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Bridging Gaps: Analysis Of Human Development, Income Inequality & Economic Growth In SAARC Countries (1985-2022)

Shah Faisal^{1*}, Dr. Atta Ullah Khan², Dr. Zahra Jamebozorg³

¹PhD Scholar, Department of Economics, Preston University Kohat-Islamabad Campus, Pakistan (faisalqureshis@gmail.com)

²Assistant Professor Economics Allama Iqbal Open University, Islamabad, Pakistan (attaullah.khan@aiou.edu.pk)

³Associate Professor of Educational Technology, Allameh Tabatabai University, Tehran, Iran (jamebozorgzahra@ymail.com)

***Corresponding author:** Shah Faisal

^{*}PhD Scholar, Department of Economics, Preston University Kohat-Islamabad Campus, Pakistan (faisalqureshis@gmail.com)

Abstract

This study delves into the intricate relationships among Human Development, Income Inequality, and Economic Growth, emphasizing the pivotal role of Human Development in shaping the progress of SAARC's member states along with China. The study also examines that how china got control over income inequality. Employing robust measures of Human Development, the research explores its influence on Economic Growth using a comprehensive panel data model, estimated through the Panel Least Square method. The selection between Fixed Effects and Random Effect Models is determined through the Hausman Test, ensuring the robustness of the analysis. The temporal scope of the study spans from 1985 to 2022. The major findings comprises that income inequality (G) has negative effect on human development (HD). Economic growth (EG), Gender Development Index (GDI) and mean year of schooling (MYS) has positive impact on human development (HD). On the other hand, CC (Control of Corruption), G (Income-Inequality) and HD (Human Development) accelerate EG (economic growth). Population growth per annum (P) results slow down the rate of EG (economic growth) in the SAARC regional states. Moreover, EG (Economic Growth) significantly increases the G, and agriculture area as percentage of total land area (AGL) and HD negatively and significantly affect income inequality (G) in the SAARC regional states. Summing up, human development positively and significantly accelerates economic growth, and economic growth enhance the level of human development ranking of the sample countries. Moreover, human development measure also significantly reduces income inequality. The study discerns that control of corruption and employment in agricultural (agri) sector on HDI has a negative impact. The relationship between Human Development Index (HDI) and economic growth is positive and statistically significant. This revelation suggests a strategic avenue for development— Encouraging the SAARC nations to invest in human capital emerges as a strategic imperative for accelerating their economic growth. By prioritizing education, skills development, and overall well-being of their populations, these countries can foster a more robust and sustainable foundation for economic progress. The new variable, that is, employment in agriculture sector has negative relationship with HDI and highly significant. It shows that if a country is moving higher at human development, then, employment in conventional agriculture sector would fall.

Keywords: Human Development, Income Inequality, Gini Coefficient, Economic growth, AGL, GDI, MYS, P, SAARC and China

Introduction

Peoples are the instrument for advancement. Through people economics development occurs. Knowledge, skill and contribution are the key factors behind the progress; but, progress is not possible without human being (Haq, 1995). Overall, prosperity of individual within the society, improves the level of human being and it comes when progress made by people of a region. Heckman et. al, (2014) emphasize that early life experiences, particularly during sensitive periods of development, have a profound and lasting impact on various aspects of an individual's skills and abilities. (De la et. al, 2019).

In the context of human development, positive social interaction play a crucial role in shaping of various aspects of an individual life, which includes social skills & physical health and both these surrounds the development of individual. (Dominques et. al, 2019). Haq, 1995, elaborates that in the development of human, the human institutions and their skills has a vital role, because these are the back bones which enhances the capability of human being.

The role of economic wellbeing recognizes the essential component of human development. However, it suggests, that economic prosperity is one side of a large-picture which should contribute to overall flourishing rather than the sole focus. (Alkire, S. 2016).

Human development is a process of human being development, but when inequality rises, it causes high social costs, such as increased rates of violence and criminal activities. Such inequality, lead to frustration, social tension, and a sense of justice,

contributing to a higher likelihood of criminal behavior. (Enamorado et al. 2016). Other causes, which rising income inequality is poor environmental quality (Hailemariam et al. 2019), lower economic growth (Brueckner and Lederman 2018; Madsen et al. 2018; Ullah, 2020) reduces consumption of human being (Bampinas et al. 2017; Khan et al., (2020)).

For academic purpose, there is allot of literature on the exploration of human development, which is not only confined to a single academic discipline. Instead, it involves insights from fields such as economics growth, poverty, income inequality, sociology, psychology, public health, and others. This research delves into the relationship between human development, economic growth and income inequality in SAARC regional states. Considering that how improvements are reflected in living standards, education and healthcare contribution to overall development.

The studies are diverse in terms of methodology used insight the analysis, data type, sets of variables and area of the study etc. However, results of these studies can be compared up to some extent i.e. Afzal et al., (2012) established that the impact of education on economic growth was remained positive in the long run in the period 1971-2010. Novid and Sumarsono (2018) was also established a positive effect of Human Development Index (HDI) on economic growth in the East Java Indonesia. Er, S. (2012) established that women participants in politics, parliament, employment of women, results in less fertility rate, which is a positive indicator for economic growth.

Doepke et al, (2015) investigated the distributive effect on monetary policy, where they opined that an increase in the interest rate lowers the income inequality in the region due to lower inflation, this result a re-distribute policy of wealth from upper to lower class, which lender to middle class borrowers.

Jamebozorg et. al (2023), concluded that designing a project-based web-based learning environment affected the dimensions human and mostly in the learning environment of students' creativity. Similarly, in another study, they also concluded that the field of artificial intelligence also improves the learning of human being as well as improves the human development in the technology era. But for such improvement proper project planning is very essential.

The results showed the effectiveness of MOOCs at the international studies, including the estimated efficiency in learning (Individual learning, learning process, Learning product, Social learning), education (Job skills, Identifying the academic problem, Planning and implementation, Course and educational content), psychological(Self-help skills, Cognitive effectiveness, Functional effectiveness, Life Skills, Motivational effectiveness, positive psychology, emotional effectiveness, Learning Social psychology variables) and pedagogical (Education and higher education processes).

In summary, the findings from Zhang (2019), Iskandar (2017), Bansal et al. (2021) and Jamebozorg et. al (2022), collectively contribute to the literature on the positive relationship between Human Development and economic growth. Providing insights into regional variations and emphasizing the enduring nature of this connection over different time periods and contexts. Moreover, according to Faisal (2022), he reported that there is a positive effect of Human Development (HD) on Economic Growth (G) within a sample of eight countries belonging to the South Asian Association for Regional Cooperation (SAARC) group. Alvan (2009) identified that causality runs in both directions between Human Development (HD) and Income-Inequality. This suggests a mutual influence, where improvements in Human Development contribute to a reduction in Income-Inequality, and conversely, a decrease in Income-Inequality extend an assistance in the improvement of human development.

To sum up, the authors of this paper make an attempt to find out the relationship between human development, income inequality, and economic growth in the SAARC organization, taking into account the influence of China and its impact on the regional economic landscape during the period from 1985 to 2022. The methodological approach, specific variables studied, and the findings would provide further insights into the complex dynamics within the studied timeframe. The primary goal of the study is to investigate and understand the role of Human Development while promoting the Economic Growth and reducing the Income-Inequality within the SAARC Regional states. Its contribution lies in its attempt to address an unexplored aspect of the relationship between these variables, providing valuable insights for both researchers and policymakers.

Methodology

The focus of the present study to investigate the relationship between human development index (HDI), Income Inequality (G) and Economic growth (EG) in the SAARC regional states. The following regression equations were developed on the basis of literature review. In the present study, Equation (1) and (2) were replicated from Binder and Georgiadis (2010) as they had estimated the determinants of human development for 84 countries from 1970 to 2005. In their study, they used auto-regressive model, whereas, in the present paper, the dynamic panel version of the Binder & Georgiadis (2010) are used.

$$HD_{ct} = \alpha_0 + \alpha_1 G_{c,t-i} + \alpha_2 EG_{c,t-i} + \alpha X_{c,t-i} + \eta_c + \gamma_t + \varepsilon \dots\dots\dots \\\backslash 1$$

$$EG_{ct} = \beta_0 + \beta_1 G_{c,t-i} + \beta_2 HD_{c,t-i} + \beta X_{c,t-i} + \eta_c + \gamma_t + \varepsilon \dots\dots\dots 2$$

$$G_{ct} = \phi_0 + \phi_1 EG_{c,t-i} + \phi_2 HD_{c,t-i} + \phi X_{c,t-i} + \eta_c + \gamma_t + \varepsilon \dots\dots\dots 3$$

Similarly, Equation (3) was derived from Roine, Vlachos and Waldenström (2009) in which they investigated the determinants of Income-Inequality for 16 countries over the entire twentieth century. However, in the present study, the model modified while including Human Development Index (HDI) as an explanatory variable along with dynamic panel specification at level and various lags of variables. Equation (1) to (3) are not treated like simultaneous equations, but was estimated as single equation models as did by Binder and Georgiadis (2010). The equations contain lag terms of various variables, which can reduce the issue of simultaneity in the regression.

The variables HD, G and EG represent Human Development Index, Income-Inequality measured by Gini Coefficient and Economic Growth of each country. Economic Growth is measured by log of Gross National Income per capita based on PPP of 2007. Whereas, X is the vector of explanatory variables. In equation (1), X includes mean years of schooling (MYS) and Gender Development Index (GDI). In equation (2), X includes Population Growth rate (in percentage) measured by P and Control of Corruption (denoted by CC). In equation (3) includes "Agricultural Land percentage of total area" denoted by AGL. The panel data set consist of SAARC regional states along with China. The country china is included for the purpose to balance the economic size of India in the sample as India is one of the largest economies in the SAARC regional states.

The data on HD, G, EG, GDI, MYS are obtained from Human Development Reports (various issues) by UNDP. Data for some variables during the period 2019 & 2020 were not available in the given database, therefore, the average of last five years were taken and used as proxy. The data on P and AGL were taken from World Development Indicators (various issues) as well as the World Bank. Data on CC collected from governance indicators, published by the world bank. It is to be mentioned that data for the said variable was not available from 1990 to 1996, then its average for five years was taken as a proxy. The time period for analysis is from 1985 to 2022 including SAARC regional states as well as China, so the total 9 countries enlisted in the panel.

Discussion

The analysis begins with a unit root test on the time series data. A unit root test is commonly employed to assess the stationarity of a time series. In this context, the Levin, Lin & Chu (2002) test is chosen for its suitability in dealing with moderate-sized panel data analysis. The results of the test are given in the Table No.1, where three options i.e. intercept, both intercept, trend and None has been performed. These results are reported in Table No.1. From the analysis, it is evident that most of the series are found stationary at level with intercept term of the test statistics. It is pertinent to mention that variable "P" is stationary at level when both intercept and trend terms are not included in the regression equations. "MYS" variable is stationary at level, when intercept and trend terms is placed in equation of test statistics. To sum up, all the series are found stationary at level, and do not suffer from the unit root issues. Hence, there is no need, to test for co-integration among of the variables.

Table 1: Levin, Lin & Chu (2002) Test Results

Variable	Level			First Difference		
	Intercept	Intercept & trend	None	Intercept	Intercept & Trend	None
HD	-3.85*	3.00	7.34	-5.80*	-7.02*	-4.45*
EG	-1.45***	0.45	8.98	-2.89*	-1.60*	-3.70*
G	-1.56*	-2.67*	-0.90	-7.06*	-6.20*	-11.59*
GDI	-1.65*	-0.67	11.03	-6.34*	-8.60*	-6.31*
MYS	-0.98	-1.99**	2.70	-0.13	1.50	-3.40*
P	0.87	-0.67	-2.60*	-11.25*	-10.40*	-11.44*
CC	-2.30*	-1.95**	-0.23	-6.89*	-7.66*	-12.44*
AGL	-0.45	-1.88**	-1.89**	-0.13	5.01	-13.50*

Source: Author's Calculation using Eviews 10.0. *, **, *** shows significance at 1%, 5% and 10% level of significance.

The next phase involves determining whether Fixed Effect (FE) or Random Effect (RE) are more appropriate for the panel data analysis. This decision is crucial for obtaining a valid and reliable result from the estimation process. The choice is often based on the nature of the data and the assumptions about individual-specific effects. In this context, Hausman (1978) test used in the present study, as the choice made bases on the results of this test, which contributes to the robustness and reliability of the subsequent estimation and interpretation of the model. In Table 2, the estimated results of the Equation (1) are reported. There are four specifications of the equation (1) which are Fixed Effect (FE) as confirmed by Hausman (1978) test. One of the benefits of estimating different specifications of the model is to see whether sign, size and significance of the model changes with changes in the specifications are not.

Table 2. Results of Equation (1) with dependent variable is HD

Variables	Fixed Effect versus Random Effect Model			
	FE	FE	FE	FE
C	-0.40*	-0.47*	-0.50*	-0.59
G	-0.66*	-0.24	-0.40*	-0.44*
G _{t-1}		-0.29	
GDI	0.44*	0.26***	0.199***	
GDI _{t-1}		0.30	0.26**	0.49*
EG	0.009*	0.077	0.09*	0.16*

EG _{t-1}		0.022	
MYS	0.019**	0.19*	0.13*	0.15*
MYS _{t-1}		-0.10*	-0.11*	-0.16*
R-Sq	0.90	0.77	0.88	0.88
Ad. R-Sq	0.90	0.77	0.88	0.88
F-Stat	132.70*	115.8*	132.44	144*
Durbin – Watson Stat	0.25	0.35	0.36	0.48

Source: Author's Calculation using Eviews 10.0. *, **, *** shows significance at 1%, 5% and 10% level of significance.

It has been observed from the Table No.2, that constant term is negative in all four specified size, which are highly statistically significant except one specified size, whereas, in three observations, the size of coefficient is very similar. The impact of Income-Inequality (G), measured by Gini coefficient is negative on Human Development Index (HD) in the sample of SAARC regional states and highly statistically significant in three specifications. In the literature, the same was reported by Tripathi (2021), Castells-Quintana, Royuela & Thiel (2019), Faisal (2022) and Saragih (2018). It means that when value of the Gini coefficient approaches to 1, the distribution of income in the society becomes pro-rich. In this context, as income inequality rises, HD and growth falls, which suggests that due income inequality the poor are unable to spend more on education, health as well as to cover-up their other allied expenses. The alignments/results are in accordance with the earlier studies and findings.

The impact of Economic Growth (EG) on Human Development is positive and significant except on specification of the model. This findings indicate a positive and significant impact of economic growth on Human Development, with consistency across various studies. It suggests that when economic growth accelerates, Human Development score of the country also improves. In one of the specifications, one-year lag value of the EG is also included. Its sign is positive but it is statistically not significant. the results are in accordance to Bansal et al, (2021), Ranis et al, (2000), Suri, Boozer, Ranis, Stewart (2011), Zhang (2019) and Iskandar (2017).

GDI measure inequalities in achievement in three basic dimension of Human Development. The effects of GDI at time “t” and “t-1” on Human Development (HD) are positive and significant. Bhowmik (2020) adds another layer of support to the reported findings, indicating a positive and significant impact of economic growth on Human Development. This consistency strengthens the validity and generalizability of the observed relationship across diverse samples and time periods of 1990 to 2015.

In Table 2, the sign of “MYS” at time “t” is positive and significant, but, it is negative and significant at time “t-1”. In other context, the coefficients on the current value of MYS are positive and statistically significant, whereas, coefficients on one-year lag values of MYS are negative and statistically significant. In the literature, Jalil and Kamaruddin (2018) reported that mean years of schooling has positive and significant effect on Human Development in the case of fifteen selected developing countries for the period of 2010 to 2014.

Table 3 Results of Equation (2) in which dependent variable is EG

Variables	FE vs RE Model		
	FE	FE	FE
C	7.50	7.51	5.30*
G	1.40	0.49	0.41
CC	0.030	0.15	0.008
CC _{t-1}		-0.16	
P	-0.09*	0.08	0.005
P _{t-1}		-0.09***	
G _{t-1}		1.38***	1.49***
HD	3.20*	3.44*	2.30*
HD _{t-1}		-0.29	
R-Sq	0.77	0.77	0.77
Ad R-Sq	0.75	0.88	0.88
F-Stat	92.90*	75.21*	88.99*
Durbin-Watson Stat	0.29	0.28	0.27

Source: Author's Calculation using Eviews 10.0. *, **, *** shows significance at 1%, 5% and 10% level of significance.

Table No.3 provides an overview as well as information of the setup for estimating Equation (2) and the selection of the Fixed Effect or Random Effect model based on the results of the Hausman (1978) test. The absence of specific Hausman test values suggests a focus on the broader outcome favoring the Fixed Effect model for the subsequent estimation. In equation (2), the dependent variable is EG (Economic Growth). The explanatory variables shown in the table are G, HD, P, CC alongwith their lag values as explanatory variables. It is pertinent to mention, that here the value(s) of Hausman (1978) test(s) have not been mentioned/reported.

The findings from Table 3 suggest that, within the panel of SAARC regional states, improvements in the Human Development Index (HD) significantly contribute to the acceleration of Economic Growth (EG). However, the sign of coefficient "G" is

positive but statistically insignificant association with Economic Growth. The results as well as findings are as per the studies of Zhang (2019), Iskandar (2017) and Ranis et al., (2000), Suri, Boozer, Ranis, Stewart (2011) and Faisal, S., Khan, A. U., & Mughal, K. M. (2023).

. Thus, economic theory posits that human development acts as an initial compound for economic growth, and later on, economic growth becomes a driver for further improvements in Human Development (HD). This cyclical relationship highlights the importance of investing in both social and economic factors for comprehensive and sustainable development. The study further reports a negative and statistically significant effect of population growth (P) on the outcome variable, which indicates an observed relationship between population growth (P) and the variables of the study. This finding can contribute to a better understanding of the dynamics within the studied context. (See Table No.3). It means that negative and significant effect of population growth (P) suggests that, in the panel of SAARC regional states, a rapidly growing population (P) is associated with a reduction in economic growth (EG). This relationship could be due to various factors, such as increased pressure on resources, challenges in providing essential services, or other economic and social dynamics that may be influenced by a higher rate of population growth (P). In another study of literature, reported by Headey & Hodge (2009), shows that effect of Population Growth (P) on Economic Growth (EG) is not robust and whether it is positive or negative, but, it is significantly different than zero.

Moreover, corruption is widely recognized as a determinant that can slow down economic activities in a region. Addressing corruption is often considered a crucial aspect of fostering a conducive environment for economic growth, attracting investments, and ensuring fair and efficient market mechanisms. The negative impact of corruption on economic activities is a pinpoint of global consensus too, and international organizations, such as the World Bank and Transparency International. They highlighted the importance of combating corruption for sustainable economic development (Mo, 2001). Gründler et. al, (2019) employed a new data set of 175 countries for a period of 2012-18 and concluded that corruption negatively affect economic growth (EG). But the present study does not report any evidence in the support of the theory. However, in the present case, the coefficients of Control of Corruption (CC), at time t, are all positive, but, statistically insignificant. Moreover, the coefficient of control of corruption, at time t-1, is negative, but, statistically insignificant.

Table 4 Results of Equation (3) dependent variable is G

Variables	FE VS RE MODEL			
	FE	FE	FE	FE
C	0.44*	0.45	0.50*	0.49*
EG	0.021*	0.05*	0.06*	0.022*
EG _{t-1}		-0.03	-0.04**	
AGL	-0.004**	-0.002	-0.003**	-0.003**
AGL _{t-1}		-0.0009		
HD	-0.20*	-0.19*	-0.14*	-0.18*
HD _{t-1}		-0.06		-0.09**
R-Sq	0.66	0.62	0.66	0.66
Ad.R-Sq	0.55	0.55	0.55	0.55
F-Stat	38.60*	28.77*	33.25*	33.25*
Durbin-Watson Stat	0.68	0.59	0.58	0.57

Source: Author's Calculation using Eviews 10.0. *, **, *** shows significance at 1%, 5% and 10% level of significance

In Table No.4, the dependent variable shown as (G), whereas EG (Economic Growth), HD (Human Development) and AGL are their lag values. The literature debate on the link between Economic Growth (EG) and Income-Inequality, their negative as well as positive effect, which reflects the complexity of the relationship, with varying views influenced by data sets, research methodology, and the period of analysis. This ongoing discourse contributes to a deeper understanding of the dynamics between economic growth and income distribution. Deininger et. al, (1997) established from their analysis that there is no evidence that economic growth (EC) has negative effect on income-inequality. They emphasize the potential for policies which ensure equal access to resources and support targeted redistribution, to be conducive to both reducing inequality and fostering economic growth. They further suggested that the impact of economic policies on growth and inequality is context-dependent and requires careful consideration of various factors.

In the instant study, as evident from Table No.4, effect of economic growth (EG), at time t, on G is positive and significant. It means that expansions in the economic activities are causing income-inequality which rising in the SAARC regional states. However, the effect of EG, at time t-1, on G is negative and significant in one case. Moreover, the results further shows that impact of human development (HD) on G is negative. However, all the coefficient are statistically significant except only one specification mentioned above, which suggests that improvements in the HDI causes income-inequality. However, it is observed during analysis, that if policy makers properly focus on the ranking of human development, then income inequality can be reduced. This is as per study conducted by Faisal (2022) and Faisal, S., Khan, A. U., & Mughal, K. M. (2023).

AGL is the agricultural land as percentage of total land and its impact on G has been given in the Table No.4, which shows that coefficient of AGL are negative and statistically significant. No doubts, the income of rural household is associated with agricultural and when the total out put in agricultural are increases then it improves the income distribution in favour of marginalized class.

Conclusion

The bridging gaps of the analysis of human development, income inequality and economic growth in the SAARC regional states transpires that human development (HD) is found to positively and significantly contribute to the economic growth of the SAARC regional states including Iran. This suggests that as human development improves, it has a positive impact on the overall economic growth of the countries in the panel of SAARC region, whereas, income inequality is significantly and negatively affect the human development process. The study further transpires that in the equation of determinant of economic growth (EC) and human development (HD) has positive and significant contribution to economic growth in the sample countries. Moreover, in the equation of income inequality (dependent variable) economic growth (EG) has significant cause of expanding income inequalities, while human development and AGL (agricultural area as percentage of total area) significantly decrease income-inequality in the SAARC region states. The Policymakers may interpret this relationship as an opportunity to focus on diversifying the economy, promoting non-agricultural sectors, and facilitating the transition of the workforce toward more skill-intensive and higher value added industries, which definitely will improve the human development and economic growth. It is also pertinent to mention, in the present era of artificial intelligence and technology can not be ignored. It also needs special focus for human development which directly effects the economic growth.

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