HUMAN CAPITAL, EQUIPMENT INVESTMENT AND THE ECONOMIC GROWTH OF PAKISTAN

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ABSTRACT

The existing paper has explored the concept of equipment investment, human capital investment and economic growth. The major objective was to analyze the relationship between the equipment investment, human capital investment and economic growth in Pakistan. The data in the study has been collected from World Bank Indicators and published reports of SBP from 1985 to 2018. The findings of the study argued that there is a long run relationship between equipment investment, human capital investment and economic growth of Pakistan. The ruslts suggested that equipment investment, human capital investment is having positive impact on the economic growth. The higher ratio of equipment investment means that the government is supporting the local industries which can helpful in increasing the production capacity and industrial progress can be enhanced. The higher education enrollment can be the most effective factor in getting sustainable economic growth. The authorities should revise their economic policies by providing higher facilities to the local industries and provide them most updated equipments. The government should start education enrollment schemes and support poor families to get enroll their children which will be a positive indication for the economic growth in future.
Keyword: Equipment, Human Capital investment, GDP, Education, Co-integration etc

1. Introduction

The increasing economic growth among the developed and developing economies increases the importance of the concept for the researchers. The concept has been elaborated by Adam Smith (1776) who associated the economic growth with the division of labors but the concept includes a lot of ambiguous statements. But after this study some of the studies Adam Smith (1776) and Thomas Malthus (1803) have discussed dynamic growth model and give importance towards the economic growth as the development in the per capital income. The model argued that the human capital is the importance tool as far as the economic growth is concern due to the fact that the investment in human capital can lead to get higher earnings level of the country and will be very easy to get economic growth. Solow (1956) has introduced the neoclassical model for the economic growth and has been using by the researchers for the last three decades. The concept has considered as the backbone for the financial credit and also the country's economic growth.

The modern economic theories i.e neoclassical and classical models have been given importance to the concept of equipment and human capital investment. The work currently going on the human capital and investment related to the country's economic growth showing close association between the factors for every economy. The concepts have been elaborated in the light of existing studies that economic development most of the time dependent on the buildup of human capital, the concept of human capital includes the skills and built-in knowledge while the economic growth of the country totally dependent on the scientific knowledge and technological modernization. In the advance economies, the investment in the moderation technological basis and human capital can be considered as the important factors for the economic growth. The same concept has been found reverse in the developing economies while making the biggest challenges for the economic growth.

The Pakistan is the developing country where most of the population is poor and living under the poverty line. The economic theories argued that the economic growth can be factor which can be used to control the inflation and unemployment but this case cannot be applied on the developing countries i.e. Pakistan. In Pakistan, the poverty of the country cannot be controlled only by economic growth but there are some other macro factors which need to be improved for the control of poverty. The studies argued that the investment in human capital is the key which can lead to invest higher on human and can improve the standard of living of the people which ultimately control the poverty. In this connection, education and health facilities should be provided to the people to gauge the income security.

The studies argued that the economic growth can be related with the equipment investment and human capital. This has been argued that that for the positive human capital, the country must invest more on the quality education and health facilities for the people. The studies argued that that with the help of human capital, it has been conclude that the physical and psychological abilities of human can be polish by giving them quality healthcare, updated skills and higher quality of education and these can be used in the most effective manner for the economic growth (Sing, 1999). In general terms, the concept of human capital is related to the higher investment and facilities related to the education and health care and the additional things needed for the people which can be used for the most effective method of working and use these things for the economic growth (Todaro, 2002).

The concept of equipment investment and human capital investment is the central point for the policy makers in the developed countries. The situation in Pakistan is not very pleasant, as the ratio of investment in the equipment's and also in the human capital is not good enough which can be considered for the positive economic growth. The studies conducted in Pakistan argued that the factors which can be used to measure the equipment investment and human capital investment are highly stumpy i.e. students' enrollments, health care facilities, literacy rate, the availability of clean and hygiene water for the people at door step. From the last decades, the policy makers are trying to invest more in the physical capital and neglect the most important part i.e. human capital sector of Pakistan. As a result, they are not showing their interest in getting higher investment in human capital and this led to the getting of higher unemployment and higher poverty level in the country. To get over this problem, it is important that the government should invest more on the equipment investment and also on the human capital so that they may get the path of sustainable economic growth.

The factor of human capital has been considered as the proxy to measure the employee economic growth and their skills. But this concept has been implemented in the condition when all the employees has been considered on the same level. The human capital in the country can play a significant role in economic growth. The existing study has explored the concept of equipment investment, human capital and economic growth's role in the economic perspective of Pakistan. The current study will evaluate the role of human capital, equipment investment in the Pakistan economic growth. Majority of the previous studies were based on the effects of human capital on economic growth, the current study will be unique in the sense that it will evaluate the short and long run relationship based on the most recent data related to the economy of Pakistan.

2. Literature Review

Ali et al., (2012) evaluated the impact of human capital investment on the economic growth of Pakistan. The study has taken secondary data range from 1972 to 2011. The paper has taken the student enrollment in the education as the measurement of human capital, physical and health capital are the important factors which can play important role in the economic growth. The findings of the paper show that the employed labor force, human capital, fixed capital having significant effect on the economic growth and also found non-directional and uni-directional causality. The findings taken from the model have been presented as the gross

fixed capital, education enrollment and Gini coefficient are having positive relationship with the GDP or economic growth while investment growth rate, head count ratio, inflation and mortality rate are having negative impact on the economic growth of Pakistan. The findings for the relationship argued that there exists a long run relationship among the fixed capital, human capital, investment growth, inflation, head count ratio and economic growth of Pakistan. The results of the model further elaborated that the EEI (Education Enrollment Index) is having positive relationship with the economic growth. This has been concluded that when the government spending more on the education then it will have to see the sustainable growth in their economy.

The study Shi (2014) argued that the human capital can play the most important role in the economic development of any country. The paper explored the data taken from Henan rural areas for material capital investment and human capital investment from 1995 to 2012. The paper has used to relate the association among the capital investment and human capital investment with economic growth by adopting the classical production function. The findings of the study argued that the human capital investment argued as having significant role in the economic growth as compared to the capital investment. The level of investment in human capital is decreasing due to the fact that the investment in capital material has been found increasing by the government.

The study of Kaas and Zink (2008) examined the human capital accumulation in the business environment. The study argued that the unemployed labors can prefer to invest more on their education, to get most updated skills and for this purpose they are willing to get more loans and they prefer to get more riskier jobs to get more quality facilities for their life. In this regard, the government should make such policies that these kinds of labors should be paid more and they can survive in the society. But it is important that the risk associated to the employment also sometimes lead to destroy the skills of employee. It has been concluded that there is no balance between the unemployment, low level of investment for poor people and investment done by the government to solve these problems. The government should allocate some certain ratio of taxes to be invests on the education facility and this can be effective in getting efficiency.

Dulleck and Neil (2008) analyzed the association among the equipment investments and economic growth of the country. The paper explored the relationship for the developing

countries for the imports of equipment to their economy. The paper has taken 55 developing economies as a sample of the study. The paper has examined whether the level of investment in equipment can affect the level of investment which can benefit from it? The paper has examined the interrelationship among the human capital and imported equipment's. The findings argued that the association among the imported equipment and human capital is not significant and found lowest and sometimes this relationship has been found negative for the countries who have low investment on human capital, and it will be on higher level for the nations who have on intermediate level of investment for human capital and fund as on average when the nations are having higher level of investment on human capital.

H_1: There is no relationship among human capital, investment capital and economic growth.

H_2: Human capital investment has negative impact on economic growth.

H_3: Equipment investment has negative impact on economic growth.

3. Methods

The paper has explored the concept of getting long run relationship between human capital, equipment investment and economic growth of Pakistan. The nature of the data which has been collected from 1985 to 2017 was time series. The series taken in the study were macroeconomic in nature and that is the reason for the selection of time series analysis. The data for the equipment investment, human capital and economic growth have been collected from IMF, World Economic Indicators (WBI) and also used to take help from the published reports of State Bank of Pakistan. For the time series, it is important that the series have been analyzed in an equation form and used different time series model of analysis. The paper has measured the human capital investment by taking education enrollment proxy in the education sector, equipment investment was measured by taking the total investment in plants and machineries and growth of GDP has been taken as the factor of economic growth.

The data regarding the variables taken in the existing paper has been found time series and it is important to check the status of stationary and non-stationary. The model of analysis has been taken from the study of Abdi (2004) who used the model of analysis for the equipment investment and economic growth in Canadian market.

For the time series and checking the status of series for the non-stationary and stationary and used to check the nature for the final model selection of analysis, ADF test has been used. The

paper has used the ADF test for the exploration of nature of series and used the model on two level i.e. level and first difference and then the final model of analysis has been selected.

The model of human capital, equipment investment and economic growth is given below:

$$EG= \alpha+ \beta_1 HC+ \beta_2 EI+ \mu \quad \ldots\ldots \qquad (I)$$

Initial model for the granger relationship between Expenditure-Revenues nexus can be specified as.

$$LnEG= \alpha+ \beta_1 LnHC+ \beta_2 LnEI+ \mu \quad \ldots\ldots \qquad (II)$$

After estimating the unit root with the help of ADF test, it is important that the association among the equipment investment, human capital and economic growth should be calculated. In time series data, when the series are checked for the stationary and non-stationary then it is significant that these series can be checked for the co-integration. The test first checks it for the co-integrating vectors and then these vectors can be estimated by co-integration test. The co-integration has been examined on trace and Max Eigen Value test.

4. Results

The checking of status for the non stationary and stationary is important to check as the series can be evaluated at first stage of analysis. The most of the recommended test for the unit root is the ADF test which can be used on two categories i.e. at level and first difference.

Variable	At level		1st difference	
	t-statistics	p-value	t-statistics	p-value
GDP	-2.2	.19	-3.6	.00
Equipment Investment	-2.17	.12	-5.3	.00
Human Capital	-2.4	.14	-3.9	.00

The table shows the findings of ADF test used to check the non stationary and stationary status of the series. The findings shows that the series i.e. equipment investment, human capital and economic growth were found significant as the p-value has been found less than .05. The results argued that the series have been found non stationary at levels but the same factors are changing the status to stationary and argued that the factors have been found

significant due to the significant p-value. This shows that the series are showing the stationary status at first difference while they were non stationary at levels.

Lag Selection

Lag	SC	HQ
0	-6.190	-4.178
1	-5.163*	-7.981*
2	-12.011	-11.100
3	-14.131	-10.154

** Indicates lag order selected by the criterion*

SC: Schwarz criterion

HQ: Hannan-Quinn information criterion

The findings taken from the above table shows that the recommended lags for the co-integration test is 1 which means that the single lag can be found significant for the checking the co-integration of series.

4.1 Co-integration

When the ADF test has been used to check the status of series and found about their non stationary and stationay then the series should be check whether these factors are co-integrating or not? The co-integration test was used in the existing paper on two levels trace test and Max Eigen value. The recommendation of optimal lag selection i.e single lag has been recommended for the co-integration test.

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.707277	56.43906	43.79707	0.0111
At most 1	0.465900	10.82194	15.49471	0.1446
At most 2	0.187944	2.414367	3.841466	0.2113

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.601346	40.61712	31.13162	0.0053
At most 1	0.465900	9.407571	14.26460	0.2538
At most 2	0.347944	6.414367	10.841466	0.1911

After checking the unit root test, now the next step in the analysis is the co-integration and this co-integration can be helpful in getting the relationship between the series taken in the study. The standards estimated by Johansen (1988) who argued that when the value of co-integrating vectors have been found ($0 \leq r \leq n$) zero and value suggested the evidence of getting no relationship between the series. The findings for the co-integration test argued that there is a long run relationship between the human capital, equipment investment and economic growth.

Long Run Equilibrium Equation

Independent Variables	Coefficient	t statistics
Human Capital Investment*	0.39120	5.18710
Equipment Investment*	0.59011	6.19017
Constant	0.19834	0.98171

Note: The asterisks (*) indicates the statistical significance at 5 percent level of significance.

The findings argued that equipment investment is having significant effect on the economic growth. The findings exhibits that the modern economic growth is related to the moderation mechanization. The higher investment in the equipments will foster the economic growth and this same case can be seen in the economic situation of Pakistan. Therefore, the policy makers might consider the higher ratio of investment in the equipments so that the local production can be increased and the manufacturers can be supported to enhance the economic growth of

the country. Majority of the previous studies were in line to the findings that the human capital investment can be the most effective determinant to get economic growth. The existing paper findings argued that the higher ratio of student education enrollment will definitely bring the economic growth in the country.

5. Conclusion

The study was conducted to explore the association among the equipment investment, human capital investment with the economic growth of Pakistan. The findings argued that the economic growth can be significantly associated to the government investment in the equipment's. The concept can be elaborated that the economic growth of any country can be related to the industrial progress and the higher investments in equipment can be consider as support to the local industries. The higher equipment investment will help the manufacturer to increase the production of local industries and can produce products at cheaper prices. Majority of the previous studies have same base line that the education is the most significant factor among others which can contribute positively in the economic growth. The higher ratio of investment by the government for the student's enrollment in the schools will defiantly foster the economic growth and also increasing the production specialized capacity of the country.

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