Intangibles and nationwide economic affluence of Pakistan – Returns to health and education

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Abstract:

The conventional idea of a strong link between material capital and economic development is exchanged with the thought of the strong relationship between human capital and economic prosperity. This research is accepted to decide the causative and dynamic nexus in the short run and long run of economic strength with intangibles like education and health in the case of Pakistan. This paper will highlight the hidden economic drivers for GDP. Unit root tests, ADF, Phillip Perron test and ARDL tools are applied to model on time series data from 1972 to 2014 of 43 years. Secondary data composed from certified websites of WDI, WBG, IMF, MOF and SBP primarily. Entire independent variables showed positive association with GDP per capita, but primary enrollment showed a negative impact on GDP per capita in the short run. The share of intangibles in economic advancement is less than 5% in the case of Pakistan. On the bases of findings, it is strongly recommended that government should increase expenditures on education sector to more than 5% of GNP instead of just 2%. Government should allot more than 5% of GDP instead of just 0.4% to increase the health level of the population particularly of females. Government must link the economy with the health and education sectors. Proper implementation of policies is essential in the both sectors. Finally, in time and better rewards with healthy

increment must be paid to the staff in both the sectors that will increase the efficiency and performance of staff which will lead to the rapid human capital accumulations and economic development.

Key words: GDP per capita, Economic development, Human capital, ARDL and WALD.

1. Introduction

Latest economic facts and up-to-date data related to the economy has a massive significance for the investors to make various economic decision making due to the movement of the economy of the world toward a capitalistic economy. Numerous empirical readings are available in economic literature dealing with the estimations of economic growth and development. Because economic growth and development, in fact, has received very much consideration due to its significance to researchers and policymakers while making various managerial decisions about the economy. There is a diversion from the role of material capital toward human capital in the modern economy. Human capital is the core engine of development in modern economy instead of physical capital on empirical evidences. Several studies are available which deal with the impact of health and education or human capital on economic health of a country. The growth rate of real GDP is 4.14% as stated in Pakistan Economic Survey (2014). Here, economic improvement is measured by GDP per capita and Health is measured by health expenditures (HE), life expectancy (LE) and population growth rate (PGR). Education on the other side is represented by taking educational expenditure (EE), primary enrollment (PE) and secondary enrollment (SE).

Different economists believe that the quality of labour inputs or human capital is extremely important for economic development. Too little population cannot help in the

development of a country, but if training, education, skills etc. are provided to population then it can speed up the growth of economic development.

Intellectual or human capital refers to the productive qualities that activate the labour force. The productive qualities are education, health and skills of the labour force. 65% wage are paid to human capital and 35% are paid to raw labour in developed countries. Intangibles are divided into two parts in this study i. e., health and education.

Massive poor population is backward also in Pakistan. The rapidly growing population has not proper health and nutrition facilities. If a worker is not healthy and fully nourished then it is impossible for it to maintain the efficiency. Government has allocated an amount of over Rs 26 billion for health sector in the federal budget of Pakistan of 2014-15.

The findings of this research like many other research studies like Barro R. J. (2013), Lee J. and Kim H. (2008), Vogl T. S. (2012), Akram et al. (2009), Weil D. N. (2007) showed positive and significant impact of health on economic growth of a nation. The education sector has a positive impact on economic growth and development of a country as stated by Agasisti T. (2014), Akhmat et al. (2014). This direct nexus between education and growth was also pragmatic by Benavot A. (1989) and Afzal M. et al. (2010). According to Munda S. W. and Odebero S. (2014), Jin L. and Jin J. C. (2014) there is the positive influence of education on economic growth.

1.1. Health and Economy

The health sector is of course a significant and vital part of the overall economy. Poverty in an economy can be removed by human development on an evident bases. Health welfare perspective on an economy suggests that investment in human resource development leads to overall economic growth and development. Development of health sector comprises health care provision, health facilities and coverage of health care

services and so on. Health sector includes various determinants, some important are health expenditures, life expectance and infant mortality rate. Good health, has good effects on the economic growth and development and vice versa. If health sector of an economy is at its best stage, then it will provide the healthy labour force to the all sectors of the economy which will lead to more economic growth and development. Health in human beings refers to the extent of a person's continuing physical, emotional, mental and social ability to manage with his society. Bad health on the other hand, refers to the existence of diseases. Sometimes, better health refers as an evidence of poverty reduction. Several evidences are available that investment in the wellbeing of people translates into the overall economic growth and development. Investment in the health sector means the provision of health care, health facilities and coverage of health care services. Same as economy of Pakistan, health sector of the economy of Pakistan is also backward. Due to the topical issue of internally displaced persons (IDPs), war on terror, political instability, disaster in the form of flood, increase in population, external aggressions and shortages of funds, it is impossible for government to provide entire health facilities to the whole population which are necessary for the economic growth and development. Health has a lot of internal as well as external economies of the scale. The poor population is backward also in case of Pakistan. The rapidly growing population has not proper health and nutrition facilities. If a worker is not healthy and fully nourished then it is impossible for him to maintain his working efficiency. Agreeing to Pakistan Economic Survey (2013-14), given the important role of better health as a key driver of social advancement, Pakistan, like other South Asian countries allocating a sizeable amount of the budget for the health sector. The health expenditure over the last seven years, i.e., since 2007-08 (Rs.60 billion) to 2013-14 (Rs.102 billion) witnessed a growth of 10% per annum. The federal Government

is committed to achieve better health outcomes by taking care of issues through increased coordination of the provincial governments along with UN agencies and donor institutes. It is very much encouraging that during the fiscal year 2014, the health expenditure increase by 28.78 % as compared to the last year. It is a sign that the existing government is making best struggles to deliver better health facilities to the general public. The following points represent the health sector: i. During last year, total expenditure on health sector is only 0.4% of GDP in Pakistan. ii. The death rate is 0.69% and life expectancy is 65.9 years. iii. One MBBS doctor is available for 1127 persons. iv. One hospital bed is for 1786 persons. v. Per capita food intake is targeted at 2450 calories per day, against the required 2550 calories per day.

1.2. Education and Economy

Education is a discipline which attached with the procedures of teaching and learning in educational institutions or like educational institutions. Education is an idea of the values and knowledge formation of a society. Education is also a type of understanding in which the knowledge, skills and habits of a group of people shift from one generation to the next generation by teaching, training or research as stated in Pakistan Economic Survey (2014). Education is a social tool that guides the people about the future direction. The process of continuous more education keeps the mind active, improve the ability to learn more and open the mind to new ideas. Increase in education is one of the major factors in human capital formation. Education is a major form of investment in human capital, which provides as a key input in human resource development. Education improves the quality of manpower and enables the skilled workers to manage the developing technology of the country. There are various economic and non-economic factors that affect the economy. Education is a socioeconomic factor that also contributes toward economic

growth and development of a country. Education is not a material or physical capital, but it is very important due to its strong link with human capital. Most of the developed countries allocate 5% to 10% of their GDP for the education sector. Like health, education also has various internal and external economies of scale. More education helps in the formation of a developed socioeconomic society. Education is an important factor of economic growth and development, more education means more chances of development. Education has a positive relationship with economic growth and development of a country. Educated labour forces plays more effective role in the economic prosperity, development and growth of a country. Education sector of Pakistan is also at deprived stages like health sector. It is impossible for the public sector to provide full educational facilities to the whole population according to international standard. Education is very much important for the economic growth and development of Pakistan. According to Pakistan Economic Survey (2014), in the rural areas of Pakistan, almost 74 % students attend public schools while 26 % students attend private schools, including Madrasah etc. and in urban areas 41 %goes to public schools while 59 % students attend private schools including Madrasah and so on. The state should provide free and compulsory education to all (EFA) the children from 5 years to 16 years of age in Pakistan as according to Article 25-A of the Constitution of Pakistan. On the other hand government of Pakistan also has signed several international conventions on education to provide better and free education for all in 1990 and millennium development goals (MDG) joint declaration on education to provide education to population without any discrimination. National Education Policy (2009) of Pakistan aimed to provide quality education to all students and to enable them to participate in economic and social development on the basis ideology in the Constitution of the Islamic Republic of Pakistan. The literacy rate of Pakistan is 60%, the literacy rate in case of male is 71% and in the case

of female it is 48%. The overall literacy rate of Punjab is 62%, of Sindh is 60%, of Khyber Pakhtunkhan is 52% and a literacy rate of Balochistan is very low at 44%.

The practice of continuous and more education keeps the mind active, improve the ability to learn more and open the mind to new ideas. Increase in education is the major factor in human capital formation. Education is a major form of investment in human capital, which provides as a key input in human resource development. Education improves the quality of manpower and enables the skilled workers to manage the developing technology of the country. The following points are important for education sector: i. The literacy rate is just 60% in Pakistan, i. e., almost 100% in developed countries. ii. Expenditure on education sector is just 2.0% of GNP i. e., the lowest in Asia. iii. Rs.20 billion allocated for 188 projects of the Higher Education Commission in Federal Budget 2014-15. iv. Rs.125 million has been allocated out of National ICT R & D Fund to provide 500 scholarships in a transparent manner.

2. Literature Review

Particular studies are available in the literature which has re-estimated the economic growth and development, using different time series econometric techniques. Selected studies are reviewed as a representative of all this type of studies because it is impossible to review all in this study.

Stahle P. (2015) examined the direction in which national intangible capital describes the GDP by taking the date of 48 countries for the period of 2001 to 2011. Stahle has used a new technique to calculate results named as ELSS to expand Cobb-Douglas production function. Findings show that 45% GDP of the world depends on the intangible capital.

Recently, Maria R. T. (2014) quantified a positive correlation between level of education and fertility at individual (micro) and country (macro) level in Europe. She had taken the

date of 27 European Union countries from 2006 to 2011 of two Euro-barometer surveys. Researcher discussed that the number of women is increasing in the economic activities in Europe, which leads to more investment in human capital formation. She tried to remove the conflict of reproductive behaviour and fertility level of women. Results showed a positive impact on the education level of women on lifetime fertility of women. She also concluded that highly literate women must allowed to have a larger families because it must result in more investment in family size and human capital which will be lead to more economic growth and development.

Lee R. and Mason A. (2010) calculated the interdependence between fertility, human capital and economic growth. They want to find the impact of fertility and population aging on economic situations, further stated that families with fewer children allocated more resources to each child. Researchers had used an overlapping generation model to check the quantity-quality choices and connection between human capital investment and economic growth. They also used simulation analysis to express that little number of children takes more amount of per capita consumption which leads to more human capital formation and finally more economic growth and development.

A combination of education and health is treated here as human capital, which is much more important for the economic growth. Human capital is more important in modern economics for the economic growth. According to Bucci A. and Torre D. L. (2009), Abbas Q. and Mukhtar E. M. (2000) human capital has positive and significant relationship with the economic health of economy same as, BucciA. (2014), Tsai C. L. et al. (2010), Viswanath et al. (2009). Positive impact of human capital on economic growth is also observed by Mamuneas et al. (2006), Mujahid M. and Nasir Z. M. (2001). There is a direct relationship between human capital and economic growth of a

country as re-estimated by Batabyal A. A. and Nijkamp P. (2013), Qadri F. S. and Waheed A. (2011).

Various researchers like Florida et al. (2008), Brunow and Hirte (2009) have tested the nexuses between use of human capital and regional economic growth. They focused on education level and occupational measures of human capital that leads to increase the productivity of labour and wage rate for labour. All of these results in more regional income and regional economic growth. Brunow and Hirte (2009) further concentrate the age specific human capital effect and monetary increase in the case of Germany that improves the economic health of an economy. The study of Fleisher et al. (2010) expresses the role of investments to improve the human capital in the backward regions of China. They conclude that improvement in human capital as a result of the investment, promote the efficiency of labour and shows the significant contribution to reduce regional disparities in China. In case of US Hammond and Thompson (2010) attach the human capital with college enrollment and further state that human capital has a crucial role for economic growth and regional growth in both metropolitan and non-metropolitan areas.

Using annual data for the period 1972 to 2006, Akram et al. (2009) checked the impact of health on economic growth in Pakistan in the long term. They tried to explore the relationship between various health indicators and economic growth of Pakistan. They applied Cointegration, Error Correction and Granger Causality techniques to the time series data of WDI from 1972 to 2006. The result showed a positive impact of health indicators on the per capita GDP just in the long run. They concluded that an increase in the existing stock of health leads to more human capital development which is necessary for the economic development. They also highlighted that slight amount of public resources is inadequate for the maintenance of better health in Pakistan. They also concluded that Secondary Enrolment hugely affected by per capita GDP.

Bloom et al. (2001) considered theory and evidence for the effect of health on economic growth. They considered the clear role of human capital in the economic growth; human capital is expressed in term of schooling, work experience and health. The results of this research showed positive and statistically significant effect of good health on GDP. They further said that one year improvement in life expectancy of the population caused four percent (4 %) increase in output.

Maria J. et al. (2013) revised the impact of human capital on economic growth in case of Pakistan as a public expenditure approach. They mainly focused on to explore the results of public expenditures on education and health in the short run and long run. They used the time series secondary data during 1978 to 2008 from Pakistan Economic Survey, Federal Bureau of Statistics and Central Bank of Pakistan and applied Cointegration, Unit Root Test and EC technique. Short run findings showed positive and statistically significant relationship between public expenditure on health and economic growth. Expenditures on education and economic growth showed positive and significant relationship in the long run. Further stated that enrolment in primary education showed positive but enrolment in secondary education showed negative connection with economic growth both in the short run and in the long run. Finally she concluded that more public expenditures are needed in case of Pakistan to education and health sector in order to boost up the economic growth.

Mankiw et al. (1992) reexamined the consistency of Solow growth model with the variation at international level and its effects of living standards. Researchers showed that Solow growth model showed excellent results in case of cross country data due to inclusion of human and physical capital. This study also examined that role of human capital showed more importance in case of poor countries as compare to rich countries.

Using annual data, Benavot A. (1989) explained the impact of education level and gender on economic development of 96 countries during 1960-1985. He applied panel regression analyses for the investigation of long run effect of males and females enrollment rate on economic growth and development. He founded that in less developed and more poor countries, increase in education of girls at school level showed more significant impact on economic growth as compare to boys education in the long run. This will increase the participant of females in labour force which leads to more human capital and economic growth.

Qadri F. S. and Waheed A. (2011) viewed human capital and economic growth by taking time series date of Pakistan from 1978 to 2007. Human capital was represented by health adjusted education and standard Cobb-Douglas production function was applied as applied by Weil D. N. (2007) to check long run relation between human capital and economic growth which showed positive relationship in case of Pakistan. Health adjusted education indicated highly significant factor of economic growth, researcher suggested that government should allocate huge funds for health and education sectors to boost up economic growth in the long run.

Viswanath et al. (2009) considered aggregate production function analysis about the contribution of human capital to economic growth of India. This study used the data of 26 Indian States and Union Territories during 1995-96 and 1998-99 from Handbook of Statistics of Reserve Bank of India during 2004-05 and applied semi-log regression equation for estimation of results. Their calculated results showed strong positive impact of investment in human capital on economic growth. Accordingly, rate of return on investment in human capital is greater than physical or material capital in large number of countries and this return is highest in case of primary education.

Mamuneas et al. (2006) focused a research work on the return to human capital and economic development. They applied a smooth coefficient semi-parametric approach to an annual data from 1971 to 1987 of 51 countries. Their study involved the contribution of classical, neo-classical and human capital in both cases across countries and time. They estimated the output elasticity and other social return on human capital and founded that labour and capital both are insufficient without human capital for economic growth and development. They also observed the more elasticity of aggregate output of human capital in case of outward looking countries under stable conditions.

Mujahid M. and Mukhtar E. M. (2000) conducted a comparative study between Pakistan and India about the importance of human capital in economic development of mentioned developing countries. Data collected from UNESCO, ILO, World Development Reports and annual Yearbooks of Pakistan and India for the period of 1970 to 1994. They used Ordinary Least Squares methods, standard growth accounting methodology and Cobb-Douglas production function for estimations. Results of empirical analysis stated that human capital, which shown by average primary schooling enrollment rates had a positive impact on economic growth in case of India only. Secondary schooling rate showed positive impact on economic growth in case of both countries. Human capital at secondary school level showed a positive link in case and Pakistan and negative impact in case of India.

Hage J. et al. (1988) planned the active state of investment in human capital and economic growth in the case of France during 1825-1975 because France had developed the link of the education sector with the economy at the end of the 19th century. They analyzed the data by using Cobb-Douglas production function, Cochrane Orcutt procedure and Durbin Watson statistic. They stated that no doubt there existed a significant relationship between educational growth and

economic growth but under certain conditions. Course outline must be connected with the achievement of economic goals and after primary education students must be enrolled for a more time period. Government, semi government and private educational institutions must be checked by the government in order to inspect the policy implementation for the application of quality education. They also applied their findings on US economy and founded the same results like France.

3. Methodology and Data Sources

3.1. Data
Secondary data has been taken from WDI 2014, IMF, WBG, UN, PES, FBS and Handbook of Statistics of SBP for the period of 43 years from 1972 to 2014. In this research GDP per capita is a dependent variable and on the other hand, health expenditures, life expectancy, population growth rate, education expenditures, primary enrollment and secondary enrollment are independent variables. ARDL approach is applied on historical data to estimate results.

3.2. Method
GDP = f (HE, LE, PGR, EE, PE, SE)

$GDP = \beta_0 + \beta_1 HE + \beta_2 LE + \beta_3 PGR + \beta_4 EE + \beta_5 PE + \beta_6 SE + e_t$

Where: GDP is gross domestic product per capita, HE shows health expenditures in the million dollars, LE shows life expectance at birth in total years, PGR denotes the population growth rate, EE represses education expenditures measured in the million dollars, PE is primary enrollment in thousand numbers, SE shows secondary enrollment in thousand numbers and finally, e_t placed to express a random error term.

4. Findings
Econometric techniques have been applied to test the affiliation between various series of data.   Econometric techniques

descriptive statistics are applied to examine the statistical behaviour of the data. A short summery of various results is given below in Table A.

Table A. Descriptive statistics

Statistics	GDP	HE	LE	PGR	EE	PE	SE
Mean	549.3428	5345.279	61.64140	2.588837	4889.419	11683.44	1672.53
Median	562.5900	3986.000	62.03000	2.650000	4401.000	10898.00	1525.000
Maximum	798.5400	15274.00	66.80000	3.42000	11823.00	18783.00	5022.000
Minimum	324.9700	292.0000	54.62000	1.650000	335.0000	5015.000	511.0000
Std. Dev	144.0926	4487.508	3.571637	0.620918	3804.079	513.940	1075.929
Skewness	0.116403	0.805881	-0.299774	-0.199928	0.580472	0.083065	1.112767
Kurtosis	1.925788	2.483385	1.918187	1.573130	2.108755	1.471873	4.012365
Jarque-Bera	2.164568	5.132525	2.740852	3.934217	3.837947	4.233301	10.71038
Probability	0.338821	0.076822	0.253999	0.139861	0.146758	0.120434	0.004724
Sum	23621.74	229847.0	2650.580	111.3200	210245.0	502388.0	71919.00
Sum Sq. Dev.	872033.1	846000000	535.7767	16.19264	608000000	1120000000	48620201
Observations	43	43	43	43	43	43	43

4.1. Correlation analysis

This examination is prerequisite to note the correlation among independent and dependent variables. Correlation analysis is not a strong measure to identify the relationship; it is not a complete measure to verify the cause and effect relationship. All the independent variables showed a positive relationship with GDP per capita but population growth rate.

Table B. Correlation matrix of GDP to health and education sector

	GDP	HE	LE	PGR	EE	PE	SE
GDP	1.0000	0.9631	0.9798	-0.8649	0.9775	0.9707	0.3540
HE	0.9631	1.0000	0.9158	-0.8933	0.9918	0.9372	0.4524
LE	0.9799	0.9159	1.0000	-0.8344	0.9388	0.9687	0.2448
PG	-0.8649	-0.8933	-0.8344	1.0000	-0.9073	-0.9179	-0.5968
EE	0.9776	0.9776	0.9919	-0.9073	1.0000	0.9581	0.4384
PE	0.9708	0.9372	0.9687	-0.9179	0.9581	1.0000	0.4103
SE	0.3540	0.4524	0.2448	-0.5968	0.4384	0.4103	1.0000

4.2. Unit root analysis

Unit root analysis is applied due to inferiority of correlation analysis and to check the stationarity of data. ADF can be used for this purpose and further Phillips- Perron (PP) test is employed. The tests can apply to the original series of data at level and also by taking first difference.

Table C. Unit root analysis

Variables	ADF (ρ) value (at level)	ADF (ρ) value (1st difference)	PP (ρ) value (level)	PP (ρ) value (1st difference)
GDP	0.9452	0.0038	0.8450	0.0039
HE	0.9738	0.0457	0.99	0.0128
LE	0.8796	0.2894	0.0024	0.3994
PGR	0.9539	0.1149	0.9775	0.1632
EE	0.9863	0.0000	0.9790	0.0000
PE	0.9556	0.0070	0.9492	0.0000
SE	0.8989	0.0010	0.8789	0.0010

(At 5% level of significance)

4.3. Autoregressive Distributed Lag Model (ARDL)

In its basic form, an ARDL regression model looks like this:

$y_t = \alpha_0 + \alpha_1 y_{t-1} + \ldots + \alpha_k y_{t-p} + \beta_0 x_t + \beta_1 x_{t-1} + \beta_2 x_{t-2} + \ldots + \beta_q x_{t-q} + e_t$

By substituting coefficient in the short run:

GDP = 15.831 + 0.0513HE + 1.1765LE+ 1.8012PGR+ 0.04675EE– 0.21138PE + 0.13438SE + e_t

By substituting coefficient in the long run:

GDP = 1102.864 + 0.23386HE + 3.56423LE+ 4.80323PGR+ 0.18921EE+ 0.86831PE + 0.48364SE + e_t

Table D: ARDL

Variables	Short Run	Long Run	Std. Error	t-Statistic	Prob.
HE	0.0513	0.23386	0.004399	0.310901	0.7577
LE	1.1765	3.56423	4.045525	5.824764	0.0000
PGR	1.8012	4.80323	12.81949	2.558856	0.0149
EE	0.04675	0.18921	0.006473	2.737537	0.0096
PE	-0.21138	0.86831	0.003193	0.182520	0.8562
SE	0.13438	0.48364	0.003580	2.336195	0.0252
C	15.831	1102.864	210.6451	5.2357	0.0000

Table E: Summary Statistics:

R-squared	0.690806	Mean dependent var	549.328
Adjusted R-squared	0.589274	S.D. dependent var	144.0926
S.E. of regression	14.92309	Akaike info criterion	8.391597
Sum squared resid	8017.149	Schwarz criterion	8.678304
Log likelihood	-173.4193	Hannan-Quinn criter.	8.497325
F-statistic	646.6258	Durbin-Watson stat	1.9841
Prob(F-statistic)	0.00000		

According to above table D, in the short run, value of GDP per capita will be 15.831 if all the independent variables are zero. Health expenditures as input expenditures will increase per capita GDP by 0.0513% with one unit increase. Life expectancy will increase GDP by 1.1765% due to one unit increase. Per capita GDP will increase by 1.8012 % with one unit increase in

population growth rate. Findings showed that a 1 unit increase in education expenditures, will push up GDP per capita by 0.04675%.One unit change in primary enrollment will affect negatively GDP by 0.21138%. Similarly, like other variables secondary enrollment also showed positive impact of 0.13438% on GDP with one unit change.

In the long run, value of GDP per capita will be 1102.864 if all the independent variables are zero. Health expenditures as input expenditures will increase per capita GDP by 0.23386% with one unit increase. Life expectancy will increase GDP by 3.564 % due to one unit increase. Per capita GDP will increase by 4.8032 % with one unit increase in population growth rate. Findings showed that a 1 unit increase in education expenditures, will push up GDP per capita by 0.1892%.One unit change in primary enrollment will affect positively GDP by 0.86831%. Likewise, secondary enrollment also showed positive impact of 0.48364% on GDP with one unit change.

As above results of Table E, show that the impressive value of R Square (R^2) is 0.690806, it means that 69.08% of GDP per capita depends mainly upon or explained by all considered independent variables. Just 30.92 % of GDP per capita is explained by the variables outside of this model. Five other elements, "Sum squared residuals," "Log likelihood," "Akaike info criterion," "Schwarz criterion," and "Hannan-Quinn criter" are used for making statistical comparisons between two different regressions.

Final summary statistic is the "Durbin-Watson," the classic test statistic for serial correlation. The value of Durbin-Watson statistics is 1.9841 which is close to 2. It means that errors are serially uncorrelated against the alternative. Summery result shows that the value of Prob(F-statistic) is 0.0000 which is less than 0.05 it means that this model is overall good fit.

4.4. Wald Test

Value of F-statistic is within the critical value band at 0.05 (5 %) level of significance. But it is less than the upper bound value and larger than lower band value. Upper band value is 3.646 and lower band value is 2.476.

Table F: Wald Test

Test Statistic	Value	Df	Probability
F-statistic	3.49482	(6, 22)	0.0169
Chi-square	15.87	6	0.0027

In view of the case intercept and no trend the value of 'k' is 6. 'k' is the number of forcing variables. Table F shows the results of Wald test. The F-statistic in Wald test is 3.49482 which are within the critical value band. It shows that there is a strong long run relationship between GDP and independent variables. Projected value of Chi-square is 15.87 which is greater than tabulated value. It shows association between GDP per capita and independent variables of health and education. So, the alternative hypothesis will be accepted.

5. Conclusion and Policy Implications

5.1. Conclusion

This research study aimed to show the ideas and experiences of various economists concerning to manage the reform programme in health and education sector of Pakistan on large scale. This is an evident study under the used data of 43 years about the economy of Pakistan from 1972 to 2014 which tried to apply the health and education reform in the health and educational institutions for the sake of economic growth and development in addition to a lot of structural changes specifically in health and education sector.

As the international comparative study of Psacharopoulos G. (1984) about the contribution of education to economic growth also concluded that education has positive effects on society, externalities, productivity growth, income

distribution and on institutions buildings. According to this study, education enhances the abilities, job competition, labour market segmentation, pay, status, reward, social class, youth employment and profits, all these lead to economic growth and development.

As Afzal et. al. (2010), concluded while to examine the short run and the long run relationship between school education and economic growth in Pakistan, the positive and significant effect of physical capital in the short run and in the long run on economic growth. This study presents an empirical analysis of the relationship of health and education sectors with economic growth and development in the case of Pakistan. This research confirms and extends various already conducted research works by creating a comprehensive data set for some domestic and foreign resources. This research study finds, as Thurow, (1972) has found, that more educated person are more productive within a given occupational type.

Using ARDL approach, empirical study of this research has reexamined the long run and short run linkage of GDP per capita with education expenditures, health expenditures, infant mortality rate, life expectancy, primary enrollment and secondary enrollment in case of Pakistan which is the main objective of this study. ARDL model is applied to a set of time series date from 1972 to 2014 for 43 years. Results showed the huge dependence of the dependent variable on all the considered independent variables. Empirical evidence from this study shows that the economic health of an economy explained by past health and education level. Future research work will further refine these findings and connections for both developing and developed countries.

5. 2. Policy implementation

There is an urgent need to update the curriculum on whole bases in the education sector and to use the modern ways of treatment in the health sector. There must be created a strong

link between economy and human capital. The government must maintain the quality education and better health facilities to the population. Finally, in time and better rewards with healthy increment must be paid to the staff in both the sectors that will increase the efficiency and performance of staff which will lead to the rapid human capital accumulations and economic development.

Intangible capital contributes 45% to the world's GDP. The contribution rate of intangible capital in the case of US is 70.3%, in the European Union is 51.6%, in the case of Sweden it is 72.5%, in Denmark it is 67.6% and it is 69.7% in the case of Finland. So, it is very important to apply the human capital for the development of the economy of Pakistan.

As discussed earlier the finding of Psacharopoulos G. (1984) strongly recommend more public and private expenditures on education sectors, especially on schooling due to the plausible findings. Policy makers and administrators must decide to spend more on schooling because it has a double positive effect on social and economic development. He further stated that the role of education is more important for industrial development in the case of developing countries.

Different researchers focused on specific areas of health and education sector like according to Barro (2013) health facilities are more important than educational facilities, research publications showed positive impact on GDP Akhmat et al. (2014), economic development depends more on education instead of health Bedia and Christophe (2008), Agasisti (2014). Educational expenditures per capita and technological education with the technological literacy rate, childhood health is helpful for primary enrollment and parent education, especially mother's education plays a more effective impact on GDP per capita as stated by Vogl (2012), increase in existing health stock leads to more GDP per capita as said by Akram (2009), poverty in Africa and South Asia is mainly due to their unhealthy population as said by Acemoglu et al. (2003).

Similarly, Vila et al. (2014) stated that knowledge of neighbor countries and trading partners has significant impact on GDP, Maria (2014) focused on education of women for economic growth by allowing literate women to keep or to adopt desired family size. Government of Pakistan must try to focus on these important above mentioned variables in order to develop the health and education sector for the improvement of human capital which is necessary for the growth of GDP per capita.

Akram, M. and Khan, F. J. (2007) researchers of this paper recommended various measures to implement the effective policy to uplift the health sector, which is necessary for GDP per capita growth. They said there is need to implement the policy equally in rural and urban areas because the population is distributed in rural and urban regions. Health sector of Pakistan needs due important to improve the living standard of population and proper reallocation of resources is required to uplift the health sector. The government must offer more subsidies to poor population mainly to enhance their health status. Government of Pakistan is not offering cost effective and reachable health services; more percentage of GDP must be allocated to develop the health sector. There is need to increase the strength of nurses as compared to doctors in Pakistan, for this government of Pakistan must establish a nursing college in the public sector and private sector. Finally, they suggested that role of the private sector must be highlighted and in specific cases public-private joint ventures must be established to develop the health sector of Pakistan.

Mazhar, A. and Shaikh, B. T. (2012) had recommended some effective measures to improve the health care services in Pakistan. Government of Pakistan must increase administrative and financial powers of authorities at the provincial level as compare to federal level. Policy implementation in the health sector must focus long run results instead of short run benefits only. If health policy is implemented at the district level, then it will be more

beneficial. More services and facilities are needed for poor income group in Pakistan. Furth more, evidence based interference for maternal, newborn and child health is needed to make advance the health sector of Pakistan.

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