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FOREIGN TRADE, HUMAN CAPITAL AND ECONOMIC GROWTH: EVIDENCE FROM ASIAN COUNTRIES

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ABSTRACT

In spite of the wave of liberalizations undertaken during the last 30 years but debate on the relationship between trades, human capital and economic growth is still open. This study aims to study the effect of foreign trade and human capital on economic growth of Asian countries using panel data in the period 2014-1999. The results show that, trade and import in Asian countries have a significant and positive effect on economic growth. Also most of the components of human capital have had a positive effect on economic growth, but other variables not had a significant effect on economic growth.

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1. INTRODUCTION

One of the most important criteria that show the progress of each country is the economic growth, that's why economic growth is one of the most important goals of economists and politician of each country. The effective factor of economic growth are very important as far as in mid-1980s studying determinant of economic growth become one of the most important issues of research in economic because of the benefits and advantages such as the improvement and promotion of living level, reduce poverty and unemployment that will be achieved in the growth process. On other hand, many economists believe that international trade is the engine of growth and development of society. They believe that international trade according to available and creatable comparative advantages creates taking advantage of the potential economic capabilities and provides appropriate situation for investment in economy. As well as international trade or openness of the economy affects the economic growth through access to foreign markets, technology and resources. Another factor influencing economic growth is human capital. Human capital refers to abilities and originator and efficient capabilities of people that these abilities and competitions include knowledge, skills and experience that create added value. Today, countries seek to improve the quality of their human resources; for now the most important determinant in technology and competitiveness position of a country is the level of education and skill in human resources for production and export products that have certain advantages. However, these goods can be produce, supply or export when the labor has high education level and expertise. In response to this increasing demand, continuous education to increase the efficiency and skill level of individuals as potential agent of change and innovation is necessary (Azarbaijani *et al.*, 2014) in general, human

capital or quality of labor or knowledge of institutionalization in human causes to increase production and economic growth in countries.

Considering the key role of trade in guiding economic development programs and also considering the close relationship that the economic growth of any country has with quality of human resource of the country, so this paper investigate the impact of foreign trade and human capital on economic growth of Asian countries.

2. THEORETICAL FOUNDATIONS

2.1. Economic Growth

Economic growth increases per capita. There are some different economies in Asia. Some economies are rich and others poor. Economic growth in some countries is high and some countries not have any growth. In summary, in the literature of economic growth, growth models are divided into two parts, i.e. exogenous growth models and endogenous growth models. In the view of Romer, technological innovation in human capital, research development affect scientific reserves. Scientific reserves are used in the production of final goods and increase the rate of growth production. The exogenous emphasize on capital and technology, while endogenous growth models based on internal mechanism of an economy such as education, human capital, knowledge, skill and so on. According to endogenous growth models, permanent changes in variables such as rates of physical investment, human capital, the share of exports, ownership, and size of government and population growth should be resulted in lasting changes in growth rates (Hajykhodazadeh *et al*., 2012).

2.2. Foreign Trade and Economic Growth

The first theory in literature of foreign trade are referred to Mercantilism. The followers of this school considered foreign trade as one of the effective factor of economic development and growth. On another hand, other economists offered different theories about the relationship between foreign trade and economic growth. In general, there are two major view point among them. The first trend: the followers of this trend are in favor of free trade. Adam Smith believes that only those nations that accept the conditions of free trade get higher economic growth rate. Classical and neoclassical by following Smith are fans of free trade.

The second group is opponents of free trade and is divided into two categories: 1) Friedrich List, the founder of the German historical school and his followers do not deny the system of free trade in general, but seeking appropriate circumstances to employing it such as: in the case of same monopoly and economy power of involved countries. They believe that in the conditions other than this, trade causes to destroy domestic industries. 2) Economists such as Singer consider free trade to developing countries and they recommend these countries should devote a period to implement the business strategy to minimize negative effects of trade on their development (Jalaei *et al*., 2008).

In general it can be said economists such as Romer (1986); Lucas (1988); Grossman and Helpman (1991) raise the foundations of the theory of positive relationship between foreign trade and growth and show that how foreign trade can have dynamic and continuous effects on rate of economic growth. Modern theories of foreign trade have criticized on some of the assumptions of traditional models as perfect competition and enter more realistic assumptions into the model and consider foreign trade as the factor of motivation and accelerating economic growth because provide achieving a broader range of knowledge and technology and facilitate knowledge spillover. In general, trade liberalization, with imports of advanced capital goods causes to transfer of technology. Also, by import of capital goods, foreign capital inflows will be increased. In endogenous growth models, reducing trade barriers is considered one of the major factors which promoting the growth. The growing influence of trade depends on investment, the acquisition of technology, practical training of workforce. According to the endogenous growth model, trade liberalization plays an important role in the increase of exports and GDP growth in transfer of

technology. The increase in exports by utilizing resting resources can be led to the promotion of GDP (Azarbaijani *et al*., 2014).

2.3. Human Capital and Economic Growth

Human capital is considered an effective factor in the growth and economic development, filling the deep gap of technology, reducing the role of comparative advantage due to abundant of natural resources and increase the adaptive advantage of developing countries and to do so in developed countries, a significant share of resources to be spent on labor training (Teimori Allah *et al*., 2011). Simon Kuznets, the winner of the Nobel Prize in economics in 1971, believed that the concept of capital that includes physical capital and commodity is a flawed concept. In his view "the human capital of an advanced industrialized country is not industrial tools and implements of that country; rather, it is the accumulation of knowledge that are obtained from experiments and training people of that country for applying this knowledge." He believed that investment in education is considered an important source for human capital formation, such as the empowerment of labor and technical progress in production and human capital takes into account an important factor in economic development (Emran, 2011).

Smith (1776) is the first classical economists that introduce skill as one of the underlying factors that explain difference in earning and productivity. After that, other theoretical studies by Romer (1986); Lucas (1988) with a different approach from Solow and Swan growth model entered human capital as an endogenous growth model into the growth model. In the view of Lucas, human capital can be considered the engine of economic growth. He stated that given that educated labor in the production, implementation and acceptance of new technologies is better, it can be said that the cause of low economic growth in developing countries is insufficient attention of these countries to issues of education and increase the level of labor skill. Thereby, reducing the efficiency of human resources and reducing investment and economic growth in these countries will be caused (Sheidaiy *et al*., 2010).

2.4. Human Capital, Foreign Trade and Growth

Today, countries are seeking to raise the quality of their labor skills. Because the level of education and skill in human resources for production and export of products that have particular advantages are considered as the most important factor in technological position and competitiveness of any country. There is a close relationship between the growth and development of labor skills. The countries that have most skilled labor are able to produce more goods with higher quality and have a larger share in world trade (Azarbaijani *et al*., 2014).

Human capital is as a means that facilitates the adoption of technology across borders. The use of superior technology and more competitive power in the market requires the use and increase human capital (Isaksson, 2002). On the other hand, increase international competition and achieve to technical progresses in the development and extension of foreign trade has increase the need for skilled and specialized labor and encourage people to learn new sciences and technologies and by this way provide the development of human capital (Teixeira and Fortuna, 2004). In other words, trade by giving incentive to people to improve their skills increase the level of their educational standards and causes to create expertise.

3. METHODOLOGY

This study aims to evaluate the impact of human capital and foreign trade on economic growth using following model:

$$G=rH+X\beta+\alpha INFL+\varepsilon \quad (1)$$

where, the growth rate (g), direct function of human capital (H), trade variables (X), inflation rate (INFL) and a error term (ε) and (r), (β) and (α) are unknown parameters which will be estimated.

In most of the growth model. World Bank and other organizations emphasize on health and nutrition as a solution of human capital improvement. Therefore, in this research we assume that efficiency (A) is a function of

school inputs (R) families (F) and other factors such as neighbors, friends, or Neighborhoods, Peers, or General Institutional Structure (Z) and a stochastic element (η).

$$A=f(R,F,Z,\prod) \qquad (2)$$

The basic idea is that the skill is measured by efficiency (A) that can be used in equation (1) as a direct indicator of human capital of a country. Training is only one part of the skills of people. Therefore, skills outside the school depend on academic level.

As it was explained before, human capital and foreign trade can be effective on each other or indeed complement each other as well. On the other hand the development of foreign trade may require more extensive training of the labor. Education and training improve different skills and increase production by raising the level of skill and specialization of labor. On the other hand, foreign trade is the main channel for the transmission of ideas, thoughts, knowledge and advanced technologies. Acceptance of these technologies depends on human capital in the host country. Furthermore, based on new theories of economic growth and foreign trade, imports of manufactured goods cause technology spillover from trading partners. Developing countries to fill the gap of technology through imports can import technology by investments in education and human capital.

3.1. Model Estimation

Model estimated for Asian countries during 2014-1990 using data from the World Bank to determine the pool or panel of model and F Limer test is done on the model.

Table-1. Test results F Limer

Effects Test	Statistic	d.f.	prob
Cross_ section F	3.403862	(18.63)	0.0002
Cross _section chi_ square	63.176576	18	0.000

Source: Research Findings

The result showed that the null hypothesis is rejected for the model, in other words, it represents the verification of panel data versus the pool data. So to estimate the model, panel data method can be used.

Hausman test employed to determine the method of fixed or random effects for estimating models. If the null hypothesis is rejected and the alternative hypothesis is accepted, the method of fixed effects is compatible and the model should be estimated using fixed effects. Statistic of Hausman test has chi-square distribution that if its possibility is smaller than 0.05, the null hypothesis at the 95% confidence level is rejected and represents that model has fixed effects. Hausman test results is provided in table 2:

Table-2. Results of Hausman test

Effects Test	Statistic	Chi- sq. d.f.	prob
Cross_ section random	20.423356	9	0.0155

Source: Findings

According to the above results in the model, the possibility is smaller than 0.05, then the null hypothesis is rejected, than the model has fix effects.

The results of the model estimation in the period 2014-1990 for Asian countries in Table 3 is shown: Coefficient of ratio of elementary school students to teachers that is one of the variables related to human capital is positive, which shows that this variable has a positive relationship with GDP growth and by increasing this ratio, GDP growth also increases but it is not significant.

Coefficient of ratio of high school students to teachers is negative there is an inverse relationship between GDP growth and high school students to teachers, in other word, one percent increase of high school students to teachers decreases economic growth by 4.0 percent.

In model one, coefficient of registering primary school students in Asian countries is -0.000922, this means that if registering primary school students increases, GDP will decrease and its negative implies that there is an inverse relationship between GDP growth and registering primary school students. Registering primary school students means that the population is growing so GDP growth reduces because these two have an inverse relationship together.

The coefficient of registering high school students is positive, its positive indicates that there is a direct relationship between GDP growth and registering of high school students. That could be because the produced skills and capabilities of labor have increased and this expertise and skill, together with other factors will increase production and economic growth.

In this model the coefficient of duration of primary education is negative i.e. by assuming the stability of other terms, there is an inverse relationship between the duration of primary education and the growth in GDP, that of its causes can refer to increase educational expenditures because government every year invests some funds in education and benefit from the investment by the end of the year does not appear, educational expenditure of government negatively related with growth rate. So even if the educational expenditures of the government have positive relationship with economic growth, the appearance of the positive relationship needs to passing time.

The coefficient of duration of high school education is negative i.e. if duration of high school education increases one percent, GDP growth about 5.76 percent decreases. Coefficient of progress to high school is also negative that represents the inverse relationship of this variable with GDP growth. With increasing progress to high school, economic growth reduces.

Export coefficient in model is negative. Assuming stability of other conditions, its negative indicates that there is an inverse relationship between growth of GDP and exports so that one of the main factors that can due to major focus of exports of this countries are traditional products, initial raw materials and raw materials.

Import coefficient is positive in the model; by assuming the stability of other terms its positive indicates that there is a direct relationship between GDP growth and imports. It is to say that the import of this country are intermediate goods. In other words, the mentioned countries can benefit from the transfer of technologies through international trade flow.

The coefficient of percentage of trade is positive, i.e., its positive coefficient shows that there is a direct relationship between GDP growth and trade. Foreign trade creates opportunity to countries to achieve intermediate goods, capital, equipment, foreign technology and methods, thereby this causes to increase economic growth.

Coefficient of inflation index is negative. This means that, there is an inverse relationship between inflation and GDP growth. This result is consistent with economic theories because higher inflation means greater economic instability.

Table-3. Results of model estimation

Variables	Coefficients probe
C	28.76221 (0.3466)**
Ratio of primary school student to teachers	0.229133 (0.0673)**
Logarithm of ratio of students to high school teachers	-3.927020 (0.2495)**
Registering in primary school	-0.000922 (0.9583)**
Registering in high school	0.062669 (0.4983)**
duration of primary school	-0781507 (0.8036)
Logarithm of duration of high school education	-5.758252 (0.3786)**
Progress to high school	-0.179964 (0.0066)*
The volume of exports	-0.012443 (0.0969)**
The volume of imports	0.36432 (0.0103)*
Trade (% of GDP)	0.069791 (0.0053)*
Inflation	-0.018871** (0.7396)
F- Statistic	5.411211
R^2	0.713539

Source: Findings
* Statistically at the level 0.05 is significant
** statistically is not significant.

Also, according to the R2 of model, it can be said that the model has good explanatory power.

4. CONCLUSION

Foreign trade by providing take advantage of economies of scale, advanced technologies, the possibility of allocating resources and increase competitiveness in production can provide increasing efficiency of factors of production and achieving economic growth. But attracting advanced technologies and modern technologies in trade flow and compliance with domestic conditions need to invest in human resources and training skilled labor, specialized and functional. Therefore, foreign trade and human capital and the combined effect of these two factors can affect the efficiency of factors of production and economic growth. In this paper, the effects of human capital and foreign trade on economic growth in Asian countries have been studied over the period 2014 -1990. The results show that trade and imports has a significant positive effect on economic growth in Asian countries as well as human development components on average have a positive effect on economic growth. But other variables not had significant impact on economic growth.

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