

GLOBALIZATION AND ECONOMIC GROWTH: COMPARATIVE STUDY OF INDIA AND CHINA

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ABSTRACT

Globalization is a multifaceted process, convergence of economic, political and socio-cultural system across the world. The economic and political forces are generally driving factors where socio-cultural convergence is a resultant of these activities. This paper intends to make a comparative study of extent of globalization and its impact on India and China during the period 1970 to 2013. Economic and social globalization positively affect Indian Economy when political globalization has a long term negative impact, on the contrary political globalization positively affects China during the period 1970 to 2013.

Keywords: Globalization, Growth, India, China

1. INTRODUCTION

Globalization can be traced back after the onset of industrial revolution since 1800s. International trade reached a high in 1913 and dramatically reduced with the beginning of First World War in 1914. Re-globalization started after Second World War (1945) under the influence of global governance, GATT and WTO. By the 1970s, the effects of the flow of trade and investment became increasingly visible with the outbreak of “outward – oriented” development strategy. The increasing integration of national economic systems through growth in international trade, investment and capital flows generally referred to as economic globalization. Political globalization promotes convergence of political systems and processes around the world, while socio-cultural globalization simply means a convergence of culture across the world. Held and McGrew et. all (2002) conceptualized globalization as “a stretching of social, political and economic activities across frontiers...”. First, A.T. Kearney tried to measure overall globalization in Foreign Policy Magazine (2002).

This paper seeks to make a comparative study of extent of three main dimensions globalization and its impact on India and China during the period 1970 to 2013 using sub-indices of composite

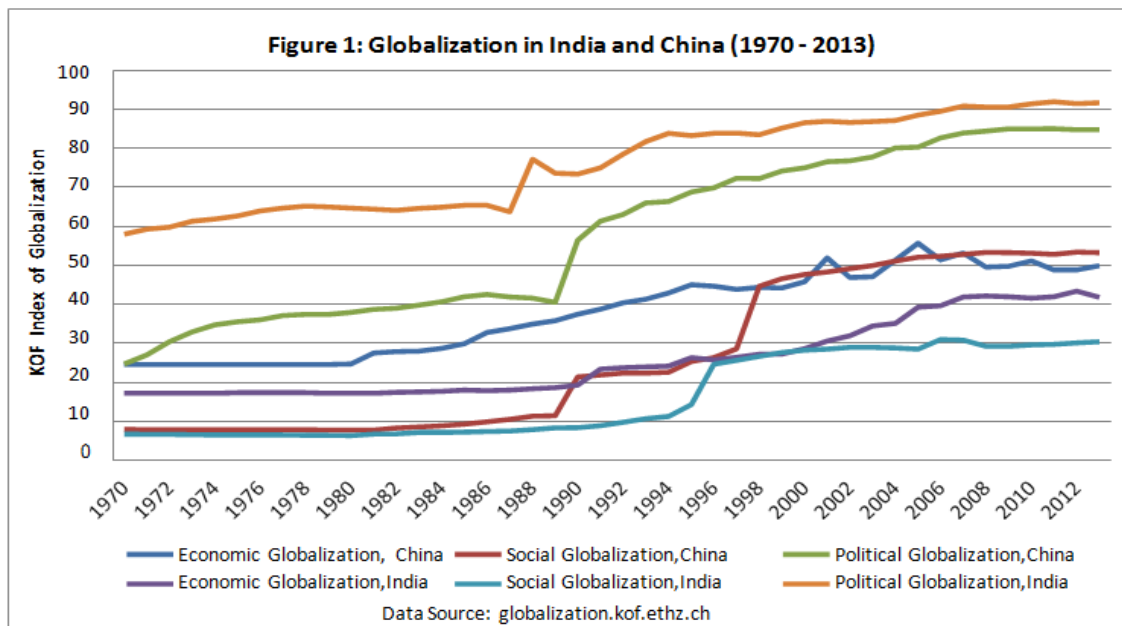
(KOF) index of globalization (Dreher 2006). The remainder of the paper is organized as follows: the next section gives a literature review, Section 3 represents trends of globalization indices since 1970, Section 4 presents trends of both countries growth rates, Section 5 observes impact of globalization on growth, Section 6 concludes.

2. LITERATURE REVIEW

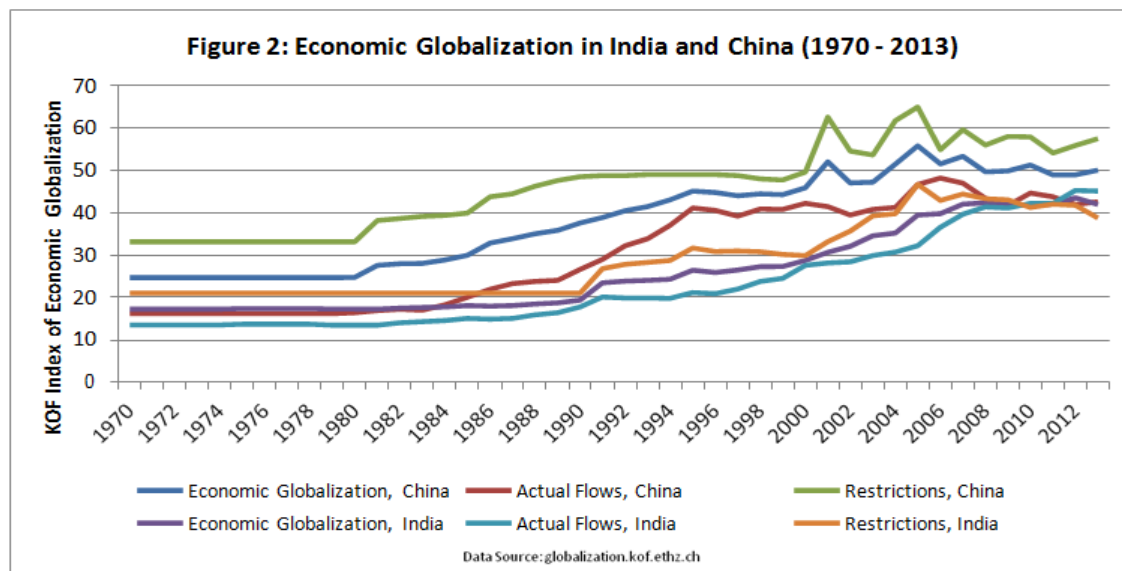
Dreher (2006) introduced a composite index of globalization (KOF) considering three main dimensions, economic, social and political. Using panel data for 123 countries this study showed globalization promotes economic growth whereas political integration has no effect during 1970 to 2000. Chang et. all (2011) adopted panel cointegration method including multiple structural breaks to examine the long-run relationship between real GDP and globalization for G7 countries from 1970 to 2006. They found globalisation process boosts economic growth more in G7 countries than other countries. Rao and Vadlamannati (2011) examined the impact of globalization on economic growth of developing countries in Africa and show a small significant positive impact. Gurgul and Lach (2014) found strong and robust growth-stimulating effect of economic and social dimensions while effect of political dimension is not statistically significant. Samimi and Jenatabadi (2014) showed economic globalization has positive effect on economic growth, particularly in high and middle-income countries than low-income countries. The selected literature considered reveals desirability of economic and social globalization; interestingly impact of political globalization, i.e., global governance is absent!

3. TRENDS IN GLOBALIZATION OF INDIA AND CHINA SINCE 1970

Globalization is a multi faceted process. The indicators of globalization show predominance of political globalization over economic and social globalization in both India and China in Fig, 1. In addition, political globalization reached 91.78 points in India while that of China is 84.81 points in 2013 as India allowed global institutions much earlier than China. Interestingly, economic and social globalization promoted much in China than India, 49.97 and 53.32 points respectively in 2013, i.e., trade intensity and bilateral linkages are strong in China.



Economic globalization index consists of “actual economic flows, i.e., trade, FDI and portfolio investment” and “restrictions on trade and capital”. Actual economic flows are higher in India in comparison to China only after 2011, but the later followed more restrictive strategy. Restrictions reached 57.39 points in China which is 38.74 points in India in 2013 in Figure 2.



The trend behaviour of globalization indices is studied by testing trend-stationarity of indices, and then using appropriate Trend-stationary (TS) or Difference-stationary (DS) model. The Augmented Dicky-Fuller (ADF) test is used to test trend-stationarity and lag order is chosen by

Hall’s “general to specific rule” (Ng and Perron 1995). The “bootstrapping” method of resampling is used to reduce error in rejection probability. The resultant statistics obtained by this method is used for inference. The globalization indices in both the countries, India & China, are non-stationary (Table 1). The random shocks have permanent effect on globalization indices. The Difference Stationary (DS) model is fitted on the basis of the result of unit root test. If autocorrelation present in the series the equations are re-estimated through the Gauss-Newton Iterative technique. The appropriate error process is determined through 12-order Lagrange Multiplier (LM) test. Table 2 provides positive and statistically significant stochastic trend-growth for economic, social and political indices of globalization in India. In case of China the stochastic trend-growth observed only in political globalization, and it’s higher than India. The trend study reveals Economic and social globalization grow at a higher rate in India than China, while that of political globalization is higher in China. Thus, political convergence encouraged at a much faster rate in China than India.

Table 1: Test for Stationarity of Globalization Indices and Growth Rates in India & China (1970 – 2013)

Series	ADF Test Statistics (Lag Order)	ADF Test Statistics Bootstrap (1000 Simulation)
India		
Economic Globalization Without Intercept & Time Trend	1.577(2)	1.5797
Social Globalization Without Intercept & Time Trend	0.9908(1)	0.9908
Political Globalization Without Intercept & Time Trend	2.5382(1)	2.5382
GDP Growth Rate With Time Trend	-3.3866 + (8)	-3.3866*
Per Capita GDP Growth Rate With Time Trend	-3.6687* (8)	-3.6687*
China		
Economic Globalization Without Time Trend		
Social Globalization Without Intercept & Time Trend	-0.4285 (8)	-0.4285

Political Globalization Without Intercept & Time Trend	2.9309 (0)	2.9309
GDP Growth Rate Without Time Trend	-2.9353* (6)	-2.9353+
Per Capita GDP Growth Rate Without Time Trend	-2.9697* (6)	-2.9697+

Notes - 1) The fitted equation for globalization indices and growth rates for ADF test statistics:

$$Y(t) = a + bt + ADF Y(t-1) + \sum_{i=1}^k \Delta Y(t-1) + u(t)$$

- 2) The ADF t-ratios reported are the t-statistics of testing 'ADF=1' for the appropriate lag k determined on the basis of the suggestion of Ng - Perron (1995).
- 3) The appropriate model of ADF test, i.e., inclusion of intercept (a) and time trend (t) is considered on the basis of t-statistics corresponding to 'a' and 't'.
- 4) ADF test statistics obtained by the bootstrapping method is considered for inference.
- 5) "*" and "+" denotes unit root hypothesis is rejected at 5% and 10% level of significance.

Table 2: Analysis of Trends of Globalization Indices and Growth Rates in India & China (1970-2013)

Series And Procedure	Intercept (a)	Time Trend (b)	R-Bar Squared	DW-Statistics	F-Statistics
India					
Economic Globalization DS: OLS	.57233*			1.7777	
Social Globalization DS: OLS	.55047+	-	-	1.4212	-
Political Globalization DS: OLS	.78395+	-	-	2.5696	-
Real GDP TS: OLS	25.7874*	.054257*	.98590	.12459	3008.1 (1,42)
GN (1)	25.3711*	.066348*	.99869	2.3541	15974.7 (2,40)
Per Capita Real GDP TS:	5.6416*	.034444*	.94835	.090749	790.5289 (1,42)
OLS GN (1)	4.6802*	.058345*	.99684	2.3773	6622.1 (2,40)
China					
Economic Globalization DS: OLS	.58837	-	-	2.3728	-
Social Globalization DS:	1.0535+	-	.11835	1.7694	- 5.5642 (1,33)

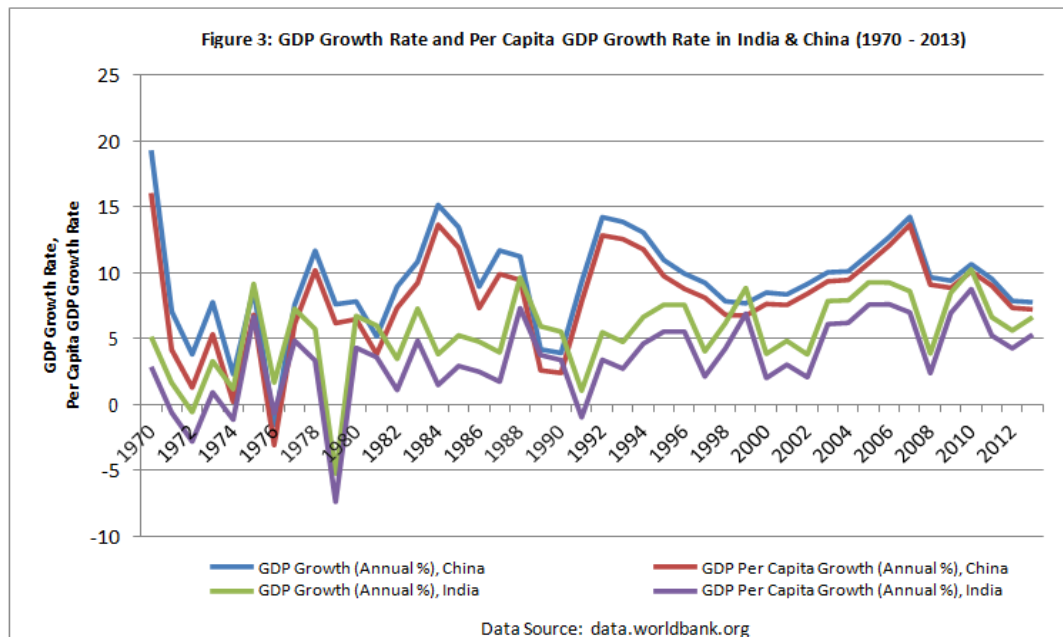
OLS GN(8)	1.3182			1.7280	
Political Globalization DS: OLS	1.3951*	-	-	1.7271	-
Real GDP TS: OLS	25.6400*	.090864*	.99524	.15070	8996.3 (1,42)
GN (6)	25.5204*	.094652*	.99951	2.0786	28054.7 (3,38)
Per Capita Real GDP TS: OLS	5.0632*	.079308*	.99013	.11048	4315.2 (1,42)
GN (6)	4.7645*	.088342*	.99931	1.4923	30509.4 (2,40)

Notes – 1) The fitted equation for TS model is $\ln Y(t) = a + b.t + u(t)$.

- 2) The fitted equation for DS model is $dY(t) = a + du(t)$, where 'd' indicates first difference.
- 3) GN (Gauss-Newton Iterative method) corresponding figures in the parentheses represent the statistically significant lags taken for calculation.
- 4) F-statistics corresponding figures in the parentheses represent the degrees of freedom.
- 5) The symbols * and + denote the significance at 1 per cent and 5 per cent levels respectively.

4. GROWTH OF INDIAN AND CHINESE ECONOMY SINCE 1970

The GDP growth rate and per capita GDP growth rate fluctuated in India and China over the period 1970 to 2013 in figure 3. A significant downfall in growth rates is observed in China in late 1970s as a centrally planned economy operated with lack of incentive for increasing productivity and efficient resource allocation. Reforms introduced in 1979. Again growth rates fall in late 1980s. China's reforms accelerated in early 1990s and ultimately joined World Trade Organization (WTO) in 2000. The global economic slowdown affected China since 2008. In India growth rate slow down in early 1980s due to continuous emphasis on import competing activities and trade deficit. The situation worsen with the balance of payment crisis in 1990 and New Economic Policy introduced in 1991. Growth rates started rising with fluctuations.



The ADF test statistics in table 1 show that the null hypothesis of unit root is rejected for growth rates in both India and China. i.e., growth rates are stationary. The appropriate TS model shows, GDP growth rate 9.5% and per capita GDP growth rate 8.8% are much higher in China than 6.6% and 5.8% respectively in India (table 2).

5. IMPACT OF GLOBALIZATION ON GROWTH

The globalization indices are non-stationary and growth rates are stationary in both countries. The conventional approach of running linear regression with a time trend is not applicable. The ARDL approach to cointegration is suitable as it makes possible to study the long-run relationship between series with different order of integration. This approach also avoids the low power problem of unit root tests.

The ARDL approach to cointegration is applied to study the impact of globalization on growth rate taking GDP growth rate or per capita GDP growth rate and one of the indices of globalization at a time. In case of time trend not significant, the model is reestimated without time trend. The long-run coefficient obtained by SBC used for inference as other information criteria lacks certain properties of asymptotic consistency (Bozdogan 1987).

Table 3: Impact of Globalization on Growth Rates in India (1970-2013)

Series And Selection Criterion	Intercept (a)	Time Trend (b)	Long Run Coefficient of Globalization Indices	ARDL Lag Order
India				
Impact on GDP Growth Rate				
Economic Globalization				
SBC b)	3.4297*	.19102 ⁺	.095856 ⁺	(0,0)
AIC a)	1.6420 ⁺	.19102 ⁺	-.013710	(10,12)
R-Bar Squared a)	1.6420 ⁺		-.013710	(10,12)
Social Globalization				
SBC b)	4.5732*	.14674*	.081713 ⁺	(0,0)
AIC a)	2.1706*	.14674*	-.035429	(11,7)
R-Bar Squared a)	2.1706*		-.035429	(11,7)
Political Globalization				
SBC a)	8.1903*	.22844*	-.11931*	(12,12)
AIC a)	8.1903*	.22844*	-.11931*	(12,12)
R-Bar Squared a)	8.1903*	.22844*	-.11931*	(12,12)
Impact on Per Capita GDP Growth Rate				
Economic Globalization				
SBC b)	.53515	.19892*	.12952*	(0,0)
AIC a)	-1.1962	.19892*	.0061138	(10,12)
R-Bar Squared a)	-1.1962		.0061138	(10,12)

Social Globalization	2.0909 ⁺	.16071*	.10988*	(0,0)
SBC b)				
AIC a)	-52392 ⁺	.16071*	-.021397	(11,7)
R-Bar Squared a)	-52392 ⁺		-.021397	(11,7)
Political Globalization	5.7351*	.26186*	-.12668*	(12,12)
SBC a)	5.7351*	.26186*	-.12668*	(12,12)
AIC a)	5.7351*	.26186*	-.12668*	(12,12)
R-Bar Squared a)	5.7351*	.26186*	-.12668*	(12,12)

Notes – 1) The equation fitted for estimating impact of globalization on growth rates using ARDL approach to cointegration is $\varphi(L) Y(t) = \alpha_0 + \alpha_1 t + \beta(L) X(t) + u(t) \dots\dots\dots(a)$

where $\varphi(L) = 1 - \sum_{j=1}^p \varphi_j L^j$ and $\beta(L) = \sum_{j=0}^q \beta_j L^j$

$\varphi(L) Y(t) = \alpha_0 + \beta(L) X(t) + u(t) \dots\dots\dots(b)$

where $\varphi(L) = 1 - \sum_{j=1}^p \varphi_j L^j$ and $\beta(L) = \sum_{j=0}^q \beta_j L^j$

- 2) The lag order of the ARDL model is selected by using the Schwarz Information Criteria, Akaike Information Criteria, R-Bar Squared criteria.
- 3) The long-run coefficient obtained by SBC criterion is considered for inference.
- 4) The symbols * and + denotes significance at the 1 per cent and 5 per cent levels respectively.

The long-run coefficients in table 3 show that economic and social integration positively influence Indian growth rates, political globalization has a negative effect during 1970 to 2013.

Table 4: Impact of Globalization on Growth Rates in China (1970-2013)

Series And Selection Criterion	Intercept (a)	Time Trend (b)	Long Run Coefficient of Globalization Indices	ARDL Lag Order
China				
Impact on GDP Growth Rate				
Economic Globalization				
SBC b)	11.9599*	-	-.033322	(9,12)
AIC b)	11.1382*	-	-.021897	(10,12)
R-Bar Squared b)	11.9599*	-	-.033322	(9,12)

Social Globalization				
SBC b)	10.1834*	-	-	(5,0)
AIC b)	9.5371*	-	.0032487	(11,12)
R-Bar Squared b)	9.5371*	-	.017348	(11,12)
			.017348	
Political Globalization				
SBC b)	7.0244*	-	.035028*	(12,12)
AIC b)	7.0244*	-	.035028*	(12,12)
R-Bar Squared b)	7.4154*	-	.031251*	(11,12)
Impact on Per Capita GDP Growth				
Economic Globalization				
SBC b)	8.2746*	-	.026156	(10,12)
AIC b)	9.2771 ⁺	-	.010361	(12,12)
R-Bar Squared b)	8.2746*	-	.026156	(10,12)
Social Globalization				
SBC b)	8.3448*	-	.018082	(5,0)
AIC b)	7.6731*	-	.042718	(11,12)
R-Bar Squared b)	7.6731*	-	.042718	(11,12)
Political Globalization				
SBC b)	4.5734*	-	.057870*	(12,12)
AIC b)	4.5734*	-	.057870*	(12,12)
R-Bar Squared b)	4.9491*	-	.054396*	(11,12)

Notes – 1) The equation fitted for estimating impact of globalization on growth rates using ARDL approach to cointegration is

$$\varphi(L) Y(t) = \alpha_0 + \alpha_1 t + \beta(L) X(t) + u(t) \dots\dots\dots(a)$$

$$\text{where } \varphi(L) = 1 - \sum_{j=1}^p \varphi_j L^j \text{ and } \beta(L) = \sum_{j=0}^q \beta_j L^j$$

$$\varphi(L) Y(t) = \alpha_0 + \beta(L) X(t) + u(t) \dots\dots\dots(b)$$

$$\text{where } \varphi(L) = 1 - \sum_{j=1}^p \varphi_j L^j \text{ and } \beta(L) = \sum_{j=0}^q \beta_j L^j$$

- 2) The lag order of the ARDL model is selected by using the Schwarz Information Criteria, Akaike Information Criteria, R-Bar Squared criteria.
- 3) The long-run coefficient obtained by SBC criterion is considered for inference.
- 4) The symbols * and + denotes significance at the 1 per cent and 5 per cent levels respectively

In case of China long-run coefficients for economic and social globalization are not statistically significant whereas global governance provide positive impetus to growth rates during 1970 to 2013 in Table 4.

6. CONCLUSION

This study addressed the question of effect of globalization on growth rates in India and China during the period 1970 to 2013. In the first phase the trend study reveals the globalization indices are nonstationary in India and China. That is, global shocks have persistent impact on globalization indices. The stochastic trend-growth observed in economic and social globalization in India. In addition stochastic trend-growth in political globalization is higher in China than India, i.e., China converges at a much faster rate to world economy. The ARDL approach to cointegration is applied in the second phase of analysis as the series are integrated of different order. The economic and social globalization have positive impact on Indian economy. Interestingly, political globalization has a long term negative impact on India while that China is positive. India opened up the economy under the influence of global governance since early 1990s while China purposefully encouraged high-tech exports as an engine of domestic development and competed with matured economies since mid 1980s. The difference in pattern of international integration benefitted China to get positive impact of political globalization.

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