research and development index have completely positive and significant effect on economical growth of Islamic conference group such that 1% increase in the growth of education costs with the constant assumption of other condntions increased 0.06% in economical growth. As research and development activities are the main basis of innovation and continually provide the ground for new demands. These new demands are the stimulator of investment and guarantee the economical growth.

Openness had positive and significant effect on economical growth of Islamic conference group. Such that 1% increase in openness by considering other conditions constant, increased the total productivity of the factors 0.50% openness of economy via a series of effects including the transfer of technology and the saving of scale increased economical growth.

Also, the effect of financial development on economical growth of Islamic conference group is positive. Such that 1% increase in financial development by knowing the other conditions constant, increased 0.63% increase in economical growth. This issue is related to the financial institutions in these countries. This can be related to financial institutions in these countries leading into the comprehensive efficiency in assignment mechanism of the credits and is a strong factor for economical growth of these countries.

Conclusion and recommendations

In this paper, analysis of economical growth of Islamic conference countries of 2000-2009 is investigated. The results show that Export diversification, human capital, research and development, openness and financial development had positive and significant effect on economical growth of these countries. Thus, considering the results, the following recommendations are presented:

1. It is recommended that the discussed countries including Iran consider for the development of economy in addition to the development of export strategy, variety policy of export besides other effective factors on total productivity of production factors and economical growth and regarded the export industries and try to develop them and are released of one-product export dependency. To achieve this investment aim in industries with export direction, innovation of industries in Iran is done to increase the quality of local productions and increasing the export capability of the goods, motivation for exporters and export manufacturers (tax exception, cash aids, export insurance), educating the skillful and specialized labor, improving the quality of local productions by new technologies can be considered good policies.
2. Considering the positive role of human capital (improving the quality of labor) in economical growth of countries, it is recommended that the governments via increasing the quality of the education and making the education compatible with labor market demand increase the quality of human capital and increase the economical growth of the countries. This reality is accepted that one of the best ways of economical welfare and development and progress is the emphasize on human capital and improving the quality of human capital and the practical way for the development of human capital is education. Due to this fact, the experts of development, know economical growth and social development with more and better investment in education.
3. It is recommended that by taking open trading policies including taking export and import policies, the attempt to export the goods with high added-value, export of technical-engineering services, good marketing, intermediate materials import of industries, providing good background for the competition of industries and increasing their efficiency, new target markets, good exchange policies to develop export and other policies increase the effectiveness of open policies.
4. Most of the economists believe that the costs of research and development have important role in economical growth of a country. Thus, considering the results, it is recommended that the share of research share of total universities and institutions are increased. Because via promoting the technical progress via increasing the share of research and development in productions, more productivity and economical growth are achieved. In addition, by keeping research and development costs via some ways such as better assignment of the credits in

research plans and avoiding to use this budget in non-research affairs, the efficiency of research and development costs is increased and the countries are developed.

REFERENCES

1. Amini, Alireza; Hejaziazad, Zohre (2008). "The analysis of the role of human capital and research and development in improving the total factor productivity in Iran economy", *Journal of economical researches of Iran*. 1-30.
2. Taqavi, Mehdi; Mohammadi, Hossein (2005). The effect of human capital on economical growth in Iran. *Economical journal*, No. 16-25, 43.
3. Hassanzadeh, Ali; Heidari, Hassan (2001). The investigation of the role of R&D expenses on economical growth rate. *Journal of economical researches of Iran*. No. 8, 59-78.
4. Salehi, Mohammad Javad (2002). The effects of human capital on Iran economy growth. *Journal of research and planning in high education*, No. 23, 24, 42-72.
5. Samadi, Ali Hossein (Spring 2002). "Export diversification and economical growth in Iran, 1347-1377", *Plan and budget journal*, Year 6, 43-68.
6. Tayebi, Seyed Komeyl and Arbabian, Shirin (2003). The short-term and long-term effects of high education on providing industrial export in Iran. *Journal of economical researches in Iran*. No. 22, 1-16.
7. Alavirad, Abas; Nasirizad, Hamid. R (2001). The investigation of the relationship of human capital and economical growth in Iran. *Political- economical data*. No. 171, 210-216.
8. Komeijani, Akbar; Memarnejad, Alireza (2003). "The importance of the quality of human capital and R&D in economic growth", *Trade journal*, NO. 31, 1-31.
9. Komeijani, A, Mirjalili, H (2001). Trade strategic mechanism for the development of Iran industrial export. *Trade research*. No. 20, 31-62.
10. Gojarati, Damodar (2006). *The basics of econometric*. Translated by Hamid Abrishami, Vol. 2, Tehran. Tehran University, Publications institution, Second edition, forth publication.
11. Qotmiri, Mohammad Ali; Samadi, Ali Hossein (1997). Export diversification and application of portfolio model in planning non-oil export. 7th conference of monetary and exchange policies, Tehran.
12. Moradi, Mohammad Ali; Mehdizadeh, Mohammad (2005). Foreign trading and economical growth in Iran. *Economy and new trading journal*. No. 3, 38-72.
13. Mosavi Jahromi, Yeganeh; Ebadati Fard, Mansureh (2008). The effect of government investment in transportation infrastructure on private sector investment and economical growth in Iran. *Transportation journal*. Year 5, No. 4, 361-371.
14. Mirshojaei, F (1997). "Instability of export and economical growth in OPEC countries", *Trading journal*. 49-78.
15. Nouri, Somayeh (2010). The effect of variety of industrial export on economical growth of Iran regions. MA. Thesis of economical development and planning. Administrative Sciences College and economy of Isfahan University.
16. Agosin, M. R. (2007), "Export Diversification and Growth in Emerging Economies", Working Paper No. 233. Departamento de Economía, Universidad de Chile.
17. Ben Hammouda H. Karingi S. Njuguna A. Sadni Jallab M. (2010). Growth, productivity and diversification in africa. *J Prod Anal* ,(33),125-146.
18. Edwards, S. (1998). Openness, productivity and growth: What do we really know?. *the Economic Journal*. 108(447),383-398.
19. Ferrantino, M. and S.A. Pines .(1997). Export diversification and structural dynamics in the growth process: the case of chile. *Journal of Development Economics*. 52,375-391.
20. Funke, M., R. Ruhwedel . (2000). Product Variety and Economic Growth Empirical Evidence for the OECD Countries, *IMF Staff Papers*, 48(2).
21. Herzer, D. , and D. Nowak-Lehman (2006), "What does Export Diversification do for Growth? An Econometric Analysis", *Applied Economics*, Vol 38 (15): pp1825-38.
22. King, R.G, and Levine, R. (1993). Finance & Growth: Schumpeter Might be Right. *Quarterly Journal of Economics*, 108(3), 717-37.
23. Landvall, B. (2000). *The Learning Economy : Some Implication for the Knowledge Base of Health and Education System*". In *Knowledge Management in Learning Society*. OECD press 2000.
24. Mengistae, T. , and C. Pattillo (2004), "Export Orientation and Productivity in Sub-Saharan Africa", *IMF Staff Papers*, Vol 51(2):pp 327-53
25. Matsuyama, K. (1992), "Agricultural Productivity, Comparative Advantage and Economic Growth", *Journal of Economic Theory*. Vol 58: pp317-34