India V/S China – Who Shall Dazzle The Future Throne In Vuca World

CMA Dr. Kinnarry Thakkar

Associate Professor, Department of Commerce, University of Mumbai

Abstract : *With vacillating characteristics of global economies, identifying prudent economies poses a major challenge before portfolio managers. Over the period of time the "Elite" economies and groups such as BRICS, MINT, NAFTA etc have experienced a significant downfall further intensifying the situation. The big question now arises" What Next"? How can we determine which countries hold the potential to sustain socio economic prospects?*

The countries coating the race have been none another than India and China with young demographics at its disposal. However, these economies have been poised with Volatility, Uncertainty, Complexities and Ambiguity with respect to various socio-economic variables undermining the identification of true future stars. Thus, the research study attempts to put forth an indicative model encompassing socio economic variables easing the comparative analysis between the two.

The indicative model shall adopt its variables from World Bank pertaining to the year 2017, further being analysed using statistical tools and visualizations. The model so developed shall propose theoretical and practical implications broadening the base for policymakers and global managers.

Keywords : *VUCA, India, China, Socio Economic Variables, Global Economies.*

I.   Introduction

From BRICS to IC, the egress of two emerging economy of the world. The accelerating pace with which India is growing seems commendable. However, India's counterpart China has left no stone unturned to ameliorate its performance across all the sectors of the economy. During the year 2015 the GDP growth rate of India was higher than China. The contribution of China is 13.43% of total world economic output against 2.65% contribution of India. Navigating in the VUCA world concomitant with attaining financial stability and socio-economic development poses distinct types of challenges that demands unparallel strategies. Both India and China will have to fortify their ability to evolve their business models to survive in the VUCA world. The 2012 Mckinsey report states that "the two leading emerging economies are experiencing roughly ten times the economic acceleration of the Industrial Revolution, on 100 times the scale – resulting in an economic force that is over 1,000 times as big."

There is a paradigm shift in the delivery of business model by the business houses subsequent to alignment of economic value creation with social value creation. The landscape that confronts the business has impelled the leaders to become astute and agile. It is rapidly becoming a compelling necessity to excogitate a more effective and responsive delivery system.

In 2016 China stood as the largest economy in the world surpassing USA. During 2013 to 2017 it was one of the fastest growing economies in the world. However the two major challenges faced by China is the aging population and deterioration of the environment. In the year 2016, to overcome these challenges, Government relaxed the population policy and ratified the Paris agreement to combat climate change and committed to reduce carbon emissions by 2030.

India, though growing at a moderate rate is considered as third largest economy in purchasing power parity (PPP) terms. While China has progressed rapidly in the manufacturing sector which is a job creator, the limited capacity to generate jobs for India's working age population will pose a major challenge to reap the fruits of demographic dividend. The contribution of manufacturing sector in India is 15% of the GDP and 11% of employment. Although efforts are being taken in the direction of boosting the investment and consequently growth in the manufacturing sector of the Indian economy, the results are yet to be seen.

II.   Review of Literature

As per RHDI report (2016) the creation of fewer jobs in India between 1991 and 2013 was largely because of the nature of growth the Indian economy experienced. "It was mostly services-led growth with low employment intensity," According to him the problem could be addressed if the government's effort to create more manufacturing jobs through programmes such as Make in India and Startup India fructifies.

As per UNDP report (2016), China and India accounted for 62% of the workers in the Asia-Pacific region in 2015, with 1 billion and 860 million workers, respectively. But China's share of working-age people is now falling, while India's continues to rise, and is expected to touch a maximum of about 1.1 billion in 2050. To a large extent, China and India, now home to 2.6 billion people, will drive demographic changes in the region and influence their consequences. India's population will likely surpass China's by 2022, possibly earlier.

Bennett N and Lemoine J, (2014) in their article observed that although combinations of VUCA elements are complex the mess implied by the phrase VUCA presents an unsolvable frustration. Developing the discipline to carefully diagnose and label a situation for what it is, however, offers a salve. Leaders need to work to develop this discipline; organizational performance cannot be preserved, let alone enhanced, if its finite resources are misappropriated to address a phantom threat.

Objectives of the study:
1. To analyze the pattern of India and China's Economic Growth for the period 1961-2017.
2. To develop a grid of selected VUCA indicators of India and China.
3. To calculate the overall score of the selected VUCA indicators of India and China.
4. To draw conclusions and the implications of the research study.

Hypothesis of the study
1. H_{A1}: There has been an erratic trend in the economic growth rate of India's and China's economy for the period 1961-2017.
2. H_{A2}: China has outperformed India in the overall score of VUCA based on the selected indicators.
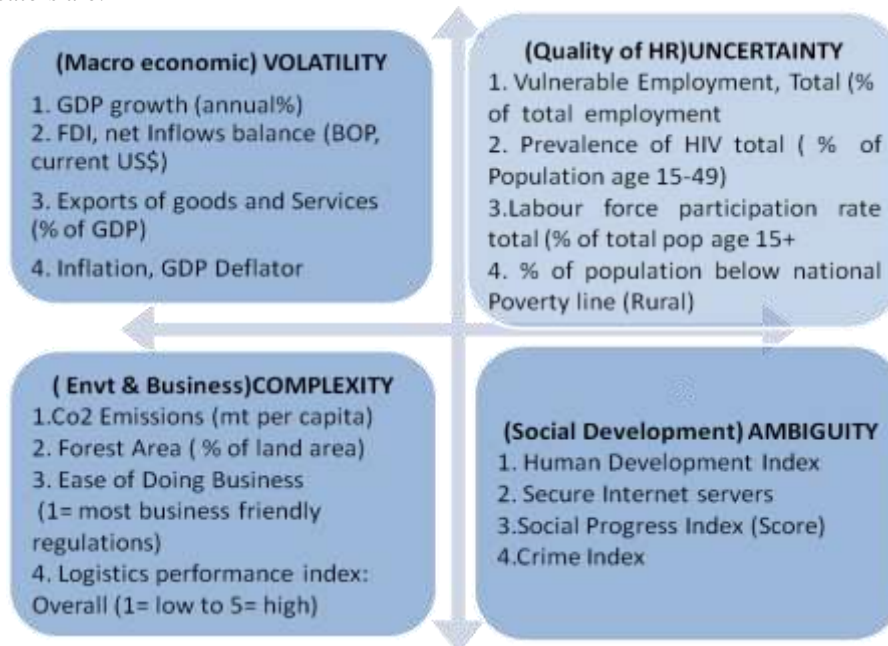
III. Research Methodology

The methodology comprises of three components a) operational definitions of selected indicators b) sources of data collection and c) data analysis and interpretation using statistical tools.

Operational Definitions:
For the purpose of analysis of Volatility, Uncertainty, Complexity and Ambiguity (VUCA) in the Indian and Chinese economy four core indicators were identified. Further, to split the complex core indicator 4 sub indicators were identified under each core indicator. Thus, the overall analysis is based on 16 indicators reflecting the VUCA environment. The four core indicators are

(I) Macroeconomic variables indicating **Volatility**
(II) Quality of Human Resources indicating **Uncertainty**
(III) Environment and Business indicating **Complexity**
(IV) Social Development indicating **Ambiguity**

The sub- indicators are:

(Macro economic) VOLATILITY
1. GDP growth (annual%)
2. FDI, net Inflows balance (BOP, current US$)
3. Exports of goods and Services (% of GDP)
4. Inflation, GDP Deflator

(Quality of HR)UNCERTAINTY
1. Vulnerable Employment, Total (% of total employment
2. Prevalence of HIV total (% of Population age 15-49)
3. Labour force participation rate total (% of total pop age 15+
4. % of population below national Poverty line (Rural)

(Envt & Business)COMPLEXITY
1. CO_2 Emissions (mt per capita)
2. Forest Area (% of land area)
3. Ease of Doing Business (1= most business friendly regulations)
4. Logistics performance index: Overall (1= low to 5= high)

(Social Development) AMBIGUITY
1. Human Development Index
2. Secure Internet servers
3. Social Progress Index (Score)
4. Crime Index

Data Collection and Analysis:
The research is based on secondary data collected from various sources. The data is analysed by using Periodogram, Spectral analysis and one sample t –test.

Testing of Hypothesis:

H_{A1}: **There has been an erratic trend in the economic growth rate of India's and China's economy for the period 1961-2017.**

Graph no 1-Periodogram of India by Period pertaining to GDP of India for period 1961-2017
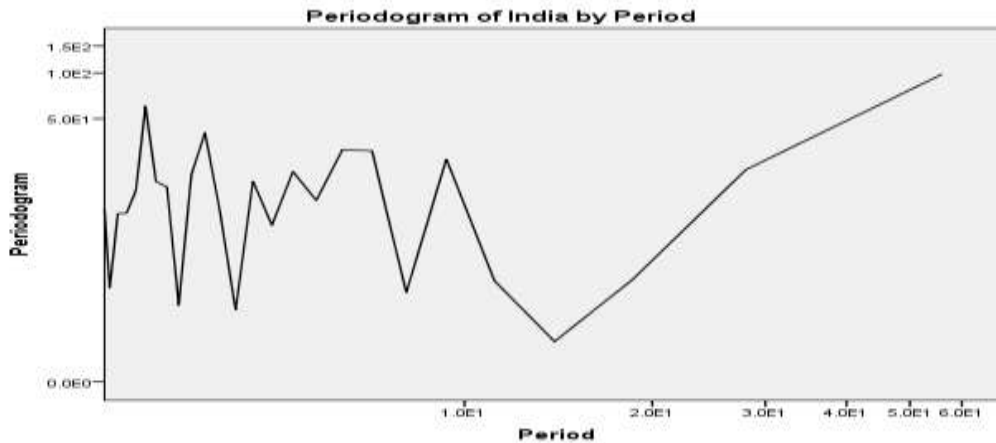
Periodogram is used to identify the dominant peaks pertaining to cyclical nature of economic growth of Indian economy. The waves are the combination of different amplitudes and time frame i.e waves of period. It represents the period of 10 years i.e one lap in the above periodogram.

The above periodogram represents high frequency of erratic waves in the initial period which then stabilizes post 2nd lap. Correlating these erratic waves with Indian Industrial policy since 1961 moved towards achieving stability post- independence. Till then the Indian growth was at nascent stage with huge volatilities and ambiguities. It was post 1980's where Indian administration focused on stabilization of macro - economic variables impacting GDP further smoothen by New Industrial policy 1991.

Graph no 2 – Spectral Density of India's GDP


Window: Tukey-Hamming (5)
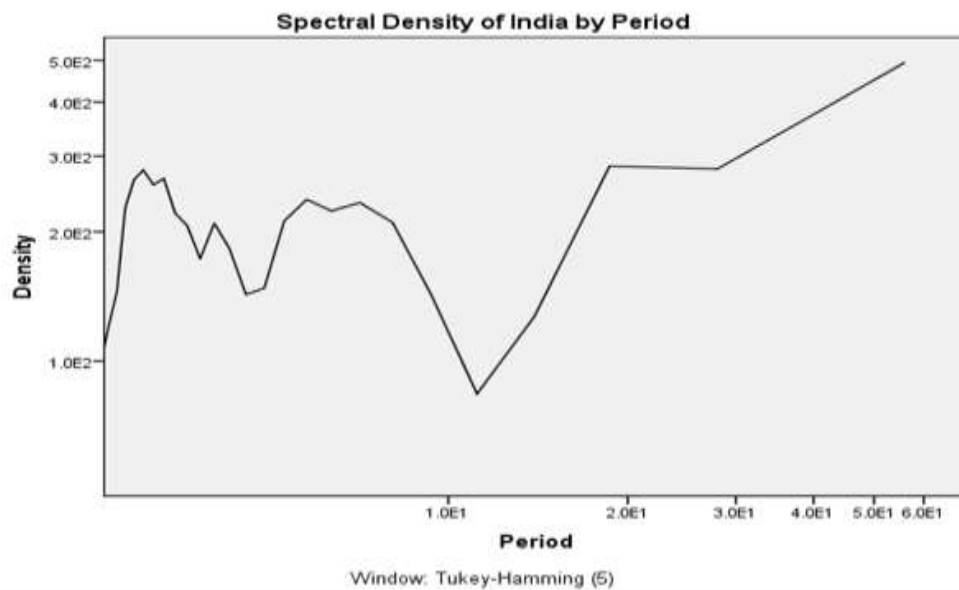
Source: Researchers Compilation

To smoothen the erratic cyclical behaviours spectral analysis Tukey-Hamming is applied representing GDP of India for the period pertaining to 1961-2017. The spectral analysis re affirm the conclusion drawn from periodogram ie the sinus rhytm is observed post 1991 due to implementation of New Industrial Policy.

To infer the India's growth in terms of GDP had been uncertain upto 1980 due to significant dependence on agricultural sector. However due to export of services and grabbing the opporunities of globalization India achived stablized growth later.

Graph 3- **-Periodogram of China by Period pertaining to GDP of China for period 1961-2017**
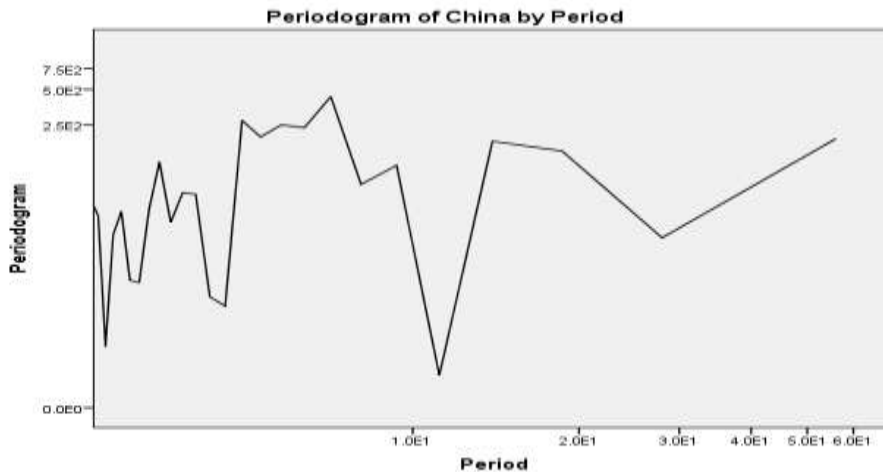
The periodogram of China represent wide fluctuations upto period 1981. It could achieve stabilization post 3rd Lap. The economy records deepest dip immediately after 1st lap embarking the impact of '' The Great Leap Forward" of China which resulted into economic regression leading to shrink in the Chinese economy. The revival process of Chinese economy fostered its GDP post 3rd lap due to expansion of manufacturing sector. The economy now moved towards rapid progress in terms of men and machines.

Graph no 4 – Spectral Density of China's GDP
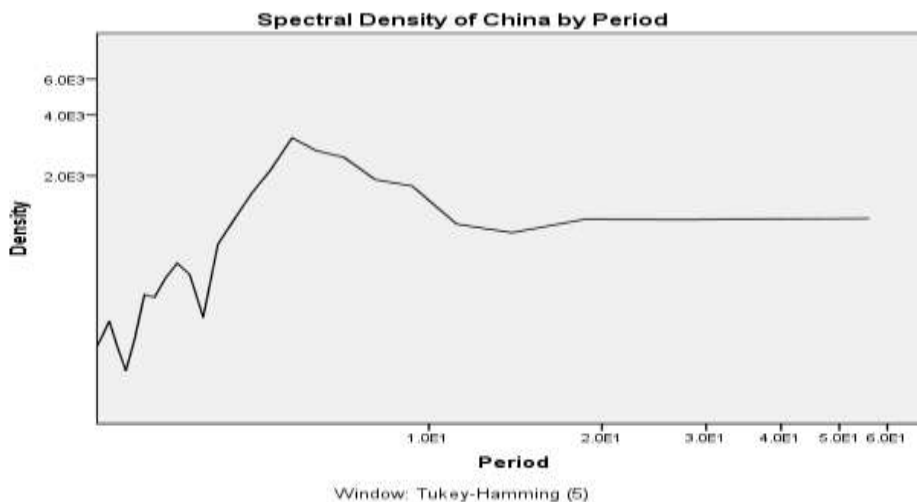
The spectral analysis smoothening the periodogram likewise reconfirm the cyclical behaviour of the Chinese economy. The analysis displays varying waves upto 2nd Lap due to socio political disaster leading to economic shrink. Thereafter in the 3rd lap the economy exhibited an upward trend. The periodogram and spectral density chart reveals the erratic trends in the growth rate of India and China, hence we accept H_1.

H_{A2}: China has outperformed India in the overall score of VUCA based on the selected indicators.

GDP as measure of economic progress has overshadowed the qualitative and quantitative indicators equally prevalent and crucial for development of any nation. Thus, the research study attempts to formulate an indicative grid signaling the comparability between India and China on whole and not just quantifiable factors. The grid below assigns "0'' to the country lagging behind and "10" to the country at its best under each parameter.

Table No 1 Grid of selected VUCA Indicators

Core Indicators	Sub- indicators	India	China
MACROECONOMIC VARIABLES	GDP growth (annual %)	10	0
	FDI, net Inflows balance (BOP, current US$)	0	10
	Exports of goods and Services (% of GDP)	0	10
	Inflation, GDP Deflator	0	10
QUALITY OF HUMAN RESOURCES	Vulnerable Employment, Total (% of total employment)	0	10
	Prevalence of HIV total (% of Population age 15-49)	0	10
	Labour force participation rate total (% of total population age 15+	0	10
	% of population below, national Poverty line (Rural)	0	10
ENVIRONMENT AND BUSINESS	Co2 Emissions (metric tons per capita)	10	0
	Forest Area (% of land area)	10	0
	Ease of Doing Business (1= most business-friendly regulations)	0	10
	Logistics performance index: Overall (1= low to 5= high)	0	10
SOCIAL DEVELOPMENT	Human Development Index	0	10
	Secure Internet servers	0	10
	Social Progress Index (Score)	0	10
	Crime Index	0	10
	FINAL SCORE	30	130

Source – Researcher's Compilation

Despite tremendous increase in India's GDP during last two decades it lags way behind when a cohesive approach is adopted to compare the qualitative and quantitative factors of both the economies. India and China though being neighbouring countries has always been each other's distant cousin. India out weighs China only in 3 parameters out of 16 adjudged in the study ie. GDP, CO_2 and Forest Cover. This leads to infer that China progressed taking all its sectors simultaneously and not just focused on few factors like India. The score clearly spells out failure on Indian economy to utilize its untapped potentialities to maximum.

Table 2: One-Sample Statistics				
	N	Mean	Std. Deviation	Std. Error Mean
China	56	8.250729944663748	6.993279454208473	.934516275986199
India	56	5.345623437991593	3.109239972349887	.415489668206991

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
China	8.829	55	.000	8.250729944663748	6.377917476875142	10.123542412452354
India	12.866	55	.000	5.345623437991593	4.512963535910983	6.178283340072203

Though the grid flawlessly enchants that China has outperformed while assessing VUCA indicators, the study uses One Sample T test to identify the significant difference between India and China. The statistical inferences reveal p value to be less than 0.05 ie non- acceptance of null hypothesis. The facts and figures exhibit significant differences between India and China in consistent with indicative grid formed above.

IV.   Conclusion

The study reveals that both India and China have witnessed an erratic trend in the economic growth rate. The reason of this fluctuating trend is due to several economic reforms adopted by the Government of these nations. While, India has witnessed increase in the growth rate in the 1991 i.e post liberalization period the similar trend was observed in China in 1978 with the change in political leadership.

There is a concrete evidence to support the fact that China has outperformed India in 13 indicators selected to measure Volatility, Uncertainty, Complexity and Ambiguity. The indicator in which India has an edge over China is lower Co2 emissions. The Constitution of India clearly states that it is the duty of the state to 'protect and improve the environment and to safeguard the forests and wildlife of the country'. As a consequence, there were many Acts implemented to protect environment and forests instrumental in safeguarding the forests area. The main reason attributed to the environment degradation in China is due to its focus on boosting the manufacturing sector at a massive scale. In contrast India jumped the queue and focused

on service sector growth. The study reveals that China has outperformed India in majority of the selected indicators identified to analyze the VUCA environment. These indicators include FDI, net Inflows balance (BOP, current US$) exports of goods and Services (% of GDP) Inflation, GDP Deflator, Vulnerable Employment, Total (% of total employment), Prevalence of HIV total (% of Population age 15-49) , labour force participation rate total (% of total pop age 15+, % of population below national Poverty line (Rural), Ease of Doing Business (1= most business friendly regulations), logistics performance index: Overall (1= low to 5= high), HDI , Secure Internet servers, Social Progress Index (Score) and Crime Index .

It was observed that there was a marginal difference in the value of the indicators, except Co2 emissions, where India had edge over China. However, there is a significant difference between the value of indicators of India and China where China scores more. This once again proves that

China has outnumbered Indian economy in majority of the indicators. The ability to withstand external pressures and excel in the VUCA environment is undoubtedly tilted in favour of China.

V.   Implications

Disruption is the pattern witnessed by all in the VUCA world. Both India and China are witnessing a turbulent environment. There is a grave need to extrapolate the future requisites due to existence of multidimensional issues creating a mélange that is difficult to fathom.

A more comprehensive study can be undertaken with different indicators to determine the extent of VUCA environment. If time series data of all the indicators are available an all-inclusive level of study can be conducted for different countries.

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