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Journey of Indian & Chinese Gross Domestic Product (GDP) in the 21st Century: A Comparative Analysis 2000-2021

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ABSTRACT:

The gross domestic product measures the total production carried out within the economic territory of a nation. The analysis of national income especially GDP is very important for understanding a country's domestic transitions position relating to goods and services. The present study is an attempt to highlight on overall GDP performance of India and China comparatively from 2000 to 2021.

The data has been compiled from the websites of the international institutions (IMF & WBG) and tabulated as the results by using the research tools mean, CV, growth percentage (YoY), regression and ANOVA.

. In this century, production transactions in India have been more dynamic than in China. The march of Indian GDP towards $ 5 trillion by 2024 is likely to take additional 3 years to achieve the target. According to the study, the Indian economy will experience the digit of 5 trillion GDP in 2027.

Key Word: GDP, GVA, FCE, GCF, SNA.

INTRODUCTION

Developing and underdeveloped countries have been trying to become the king of the world economy. All economies have been enlarging their sectors to increase the national income. The analysis of national income especially GDP is very important for understanding a country's domestic transitions position relating to goods and services. National income accounts furnish us with valuable information about the basic structure of the economy and the contribution made by the various sectors to the national product of the country. It also reveals the change in the size and composition of the national product and the structural changes taking place in the economy during the process of growth. The present study is an attempt to highlight on overall GDP performance of India and China comparatively.

The gross domestic product measures the total production carried out within the economic territory of a nation. GDP (at purchaser's prices) is the sum of gross value added by all resident producers in the economy plus (+) any product taxes and, minus any subsidies not included in the value of the products. The GDP is formulated based on three approaches i.e. Production, Income, and expenditure, or the Final demand approach.

OBJECTIVES:

1. To find the time lag to become India's $ 5 trillion economy.
2. To find out the total and average GDP of India & China from 2000-2021.
3. To analyze the trend of the respective countries' GDP comparatively.
4. To find out the gap between the Indian GDP and the Chinese GDP.

HYPOTHESIS:

H_0: There is no significant difference between Indian and Chinese GDP in 21st century.
H_0: There is no significant way to achieve the $ 5 trillion economy for India by 2024.

RESEARCH METHODOLOGY:

The present study is based on secondary sources adapted from the website of the World Bank. The data analysis has been done by using the simple average, growth rate (basis on year on year), Comparative percentage analysis, and Coefficient of variance (CV).

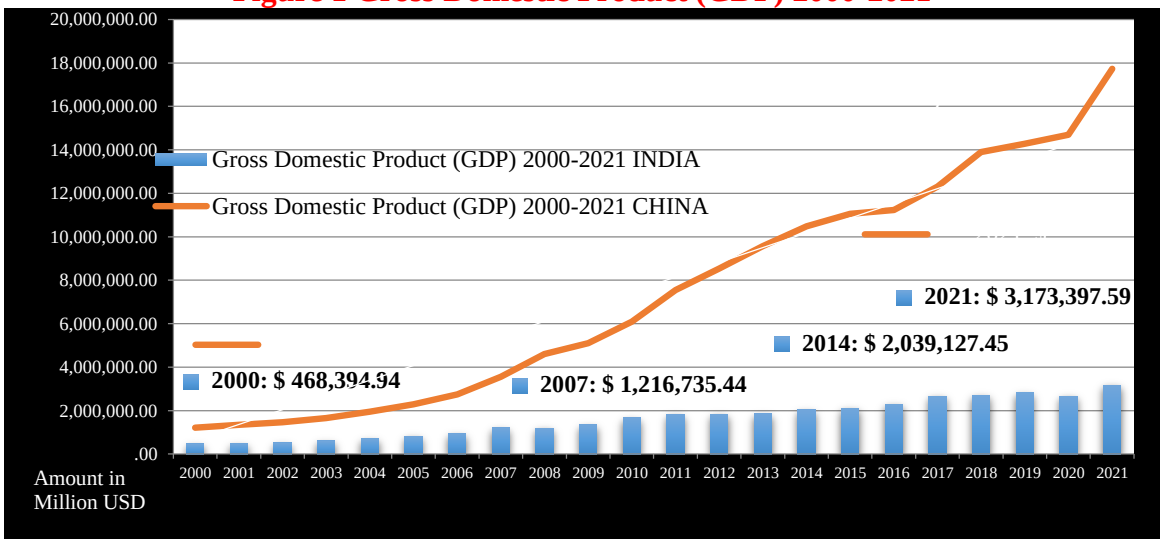
SCOPE AND LIMITATIONS:

1) Geographical scope: the study covered two countries i.e. India and China R.P. 2) Operational scope: the study has covered the GDP
3) Temporal scope: the study covered 22 years that is from 2000 to 2021.
4) All figures are presented in the United States Dollar (USD) in million.

DATA ANALYSIS, INTERPRETATION & FINDINGS:

Figure 1 shows the journey of the gross domestic product of India and China from the source point of the 21st century to 2021. The highest value of Indian and Chinese GDP had registered in 2021, whereas the lowest was in 2000. The total GDP of India accounted for 35,951,359.73 million USD with an average of 3,247,014.73 million USD over the study period, whereas the total GDP of China had noted as 354.34 percent excess of the Indian GDP. The Chinese GDP has grown an average of 11,547,023.28 million USD over the average GDP of India.

Figure 1 Gross Domestic Product (GDP) 2000-2021

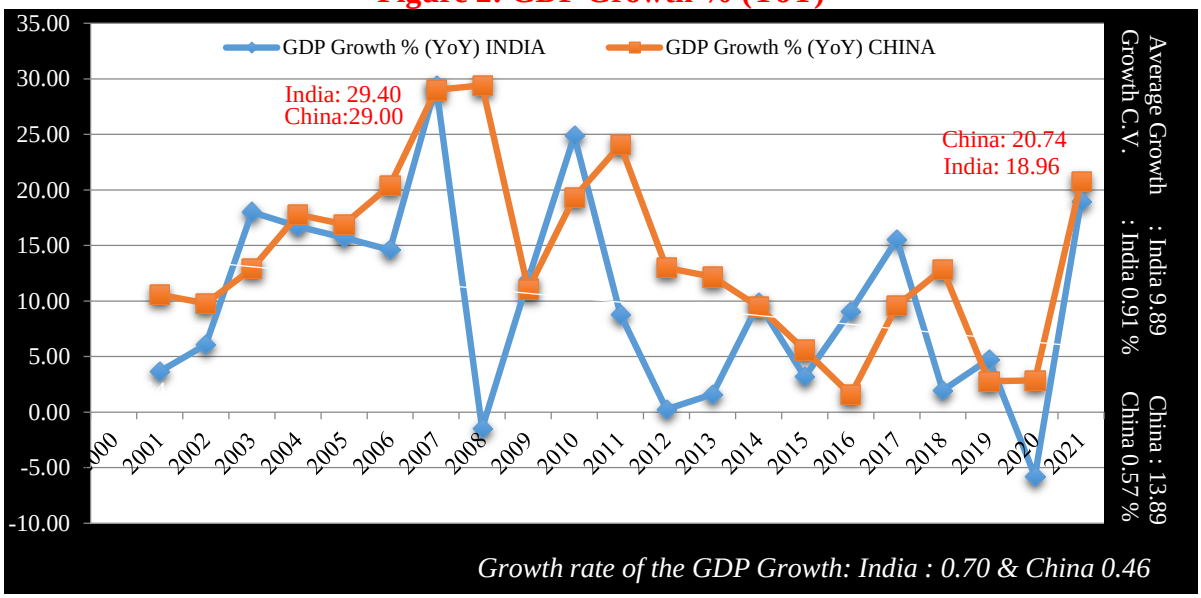


(Source: https://data.worldbank.org/country)

The total growth value of Indian GDP has accounted for 2,705,002.65 million USD by an average of 122,954.67 million USD. Concerning China, the total growth of the GDP value had recorded at 16,522,715.78 million USD with an average of 751,032.54 million USD, which had been observed as 510.82 percent more than the Indian GDP over the study period.

Figure 2 shows the speed of the journey (i.e. growth percentage comparatively based on year-on-year. The highest GDP growth rate had noted at 20.90 percent in India in 2007 & China in 2008. The Lowest growth rate of the Indian GDP had registered at 0.25 percent in 2012, and it had found 1.55 percent in 2016 China.

Figure 2: GDP Growth % (YoY)



(Source: depicted based on figure no 1)

The negative growth rate of Indian GDP was remarked twice in the century_ -1.49 percent in 2008 & -5.79 percent in 2020 due to economic crises & Covid -19 pandemic, respectively. The average growth rate calculated based on the year-on-year (YoY) of Indian GDP has been recorded at 9.89 percent and, it was 13.89 percent for China. The coefficient of Variance (SD/Mean) of GDP growth has scored 0.91 percent for India and 0.57 percent for China which indicates that there has been more variability in Indian production activity than in China. In other words, there has been more stability in the production activities of China than in India. The average growth of the GDP growth of India has been noted as 0.70 percent, whereas it was noted as 0.46 percent for China over the study period, which indicates the speed of the growth of Indian GDP has been increasing more than the speed of the growth of Chinese GDP.

Table 1, the results of trend analysis implied that the GDP of India and China increased annually by 130,811.95 million USD and 787,581.40 million USD respectively during 2000-2021. The regression coefficient of semi log model for India and China implied that the GDP increased at the compound growth rate of 9.85 percent and 14.47 percent per year respectively. The regression coefficient in both the models was significant at five percent level.

Table 1: Results of Trend Analysis of GDP during 2000-2021

Regression Analysis : Linear and Semi Log								
COUNTRY	**Model**	**a.**	**b.**	**SEb.**	**t.**	**R^2**	**Ad R^2**	**CGR**
INDIA	Linear	129815306089.21	130,811,948,587.77	3936390380.11	33.23	0.98	0.98	--
	Semi-Log	26.88	0.09	0.00	20.46	0.95	0.95	**9.85**
CHINA	Linear	-1632636486364.00	787,581,401,187.27	31936683682.99	24.66	0.97	0.97	--
	Semi-Log	27.76	0.14	0.01	23.08	0.96	0.96	**14.47**

(Source: resulted & tabulated based on figure no 1)

The value of adjusted R^2 of India and China were 0.98 and 0.97 respectively in simple linear regression model and they were 0.95 & 0.96 respectively in the semi log model during the study period. It means India and China 98 percent and 97 percent of variations respectively in the dependent variable were

explained by the independent variables in the linear model. Further, around 95 percent and 96 percent of variations in the dependent variable were explained by the independent variables in the semi log model.

In the Table 2, the fundamental hypothesis of the study concerning GDP has been tested. To check the difference between Indian GDP and Chinese GDP the ANOVA test was employed

Table 2:Summery & Results of Single Factor ANOVA

GROUPS	COUNT	SUM	AVERAGE	VARIANCE	SD	CV
INDIA	22	35,951,359,726,667.10	1634152714848.50	7.34614E+23	857,096,098,004.62	**0.51**
CHINA	22	163,340,091,800,371.00	7424549627289.61	2.70155E+25	5,197,642,497,545.23	**0.70**
GAP (China-India)		127,388,732,073,704.00	5,790,396,912,441.10	--	--	--
SINGLE FACTOR : ANOVA						
Source of Variation	***SS***	***df***	***MS***	***F***	***P-value***	***F crit***
Between Groups	3.68816E+26	1	3.68816E+26	26.58	0.00	4.07
Within Groups	5.82752E+26	42	1.38751E+25			
Total	9.51568E+26	43				

(Source: Calculated and tabulated based on the data figured)

The obtained F value (26.58) significant at 0.05 level of significance was greater than the table value (4.07) at degree of freedom (1, 42). The null hypothesis was rejected and alternative hypothesis was accepted at the level of significance. Hence, it was interpreted that there is significant difference between GDP of India and China during the study period. The Chinese GDP has been accounted more by 127.388 trillion USD with an average of 5.790 trillion USD than the GDP of India in the 21st century.

The coefficient of Variance of GDP has scored 0.51 percent for India and 0.70 percent for China, which indicates that there has been less variability in Indian production activity than in China. In other words, there has been more stability in the production activities of India than in China.

SUGGESTIONS:

The total and average value of Chinese gross domestic product noted 354.34 percent excess of India over the study period. The growth value of Chinese GDP also found more than India by 510.84 percent in the century. The simple & compound annual growth rate of India was noted as less than the rates of China over the study period. The CV (0.91) and growth rate (0.70) of the GDP growth of India surprisingly found more than China, which indicated there has been dynamic production activities carried out in the Indian economy. But, to achieve the predefined march towards the 5 trillion economies, India needs to increase the growth and value of the production transactions by improving the sectoral outputs i.e. agricultural, manufacturing, industrial, and services. The following points have suggested increasing the Indian GDP and its growth rate. (1) India should increase the Gross Capital Formation (Investment) (2) India should satisfy the domestic consumption by domestic sources (3) India should use all the resources at the optimum level (4) India should increase agriculture sectoral outputs through advanced technology. (5)India should enhance industrial development (6) India should promote research and innovation (7) India should enlarge the manufacturing sector (8) Comprehensive development of all sectors of the Indian economy.

CONCLUSION:

From the source year of the 21st century, comparatively the production performance of the Indian economy has not been satisfactory because the growth rate of Indian GDP remained behind the growth rate of China. The variability in the GDP growth of India remarked excess than China, therefore; India needs to stable it with an upward trend. In this century, production transactions in India have been more dynamic than in China. The march of Indian GDP towards $ 5 trillion by 2024 is likely to take additional 3 years to achieve the target. According to the study, the Indian economy will experience the digit of 5 trillion GDP in 2027.

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