

Global Connectedness of India: An Analysis with Environmental Elements

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Abstract: *Global connectedness of a country signifies the connectivity with various nations through different forms of trading. Global connectedness has been measured by global connectedness index (GCI). Generally, it focuses on the flow of trade, capital, information and human being of nations. Connectedness of country may be influenced by various macro environmental elements; like, Human Development Index (HDI), Corruption Perception Index (CPI), Global Peace Index (GPI), Global Terrorism Index (GTI), Inflation Rate, Dependency Ratio, Education Rate etc. Objective of this study is to identify and analysis the effect of the above mention macro environmental elements on global connectedness of India. Multiple Regression model has been implemented on ten years (2006 to 2015) related data of macro environmental elements and global connectedness for calculation of results. Result of reveals that some determinants like CPI, GPI, Dependency Ratio satisfy hypothesis and among them CPI and Dependency have significant effect on global connectedness of India during the sample period. Another side other elements unable to satisfy hypothesis but they have significant effect on global connectedness of India during sample period.*

Key Words: *Global Connectedness Index, Macro Environmental Elements, Multiple Regressions.*

Paper type: *Research Paper.*

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I. Introduction

Globalisation may be defined as a growing interaction and interdependent process of economy and society among various nations of a large distance (Vujakovic, 2001). Effective use of all resources is possible through globalisation (Fischer, 2003). It helps Individual to enjoy the facilities of resource mobilisation (Edwards,1998). Globalisation also affects technology, education, culture etc (Dreher, 2006). It effects not only limited within economic and social aspects of nation but politics also affected by it. Economic, social and politics are treated as three pillars of globalisation (Kearney,2007) and thus it has multiple effects. It is not only a multidimensional approach but also a composite form of various indicators (JRC/OECD, 2008, p. 13).

Degree of globalisation has been measured through global connectedness index, prepared by Pankaj Ghemawat and Frank Appel. Global connectedness of a country depends on country's macro and micro environmental factors (Birnleitner,2013) such as suppliers, customers, labour, trade union, human development, education of individual, inflation rate etc (Kalpana, 1986). So, it can be said that global connectedness is the function of various environmental elements and therefore it is assume that these elements have effect on global connectedness.

The remaining of this paper is designed as follows: Review of literature and research gap have been depicted in section-II. Section -III deals with objective. Section-IV highlights collection of data and study period. Section-V highlights formulation of hypotheses. Research Methodology has been discussed in section-V. Section-VI analyses the results and the last section deals with conclusion and recommendation.

Section-II

II. Review Of Literature

Global connectedness measures the degree of connectivity of any country with rest of the world. It is measured through global connectivity index prepared by Ghemawat and Apple. This index is consists of three dimensions i.e. depth, breadth and directionality. Depth indicates the cross-border connection of any country in terms of GDP. Dimension breadth presents how broadly country's international flows distributed among various nations. Inward verses outward flows are measured by directionality (Kumar, 2015). Globalisation acts as a driver of global connectedness (Obwana, 2001).

The term Internationalization and globalization are used for many economic aspects (Adler, N. J., 2008). It affects the growth of any country (Dreher, 2006). Globalisation of a country depends on various elements of environment. Pfaff (2004) investigates that it is affected by PEST i.e. political environment, economic environment, social environment and technological environment. Hofstede (2001) conducts a study regarding culture and its impact on globalisation. He observes that five cultural dimensions i.e. power distance (PDI), uncertainty avoidance (UAI), individualism versus collectivism (IND), masculinity versus femininity (MAS) and long-term versus short-term oriented persons (LTO) affect globalisation procedure. In a study McCarthy (1975) defines five various segments of macro environmental elements i.e. objective, resources of the firm, present business circumstances, social & cultural environment, political & legal environment and economic environment that influence the entry of new foreign business in a country. Another study by Kieser and Kubicek (1976) evaluate that competitive situation, customer structure, dynamic of technology, task specific environment, and social condition, cultural conditions etc influence on globalisation of a country. Ansoff (1997) investigate that adjustment of internal environment with external environment is essential for multinational companies. Mintzberg (2009) and Skinner (1964) examine that materials, relative costs of labour, overhead, equipment, capital, availability of credit taxes, cyclical activity, stability-inflation growth, forecast ability, foreign exchange, competition, distribution system, tariffs, mass media for communication, availability of talents and skills, purchasing power of individual etc have impact on globalisation. Karlsson et al. (2012) examine the relationship between education and skilled employee which is attractive for globalisation. Trompenaars (1994) examines that various various cultural factors affect the globalisation. According to his views culture is the combination of human relationships, the feeling and interpreting of time and the attitude to the environment. Similarly, cross-border culture, perception of foreign life style may influence the adoption capability of globalisation (Monda et al., 2007; Popkin, 1999; Rivera et al., 2002; Swenburn,2011). Globalisation influences the balance of power that helps to change the market economy, social and environmental conditions and collective action of internal agencies (Zarsky 1997).

Section-III

Research Gap and Objective of the study:

Globalisation is affected by various environmental factors such as political, economic, technological and social environment. Cultural dimensions, employee's skill, relative cost of labour, foreign exchange rate, perception of foreign lifestyle also affects the globalisation flow of this country i.e. global connectedness. It is observed from the above study that globalisation changes the balance of socio-economic power of a country. Education and skilled workers also play vital role for enhancing the degree of globalisation. So it can be said that global connectedness is influenced or affected by various environmental elements. These may be macro or micro. It is expected that except these elements other macro environmental factors like global terrorism index, global perception index, corruption perception index, inflation rate, dependency ratio and education have effect on global connectedness. But existing literature unable to presents the effect of these environmental elements on global connectedness of India. This is the research gap of the present study; this motivates me to carry out this research work.

Objective of the study:

Objective of the present study is to identify the effect of above mention macro environmental elements on global connectedness and investigate the more effective element/s for improving the global connectedness of India.

Section-IV

Formulation of Hypotheses:

The following hypotheses are formulated based on seven macro environmental elements:

i) Human Development Index:

The Human Development Index (HDI) is a summary composite index which measures a country's average achievements in basic three aspects of human development i.e. knowledge, health and income (Reyles, 2011). It is a more compact welfare outcome of a country (Lehnert, Benmamoun, & Zhao, 2013; Sharma & Gani, 2004). HDI has been developing through various ways. Foreign direct investment i.e. globalization is affected by it (Agosin and Machado, 2005; Al-Sadig, 2013). Reiter & Steensma, (2010) suggest that HDI has positive effects globalization but its impact is small. Thus it also affects global connectedness. Hence, following hypothesis can be drawn from this argument:

H₁(Hypothesis 1): There is a positive relationship between Global Connectedness and Human Development Index.

ii) Corruption Perception Index:

Corruption has a negative impact on globalization (Hines,1995 and Wei,2000). Smarzynska and Wei (2000) suggest that corruption reduces transparency and increases the power of bureaucracy; as a result foreign direct investors are less interested to invest in corrupted country. But a reverse result is depicted by the study of Henisz (2000). He examines the effect of corruption on new foreign business enters the market and ownership mode for US based multinational companies. He observes that coefficients of corruption on new foreign business are insignificant that represent corruption is associated with global connectedness. But generally it is expected that corruption creates a negative impact on global connectedness. Therefore, the following hypothesis may be drawn:

H₂: There is a negative relationship between global connectedness and corruption perception index.

iii) Global Peace Index:

Environmental stability and peacefulness generate trade friendly economic policy (Copeland and Taylor, 2013). Peaceful environment acts as developmental criteria of any trade related activity. Degree of peace of a country is measured through Global Peace Index (GPI). It is an attempt to measure the relative position of nations' and regions' peacefulness (Wikipedia). Hence, it is expected that global connectedness depends on peacefulness and economic stability of a country which helps to formulate the following hypothesis.

H₃: There is a positive relationship between Global Peace Index and global connectedness.

iv) Global Terrorism Index (GTI):

Terrorism is the use of violence or threat of violence in order to purport a political, religious, or ideological change (Wikipedia). Degree of terrorism movement has been measured through Global Terrorism Index (GTI). It is an attempt to prepare ranks in a systematic way of the world based on terrorist movement (Fandl, 2003). This activity of a country creates negative impact on trade activities (Nitsch and Schumacher, 2003). S.W.Polachek (2004) also examines the negative association between trade and terrorism movement. From the above be concluded that, global connectedness is negatively affected by Global Terrorism Index. Following hypothesis can be derived from the above explanation.

H₄: There is a negative relationship between Global Terrorism Index and global connectedness.

v) Inflation Rate:

Inflation can be defined as a sustained increase in the general level of prices for services and goods. It is measured as an annual percentage increase. As inflation rises, every dollar you own buys a smaller percentage of a good or service (Wikipedia). High rate of inflation creates many economical problems and act as a threat for the development of an economy. It also slows down the economic growth of a country (Ashra, 2002). In case of highly inflationary situation, development of trade is dismissed (Ramzan et.al.2013). Hence, it can be argued that highly inflationary condition is unfavourable for global connectedness.

Therefore, hypothesis on the basis of this argument can be drawn as follows:

H₅: There is negative relationship between inflation rate and global connectedness.

vi) Dependency Ratio:

In economics, geography and demography the dependency ratio is an age-population ratio of those typically not in the labor force (the dependent part) and those typically in the labor force (the productive part). It helps to measure the pressure on productive population (Wikipedia). So there should be negative relationship between global connectedness and dependency ratio. Hypothesis relating with dependency ratio can be derived as follows.

H₆: There is a negative relationship between dependency ratio and global connectedness.

vii) Education: A significant and positive relationship exists between level of education and the development of business (Burnett and Palmer, 1984; Truett and Truett, 1990). According to Truett and Truett (1990) higher level of education helps the people to aware about all types of development. Outreville (1996) suggest a positive relationship between higher level of education and demand of new foreign entrepreneurship. It seems to clear that education influences the globalisation. So the following hypothesis is formulated:

H₇: There is a positive relationship between education level and global connectedness.

Data and Study Period:

The study uses annual data relating to global connectedness, HDI, GTI, GPI, GCI, Inflation Rate, Dependency Ratio and Education Rate which are collected from their respective websites and from the official website of World Bank during the period 2006 to 2015.

Section-V

III. Research Methodology

Measurement of Variables:

Two types of variables have been considered, namely dependent and independent variable which are as under:

Dependent Variable:

Ten years Global connectedness index of India has been considered as dependent variable.

Independent Variable:

Seven variables have been considered and logical process has been resorted for establishing these variables as independent variable for global connectedness of a country.

Human Development Index:

The Human Development Index (HDI) is a combined measure of average achievement of key dimensions of human development i.e. a long and healthy life, being knowledgeable and have a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions (Human Development Report). Higher score indicates higher development of human life.

Corruption Perception Index:

The Corruption Perceptions Index is the result of public sector survey. It measures the perceived levels of public sector corruption in countries worldwide. It based on expert opinion; countries are scored from 0 (highly corrupt) to 10 (very clean). Some countries score well, but no country scores a perfect 100. (Petrobas, 2012).

Global Peace Index:

Higher value of this index represents high peace and vis-a-vis. Value of this index varies from 0 (Zero) to 1 (one). The index gauges global peace using three broad themes: the level of safety and security in society, the extent of domestic and international conflict, and the degree of militarization. Factors are both internal such as levels of violence and crime within the country and external such as military expenditure and wars. The Global Peace Index (GPI) is an attempt to measure the relative position of nations' and regions' peacefulness. It is the product of the Institute for Economics and Peace (IEP) and developed in consultation with an international panel of peace experts from peace institutes and think tanks with data collected and collated by the Economist Intelligence Unit (Wikipedia).

Global Terrorism Index:

The Global Terrorism Index (GTI) is an attempt to represent systematic rank the nations of the world according to terrorist activity. The index combines a number of factors associated with terrorist attack. It is the product of Institute for Economics and Peace (IEP) and is based on data from the Global Terrorism Database (GTD) which is collected and collated by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland. Higher value of this index provides high terrorism activity and vis-à-vis. It varies between zero (0) to one (1) (Wikipedia).

Inflation: Inflation rate is calculated by using consumer price index. It reflects the annual percentage change of consumer price index to average consumer price index for goods and services that may be changes or fixed. The Laspeyres formula is generally used for calculation of inflation rate.

Dependency Ratio:

In this ratio the dependent part usually includes those under the age of 15 and over the age of 64. The productive part makes up the population in between, ages 15 – 64.

Education: Total enrolment in primary education is considered here, regardless of age, expressed as a percentage of the population of official primary education age. Gross Enrolment Rate can exceed 100% due to the inclusion of over-aged and under-aged students because of early or late school entrance and grade repetition. Hence, multiple regression model has been used as method for analysing the result of this study by taking log both side. Hence Durbin Watson test is also applied for searching out the autocorrelation among sample independent variables. Following regression equation represents the relationship of various said macro environmental elements on global connectedness.

$$LGCI = \beta_0 + \beta_1 LHDI + \beta_2 LCPI + \beta_3 LGPI + \beta_4 LGTI + \beta_5 LIR + \beta_6 LDR + \beta_7 LER + e$$

Explanation of variables are presented in table no.1

Table No.1

Variable	Description
LGCI	Log of Global Connectedness Index
LHDI	Log of Human Development Index.
LCPI	Log of Corruption Perception Index.
LGPI	Log of Global Peace Index.
LGTI	Log of Global Terrorism Index.
LIR	Log of Inflation Rate.
LDR	Log of Dependency Ratio.
LER	Log of Education Rate.

Section-VI

IV. Analysis Of Result

Result of descriptive statistics shows by the table number 2. Deviation of Global connectedness index (1.399) among sample years is lower than other variable. Coefficient of variance signifies the consistency of data among sample period. Value of coefficient variance of Global connectedness (.8415) indicates more consistency among sample period than other variables.

Table No 2: Descriptive Statistics

Dimensions	Mean	Std. Deviation	Coefficient of variance	N
Connectedness	166.2554	1.39906	0.84151252	10
HDI	173.6691	4.32572	2.49078276	10
CPI	52.902	3.39633	6.42004083	10
GPI	38.9679	1.75742	4.50991714	10
GTI	88.9134	1.47076	1.65414887	10
Infl_Rate	90.1504	14.22324	15.7772345	10
Depen	175.3185	1.82601	1.04153869	10
Edu	203.1639	3.41598	1.68139123	10

Among independent variables dependency ratio is more consistent (1.04) during sample period. It indicates fluctuation through the period of this data is very lower and rate of depended people not improve or reduce during the sample period. Coefficient variance of this descriptive statistic also highlights that intensity of fluctuation of inflation rate of India is very high (15.78) during the sample period. Result also shows that movement of education rate in India is generally stable (1.68) for sample period. Global corruption index coefficient variance presents moderate degree of consistency during the sample period (6.42). It can be said that our country is not free from corruption. Consistency of global peace index is not very lower that imply economic, political and social stability is not constant in India.

Hence the value of Durbin Watson test is 2.15 that belong to autocorrelation free range (1.80-2.20). It signifies that there is no autocorrelation among sample independent variables. It also be expected that these seven independent variables influence the global connectedness of India with rest of the world. Effect of these independent macro environmental elements on global connectedness of India during study period can be presented by the following table (Table No 3).

Table No.3 Coefficient

Model	Beta	t	Sig.
(Constant)		7.522	.017
HDI	-4.535	-6.628	.022*
CPI	-4.292	-7.248	.019*
GPI	.266	.744	.534
GTI	2.984	6.313	.024*
Infl_Rate	.916	4.062	.056**
Depen	-9.337	-6.983	.020*
Edu	-5.523	-6.925	.020*

Note: ‘*’ stand for significance at 5% level and ‘**’ stand for significance at 10% level.

Human development index (HDI) has negative impact (-4.535) of global connectedness in India during the study period and the value of this effect is significant at 5% level but this value of effect does not satisfy our alternative hypothesis. Corruption perception Index (CPI) satisfies the alternative hypothesis and it also significant at 5% level. Result of CPI indicates enhancement of corruption act as a barrier of global connectedness and vis-à-vis. Existence of peace in India influences the expansion of global connectedness of India. Global Peace Index (GPI) is provides positive value but this value is not significant. It satisfy the hypothesis number 3 but not statistically significant. Global terrorism index of India gives a result which is significant at 5% level but this result indicates that terrorism movement in India positively influences the global connectedness of India which unable to satisfy our alternative hypothesis 4 (H₄). Result of inflation rate is significant at 10% level but it does not satisfy our hypothesis 5. It implies that increment of inflation rate helps to expand the global connectedness of India during the sample period. Dependency ratio of India acts as a burden of global connectedness. Negative value of this coefficient implies enhancement of dependent individual reduces the global connectedness of India during the sample period. This variable satisfy hypothesis number 6 and this also statistically significant at 5% level. Education rate of India during the study period provides significant negative result. Global connectedness of India is negatively influenced by education rate i.e. enhancement of education rate reduces the global connectedness. It is expected that education of India may helps to enhance the self dependency. So this element unable to satisfy the alternative hypothesis number 7.

Hence, the adjusted R square is 91% , it represents the good-fitness of the regression model. Table number 4 shows this result.

Table No 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.990 ^a	.980	.910	.41910

ANOVA table shows the macro environmental how much accurate. Table number 5 represents these results.

Table No.6

ANNOVA table

ANOVA						
Model	Sum of Squares	df	Mean Square	F	Sig.	
Regression	17.265	7	2.466	14.042	.068	
Residual	.351	2	.176			
Total	17.616	9				

Here, the regression value is 17.265 i.e. 98% of total. Hence residual value is .351 i.e. 2 % of total. The result of this table indicates that these elements are perfectly accurate. Value of F statistics is 14.042 that is significant at 10% level.

V. Conclusion

Global connectedness of India is influenced by all sample macro environmental elements. This study is conducted on ten years (2006-2015) data of seven macro environmental elements by using multiple regression method. Result of this study reveals that effect of three elements satisfies the hypotheses. Out of these three corruption perception index and dependency ratio have significant effect and the effect of global peace index is not statistically significant. On the other hand human development index, global terrorism index, inflation rate and education rate unable to satisfy the hypotheses but effect of these all elements are significant. Hence, in India dependency ratio has been played a vital role for the as influencer of global connectedness, after that corruption perception index also play important role for creation a burden on global connectedness. It can be concluded that global connectedness will increase by reduction of corruption perception index and dependency ratio.

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