International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 06, 2020
ISSN: 1475-7192

IMPACT OF POPULATION, TRADE OPENESS, EDUCATION, LIFE EXPECTANCY AND GROSS CAPITAL FORMATION ON THE ECONOMY OF INDIAN SUB-CONTINENT

[1]Dr Sarfaraz Javed, [2]Dr. Mohammad Shahfaraz Khan, [3]Dr. Ataur Rahman Farooqi

ABSTRACT--*This paper examines the impact of population, trade openness, education, life expectancy and gross capital formation on the economy of Indian sub-continent.This study made use of quantitative research design andsecondary data on population, trade openness, education, life expectancy, gross capital formation and GDP of India, Pakistan, Sri Lanka and Bangladesh gotten from world bank database from 1990-2017 was used. The* outcome variable was GDP while the predictor variables were population, trade openness, education, life expectancy and Gross Capital Formation (GCF). *The data was analyzed using Eviews 9.0 and statistical methods such as Pearson Correlation, Fixed and Random Model and Hausman Tests were used to test the hypotheses. The finding of this study shows that Population, Life Expectancy and Trade openness significantly influence economy of India while education and Gross Capital formation did not. Also, Gross Capital formation positively significantly impact economy of Pakistan while Population, Life Expectancy, Trade Openness and education did not significantly impact the economy of Pakistan. In Sri Lanka, Population, Life Expectancy, Trade Openness, Gross Capital Formation and education did not significantly impact the economy. In Bangladesh, Population, Life Expectancy, Trade openness, education for all, education for men and women significantly influence economy. The result of the fixed and random effect shows that population effect across Bangladesh and Pakistan is positive and significant and the population effect of India is negative while that of Sri Lanka is not significant. Gini education for all is positive and significant in India and Sri Lanka which implies that education for all positively impact economy of India and Sri Lanka while education for all is negatively significant in Pakistan and not significant in Bangladesh**. *Many of the previous research works were centered on India. Very few studies had been carried out on Indian-subcontinents with respect to the variables considered in this study.This study examines the overview of previous related research studies and also examine the impact of the predictor variables on economic growth in the selected 4 countries selected from the Indian sub-continents using Fixed and Random Model and Hausman Tests.*

Keywords-- *impact of population, trade openess, education, life expectancy and gross capital formation on the economy of indian sub-continent*

[1]Assistant Professor, Economics and Business Studies, Mazoon College, Oman

[2]Assistant Professor (Accounting & Finance), Department of Business Administration|Rustaq college of Education (Formerly College of Applied Sciences) |Ministry of Higher Education Oman

[3]Assistant Professor (Accounting & Finance) College of Applied Sciences, Nizwa Ministry of Higher Education Sultanate of Oman

Received: 22 Feb 2020 | Revised: 13 Mar 2020 | Accepted: 05 Apr 2020

I. INTRODUCTION

Population, Trade Openness, Education, Life Expectancy and Gross Capital Formation play vital roles in economic development of a nation. The population of the world grew to almost Two Hundred and Fifty Million around Two thousand years ago, with lower than one fifth of the Chinese population presently. The 21st century started with more than Six billion population and there has been a tremendous growthof population of the world from the twenty-first century to date. According to Max and Esteban (2013), the growth in population that the world experienced from 1900 to 2000 triples the entire population of past years of the world.In 2017, the total world population was estimated at 7.5 billion people (World Bank, 2017). Research has shown that aboveEighty Five million personsadd up to global populationeach year with over Eighty Three percent of this net increase in population comes from the developing countries.Trade openness is known as trade shares. The trade-to-GDP ratio is an indicator of the relative significance of global trade of nation's economy. It is computed by dividing the total value of imports and exports over a period by the GDP for a similar period.Across nations of the world, life expectancy in greater measure is correlated with a high level of Per Capita. Theoretically, a rise in life expectancy may positively or adversely affect GDP. Contrarily, low level of mortality rate may increase per capita incomethrough increasein production of resources available.

India is one the largest democratic nation globally and covers 2.4 percent of global total land as well as 16 percent of worldwide total population living in it. Each year, Indian's population increases by about 1.6 corespeople. India as a nation has medium human development with 0.624 divisions, together withnationslike Namibia, Pakistan and Congo respectively and rated third within SAARC nations followingSri Lanka (Seventy Three), Maldives (One Hundred and Five) while India 131 ranked among the 188 countries.

In terms of politics, Indian subcontinent is made up of countries like Sri Lanka, Bangladesh, Pakistan and India. It also involves other countries like Bhutan, Maldives and Nepal (Kumar, 2012). However, this study will focus on India and three other countries which are Bangladesh, Pakistan and Sri Lanka.This paper's primary aim is to examine impact of population, life expectancy, trade openness, Gross Capital Formation (GCF) and education on the economy of Indian sub-continent.

II. LITERATURE REVIEW

Kothare (1999)carried out a study on the correlation between growth in economy and population in India from 1988 to 1998. The results indicate that population growth positively affecteconomy, which is consistent in short-run as well as long-run.Ali et al. (2013)carried out a studyon the effect of growth in population on economyofPakistan from 1975 to 2008 withARDL model which shows a positivelysignificant correlation between economy and growth in population. Bhanu and Archana (2016) carried out a study onimpactof growth in population on economy of India and found that growth in population has a positively significant correlation witheconomy.Tilak (2007) carried out a study on the impact of secondary and tertiary education levels on economy of India. The findings revealed a significant relationship between secondary education and growth in economy. In addition, it also reveals that inequality of gender in education is major challenge of the society of India.

Karim & Islam (2014) carried out a study on the impact of Trade Openness on economic growth of Bangladesh from 1980-2012 using Co-integration and Error Correction model and the result shows that causality are from GDP per capita, life expectancy and population density to economic growth rate.In their study, Self et al (2004) showed that elementary and secondary education is not only strongly related with the economic growth of India but it also has a strong casual effect on India's economy. Their result equally revealed that all education levels are related to each other. Nonetheless, the finding also showed differences between the primary, secondary and tertiary level of education based on their effecton economic growth as tertiary education does not seem to have causal effect on the economic growth.

In a study of about Sixty Nine developing nations, Ranis et al (2005) revealed a two-way correlation within growth in economy determined by GDPas well as human development determined by life expectancy as well as education .A study carried out by Acemoglu and Johnson (2007) across 59 nations, revealed that higher life expectancy does not result intohigh level of per capita income. Aslam (2017) examined the dynamics of Trade Openness in Sri Lanka making use of time series data from 1975-2014 applying co-integration and VECM. Their findings show that trade openness had a negative significant long run correlation with economic growth of Sri Lanka.

III. HYPOTHESES

H_{01}Population, trade openness, gross capital formation education and life expectancy do not significantly affect the economy of India.

H_{02} Population,gross capital formation, trade openness, education and life expectancy do not have significant impact on the economy of Pakistan.

H_{03} Gross capital formation,population, trade openness, life expectancy and educationdo not have a significant impact on the economy of Sri Lanka.

H_{04} Population, trade openness, education, life expectancy and gross capital formation do not have a significant effect on the economy of Bangladesh.

H_{05}: The fixed and random effects of Population, trade openness, education, life expectancy and gross capital formation on economy of Indian sub-continent

IV. METHODOLOGY

This study made use of quantitative research designandsecondary data on population, trade openness, education, life expectancy, gross capital formation and GDP of India, Pakistan, Sri Lanka and Bangladesh gotten from World development Indicators from World Bank Database within 1990 to 2017was used.

Indian subcontinent comprisesIndia,Sri Lanka, Bangladesh, Pakistan, Bhutan, Maldives and Nepal. According to World Bank (2017), the population of India in 2017 was 1.339 billion, Pakistan had a population of 197 million and Sri Lanka had a population of 21.44 million while other sub-Indian continent nations such as Bhutan had a population of 807,610, Maldives had a population of 436,330 and Nepal had a population of 29.3 million.Out of the 7 countries in the Indian subcontinent, 4 of the countries (India, Pakistan, Bangladesh and Sri Lanka) were purposely selected for this study because the data on Population, Trade Openness, Education, Life

Expectancy and Gross Capital Formation for the other 3 countries (Maldives, Bhutan and Nepal) were not complete and available for this study.

Economy growth was measured using GDP and also serves as the outcome variable while the predictor variables were population, trade openness, education, life expectancy andGross Capital Formation (GCF). The data was analyzed using Eviews 9.0 and statistical methods such as Pearson Correlation, Fixed and Random Model and Hausman Tests weretested to on the hypotheses to determine the impact of the independent variables on dependent variable.

According to Bole & Rebec (2013), to use fixed effect models or random effects model is dependent on the correlation between the unit effects and the predictor variables. The standard test to decide which of the models to utilize is determined by Hausman test (1978). Baltagi (2005) noted that Hausman's (1978) test significantly proposes to compare $\hat{\beta}_{GLS}$ and $\hat{\beta}_{within}$ which are reliable with H_0"Null Hypothesis" when H_0: E($u_{it} \mid X_{it}$) = 0 is true, however with $\hat{\beta}_{GLS}$ not reliable, when $H_0$is not true.

V. DATA ANALYSIS

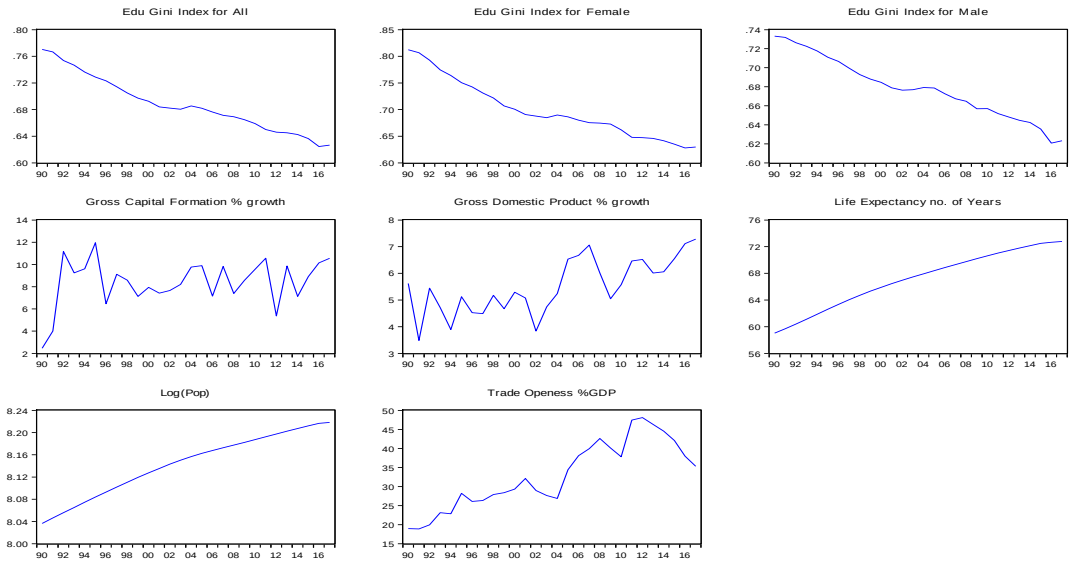

Figure 1: Bangladesh

Received: 22 Feb 2020 | Revised: 13 Mar 2020 | Accepted: 05 Apr 2020

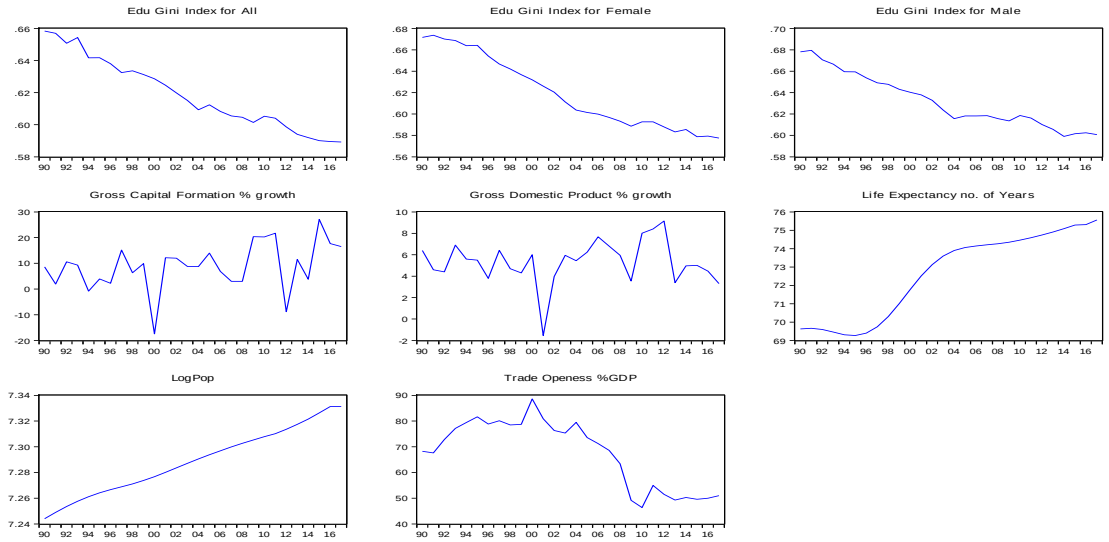

Figure 2: Sri Lanka

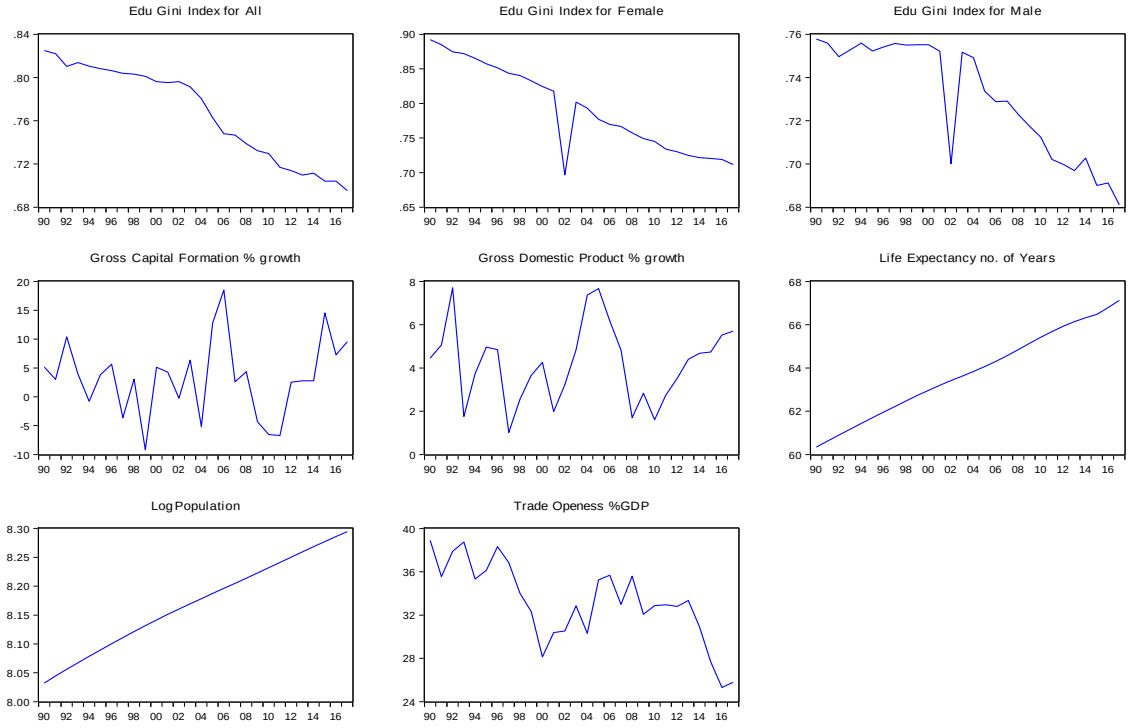

Figure 3: Pakistan

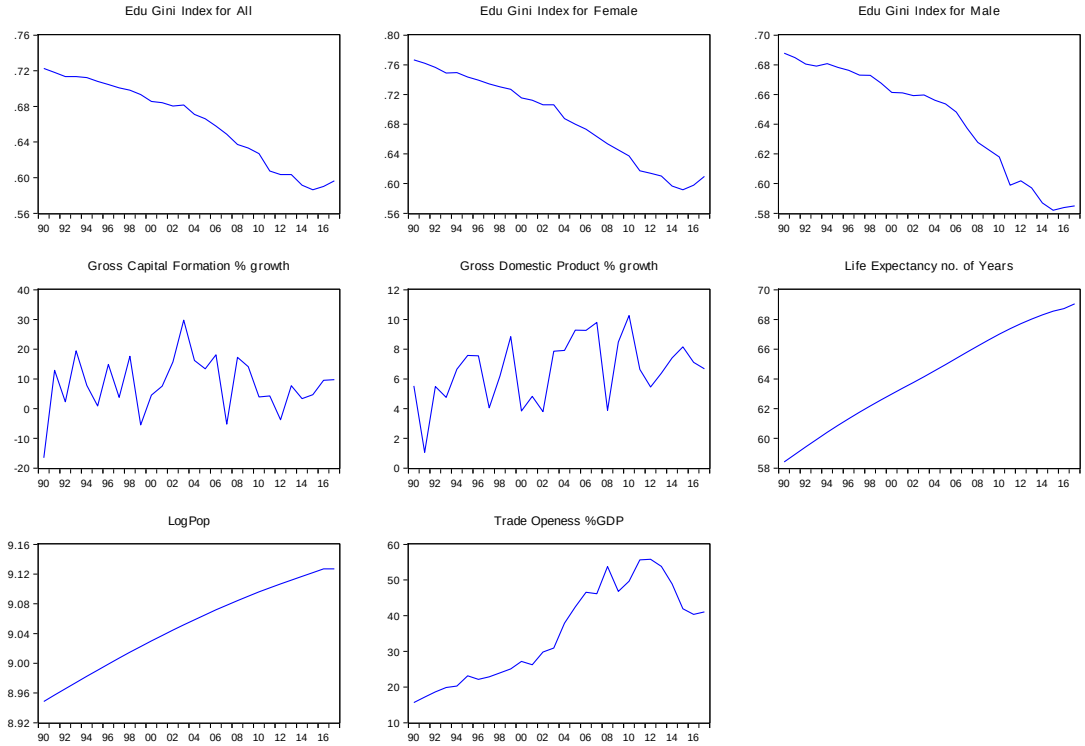

Figure 4: India

Table 1: Correlation of Population, trade openess, education, life expectancy and gross capital formation on the economy of India

Variable	1	2	3	4	5	6	7	8
GDP	1							
LogPop	.427*	1						
Life Expectancy	.420*	.999**	1					
Trade Openness	.405*	.902**	.902**	1				
Gini[a]	-.337	-.964**	-.971**	-.878**	1			
Gini[m]	-.300	-.942**	-.953**	-.837**	.995**	1		
Gini[f]	-.373	-.976**	-.981**	-.899**	.997**	.987**	1	
GCF	-.067	.085	.071	.032	.043	.063	.013	1

Table 1 shows a significantly positive correlationwithin GDP and Population at (r = .437, p<.05), GDP and Life Expectancy at (r=.420, p<.05) as well as GDP and Trade Openness at (r=.405, p<.05). However, no significant relationship existedwithin GDP and Education for all (Gini[a]), GDP and education for men (Gini[m]), GDP and education for women (Gini[f]). Also, no significant relationship existed withinGCF and GDP.Therefore, the result of the first hypothesis shows that Population, Life Expectancy and Trade openness significantly influence economy of India while education and GCF did not.

Received: 22 Feb 2020 | Revised: 13 Mar 2020 | Accepted: 05 Apr 2020

Table 2: Correlation of Population, trade openess, education, life expectancy and gross capital formation on the economy of Pakistan

Variable	1	2	3	4	5	6	7	8
GDP	1							
LogPop	.027	1						
Life Expectancy	.020	.999**	1					
Trade Openness	-.106	-.714**	-.710**	1				
Gini[a]	-.044	-.964**	-.971**	.595**	1			
Gini[m]	-.024	-.882**	-.893**	.608**	.912**	1		
Gini[f]	.005	-.941**	-.938**	.675**	.888**	.927**	1	
GCF	.518**	.073	.067	-.010	-.118	-.122	-.034	1

From table 2no significant correlation existed within GDP and Population at (r=.027, p>.05), GDP and Life expectancy (r=.020, p>.05), GDP and Trade Openness (r=-.106, p>.05), education and GDP. However, a positive significant correlation existedwithin GDP and Gross Capital Formation (r=.518, p<.01). Therefore, the result reveals that the economy of Pakistan was positively influenced by GCF while Population, Life Expectancy, Trade Openness and education did not significantly impact the economy of Pakistan.

Table 3: Correlation of Population, trade openess, education, life expectancy and gross capital formation on the economy of Sri Lanka

Variable	1	2	3	4	5	6	7	8
GDP	1							
LogPop	.055	1						
Life Expectancy	.080	.946*	1					
Trade Openness	-.143	-.767**	-.709**	1				
Gini[a]	-.048	-.985**	-.960**	.701**	1			
Gini[m]	-.060	-.971**	-.961**	.648**	.993**	1		
Gini[f]	-.081	-.971**	-.984**	.706**	.989**	.988**	1	
GCF	-.175	.361	.335	-.463*	-.330	-.309	-.342	1

From Table 3, no significant correlation existedwithinPopulation and GDP at (r=.055, p>.05), GDP and Life Expectancy (r=.080, p>.05), GDP and Trade Openness (r=-.143, p>.05), education and GDP and GDP and Gross Capital Formation (r=-.175, p>.05). The result of the third hypothesis shows that Population, Life Expectancy, Trade Openness, GCF and education did not significantly impact the economy of Sri Lanka.

Table 4: Correlation of Population, trade openness, education, life expectancy and gross capital formation on the economy of Bangladesh

Variable	1	2	3	4	5	6	7	8
GDP	1							
LogPop	.703**	1						
Life Expectancy	.703**	1.00**	1					
Trade Openness	.691**	.896**	.903**	1				
Gini[a]	-.681**	-.991**	-.991**	-.875**	1			
Gini[m]	-.701**	-.984**	-.985**	-.858**	.993**	1		
Gini[f]	-.657**	-.988**	-.988**	-.875**	.996**	.979**	1	
GCF	.267	.288	.283	.187	-.303	-.279	-.304	1

From Table 4,there exist a significant positive relationship within GDP and Population at (r = .703, p=.05), GDP and Life Expectancy at (r=.703, p<.01) and GDP and Trade Openness at (r=.691, p<.01), while there no significant correlation existedwithin GDP and GCF. The result of the fourth hypothesis shows that Population, Life Expectancy, Trade openness, education for all, education for men and women significantly influence economy of Bangladesh while no significant correlation existed within GDP and GCF.

Table 5: The results of fixed-effects model regression by method of OLS

FIXED EFFECTS				
	Bangladesh	India	Sri Lanka	Pakistan
Log(Pop)	284.11**	-489.45**	7.22E-12	159.86**
	(41.30)	(85.02)	(6.73E-12)	(82.84)
Trade Openess	0.12**	-0.12**	7.87E-15*	-0.24**
	(0.12)	(0.03)	(4.10E-15)	(0.05)
Life Expectancy	-3.77**	9.41**	-8.82E-13**	-8.00**
	(0.59)	(1.54)	(6.26E-14)	(3.16)

Gini[a]	-6.14	509.17**	4.21E-11**	-72.45**
	(27.43)	(89.72)	(1.49E-11)	(20.28)
Gini[m]	-62.88**	87.14	5.57E-11**	6.22
	(27.43)	(68.54)	(1.13E-11)	(32.22)
Gini[f]	42.96**	-430.87**	-1.26E-10**	-1.25
	(21.32)	(44.40)	(8.85E-12)	(15.29)
Gross Capital Formation	0.06**	-0.09**	1.00**	0.11**
	(0.02)	(0.01)	(2.78E-15)	(0.02)
Constant	-2043.05**	3738.09**	2.76E-11	-732.59
	(295.72)	(663.79)	(5.35E-11)	(471.91)
N	28	28	28	28
F-test	Prob>F = 0.000	Prob>F = 0.000	Prob>F = 0.000	Prob>F = 0.000
R-Square	0.6635	0.5618	1.000	0.3456

Table 6: The results of Random-effects model regression by method of OLS

Random EFFECTS				
	Bangladesh	India	Sri Lanka	Pakistan
Log(Pop)	284.11**	-489.45**	2.53E-11**	159.86**
	(41.30)	(85.02)	(6.73E-12)	(82.84)
Trade Openess	0.12**	-0.12**	2.76E-14**	-0.24**
	(0.12)	(0.03)	(4.10E-15)	(0.05)
Life Expectancy	-3.77**	9.41**	2.59E-14	-8.00**
	(0.59)	(1.54)	(6.26E-14)	(3.16)
Gini[a]	-6.14	509.17**	-1.93E-11	-72.45**
	(27.43)	(89.72)	(1.49E-11)	(20.28)
Gini[m]	-62.88**	87.14	8.37E-11**	6.22
	(27.43)	(68.54)	(1.13E-11)	(32.22)
Gini[f]	42.96**	-430.87**	-3.62E-11**	-1.25
	(21.32)	(44.40)	(8.85E-12)	(15.29)
Gross Capital Formation	0.06**	-0.09**	1.00**	0.11**
	(0.02)	(0.01)	(2.78E-15)	(0.02)
Constant	-2043.05**	3738.09**	-2.07E-10**	-732.59
	(295.72)	(663.79)	(5.35E-11)	(471.91)
N	28	28	28	28
F-test	Prob>F = 0.000	Prob>F = 0.000	Prob>F = 0.000	Prob>F = 0.000
R-Square	0.6635	0.5618	1.000	0.3456

The result of hypothesis five reveals population effect across Bangladesh and Pakistan is positively significant which implies that the population of Bangladesh and Pakistan significantly impact their economy while the effect of population of India is negatively significant while that of Sri Lanka is not significant. Gini education for all is positive and significant in India and Sri Lanka while implies that education for all positively impact economy of India and Sri Lanka while education for all is negatively significant in Pakistan and not significant in Bangladesh.Education for male is significant in Sri Lanka and Bangladesh but not significant in India and Pakistan while it is positive in Sri Lanka, it is negative in Bangladesh. Education for female is significant in Bangladesh, India and Sri Lanka but not significant in Pakistan. However, it is positively significant in Bangladesh while it is negatively significant in India and Sri Lanka.

Hausman Test

H_0: Random effects model is appropriate

H_A:Fixed effects model is appropriate

Table 7: Summary of results with Hausman Test

Countries	Chi–square	Prob	Decision	Conclusion
India	0.000000	1.00000	Accept H_0	Random Effect is appropriate
Sri Lanka	0.000000	1.00000	Accept H_0	Random Effect is appropriate
Pakistan	0.000000	1.00000	Accept H_0	Random Effect is appropriate
Bangladesh	0.000000	1.00000	Accept H_0	Random Effect is appropriate

Since p-value of the Hausman tests across the 4 countries is >.05, this implies that the null hypothesis is retained and therefore conclude that Random Effect is appropriate for India, Sri Lanka, Pakistan and Bangladesh.

VI. CONCLUSION

The finding of this study shows that Population, Life Expectancy and Trade openness significantly influence economy of India while education and Gross Capital formation did not. Also, Gross Capital formation positively significantly impact economy of Pakistan while Population, Life Expectancy, Trade Openness and education did not significantly impact the economy of Pakistan. In Sri Lanka, Population, Life Expectancy, Trade Openness, Gross Capital Formation and education did not significantly impact the economy. In Bangladesh, Population, Life Expectancy, Trade openness, education for all, education for men and women significantly influence economy while there was no significant relationship between GDP and Gross Capital Formation. The result of the fixed and random effect shows that population effect across Bangladesh and Pakistan is positive and significant which implies that the population of Bangladesh and Pakistan significantly impact their economy while the population effect of India is negative and significant while that of Sri Lanka is not significant. Gini education for all is positive

and significant in India and Sri Lanka while implies that education for all positively impact economy of India and Sri Lanka while education for all is negatively significant in Pakistan and not significant in Bangladesh. This finding agrees with Kothare (1999) who discoveredthat population growth positively significantlyaffects economic growth. Also, Tilak (2007) in his studyrevealed a significant correlation withinsecondary education and growth in economy.

REFERENCES

1. Acemoglu, D., & Johnson, S. (2007). Disease and Development: The Effect of Life Expectancy on Economic Growth. Journal of Political Economy, 115 (6), 925-985.
2. Ali, S., Ali, A., & Amin, A. (2013). The impact of population growth on economic development in Pakistan. MiddleEast Journal of Scientific Research, 18(4), 483–491
3. Aslam, A.L. M (2017). Dynamics of Trade Openness in Sri Lanka. World Scientific News;WSN 81(2) (2017) 94-105
4. Baltagi, B. H. (2005). Econometric Analysis of Panel Data (3 ed.). Chichester: Wiley
5. Bhanu, P. K. K., & Archana, T. (2016). Effect of Population Growth on Economic Development in India. Available at: https://www.researchgate.net/publication/309158950 (Accessed 13 December 2018).
6. Biggs, B., King, L., Basu, S. & Stuckler, D. (2010). Is Wealthier always Healthier ? The Impact of National Income Level, Inequality, and Poverty on Public Health in Latin America. Social Science & Medicine, 71, 266-273.
7. Bocchiola, D., & Diolaiuti, G. (2013).Recent (1980–2009) evidence of climate change in the upper Karakoram, Pakistan.Theoretical and applied climatology, 113(3-4), 611-641.
8. Bole, V., & Rebec, P. (2013). Bootstrapping the Hausman Test in Panel Data Models. Communications in Statistics: Simulation and Computation , 42, 650-670.
9. Hausman, J. A. (1978). Specification Tests in Econometrics. Econometrica , 46 (6), 1251-1271.
10. Kothare, R. (1999). The impact of population growth on economic growth in India. Journal of Social Science India, 410, 1-14
11. Kumar, D. (2012). Genomics and Health in the Developing World. Oxford University Press. p. 889. ISBN 978-0-19-537475-9.
12. Max, R., & Esteban O. O. (2013). World Population Growth. Available at: https://ourworldindata.org/worldpopulation-growth/ (Accessed 13 December 2018).
13. Ranis, G., & Stewart, F. (2005). Dynamic Links between the Economy and Human Development. Working Paper No. 8. New York: Department of Economic and Social Affairs (DESA), United Nations
14. Rasul, G., Mahmood, A., Sadiq, A., & Khan, S. (2012). Vulnerability of the Indus delta to climate change in Pakistan.Pakistan Journal of Meteorology, 8(16).
15. Self, S. and Grabowski, R. 2004. Does education at all levels cause growth? India, a case study. Economics of Education Review, 23: 47–55.
16. Tilak, J. B. G. 2007. Post-elementary education, poverty and development in India. International Journal of Educational Development, 27(4): 435–445.