

Openness, Economic Growth, and Human Development: Evidence from South Asia

Introduction

- The key objective of this paper is to estimate the relationships between openness, economic growth and human development in a panel of the five major historically and culturally homogeneous South Asian countries.
- Positive impact of openness on economic growth although there is still no consensus on the issue .
- Even less explored question is if openness leads to better human development?
- This paper is the first attempt in this regard for South Asian economies employing annual panel data and advanced econometric techniques.

Analytical Framework

We setup a three simultaneous equations empirical model (individual equations for openness, economic growth and human development) to study the relationships between openness, economic growth and human development for a panel of five South Asian countries.

The growth equation is derived from an aggregate production function:

$$Y_{it} = A_i f(L_{it}, K_{it}, H_{it}, OP_{it}, HD_{it}, ME_{it})$$

where Y is output (real GDP), L is Labour, K is capital stock, H is human capital stock, OP is the openness, HD is Human Development and the term A_i is decomposed into unobserved individual country effect and the error term which varies across countries and time (Islam, 1995; Wang et al., 2004).

We specify the conventional utility function as to represent human development following Clark, Frijters, & Shields (2008) as following:

$$HD_{it} = U(u_1(Y_{it}), u_2(T_{it}, Z_{it}))$$

Therefore, HD depends upon income/consumption of the individual (Y_{it}) and $u_2(T_{it}, Z_{it})$ picks up the impact of leisure, with I_t denoting human capital and Z_{it} reflects openness, military expenditures, infant mortality rate and country dummies. Similarly the openness function,

$$OP_{it} = G(Y_{it}, HD_{it}, FDI_{it}, MS_{it})$$

FDI stands for foreign direct investment and MS represents the market size and all previous definitions of variables hold.

Data and Econometric Methodology

Data Sources

- World Development Indicators (WDI) 2010, Barro and Lee (2010) and UNDP (2009) report.
 - A balanced panel of five South Asian countries over the period 1980-2009.
 - Physical Capital Stock: Perpetual Inventory Method.
 - Human Development Index (HDI): A summary measure of a country's average achievement in attaining a long and healthy life, access to knowledge and standard of living.
 - We have constructed HDI index for our sample countries based on UNDP (2009) report and employing their current methodology.
 - Openness is measured as the ratio of exports plus imports to GDP.
- Three Stage Least Squares (3SLS)**
- We use 3SLS (three-stage least squares) estimator because we are interested to estimate the simultaneous equations system consisting of three equations.
 - The 3SLS estimator is superior over 2SLS as the 3SLS is a combination of 2SLS and SURE and is consistent and more efficient than 2SLS estimator (Kennedy, 2009).

Trends in Openness and GDP per capita in South Asia

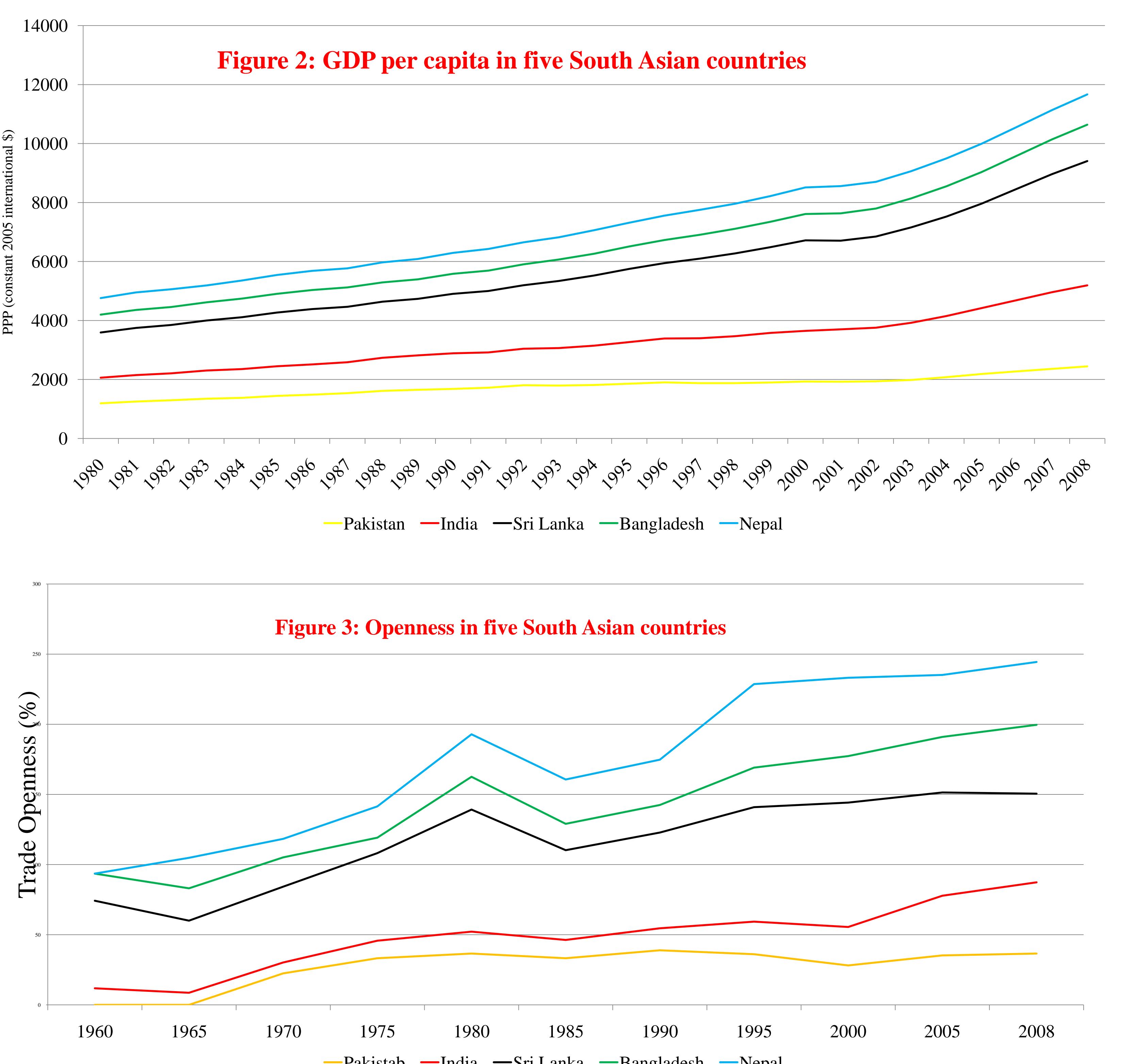


Table 1: Openness, Growth and Human Development in South Asia, 2009

Variable	GDP Growth	GDPpc (PPP)	Pop(million)	HDI	Trade (% of GDP)	Life Expectancy at birth (years)
Bangladesh	5.7	1288	162	0.55	51	69
India	7.4	2970	1155	0.62	55	65
Nepal	4.6	1049	29	0.56	53	70
Pakistan	3.7	2381	170	0.58	38	70
Sri Lanka	3.5	4333	20	0.77	51	82
South Asia	4.9	2404	307	0.62	50	71 (average)

Source: World Development Indicators (2010) and authors own calculations

Empirical Results, Robustness and Sensitivity Analysis

- We provide the estimation results in three specifications for the system of equations using 3SLS.
- The first results are the base specification. We include GINI coefficient in the human development equation and then add interaction term between GINI and Y.
- In addition we estimate our system of equations in first difference.
- To check the robustness of our results we use openness measure from Penn World Table and the results remain stable.
- For sensitivity analysis we use the Economic Globalization Index, a sub index from KOF Globalization Index (Dreher, 2006) as a broad measure of trade openness.
- Our main conclusions are not sensitive to change in openness measure.

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Table 2: Three stages least square estimates of Openness, Income and Human Development in South Asia: 1980-2009

Variable	Log Y	Log Y	HDI	HDI	OP	OP		
Log L	-0.530*** (0.0919)	-0.533*** (0.0921)	Log H	0.0275*** (0.00920)	0.0297*** (0.00913)	HDI	1.780*** (0.312)	1.738*** (0.313)
Log H	0.202*** (0.0427)	0.199*** (0.0427)	OP	0.0401** (0.0170)	0.0327* (0.0170)	Log Y	0.744*** (0.104)	0.745*** (0.104)
Log K	0.138*** (0.0297)	0.135*** (0.0298)	Log Y	0.00450 (0.0198)	0.0202 (0.0244)	FDI	1.162 (1.051)	1.174 (1.055)
OP	0.530*** (0.0529)	0.531*** (0.0530)	ME	-0.0208 (0.103)	-0.0189 (0.124)	MS	-0.246* (0.132)	-0.238* (0.132)
HDI	-0.0681 (0.256)	-0.0322 (0.257)	IMR	-0.885*** (0.0917)	-0.873*** (0.0958)			
ME	-2.331*** (0.355)	-2.339*** (0.355)	GINI	0.434 (0.449)				
			Log Y*GINI	-0.0172 (0.0196)				

Notes: *** statistically significant at 1% level, ** statistically significant at 5% level, *statistically significant at 10% level. Figures in parentheses represent the standard deviation. All explanatory variables are in log. Trend, constant and country dummies are not reported to conserve space. India is a base country here.

Summary of results and conclusion

- Openness, economic growth and human development are inter-related.
 - Openness has a strong positive impact on both economic growth and human development.
 - Human capital has a strong positive effect on economic growth and human development.
 - Military expenditures derail growth and human development..
- Therefore,
- One of the key policy objective for policy makers in South Asia should be to improve the level and quality of education alongside increasing technical, vocational and higher education to meet the increasing competitiveness.
 - Invest more in education and strengthening of institutions to absorb the trade-spillovers in the form of technology and knowledge.
 - There is need to shift the resources from military to socio-economic development of the regional economies.
 - The policy makers should shift their choice to human development rather than growth if there is a choice available between growth and human development.
 - Our efforts are only beginning, and require further exploration at both theoretical and empirical level.