Does Quality of Life of USA affect the Quality of Life of Emerging Economies?

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Abstract

The present times have called for the economies across the World to indulge into mutually beneficial economic relationships with each other. The reduction of trade barriers have helped in easing the trade and liberalization practices in India and BRIICS have capitalized on these opportunities offered to it. Also, the common interests faced by the BRICS binds it together though there might be different responses to challenges faced by them. The economic performance of a Nation is reflected in the performance of economic variables of a Country. Thus, all relevant economic variables should be considered for the proper measurement of economic performance of a Nation. The same is even helpful for evaluating the economic policies and considering its suitability and making necessary modifications if need be. The performance of an economy is gauged through the economic indicators of an economy but for the measurement of the socio economic performance there is no such indicator. This paper therefore addresses this issue and is an attempt to construct the Quality of Life Index. The study would be using the misery index and the economic performance index to measure the economic performance of the countries. The study will focus upon studying the impact of the US economy on emerging economies in the South Asian cluster of the World Bank.

Keywords: Economic Performance, Socio Economic Indicators, Quality Of Life, Emerging Economies

INTRODUCTION

In the present times it has become important for the markets across the World to indulge into mutually beneficial economic relationships with the OECD and the BRIICS and nurture their relationships. History says that times of crisis are the times of opportunities. BRIICS have opened up their economies recently thereby improving the connectedness to the world trade networks. The reduction of trade barriers at the border have also helped in the openness of trade and the slow and selective nature of liberalization has opened up the markets suggesting that several BRIICS have capitalized on the growth opportunities offered by world services markets. The trade between the BRIICS exhibits the prevalence of integration amongst the emerging economies in terms of intermediate inputs, final goods and services, trade-to-GDP ratios and shares of exported value added. The BRIICS have expanded their trade in the last two decades more than the developed countries.

The BRICS summit which took place in India recently addressed the issues which create political disruptions leading to volatilities in the Global arena. Prime Minister

Manmohan Singh has also pitched in the favor of the BRICS by agreeing to examine in detail a proposal to set up a South-South Development Bank which shall be funded by the BRICS and other developing countries. He further added that BRICS should voice their opinions in one voice on issues related to reforms of international body. He expressed his concern in the areas of job creation, energy and food security, revival of global growth, Doha round of negotiations and creation of funds for infrastructure related developments.

BRICS represent 40 percent of the population of the World and this summit addressed a key concern aimed at enhancing the intra-BRICS trade. The same can be facilitated by avoiding political disruptions and putting the energy in ensuring positive direction of the trade flow. Likewise, economic growth can be revived by ensuring proper policy coordination.

The performance of an economy can be analyzed in terms of the economic and the social perspectives both. The economic perspective can be studied by analyzing the performance of the economic parameters or indicators but for the performance of an economy on the societal grounds

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there is no such indicator or measure of gauging the performance.

This paper is therefore an attempt to both analyze and gauge the economic health and social well-being of an economy. For the purpose of the same an Economic Performance Index and Quality of Life Index is constructed.

The emerging economies are influenced by the US economy in terms of trade, business and finance. The influence can be observed in the form of the movement of share markets, spillover effects observed in business and industry. This study is focused upon analyzing the impact of the US Economy on the leading South Asian economies. The South Asian economies on which the impact of the US Economy is studied are India, Pakistan, Bangladesh and Nepal.

INDICATORS USED TO MEASURE THE PERFORMANCE OF ECONOMIES

Previous studies have broadly classified two major indicators as the tools to study and analyze the performance of an economy. They are misery index and economic performance index. This study is a forward step in the direction of this analysis by incorporating the element of qualitative measurement also. Thus to analyze and evaluate the performance of an economy along with the quantitative tools of measurement like macroeconomic indicators, qualitative tool in the form of QLI is also proposed.

Misery Index

There are various ways available to measure and evaluate the economic performance of a Nation. A commonly used indicator is misery index which simply adds inflation and unemployment. Misery index gauges the economic state of an economy or country by using simply the sum of inflation rate and rate of unemployment prevalent in an economy. Misery index is simply defined as the sum of inflation and unemployment. Let U and p denote unemployment and inflation in the following equation: -

$$M = |p| + U \quad (1)$$

Where,

M = Misery Index

|p| = absolute value of inflation

U = Unemployment

Where | | denotes the absolute value. The index was originally propounded by Arthur Okun and was derived from the Phillips curve. The curve was used as a general indication of the healthy state of an economy. The unemployment rate and the rate of inflation generally have

an inverse relationship with each other. This index has become infamously famous for the correct prediction of the likelihood of a reelection of incumbent US presidents after World War II.

Economic Performance Index: -

To compare the economic performance of several economies, an EPI or the economic performance index was proposed by Lee, Cheong and Suh (2007). This EPI was based on four economic variables namely economic growth rate, inflation rate, unemployment rate and the ratio of current account to GDP. Since these variables are considered to be extremely pertinent when evaluating the performance of a country in economic terms they are considered in the study. There have been researches quite similar to the proposed research (Nordhaus and Tobin (1973), Zolotas (1981), Daly and Cobb (1989), Cobb and Cobb (1994), Talberth, Cobb and Slattery (2006)).

The EPI is calculated by using four variables as mentioned above. For calculating EPI, we need the normalized values of each variable which is calculated as below in equations 1 and 2:-

$$Z_{it} = [(X_{it} - X_i)/s_i] * 5 + 100 \quad \text{where } i=1,4 \quad (2)$$

$$Z_{it} = [(X_{it} - X_i)/s_i] * 5 + 100 \quad \text{where } i=2,3 \quad (3)$$

Where,

Z_{it} = normalized value of variable

X_{it} = the value of one economic variable at time t in sector i (i=1,2,3,4 and t=1,2,...n).

X_{1t} = economic growth rate,

X_{2t} = denotes inflation,

X_{3t} = unemployment,

X_{4t} = the ratio of the current account to GDP.

Since these variables are different in terms of their absolute values, normalization is required. The normalized value denoted by Z is obtained by using the mean and variance of X_{it} . In the above equations X_i is the sample mean of X_{it} and s_i is the standard deviation. Better economic performance is indicated by a higher value of Z_{it} at time t and sector i. The numbers 5 and 100 in the above equation however do not affect the qualitative characteristics of a variable.

The economic performance Index, EPI can be expressed in the following manner using Z_{it} .

$$EPI_t = \sum_{i=1,4} w_i Z_{it} \quad (4)$$

Where,

$\sum_{(1,4)}$ = sum from 1 to 4

w_i = weight in the ith sector

Thus EPI_i is the weighted average of Z_{it} 's.

Quality of Life Index

The economic indices are quantitative indicators and reflect the performance of an economy in terms of figures only. Life Satisfaction Index and Human Development Index are the qualitative indicators of the performance of a Nation. However, there exists a gap in the qualitative and quantitative indicators of measurement of the performance of a Country. The need of an index which is capable of encapsulating the qualitative and quantitative aspects both was strongly realized.

Hence, the formation of the Quality of Life Index is done in this study with an objective of including both the qualitative and quantitative aspects into consideration and bringing it to a comparable position.

Construction of QLI Index

The Quality of Life Index given by The Economist Intelligence Unit's is based on a unique methodology that links the results of subjective life-satisfaction surveys to the objective determinants of quality of life across countries. The factors which were used to determine the quality of life are Healthiness, Family life, Community life, Material well being, Political stability and security, Climate and geography, Job security, Political freedom and Gender equality. Furthermore there are some indicators which are used to measure the performance of these factors.

In the present study the Quality of Life Index is constituted taking into consideration the variables which affect the standard of living of people residing in a country. This index is constituted to answer the twin objectives of qualitative and quantitative measurement of the state of an economy through an index.

Description of QLI

The QLI can be expressed in the following manner.

$$QL_{t,i} = \frac{QL_{t,i} * 100}{QL_{t-1,i}}$$

Where,

$QL_{t,i}$ = Quality of Life for variable i and time t
 i = variables depicting quality of life

Further, the QL thus calculated is converted into a QLI index number as follows:-

$$QLI_t = \frac{\sum_{i=1}^n QL_{t,i}}{n}$$

RESEARCH METHODOLOGY

The study will be analyzing the effect of the US economy on Emerging Economies in the South Asian cluster classified by the World Bank. The study will specifically focus on the Quality of Life Index only. Thus the QLI of US will be used to analyze its effect on the QLI of emerging economies in the South Asian economies. Since there are many countries in all the clusters given by the World Bank the study would be carried out for fifty percent of the countries in the South Asian Cluster of Emerging Economies classified by the World Bank.

Description of Sample

Quality of Life Index: - For the purpose of comparison the categorization of emerging countries done by the World Bank is used. The developing countries have been classified according to the classification done by the World Bank. Table 1 gives a list of the clusters of Emerging Economies by the World Bank.

(INSERT TABLE 1 HERE)

Quality of Life Index is estimated for the South Asian region of the World Bank classification of clusters as shown in Table 2.

(INSERT TABLE 2 HERE)

The data is normalized to bring all the countries in the South Asian region to a comparable position. For the purpose of the same the first values of all variables are considered as 100 and the following values are drawn out proportionately. Then for all the years ranging from 1980 to 2010 the values of all the 41 variables are added for each year. Likewise, the same procedure is followed for all the years from 1980 to 2010. Thus the summed value which emerges is the Quality of Life Index constituted for all the years. These values are then divided by the total number of variables to get the normalized values.

The research approach includes studying the effect of the USA economy on Emerging Economies in the South Asian cluster as specified by the World Bank.

TOOLS FOR DATA ANALYSIS

Augmented Dickey Fuller

The Augmented Dickey Fuller tests are used to detect the presence of a unit root for the individual time series and their first differences. Therefore, the data is first checked for the presence of stationarity.

Causality Test – Granger Causality test

In the study the causal relationship is analyzed by the concept of Granger causality. This methodology has been employed in recent empirical studies exploring different areas of economic growth (Thornton, 1997; Khalafalla and Webb, 2001; Barot and Yang, 2002; Oh and Lee, 2004; Kim

$$QLI_{t,n} = A_1 QLI_{t-1,n} \dots + A_p QLI_{t-p,n} + \beta QLI_{t,USA} + \epsilon_t$$

et. al, 2004 and Cortés-Jiménez and Pulina, 2006)

Variance Decomposition Analysis

The Variance Decomposition Analysis separates the variation in an endogenous variable into the component shocks to the VAR. The VDA equations for Quality of Life Index are as follows: -

where, $QLI_{t,n}$ = QLI of country n at time t

RESULTS AND ANALYSIS

Results of Stationarity - Augmented Dickey Fuller

(INSERT TABLE 3 HERE)

The Results of the above table can be summarized from the p values obtained in the ADF test. The p values for the Countries having the highest values of QLI provide little evidence that we may reject the null hypothesis, thus we accept the null hypothesis of a unit root. Also, for the countries having the lowest values of QLI we accept the null hypothesis for US and India.

Results of Granger Causality test

(INSERT TABLE 4 HERE)

Based on the Probability values reported in the above table, the hypothesis that QLI OF NEPAL does not Granger

Cause QLI OF US can be rejected. Likewise the hypothesis that QLI OF US does not Granger Cause QLI OF NEPAL can also be rejected. *Therefore, it appears that Granger causality runs in either direction from QLI of Nepal to QLI of US and from QLI of US to QLI of Nepal.*

Based on the Probability values reported in the above table, the hypothesis that QLI OF BANGLADESH does not Granger Cause QLI OF US can be rejected. Likewise the hypothesis that QLI OF US does not Granger Cause QLI OF BANGLADESH can also be rejected. *Therefore, it appears that Granger causality runs from QLI of Bangladesh to QLI of US.*

Based on the Probability values reported in the above table, the hypothesis that QLI OF BANGLADESH does not Granger Cause QLI OF NEPAL can be rejected. Likewise the hypothesis that QLI OF NEPAL does not Granger Cause QLI OF BANGLADESH can also be rejected. *Therefore, it appears that Granger causality runs in either direction from QLI of Bangladesh to QLI of Nepal.*

Based on the Probability values reported in the above table, the hypothesis that QLI OF PAKISTAN does not Granger Cause QLI OF US can be rejected but the hypothesis that QLI OF US does not Granger Cause QLI OF PAKISTAN cannot be rejected. *Therefore, it appears that Granger causality runs from QLI of Pakistan to QLI of US.*

Based on the Probability values reported in the above table, the hypothesis that QLI OF INDIA does not Granger Cause QLI OF US can be rejected. Likewise the hypothesis that QLI OF US does not Granger Cause QLI OF INDIA can also be rejected. *Therefore, it appears that Granger causality runs in either direction from QLI of India to QLI of US.*

Based on the Probability values reported in the above table, the hypothesis that QLI OF INDIA does not Granger Cause QLI OF PAKISTAN can be rejected but the hypothesis that QLI OF PAKISTAN does not Granger Cause QLI OF INDIA cannot be rejected. *Therefore, it appears that Granger causality runs from QLI of India to QLI of Pakistan.*

Results of Variance Decomposition Analysis

Effect of QLI of USA on QLI of other Countries in the Cluster as shown is Table 5.

(INSERT TABLE 5 HERE)

CONCLUSION

The study indicates presence of a co-integration in the economies since the quality of life in one of the countries affects the quality of life in other countries also. The probable reasons for the same could be the development of trade across borders, increase in the exports and imports taking place between economies. The performance of a Nation in terms of economic aspects only is difficult to be assembled and applied on all domains. Therefore, the need for the qualitative indicators of measurement has been justified with the results indicated by it in indicating the effect of one economy on others. The QLI has been estimated and compared internationally and intra-nationally. The results of the variance decomposition analysis are in accordance with the granger causality results. This indicates that the quality of life index developed in the paper suitably and adequately reflects the socio-economic situations of the USA and other emerging economies taken in the study.

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Table 1: List of Clusters of Emerging Economies by World Bank

Cluster 1 - East Asia and Pacific
Cluster 2 - Sub Saharan Africa
Cluster 3 - Latin America and Caribbean
Cluster 4 - Europe and Central Asia
Cluster 5 - South Asia
Cluster 6 - Middle East and North Africa

Table 2: Variables for constructing QLI of South Asian Region

Age dependency ratio (% of working-age population)	Merchandise trade (% of GDP)
Life expectancy at birth, total (years)	Private capital flows, total (% of GDP)
Crop production index (1999-2001 = 100)	Private capital flows, total (BoP, current US\$)
Agricultural land (% of land area)	Service exports (BoP, current US\$)
Agricultural machinery, tractors	Service imports (BoP, current US\$)
Arable land (% of land area)	Services, etc., value added (annual % growth)
Cereal production (metric tons)	Trade (% of GDP)
Cereal yield (kg per hectare)	Trade in services (% of GDP)
Food imports (% of merchandise imports)	Computer, communications and other services (% of commercial service exports)
Food exports (% of merchandise exports)	Computer, communications and other services (% of commercial service imports)
Food production index (1999-2001 = 100)	Communications, computer, etc. (% of service exports, BoP)
Permanent cropland (% of land area)	Communications, computer, etc. (% of service imports, BoP)
Agriculture, value added (annual % growth)	Mobile cellular subscriptions
Air transport, freight (million ton-km)	Mobile cellular subscriptions (per 100 people)
Air transport, passengers carried	Telephone lines
Air transport, registered carrier departures worldwide	Telephone lines (per 100 people)
Road sector energy consumption (% of total energy consumption)	Alternative and nuclear energy (% of total energy use)
Transport services (% of commercial service exports)	Electric power consumption (kWh per capita)
Transport services (% of commercial service imports)	Electric power consumption (kWh)
Transport services (% of service exports, BoP)	Energy production (kt of oil equivalent)
Transport services (% of service imports, BoP)	Portfolio equity, net inflows (BoP, current US\$)
Travel services (% of commercial service exports)	Portfolio investment, bonds (PPG + PNG) (NFL, current US\$)
Travel services (% of commercial service imports)	Portfolio investment, equity (DRS, current US\$)
Travel services (% of service exports, BoP)	Portfolio investment, excluding LCFAR (BoP, current US\$)
Travel services (% of service imports, BoP)	Population in the largest city (% of urban population)
Broad money (% of GDP)	Population in urban agglomerations of more than 1 million (% of total population)
Broad money growth (annual %)	Primary education, duration (years)
Exports of goods and services (% of GDP)	Primary education, pupils
Gross capital formation (% of GDP)	Primary school starting age (years)
Gross domestic savings (% of GDP)	School enrollment, primary (% gross)
Commercial service exports (current US\$)	School enrollment, secondary (% gross)
Commercial service imports (current US\$)	School enrollment, tertiary (% gross)
IBRD loans and IDA credits (DOD, current US\$)	

Table 3: Effect of QLI of USA on QLI of other emerging Countries in the cluster

	Name of the Country	T-Statistic	Prob
Countries having the Highest Values	US	4.352342	1
	Nepal	-0.25698	0.9222
	Bangladesh	2.978905	1

Countries having the Lowest Values	US	4.352342	1
	Pakistan	-10.5684	0
	India	2.790416	1

Table 4: Effect of QLI of USA on QLI of other countries in the cluster

	Null Hypothesis:	Obs	F-Statistic	Prob.
Countries having the Highest Values	QLI OF NEPAL does not Granger Cause QLI OF US	39	4.53933	0.0179
	QLI OF US does not Granger Cause QLI OF NEPAL		5.08986	0.0117
	QLI OF BANGLADESH does not Granger Cause QLI OF US	39	4.57192	0.0174
	QLI OF US does not Granger Cause QLI OF BANGLADESH		0.78852	0.4627
	QLI OF BANGLADESH does not Granger Cause QLI OF NEPAL	39	14.3908	3.00E-05
	QLI OF NEPAL does not Granger Cause QLI OF BANGLADESH		3.72289	0.0345
Countries having the Lowest Values	QLI OF PAKISTAN does not Granger Cause QLI OF US	39	4.65444	1.63E-02
	QLI OF US does not Granger Cause QLI OF PAKISTAN		0.77074	0.4706
	QLI OF INDIA does not Granger Cause QLI OF US	39	36.5898	3.00E-09
	QLI OF US does not Granger Cause QLI OF INDIA		8.28653	0.0012
	QLI OF INDIA does not Granger Cause QLI OF PAKISTAN	39	86.9169	4.00E-14
	QLI OF PAKISTAN does not Granger Cause QLI OF INDIA		1.14624	0.3298

Table 5 : Two Countries having the Highest Values

Variance Decomposition of US

Period	S.E.	US	NEPAL	BANGLADESH
1	9.08E-12	100	0	0
2	1.62E-11	31.51669	68.44417	0.039145
3	1.66E-11	29.82512	69.07283	1.102051
4	1.80E-11	25.60965	63.29953	11.09082
5	2.53E-11	12.91946	49.6459	37.43464
6	3.66E-11	6.180068	39.11048	54.70946
7	4.43E-11	4.220766	34.04386	61.73537
8	4.46E-11	4.157513	33.75996	62.08253
9	6.34E-11	2.066016	39.18848	58.7455
10	1.27E-10	0.5262	36.42003	63.05377

The results of Variance Decomposition Analysis in the above Table indicate that the Variance Decomposition of US is influenced by itself and Nepal.

Variance Decomposition of NEPAL

Period	S.E.	US	NEPAL	BANGLADESH
1	1794.576	0.013267	99.98673	0
2	2432.812	0.008623	97.38959	2.601786
3	2894.397	0.008871	97.99035	2.000775
4	3163.25	0.01835	87.46057	12.52108
5	4635.375	0.03144	43.00824	56.96032
6	8111.455	0.031957	22.56969	77.39835
7	12051.58	0.032104	17.13875	82.82915
8	14155.86	0.035131	13.55378	86.41109
9	14747.73	0.033976	20.23518	79.73085
10	23992.69	0.016588	40.67652	59.3069

The results of Variance Decomposition Analysis in the above Table indicate that the Variance Decomposition of Nepal is influenced by itself only.

Variance Decomposition of BANGLADESH

Period	S.E.	US	NEPAL	BANGLADESH
1	19602.86	0.006849	51.04497	48.94818
2	46469.41	0.012716	39.1316	60.85568
3	74832.55	0.015271	34.61503	65.3697
4	89448.69	0.017353	31.4516	68.53104
5	90235.36	0.017156	32.60038	67.38246
6	150706.6	0.013855	37.42118	62.56497
7	303015	0.01524	34.59896	65.3858
8	472105.4	0.017238	31.35719	68.62558
9	558742.6	0.019365	28.37218	71.60846
10	565797.9	0.019038	30.09165	69.88931

Cholesky Ordering: US NEPAL BANGLADESH

The results of Variance Decomposition Analysis in the above Table indicate that the Variance Decomposition of Bangladesh is influenced by Bangladesh and Nepal proportionately.

Two Countries having the Lowest Values

Variance Decomposition of US

Period	S.E.	US	PAKISTAN	INDIA
1.00E+00	1.23E-11	1.00E+02	0.00E+00	0
2.00E+00	1.23E-11	1.00E+02	5.20E-28	1.50E-27
3.00E+00	1.23E-11	1.00E+02	5.99E-27	6.19E-27
4.00E+00	1.23E-11	1.00E+02	5.99E-27	6.19E-27
5.00E+00	1.23E-11	1.00E+02	5.99E-27	6.19E-27
6	1.23E-11	100	5.99E-27	6.19E-27
7	1.23E-11	100	5.99E-27	6.19E-27

8	1.23E-11	100	5.99E-27	6.19E-27
9	1.23E-11	100	5.99E-27	6.19E-27
1.00E+01	1.23E-11	100	5.99E-27	6.19E-27

The results of Variance Decomposition Analysis in the above Table indicate that the Variance Decomposition of US is influenced by US itself.

Variance Decomposition of PAKISTAN

Period	S.E.	US	PAKISTAN	INDIA
1.00E+00	3.77E-11	0.053582	9.99E+01	0
2.00E+00	3.77E-11	0.053582	9.99E+01	7.12E-27
3.00E+00	3.77E-11	0.053582	9.99E+01	1.66E-26
4.00E+00	3.77E-11	0.053582	9.99E+01	1.66E-26
5.00E+00	3.77E-11	0.053582	9.99E+01	1.66E-26
6	3.77E-11	0.053582	99.94642	1.66E-26
7	3.77E-11	0.053582	99.94642	1.66E-26
8	3.77E-11	0.053582	99.94642	1.66E-26
9	3.77E-11	0.053582	99.94642	1.66E-26
1.00E+01	3.77E-11	0.053582	99.94642	1.66E-26

The results of Variance Decomposition Analysis in the above Table indicate that the Variance Decomposition of Pakistan is influenced by Pakistan itself.

Variance Decomposition of INDIA

Period	S.E.	US	PAKISTAN	INDIA
1.00E+00	5.30E-11	5.65085	64.48103	29.86812
2.00E+00	5.30E-11	5.65085	64.48103	29.86812
3.00E+00	5.30E-11	5.65085	64.48103	29.86812
4.00E+00	5.30E-11	5.65085	64.48103	29.86812
5.00E+00	5.30E-11	5.65085	64.48103	29.86812
6	5.30E-11	5.65085	64.48103	29.86812
7	5.30E-11	5.65085	64.48103	29.86812
8	5.30E-11	5.65085	64.48103	29.86812
9	5.30E-11	5.65085	64.48103	29.86812
10	5.30E-11	5.65085	64.48103	29.86812

Cholesky Ordering: US PAKISTAN INDIA

The results of Variance Decomposition Analysis in the above Table indicate that the Variance Decomposition of India is influenced by Pakistan to a major extent.