Analyze the Impacts of Human Development on the Industrial Value Added

Arash Ketabforoush Badri, Afshin Ketabforoush Badri, Aidin Poorabdollahi Sheshgelani, Fatemeh Ghahremani

Abstract: The industry sector is one of the effective economic sectors in developing countries. Here is an issue that has attracted experts and theorists, the correct and rational use of the abilities and talents of manpower in community. With knowledge of the matter, this paper is trying to examine the impacts of human development on the industrial value added in developing countries at the period 2006 to 2012 by using panel data method. The results show that human development has a direct impact on industrial value added.

Keywords: Human Development, Industry Value-Added, Panel Data.

1. Introduction

Today, the role and importance of human power in the process of production and services in human societies are known as the most important factors. By taking a look at the levels of civilization it can be concluded that the role of human power has developed from simple working power (arm strength and mechanical work) to human capital (knowledge and skill) which is known as the most important factor of production, because if men can’t take advantage of sophisticated tools and technology, technology development will be useless.

Human capital is an issue hotly debated by economists. In studies and investigations done on growth making factors, less than 50 percent of the growth is resulted by the primary factors of production (labor, capital and field) and the rest is resulted by unknown factors like technology change, productivity increase and the remaining factor. And today, mostly they believe that this qualitative factor is nothing but the role of human factor (Emazadeh and Bakhtash, 2005).

The noticeable point is that today injecting large amounts of physical capital to the countries of the world actually has not resulted increase of their growth, but only countries that had a productive organization and at the same time had skilled human capital, have been able to use physical and material capital decently for making the growth process faster (Moradi et al., 2013).

It is to be mentioned that economic sectors must pay special attention to find ways to improve using human power and making their industries productive and they must consider this, because special attention to quality and productivity of the labor force can help them achieve this purpose because of its beneficial results. So in order to achieve it, first it must be started from investing in human power (Okpala, 2007).

For this purpose, this paper is trying to examine the impacts of human development on the industrial value added in developing countries at the period 2006 to 2012 by using panel data method.
2. Theoretical and Empirical Literature Review

Industry is main and vital sectors of any country’s economy, which has noticeable effects on social, political and economic connections inside any country, because of this, paying attention to it for growth and development has been listed as one of the aims of most of the societies. This is why developing countries have been following the economic growth and development through this sector and have spent lots of money for solving the problems of those new industries (Izadi and Izadi, 2008).

This sector is one of the structural sectors of economy that has an important role in determining cycles of economic boom and bust (Shahbazi and Karimzadeh, 2014). The industry sector has an important role about previous and future connections in productivity and production with other sectors. This sector, on one side, uses the products of other sectors as intermediate inputs and growth and development of this sector will help its growth and development and on the other side, will provide the required intermediate and capital products of other sectors and by this also it may help growth of their production and productivity. If there is a technical improvement in the industry of producer of capital goods, more efficient and productive machineries will be produced which help the increase of productivity in sectors using these capital facilities. So, increasing productivity in industry sector will result this sector’s production increase and also will help the growth of production and productivity in other sectors (Amini, 2004).

Among all, the important factor which can make a big change in improving the situation of industry sector, is human capital. The importance of human capital in industry sector is noticeable because so far, no process has been invented which doesn’t need human labor, so no production is done without human help. But co-operation during historical development and evolution of the societies has faced main changes of human labor in production. The role of human power from physical work has reached the most advanced level (means that man mostly thinks and machine works). Industrial development is done based on two important capital sources of physical capital and human capital.

Investment on human power and excellence of labor force quality is one of the structures and most important and basic ways of increasing productivity, industry growth and ultimately, and acceleration of the society’s economic growth. According to economic studies we can say that human capital is totally an economic concept. Another definition of human capital is knowledge, skill and experience, ability and ultimately discipline and creativity which is resulted by education and in different sectors in the labor force of the society it is saved and it causes increase of human power productivity which is created by increasing the qualitative level and effort (Nasiripoor et al., 2010).

This fact that human power with high quality is known as a workshop’s capital, has caused the developed countries to concentrate more on training human power and connections and relationships in the process of industrial production. By experience, these countries have found out that increasing the productivity of industries is possible by improving the quality of faster labor force. Although by replacing modern machineries, changing and improving the lines, applying new methods of inventory, etc. we can improve the productivity of different industries but we must consider the fact that also these factors as the main reason, depends on abilities and motivations of human source and we can definitely say that any machine, after all, has a limitation more than which we can’t expect, but human abilities are infinite (Moshbaki et al., 2010).

In the recent decades, human sources have been considered as a smart factor which plays an important role in the system with its skill and creativity. A country’s productive human force is known as one of its valuable capitals, as the capital of knowledge is more important than the capital of production (Litman et al., 2008).

Developing countries take advantage of human capital more than physical capital. According to statistics, human capital has the first role of wealth making in developing countries with 67 percent, while the share of natural and physical sources is only 33 percent. It is capital that can be as the big backup for big social movements in the 21st century (Moradi et al., 2013).

Education, as the most obvious factor of human investment, has the primary role in improving the productivity of human power. Education on one side, increase the productivity and skill of the labor force and it reveals talents and on the other side, it provides the opportunity for using higher and better technology for the labor force. So the society will achieve its aims when it continues its way by human development

In fact, the base of plural life of human is made by education and we live as we are educated, so any definition that we have from development, in order to achieve it, all the effort is for people who must make this achievement reachable. Because in the present world, the education sector has the responsibility
of educating the human power in the society, so it is known as the most important opportunity of training human power (Emazadeh and Bakhtash, 2005).

It is to be mentioned that international experiences and studies, all point to the fact that development of different economic sectors and the matter of stable development, exclusively must pass the human field and before the circumstance of success, stability and continuousness of any development and change, investment in human development as the main factor of it.

Fakoya (2014) studied effects of productive resources, industrial value added on economic growth in the period of 2004 to 2012 years in 15 selected countries in Africa utilizes the panel data model. The results show that production and industrial value added sources have a positive effect on economic growth in studied countries.

Shahbazi and Karimzadeh (2014) have examined the effects of monetary and fiscal policy and industry sector of Iran in the period 1979 to 2010 using ARDL method. The results show that monetary and fiscal policy have significant and positive effects on industrial value added in short run.

Irfan et al. (2012) studied effects of human capital on economic development in Pakistan in the period 1972 to 2009 using ARDL method. Findings show that there is two-way relationship between human capital and economic development in Pakistan in the studied period.

Olayemi (2012) has studied the relationship between investments in human capital and total factor productivity in Nigeria in the period 1978-2008 by using the Granger method. Results indicate that government spending in education has a positive and significant effect on productivity but the growth of physical capital has a negative effect on productivity.

Mohammadzadeh and Rahnamay (2012) have examined the effect of the market capitalization of research and development of domestic and foreign capital stock on value added of Iranian medium and large industries using panel data over the period 1994 to 2007. The results show that during the study period, of domestic capital, foreign capital, human capital and research and development of domestic capital has a positive and significant impact on value added of Iranian medium and large industries.

Su and Heshmati (2011) analyzed the relationship between labor productivity and resource development in 31 provinces of China in the period 2000-2009 using the LSDV2. The results suggest that investment in fixed assets, industrial output and average labor wage levels have significant and positive effect on labor productivity and its growth.

3. Econometric Methodology and Variables

3.1. Panel Data

Panel data model is one of the most used methods in Econometric for estimating equations and economic relations. This model is a combination of cross-sectional data and time series, that's mean we can see Information on cross-sectional data over time. Clearly, such data has two dimensions. One dimension is related to different units in any given time period and the other is related to time. Using panel data methods than the cross-sectional and time-series methods have two major advantages. First, it allows the researcher to investigate relationship between variables and even units (countries) to consider and review over time and the second advantage is the ability of the method to control individual effects related to countries (as of period). The larger number of observations and data, in panel data method compared with other models, more reliable estimates, and testing the enhanced model by researcher are the other features of panel data model (Ashrafzadeh and Mehrgan, 2010).

3.2. Data and Variables

The study population consisted of 8 selected developing countries Indonesia, Malaysia, Thailand, Iran, India, Pakistan, Belarus and Russia. Period is used 2006-2012 and Data have been taken from WDI 2015. The model presented in this paper inspired by the Fakoya (2014), Hientz (2007), Samsami and Amirjan (2011) with adjustments as follows:

\[
L(IND_i) = \beta_0 + \beta_1 L(EDU_i) + \beta_2 L(HE_i) + \beta_3 L(DCP_i) + \beta_4 L(GCF_i) + \epsilon_i
\]

\[
\text{LnIND}_i = \text{Logarithm of industry added value of country } i \text{ (constant 2005 dollars)}
\]

\[
\text{LnEDU}_i = \text{Logarithm of government expenditure on education of country } i \text{ (% GDP)}
\]

\[
\text{LnHE}_i = \text{Logarithm of health expenditure of country } i \text{ (% GDP)}
\]

\[
\text{LnDCP}_i = \text{Logarithm of domestic credit to the private sector of country } i \text{ (% GDP)}
\]

1. Autoregressive Distributed Lag
2. Least Square Dummies Variables
\[ \text{LnGCF}_{it} = \text{Logarithm of gross capital formation of country I (constant 2005 dollars)} \]
\[ \varepsilon_{it} = \text{random error} \]

4. Empirical Analysis

4.1. Results of F and Houseman Tests

Table 1 shows the results of F and Housman tests. Based on the results, fixed effects will be used in estimation of the model.

Table 1. Results of F- Lymr and Houseman test of the estimated model.

<table>
<thead>
<tr>
<th>Test</th>
<th>F- Lymr Test</th>
<th>Houseman Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistics</td>
<td>68/8964</td>
<td>17/4469</td>
</tr>
<tr>
<td>Prob</td>
<td>0/0000</td>
<td>0/0016</td>
</tr>
</tbody>
</table>

Sources: Research Findings

4.2. The Estimation Results

Accordingly, the results of model estimation is introduced to determine the effects of human development on value added of industrial sector using a fixed effects panel data are presented in Table 2.

Table 2. Results of estimating the effects of human development on value added of industry sector

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>T Statistics</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>LnEDU</td>
<td>0/1001</td>
<td>13/0771</td>
<td>0/0000</td>
</tr>
<tr>
<td>LnHE</td>
<td>0/1530</td>
<td>2/2949</td>
<td>0/0272</td>
</tr>
<tr>
<td>LnDCP</td>
<td>0/0357</td>
<td>0/4763</td>
<td>0/6365</td>
</tr>
<tr>
<td>LnGCF</td>
<td>0/4161</td>
<td>5/3628</td>
<td>0/0000</td>
</tr>
<tr>
<td>( R^2 ) = 0/8978</td>
<td>( R^2 ) = 0/8973</td>
<td>D-W = 1/70</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Research Findings

The results show that the coefficients of model variables in spite of domestic credit to the private sector, statistically were meaningful. Also all the variables have the theoretical expected marks. All variables have a positive impact on industrial value added.

The elasticity of the industrial value added compared to the education expenditure is 0.10. This shows that 1 percent increase of education expenditure, increase the industrial value added by 0.10 percent. Basic changes of cultural beliefs, social, economic institutions, for creating and being decent with new capacities and qualitative and quantitative human, educational, economic abilities can happen by more human development which provides the possibility for a growing industry. This requires productive educating and expert human power. Correct education in fact is one of the principals and logic ways of leading the effort of the workers in any company and it results use of hidden talents, using the imagination power and creating the required thinking flexibility in the workers. The more efficient and better the education is, widely it leads a society to aims like development, skill, change and improvement and these changes cause the workers of a company to be more successful doing their duties. Educating the human power is an investment with high profit which’s productivity is in sufficient spreading in every economic sector and also in improving the general culture of the society it plays a more important role. Focusing on education is known as one of the dimensions of human development because it is one of the undeniable choices of the people. A choice that has no relation with wealth level or social status. Education is an inseparable part of human development. Educated human power, has decent tools for opposition with social deprivations and they can make decisions that can have positive effect on their lives, they can exchange information together and through this, for their own role they can be useful for enrichment of knowledge and culture of the society, increasing production and creating added value in different economic sectors like industry. So we can say that focusing on education of human power is necessary for reaching the aims of industry growth.

Also, with 1 percent increase in health expenditure, the added value of industry sector increase by 0.15 percent. Improving and increasing the added value of different economic sectors like industry, etc. depends on being mentally and physically healthy of the work force. Healthcare costs will result economic growth of the countries by improving health factors and increasing the human capital. Health can be known as an important part of the human capital and as usual, it is expected that healthy people who are working with a specific amount of production factors, in a unit of time, they will have more productivity than the sick labor force. Healthy people usually with more motivation to get income, are more hardworking and more productive. Despite, investment for increasing healthcare services can increase the
efficiency of other investments in educating healthy human power like general education and professional education. Health can affect a country’s growth and development in different ways. The first factor we can mention is better productivity of healthy labor force comparing to the others. Healthy labor force, has used its physical ability more and better than the others and has a more creative mind. Beside this direct effect, improving health in human power, will result motivation for continuing education and learning more skills. Because improving the situation of health on one side will increase the attractiveness of investment in education and educational opportunities and on the other side, by increasing the ability of learning, will make the people more ready for continuing education and gaining social skills. So that healthy human power works more and better than others and has a more ready and creative mind. Beside these direct effects, health also has some indirect effects on production. For instance, improving health in human power will result motivation for more education and learning better skills, because improving health situation, on one side will increase attractiveness of investment in education and educational opportunities which will have positive effects on function of different economic parts like industry. So by increasing the costs of health we can see the increase of the industry sector’s added value.

The elasticity of industrial value added comparing to DCP is 0.03. This shows DCP has direct effects on industrial value added, as with 1 percent increase of the to domestic credit to the private sector, 0.03 percent increase of the value added of the industry sector. Because of less development of financial markets in developing countries, the industry sector depends on bank loans for providing for their activities and of course it is to be mentioned that this variable is not statistically significant.

At last, the elasticity of the added value of the industry to gross capital formation was also estimated positive. This shows that there’s a positive and meaningful relation between gross capital formation and the value added of the industry sector. So that 1 percent increase in gross capital formation, value added of the industry sector increase 0.41 percent.

Also the $R^2$ estimated by the model is 0.89. This shows high ability of explaining of the independent variables.

5. Conclusion and Policy Recommendations

The importance of human capital in industry sector is noticeable because so far, no process has been invented which doesn’t need human labor, so no production is done without human help. But co-operation during historical development and evolution of the societies has faced qualitative and quantitative changes of human labor in production. The role of human power from physical work has reached the most advanced level (means that man mostly thinks and machine works). Industrial development depends on two important capital sources, physical capital and human capital. The thing that in recent years has been more focused on in developed countries is human capital. Human sources have two main roles in production and economic growth. The role of labor as a first factor of production and the role of human as a factor beyond labor and other factors of production, these two are the main roles in production and economic growth. Human capital contain factors like education level, skill, profession, experience, and health of the labor force. Education is always known as a certain tool for improving the quality of function and solving the problems of management and a lack of it also is one of the basic and hard problems of any company. For this purpose, for preparation of human power of any company, and refining and taking advantage of this power, without a doubt education is one of the most important and most effective solutions and factors for improving the jobs of the companies. For the same reason, this study has considered studying the effects of human development on the added value of the industry sector of 8 selected developing countries in period of 2006 to 2012 using the panel-data method. The results of the this study shows that the expenditure of education, expenditure of health, the amount of facilities given to the private section and fixed physical capital, have a positive effect on the value added of the industry sector of the considered countries. As we can say by 1 percent increase of the mentioned variables, the value added of the industry sector respectably increase 0.10, 0.15, 0.03, and 0.41 percent. It is to be mentioned that the variable of the facilities given to the private section wasn’t meaningful statistically. In mentioning the political suggestions we can point to this fact that considering the role that human power and the amount of capital in economic growth play in increasing production and creating value added, education and increasing the level of labor force quality and besides, effective use of machinery and tools in the process of production, can be known as an effective step for achieving economic growth, increasing production and creating value added. So the policies must be in a way that they can cause plans of encouraging foreign and domestic investment, efficient allocation of production and labor and capital factors between different sectors, creating relation between wage and productivity, improving and
developing decent space of work, spreading of technical and professional skills decent with the work place.

References


