

Inter-Linkages among Trade Openness, Human Development and Economic Growth: A Case Study of SAARC Countries

Azhar Iqbal¹
Dr. Sadia Safdar²

Abstract

This paper examines the relationship between economic growth and the human development index and trade openness. In first model and impact of economic growth on trade openness for SAARC countries considering panel data from 1995 to 2022. In order to test the stationarity of variables cross sectional IPS is used which is second generation unit root test. Fixed effect test is used to find the relationship between trade openness and human development and economic growth. Additionally, for robustness, we also calculated a CS-ARDL model, which is crucial for handling unobserved common factors and heterogeneous slope coefficients. We employed the Breusch and Pagan (1980) and Pesaran (2004) tests to determine whether or not the model's residuals were cross-sectionally dependent, and we utilized the Pesaran and Yamagata (2008) homogeneity test to confirm the heterogeneity among the sample countries. According to Model 1, a one percent increase in openness will greatly boost GDP by 0.0832 percent, and a one percent increase in foreign direct investment will significantly boost GDP by 0.0231 percent. Model 2 showed that there exist a positive and significant relation between openness and GDP, and between openness and FDI.

Keywords: Trade openness, Economic Growth, Fixed Effect Model, CS ARDL Model, Human Development Index

¹Director of Academics & Operations, Best Group of Colleges, Gujranwala,

Corresponding Author's Email: azhariqbalmalik82@gmail.com

²Assistant Professor, Department of Economics, Federal Urdu University of Arts, Science & Technology, Islamabad,
Email: sadia.safdar@fuuast.edu.pk

Introduction

The days of poor countries firmly believing in trade restrictions are long gone; now, we are living in a time of globalization, where it appears that everyone lives in one big community. It is very difficult for an economy to get develop and attain a sustainable growth rate without trade openness. In these days nations are exchanging all their new products, inventions, innovations, knowledge and information very hastily and quickly. Which economy can grow faster either open economy or closed economy? It is very important question. Mostly empirical growth studies have concluded that an open economy can grow faster than that of closed economy. Generally, it has been observed that outward-oriented economies have higher growth rates than inward-oriented economies. To some extent, it is because of the failures of the import-substitution strategies particularly in 1980's (Yanikkaya, 2003).

Although globalization has positive effects on economies, these effects vary depending on the economy. It is contingent upon an economy's level of openness, structure, and character. It has been noted that by specializing in the areas where they have comparative advantages, all economies that prioritize trade openness improve societal welfare (Ricardo). High growth rates are typically observed in economies that support export-led growth programs. Only in nations that firmly believe in trade openness may export-led policies be implemented (Kabadayi, 2013:193). It has been determined that openness will have a good impact on economic progress, which in turn will have an impact on human development. Economies that adhere to trade-free policies will share ideas, ideologies, and technologies in addition to goods and services. People around the world have the chance to make better decisions if nations share ideas, technology, and ideologies. These arguments demonstrate the beneficial impacts of openness on human development (Asghar et al., 2024; Asghar et al., 2023; Ameer et al., 2024).

One technique for dismantling monopolies is trade liberalization. The majority of empirical research came to the conclusion that trade openness boosts economic expansion. A nation will adopt export-led policies if it supports trade liberalization. It has been noted that all businesses who export their goods have an increase in productivity as a result of their increased competitiveness and exposure abroad.

The process that makes markets and businesses more interconnected and dependent on one another is known as economic globalization. It eliminates the obstacles and limitations on the cross-border and cross-regional flow of goods, commodities, and knowledge. Economic globalization is generally expected to decrease poverty and contribute to economic development by accelerating growth. It strengthens the nations' dependency on one another in terms of trade, culture, and finances. According to Burger and Krueger (2003), trade openness boosts economic growth and aggregate income. Harrison (1996) clarified that the concepts of neutrality and trade openness are comparable. He defines neutrality as having the ability to earn one unit of foreign exchange through exports or save one unit through import substitution. Economic globalization, according to the IMF (2006), integrates economies worldwide and improves labor and technology mobility across borders. The political, cultural, and environmental aspects have expanded due to globalization.

As mentioned above that openness and economic growth are positively connected. Except these two variables, a third and important variable of this study is human development. In simple words human development can be defined as “enlarging people’s choice in a way that they can lead longer, healthier and fuller lives. Economists generally agree that human development and economic progress are positively correlated, however this is not always the case. There is a better correlation between economic growth and human development in economies with lower rates of poverty, more equitable income distribution, and greater investment in social development and education. Human development is improved by economic growth through government and household spending. Consequently, betterment in the quality of labor force in health, education and nutrition improve their productivity and capabilities then in turn they contribute to growth (Ranis & Stewart, 2000; Sibte-Ali et al., 2018; Taqi et al., 2021). Human development is a prerequisite for maintaining growth, according to empirical data found by Ranis and Stewart (2000) and Suri, Boozer, and Ranis (2011).

The relationship between openness and economic growth is precise and conclusive but trade openness and human development relationship is inconclusive and scattered. Trade openness has three direct and indirect effects on human development: (1) income distribution of the households by changes the prices of the goods; (2) profitability of businesses as measured by changes in earnings, wages, and job opportunities; (3) Government spending through adjustments to taxes and transfers (McCulloch, Winters & Cirera: 2001). Openness can stimulate human development without effecting growth. Although trade barriers and economic growth have negative relationship. Eusufzai (1996) investigated a positive correlation between openness and all of the UNDP's (United Nations Development Program) human wellbeing metrics, including the HDI. He came to the conclusion that all more open economies had higher HDI scores for human development, lower mortality rates for children under five, and a large percentage of people who drank clean water. Openness can have an impact on human development and economic prosperity, according to research by Naurzad and Powell (2003). They employed five-year averages on a panel of 47 developing nations spanning 25 years, from 1965 to 1990.

Statement of the Problem

Trade openness plays a vital role in the development of a country. Mostly, empirical studies found a positive relationship between openness and economic growth. The present study is design to explore inter-linkages among openness, human development and growth for SAARC countries. Further this study will also explore the determinants of openness in SAARC countries. The main objectives of this study are:

- To explore the relationship of economic growth with trade openness and human development in case of SAARC countries.
- To examine the relationship between trade openness and economic growth and human development in the context of SAARC nations.

Literature Review

Human development and openness are crucial to a nation's progress, and most empirical research has shown that openness and economic growth are positively correlated. Human development is necessary for the economic growth as well. In the following relevant literature review is presented.

Eusufazai (1996) addressed this subject by determining the association between the Dollar's Openness Index and different HDIs for different country types using Pearson correlation coefficients. He discovered a stronger and more beneficial relationship between HDIs and openness.

Georgios (2003) used two panel data sets: one with 56 nations with a 1951–1998 timeframe, and another with 105 countries and a 1960–1997 timeframe. He used the benchmark model to generate the results the Penn World Table (PWT, Mark 6.0) data. He came to the conclusion that trade openness has a statistically significant, long-lasting, and economically meaningful impact on economic growth. He also investigated the idea that a 10 percentage point

increase in commerce (exports + imports) would result in a 0.25 to 0.3 percent increase in the actual growth rate of GDP per capita. He contends that countries benefit from trade openness.

Yanikkaya (2003) investigated the relationship between economic development and trade openness policies. He began by outlining the primary indicator of trade openness, which is the ratio of imports to exports divided by GDP. He maintained that both imports and exports had a significant impact on the state of the economy. He goes on to say that emerging nations that trade with industrialized nations benefit more than those who solely trade with other developing nations.

Rigobon and Rodrick (2004) explored the relationship among various variables like trade openness, rule of law, democracy and income by using OLS and GMM models and income as a dependent variable. In short they concluded that openness is positively connected with income level but here they examined *t* values are moderately lower. Moreover, they found a negative relationship between openness and democracy whereas direct relationship between openness and rule of law.

Ellahi, Mahmood & Ahmed (2010) used time series data from 1980-2009 and examined the empirical connection between Pakistan's economic growth, industrial value addition, and trade openness. They found the results that in the presence of industrial value added, both imports and exports have a positive relation with economic growth. They strongly believe that liberalization policy will make their economies strong and, at the end, their living standard will improve as well. Similarly in case of Pakistan, they suggest that Pakistan must adopt this policy to stimulate its economy.

Fatah, et. (2012) explained that openness and human development index (HDI) have positive effects on economic growth by using the data of China, Malaysia, and Indonesia. Their explanatory variables were life expectancy, civil liberties, openness, FDI, political rights and human development whereas economic growth was dependent variable. Data were collected from 1980 to 2005.

Adeel-Farooq et al. (2017) investigated the impact of trade openness, financial liberalization, and economic growth in Pakistan and India. In this study, panel data covering the years 1985–2014 were used. ARDL, cointegration, ECM, VECM, and the generalized method of momentum are the methods that are employed. The WDI and the IMF provided the data for each variable. Trade openness, the capital, and financial liberalization were considered the elements that influenced economic growth. In India's instance, every factor had a major impact on economic growth.

Mbogela (2019) investigated trade-openness parameters and how they affected African nations. The ability of African economies to trade freely contributed significantly to the acquisition of new money, ideas, and expertise. The panel data covering the years 1989–2009 was utilized with 49 African nations. The WDI provided the data. The use of econometric methods like random effect and fixed effect models is made. The variables are treated endogenously by the random-effect model. The results have demonstrated that commerce increased as a result of the African countries' growing economies, larger populations, and improved per capita income.

Chhabra and Alam (2020) looked into India's inflation and trade-openness. Trade was essential to prosperity and a potent investment in eradicating unemployment, inflation, and poverty. The correlation between trade openness and inflation served as a means of communication between scholars and decision-makers in rich and developing nations alike. There are 42 years in the data period, from 1974 to 2016, and the kind of data is time series. The analysis made use of ARDL, Johansen cointegration, and ECM methodologies.

Methodology and Data Sources

Data Foundations

This empirical work uses panel data on trade openness (TO), human development (HD), foreign direct investment (FDI), labor force (LF) and economic growth (GDP) for the span of 1995-2022 to examine the relationship among trade openness, human development, foreign direct investment, labor force and economic growth. Data were collected from World Bank (WB) for SAARC countries.

Model

The following models have been estimated with the study's goals in mind. To find out the relationship among openness, human development and economic growth, the following model is estimated.

$$GDP_{ij} = \beta_0 + \beta_1 LF_{ij} + \beta_2 TO_{ij} + \beta_3 HDI_{ij} + \beta_4 FDI_{ij} + \varepsilon_1 \quad (\text{Model 1})$$

$$TO_{ij} = \beta_0 + \beta_1 LF_{ij} + \beta_2 GDP_{ij} + \beta_3 HDI_{ij} + \beta_4 FDI_{ij} + \varepsilon_2 \quad (\text{Model 2})$$

Where GDP indicates economic growth, FDI is foreign direct investment, TO indicate trade Openness, HDI represents human Development Index and LF is labor force.

Description of Variables

In this study, we used annual data for SAARC countries. Table 1 includes a thorough explanation and sources for the data.

Table 1: Description of Variables		
Variable	Definition	Data Source
GDP	Gross domestic product (Constant, 2010 US \$)	World Development Indicator
FDI	Foreign direct investment inflows (% age of GDP)	World Development Indicator
HDI	Human Development Index	World Development Indicator
TO	Trade openness (% age of GDP)	World Development Indicator
LF	Labour Force Participation Rate	World Development Indicator

Econometric techniques

There are limitations to time series and cross-sectional data. Time series have the drawback of having very few observations, which makes it challenging to derive meaningful t- and F-statistics from regression findings. In order to examine the patterns of various cross sections across time, panel data is utilized in this study. Panel data estimates are thought to be the most modern and effective analytical methods for working with economic data. Panel data

estimations are popular primarily because they allow for the inclusion of cross sections N (people, businesses, nations, etc.) as well as time intervals T (weeks, months, quarters, years, etc.) (Hill, Lim, and Griffiths, 2008).

Cross-sectional dependence

Baltagi and Pesaran (2007) state that it is critical to look into the dependence of cross-section between the variables. The association between our panel's cross-sectional units and time series is the cause of this cross-sectional dependence problem. The primary cause of this reliance is the ability of global trade to transfer shocks from one region to another (Nazlioglu et al. 2011). Therefore, in order to examine the presence of cross-sectional dependence, we employed the tests developed by Breusch and Pagan (1980) and Pesaran (2004).

Cross-sectional unit root test

The purpose of the panel unit root test is to verify the stationarity of data panels. Second-generation unit-root tests are preferred over first-generation unit-root tests because we verify the first-generation test's data stationarity under the presumption that the data do not exhibit cross-sectional dependence. Second-generation unit root tests, however, take cross-sectional dependence into account. As a result, it's critical to take into account each particular cross-sectional dependence. To find the data's unit root, we employed the CIPS test.

Fixed Effects Model

The link between explained and explanatory variables inside an object is investigated using the "Fixed Effect Model. In FE Model, explained variables may be impacted by certain internal entity aspects. By adding dummy variables for time-invariant traits like race, religion, and colonial background, among others, fixed effect regulates these variables. Every cross section has distinct and exclusive time invariant properties. There is no relationship between it and other personal traits. Since every entity is unique, there should be no correlation between the error and intercept terms of any two entities.

For every cross section unit, the fixed effect has a separate intercept term and constant slopes. Another name for the "Fixed Effects Model" is "Least Squares Dummy Variables" (LSDV). This name comes from the fact that time-invariant characteristics are estimated using dummy or binary variables in the FEM. The following is one way to display the equation of fixed effects:

$$Y_{it} = \alpha_i + \beta X_{it} + u_{it}$$

Where X is explanatory variable, Y indicates dependent variable, i means each cross section entity or unit, α is intercept for each cross section unit, t indicates time period and u indicates error term or disturbance term.

CS ARDL Model

This research uses the CS-ARDL model, which overcomes CD problems and provides the short- and long-run coefficients, because the model has CD problems in addition to

cointegration. The CS-ARDL model, which is constructed to address CD, dynamics, and heterogeneity issues, is a variation of the classic ARDL model and is credited to Chudik and Pesaran's (2015). Numerous panel datasets have been found to display CD, and a model that addresses this issue—such as the CS-ARDL technique—is needed. Additionally, the CS-ARDL approach provides the greatest results by overcoming dynamics and heterogeneity issues.

Results and Their Interpretation

To examine the relationship between Openness, FDI, labor force and human development different econometric techniques were used.

Cross-Sectional Dependence and Homogeneity Tests:

Based on the test findings, we conclude that there is cross-sectionally dependent variable existence (Table 2). This demonstrates how a country's shock might spread to another country if a cross-sectional group have strong economic ties. Our results agree with those of Musah et al. (2020).

Table 2: Outcomes of CS Dependence Test		
Variables	Statistics	Prob. Values
GDP	6.5472**	0.0381
FDI	8.9356*	0.0049
HDI	12.3791*	0.0000
TO	9.0736**	0.0127
LF	10.8329*	0.0000

1%, 5%, and 10% levels of significance are shown by *, **, and ***

The slope homogeneity hypothesis is tested using the method developed by Pesaran and Yamagata (2008) and the findings are displayed in Table 3. Each of the two equations rejects the null of homogeneity. Since the test founds heterogeneity among the countries and evenly distributed heterogeneous panel techniques should be used.

Table 3: Outcomes of Homogeneity				
	Model 1		Model 2	
	Statistics	Prob. Values	Statistics	Prob. Values
Delta_tilde	17.4862*	0.0047	21.0538**	0.0216
Delta_tilde_adj	19.7321*	0.0052	22.7046*	0.0049

The tests of slope homogeneity are shown by Delta_tilde and Delta_tilde
1%, 5%, and 10% levels of significance are shown by *, **, and ***

Cross-Sectional Im, Pesaran, and Shin Unit Root

The CS Im, Pesaran, and Shin test was employed to verify the stationarity of the variables in our panel (Table 5). Based on the outcomes, all variables are variables are stationary at first order.

Table 4: Results of Unit Root Test				
Variables	Level		First Difference	
	Constant	Constant and trend	Constant	Constant and trend
GDP	0.246	1.469	3.649**	3.754**
FDI	1.485	1.037	4.207**	4.802*
HDI	1.296	0.826	4.061*	5.631*
TO	2.378	1.235	5.084*	6.854*
LF	1.352	1.904	4.631*	4.759*

1%, 5%, and 10% levels of significance are shown by *, **, and ***

F-tests and Fixed Effect Models

F-tests and Fixed Effect Models are used to achieve the goals of the study. The results of are shown in the following table.

Table 5: F-Test for all Models		
Model 1		
Cross-section F	544.606	0.0000
Cross-section Chi-square	236.809	0.0000
Model 2		
Cross-section F	382.739	0.0000
Cross-section Chi-square	755.453	0.0000

The F-test results for each model are shown in Table 5. The F-test is actually the option between the Common Constant Method and Fixed Effects. Since the computed F-test value for each model is more than its crucial value of the 1% threshold of significance, the F-test value in this instance demonstrates how FEM is superior to the Common Constant Method. Models 1 and 2 have been estimated using the Fixed Effect Method since the F-test yields findings that support it. Table 6 presents the finding

Table 6: Fixed Effect (When GDP Served as Dependent Variable)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.200364	0.259229	-4.630514	0.0000
Openness	0.083292	0.043465	1.916311	0.0602
FDI	0.023171	0.005868	3.948911	0.0002
LF	0.182739	0.043444	4.206304	0.0001
HDI	0.537489	0.068546	7.841262	0.0000
R-squared	0.779072			
Adjusted R-squared	0.764094			
F-statistic	52.01388			
Prob(F-statistic)	0.000000			

In model 1, we analyzed the influence of Openness, Foreign Direct Investment (FDI), Labour Force (LF) and human development index (HDI) on Economic Growth (GDP). Table 6 exhibits the results of Fixed Effect among the variables used in model 1 of the present study. The results reveal that there exist a positive and significant relation between LF and GDP i.e., 0.1827. Openness is positively and significantly correlated with GDP i.e., 0.0832. The relationship between FDI and GDP is also positive and significant i.e., 0.0231. Model 1 reveals that there exist a There also exist a positive and significant relationship between HDI and GDP i.e., 0.5374. The value of R^2 is 0.7790 which exhibits that model 1 is a good fit.

Table 7: Fixed Effect (When Openness Served as Dependent Variable)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.543290	0.790342	0.687411	0.4945
GDP	0.000323	0.000137	2.363578	0.0214
FDI	0.122525	0.027051	4.529423	0.0000
LF	-1.30E-09	1.49E-10	-8.699513	0.0000
HDI	0.775192	0.218316	3.550783	0.0008
R-squared	0.804476			
Adjusted R-squared	0.791220			
F-statistic	60.68817			
Prob (F-statistic)	0.000000			

In model 2, we analyzed the influence of Economic Growth (GDP), Foreign Direct Investment (FDI), Labor Force (LF) and human development index (HDI) on openness. Table 7 exhibits the results of correlation among the variables used in model 2 of the present study. The estimation reveal that there exist significant and positive relation between GDP and openness i.e., 0.0003. FDI is positively and significantly effected to openness i.e., 0.1225. The relationship between LF and openness is negative and significant i.e., -1.30E-09. Model 2 reveals that there exist a positive and insignificant relationship between HDI and openness i.e., 0.7751. The value of R^2 is 0.8044 which exhibits that model 2 is a good fit.

CS ARDL Model

The Chudik and Pesaran (2015) CS ARDL test was also utilized to assess robustness. This test is significant because it addresses the unobserved common factor problem in addition to being helpful for estimate in the presence of dependence in cross-sections and endogeneity problems. Trade openness and foreign direct investment significantly and favorably affect GDP in the model 1 human development index, whereas labour force participation rate is insignificantly related to GDP in long run.

The overall findings suggest that trade promotes economic growth over the long term through economies of scale, resource allocation that is efficient, increased utilization of domestic capacity, and enhanced productivity as a result of spillover effects. According to Din (2004), all of these elements foster a competitive atmosphere in home industries, which increases market share abroad.

Table 8: Estimated Coefficients Of CS ARDL Model				
Variables	Model 1 (GDP is dependent variable)		Model 2 (TO is dependent variable)	
	Short Run Estimates	Long Run Estimates	Short Run Estimates	Long Run Estimates
C	3.579 (0.763)	-2.566 (0.691)	1.956*** (0.062)	1.329 (0.025)**
TO	0.035** (0.025)	0.072** (0.013)		
FDI	0.063*** (0.087)	0.036** (0.042)	0.531** (0.045)	0.144* (0.006)
LF	0.079 (0.158)	0.028** (0.036)	-0.237* (0.002)	-0.035*** (0.071)
HDI	0.572** (0.049)	0.469* (0.003)	0.506** (0.047)	0.684** (0.038)
GDP			1.371 (0.672)	0.3726* (0.008)
ECT	- 0.592** (0.035)		- 0.613** (0.042)	

In model 2 computed coefficients have the anticipated indications and is statistically significant. The findings suggest that FDI has a long-term favorable impact on economic growth. If all else stays the same, real GDP per FDI rises by roughly 0.144% for every 1% increase in FDI. If nothing else changes, output rises by 0.37% for every 1% increase in trade openness. This result supports the trade-led growth theory, which holds that increased commerce raises economic production.

Conclusion and Recommendations

After the estimation of empirical data, in this chapter the conclusion and recommendations by the present study are represented.

Conclusion

We analyzed the influence of Openness, Foreign Direct Investment (FDI), Labor Force (LF) and human development index (HDI) on Economic Growth (GDP).

1. Model 1 showed that there exist a positive and significant relation between GDP and openness, between GDP and FDI, between GDP and LF and between GDP and HDI.
2. Model 1 depicted that GDP is increased by 0.08 percent in response of 1 percent increase in trade openness and one percent increase in Foreign Direct Investment will significantly get 0.023 percent increase in the GDP. While 1% increase in LF will significantly leads to 0.1827 percent increase in the GDP and GDP is increased by 0.54 percent in response of 1 percent increase in HDI. Here value of R-square is 0.7790.
3. Model 2 showed that there exist a positive and significant relation between openness and GDP, and between openness and FDI. There also exist a significantly negative

relationship between openness and GDP and insignificantly positive relationship between openness and HDI. Model 2 depicted that 1% increase in GDP will significantly get 0.0003 percent increase in the Openness and 1% increase in FDI will significantly leads to 0.1225 percent increase in the openness. While one percent increase in LF will significantly bring -1.30E-09 percent decrease in the openness and one percent increase in HDI will insignificantly bring 0.7751 percent increase in the GDP. Here value of R-square is 0.8044 which means that 80.4% variations in openness are explained by the fitted model.

Recommendations

The findings of present study suggest the following recommendations:

1. As the result showed that economic Openness has positive effect on economic growth in in case of SAARC countries so it is recommended that government of respective countries should promote Openness to further increase the economic growth.
2. Respective governments and higher authorities of the respective countries should formulate such polices that will enhance the FDI. As the status of FDI and LF increased it will automatically increase the level of economic growth and development.
3. The Education can increase the economic growth. Additionally, it is advised that higher authorities create regulations that would raise the standard of human growth. So that it will contribute more in the process of economic growth and development.

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