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A Time-Series Analysis of Economic Growth in the Context of Indian Economy

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ABSTRACT

India has a sizable and successful consumer class, which is critical given that household consumption accounts for 60% of GDP. Total market value is calculated by adding the monetary or market values of all final goods and services produced inside a nation's borders. Additionally, the gross domestic product at market value (GDP at market value) may be employed to reflect this total market value. Total domestic production is defined in terms of GDP to assess the economy's health. GDP is computed on a quarterly or yearly basis, depending on the state of the economy at the moment. Human capital is a country's most important natural resource, and it must be used appropriately and acknowledged to accomplish long-term economic goals sustainably. India is the world's second-most populated nation, with 1.3 billion people behind China. According to the World Bank, India's global influence has grown in lockstep with its consistent economic success. Compared to wealthier nations, emerging countries have several obstacles, including a lack of infrastructure and a low per capita income. Another issue that has to be addressed is the growth of rural economic systems. According to some experts, India's current economic instability will culminate in an unprecedented economic boom, which they believe has already begun.

Keywords- Indian Economy, GDP, Forecast, Economic Shock.

I. INTRODUCTION

In order to achieve long-term economic objectives, a nation's most valuable natural resource — its people — must be used appropriately and valued. India is the second-largest country in the world by population, behind China. As India's economy continues to expand, the country's global influence has expanded as well. Emerging countries have infrastructural deficiencies, low per capita income, and a proliferation of rural economic systems compared to developed countries. According to some analysts, the current economic changes in India might result in an unprecedented economic boom. The politics of India's economic growth arouses an insatiable interest among observers. Growth in the global economy that is sustained throughout time is the most surefire and well-tested strategy of reducing poverty and improving living conditions worldwide. India is a functional democracy, which means that the needs of political parties may dictate economic policy. For example, social indicators like literacy and infant mortality are behind, pushing political parties to engage in competitive populism to catch up. Political economics is critical in the formulation of public policy. What policies can be implemented given these limits is an essential indication for policies that affect many people's lives. India faces several challenges. In 2022, it is predicted that fuel and food prices will rise and that urban unemployment will rise. Due to the continued economic growth of the Indian subcontinent, foreign investment in India's economy has reached an all-time high. The economy is expected to grow in the following years due to higher wages and savings, more investment opportunities, and a younger population. As a result of the worldwide demand for Indian goods and services, India's economic growth and development have been boosted. During the previous decade, India's purchasing power parity (PPP) has increased by a factor of more than four times. Consequently, the average quality of life for the general population has increased significantly. Recent years have seen an increase in the average life expectancy, resulting in a decrease in neonatal fatalities.

As a result, India has a significant and prosperous consumer class, which is crucial considering that household spending accounts for 60% of the country's GDP. Sum up the monetary or market value of every final item and service produced inside the country's borders to arrive at the total market value, which may be expressed either in dollars or as market value GDP. It is vital to analyze the economy's health using this indicator of total domestic production. Gross Domestic Product may be calculated on a quarterly or yearly basis, depending on the status of the economy at the time. Government-issued GDP figures for the United States are provided regularly unless precisely specified differently. It is important to note that the outcomes of this research have been expressed in real terms to reflect the previously mentioned worries about increasing costs and inflation. When it comes to measuring economic growth, the Gross Domestic Product, a frequently used economic indicator, is utilized. When measuring a country's gross domestic product, it is critical to consider both consumption and capital investment. The Gross Domestic Product of a nation is a monetary measure of the entire production of a country over a certain period that economists and investors often use. It is a method of determining the amount of land that a country's population occupies. A mathematical calculation is one-way central banks determine the appropriate interest rate at any given time.

II. LITERATURE REVIEW

Using secondary data acquired over seven years, Iqbal et al. (2017) assess the inclusiveness of the banking sector and its impact on India's GDP. Banks' implementation of the multiple regression model has a significant impact on their branch network and credit ratio. On the other hand, ATMs are thought to have a minor impact on India's GDP, according to academics. Majhi et al. (2021) conducted another fascinating analysis of eight industrialized and developing countries during the pandemic, evaluating their real GDP in the first quarter of 2020. According to their multilayer artificial neural network model, GDP reductions are expected in all countries. Based on their results, they feel that the present condition of things requires prompt action by all governments worldwide. Rehman (2016) studies the link between foreign direct investment and economic growth. The Pakistani time series from 1970 to 2012 were evaluated using two models. This study looks at some of the more practical elements of calculating foreign direct investment growth. According to the VECM, economic development is linked to FDI, but not the other way around. Foreign direct investment, human resources, and exports were prioritized in the second model. The interaction of Pakistan's components stymies its economic progress (for example, foreign direct investment and human capital). This is a compilation of data that has been accumulated throughout time (1970-2012). As a consequence of this study, Pakistan's economy may improve. Efforts must be made to raise literacy levels. The unemployment rate has fallen as a result of these measures. Thus, both output and currency value would increase. As a result, foreign investors are hesitant to invest in the country's economy. A stable and safe economy is where foreign direct investment will eventually end.

S. K. Patra et al. (2017) study India's long-run link between savings and growth. The Bi-Perron test is used to determine the structural break in 1980, from 1950–51 to 2011–12. It also investigates the link between savings and actual economic activity. Saving increases activity before and after the break, although economic success encourages short-term savings. According to the findings of this study, both neoclassical exogenous and post-neoclassical endogenous growth models seem to be more efficient than incentive- and productivity-based measures. This article will undertake an experiment after Khraief, et al. (2018) investigated how economic growth affects Algeria's energy usage. Between 1971 and 2012, two new variables were included in the demand function: urbanization and trade openness. Increased energy consumption is associated with higher income levels, with urbanization having the highest impact. More openness in the economy has the added benefit of lowering energy use. The Vector Autoregressive approach is used in innovation accounting to determine the causal link between variables (VAR). The researchers discovered no link between higher family income and increasing power use. In the Granger sense, higher energy use leads to more urbanization.

The research was undertaken by A. Jamal et al. (2019) to assess the influence of exports, imports, and FDI on GDP. The technique of Johansen Juselius quantified GDP, exports, foreign direct investment, and imports. The test results showed no evidence of a long-term relationship between the factors. According to the VAR model, foreign direct investment and exports considerably impacted India's current GDP growth, while imports had little impact. The impulse response function of the study found that both export and FDI shocks raise GDP in the short and long term. The Granger Connection test demonstrates a causal relationship between GDP and foreign direct investment. Exports, on the other hand, contribute to GDP. Diversified, created, exported, and dispersed foreign direct investment is required (FDI). Consequently, India's economy needs export-led growth, foreign direct investment, and other sources of vitality. It is said that

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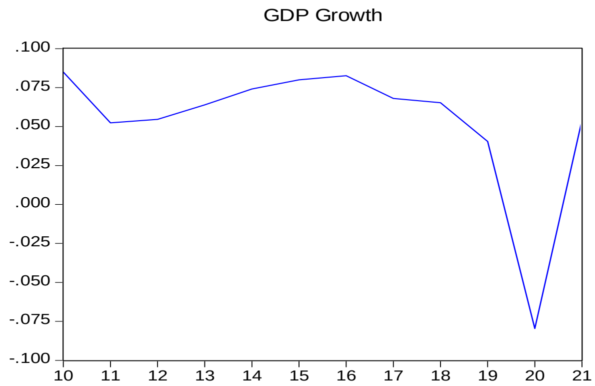
liberal policies are essential to boost India's GDP. A time-series analysis of data from 1971 to 2011 is used to investigate the relationship between financial development, economic expansion, and energy use on environmental degradation in India. M. Sehrawat and colleagues (2015) each unit root test examines the static attributes of the variables. Autoregressive Distributed Lag Bounds is a subset of distributed lag bounds. Long-term relationships are investigated using statistical testing, while short-term dynamics are investigated using the Error Correction Method (ECM). The variance decomposition methodology is utilized in the VECM method to assess causation and forecast exogenous shocks. The data suggest that the factors have a long-term relationship. The environment in India seems to be deteriorating due to the country's economic prosperity. Economic growth is intrinsically tied to energy consumption, financial development, and urbanization. Aside from that, statistical data show that the Indian economy follows an eco-Kuznets curve.

III. RESEARCH METHODOLOGY

India GDP Growth Rate - Historical Data	
Year	GDP Growth
2010	8.5
2011	5.24
2012	5.46
2013	6.39
2014	7.41
2015	8
2016	8.26
2017	6.8
2018	6.53
2019	4.04
2020	-7.96
2021	5.4

IV. DATA ANALYSIS



India GDP Growth Rate - Historical Data

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	2010	1	7.7	7.7	7.7
	2011	1	7.7	7.7	15.4
	2012	1	7.7	7.7	23.1
	2013	1	7.7	7.7	30.8
	2014	1	7.7	7.7	38.5
	2015	1	7.7	7.7	46.2
	2016	1	7.7	7.7	53.8
	2017	1	7.7	7.7	61.5
	2018	1	7.7	7.7	69.2
	2019	1	7.7	7.7	76.9
	2020	1	7.7	7.7	84.6
	2021	1	7.7	7.7	92.3
	Year	1	7.7	7.7	100.0
	Total	13	100.0	100.0	

V2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	-7.9600%	1	7.7	7.7	7.7
	4.0400%	1	7.7	7.7	15.4
	5.2400%	1	7.7	7.7	23.1
	5.400%	1	7.7	7.7	30.8

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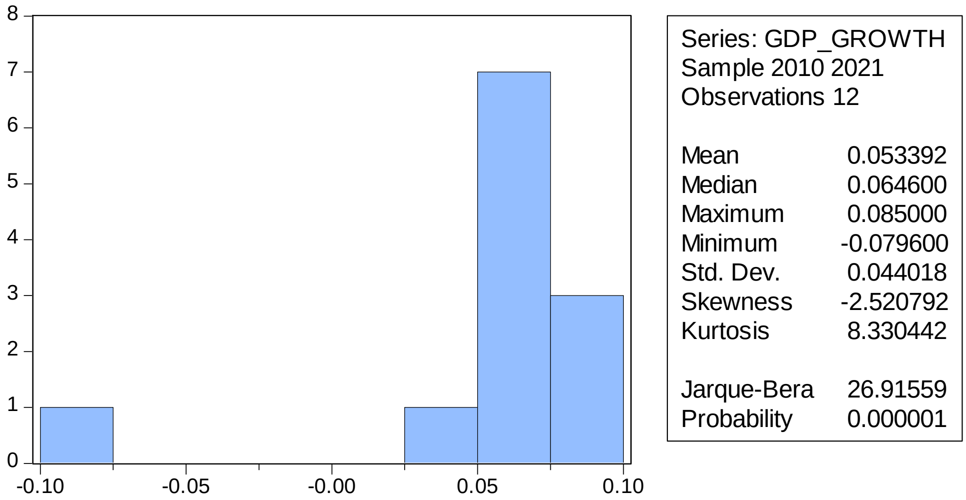
	5.4600%	1	7.7	7.7	38.5
	6.3900%	1	7.7	7.7	46.2
	6.5300%	1	7.7	7.7	53.8
	6.800%	1	7.7	7.7	61.5
	7.4100%	1	7.7	7.7	69.2
	8.00%	1	7.7	7.7	76.9
	8.2600%	1	7.7	7.7	84.6
	8.500%	1	7.7	7.7	92.3
	GDP Growth (%)	1	7.7	7.7	100.0
	Total	13	100.0	100.0	



V. ANALYSIS OF NORMALITY OF DATA

As per the Jarque-Bera test, data analysis is done to find if they are normally distributed at a 5% level of significance and found a p-value lesser than 0.05 that indicates data is not normally distributed. Therefore, the null hypothesis was rejected, and thus further other data diagnostic stationary tests were carried out to see if they were feasible at the level to interpret data.

Null Hypothesis: GDP_GROWTH has a unit root at level			
Exogenous: Constant			
Lag Length: 0 (Automatic based on SIC, MAXLAG=2)			
		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.59679	0.122222
Test critical values:	1% level	-4.20006	
	5% level	-3.17535	
	10% level	-2.72899	
*MacKinnon (1996) one-sided p-values.			

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDP_GROWTH)
Method: Least Squares

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Sample 2011-2021				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP_GROWTH(-1)	-0.83029	0.319736	-2.59679	0.02889
C	0.041466	0.022111	1.87537	0.093494
R-squared	0.42833	Mean dependent var		-0.00282
Adjusted R-squared	0.364811	S.D. dependent var		0.058568
S.E. of regression	0.046678	Akaike info criterion		-3.12813
Sum squared resid	0.019609	Schwarz criterion		-3.05579
Log likelihood	19.20473	Hannan-Quinn criter.		-3.17374
F-statistic	6.743337	Durbin-Watson stat		1.946346
Prob(F-statistic)	0.02889			

VI. CONCLUSION AND OUTCOME OF THE STUDY

In this research paper impact of GDP on the Indian economy was analyzed. In the first phase of data analysis, diagnosis through Augmented Dicky Fuller test conducted and found p-value more than 0.05 and the null hypothesis is accepted hence GDP data not stationary at level. Furthermore, the ADF test is carried out to check if they are stationary at first difference or not and found stationary at first level. Therefore, study data was appropriate for further study, and on the accuracy of data, the intense research study was done to see the impact of GDP on the Indian economy within the time frame of 2011 to 2021. India's Gross Domestic Product (GDP) has had various ups and downs throughout the selected 2010 to 2021, as seen by GDP growth of 8.5 percent in 2010 and 5.4 percent in 2021 and thus seen plunging trend of approximately 35% down since 2010, which is quite remarkable despite continuous demand. Still, the downtrend enthused about looking at several other economic factors and found Covid-19 by the end of 2019, though slightly down is also one of the crucial factors of negative real GDP growth in India. Although if analyzed the period of 2019 to 2021, GDP growth surges upward by fulfilling the demand of goods and services, which hampered substantially during the pandemic.

FURTHER SCOPE OF RESEARCH

There are plenty of scopes left in this research paper for future research since only one single economic variable is studied in a limited but controllable period between 2010 and 2021. In data analysis, many tests can also be performed apart from data diagnosis since a single variable study does not leave any further scope of analysis. Nevertheless, the study still seeks significant economic data inclusion for further research in this domain due to time constraints.

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