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# Impact of GDP on Indian AUTO Sector – An analysis of Nifty AUTO Index

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**Abstract**

The capacity of a country to produce products and services determines its economic growth. The Gross National Product (GNP), or Gross Domestic Product (GDP) measures the country's aggregate economic growth. The auto industry is a major engine of India's economic growth. According to the research, it provides 7.1 percent of total GDP and 49 percent of manufacturing GDP, while creating 3.7 crore direct and indirect jobs by the end of 2021. The current study investigates the impact of GDP on the Indian auto sector. It looks for uniformity in the growth rates of the Nifty AUTO and GDP. Information from sources other than the ones under investigation has been obtained for this study, which covers an 11-year period from 2012 to 2022. One-way ANOVA and other descriptive statistics were employed as statistical tools.

**Key Words:** GDP, India's manufacturing sector, the country's GDP, economic expansion, etc.

## I INTRODUCTION

Every nation's capital market is essential because it has the power to alter the national budget and regulate the economy. Because it makes capital transfers easier and draws in new resources, the capital market is essential to economic growth. The nation's industrial and commercial growth has been significantly influenced by the understanding and control of the capital market. To expand, the commercial and industrial sectors require long-term funding, which the capital markets supply.

GDP per capita is computed by dividing the total market value of all finished goods and services produced in a country by its total population. The GDP is a metric used to quantify the size of an economy. According to nominal GDP, India's economy is currently the sixth largest in the world. It is the third largest in terms of purchasing power parity (PPP). Two of the greatest measures to monitor changes in outputs and people's level of life are GDP and GDP per capita. The gross domestic product (GDP) is one of the most significant concepts that the government and decision-makers must understand in order to plan and implement policies. We can determine whether the economy is experiencing a boom, recession, or depression using GDP. A nation's GDP is a comprehensive indicator of its overall economic health and level of revenue. The following formula is used to determine GDP:

$$GDP = (X-M) + C + I + G$$

C = Annual consumption (expenditure on personal consumption).
G = Government expenditure.
I = The Nation's Total Private Investment
X = Total Export Amount
M = The total import quantity.
X-M = The total amount of net exports (however this number could potentially be negative).

There are several elements influencing India's GDP growth. These variables include manpower, infrastructure, investments, and consumer demand, among others. Each year, the Economic Survey—which includes information on India's GDP growth for the next fiscal year as well as the state of the economy in the previous year—is presented immediately before the Union Budget. India's GDP is segmented into three main sectors: industry, agriculture, and related services. According to recent data, the growth rate of the agriculture sector was 3.5% in FY23 compared to 3% in

FY22. The manufacturing sector is expected to increase by 1.6%, while the mining and electrical sectors are expected to rise by 2.4% and 9%, respectively.

## II. INDIA'S AUTOMOBILE SECTOR

The automobile sector, which comprises the industries that manufacture automobiles and automotive components, is one of the primary drivers of India's economic growth. Because of its close ties to other industrial sectors, manufacturing contributes significantly to the GDP, exports, and employment of the country. The sector has grown as a result of its historical capabilities in casting, forging, precision machining, fabricating (welding, grinding, and polishing), cost advantages (caused by a vast pool of inexpensive, skilled labor), and significant FDI inflows. The industry's success and ability to distinguish itself among India's manufacturing sectors are largely attributable to the government's strong support. Among other countries that produce automobiles, the nation's vehicle production is unique since it is tailored to the demands of middle-class and lower-class consumers.

According to the Economic Survey 2023, India's transition to renewable energy would be greatly aided by the automobile sector. The Economic Survey, presented to Parliament on January 31 by Finance Minister Nirmala Sitharaman, projects that the domestic electric vehicle (EV) market will develop at a compound annual growth rate (CAGR) of 49% between 2022 and 2030, when it hits one crore units. By 2030, the EV industry would generate 5 crore direct and indirect jobs, according to the research. In order to foster and facilitate this expansion, the government has initiated several initiatives. It commended the August 24, 2022, release of the Battery Waste Management Rules, 2022, which guarantee the environmentally responsible disposal of used batteries. "Notifying these rules is a transformative step towards promoting the circular economy." The Batteries (Management and Handling) Rules of 2001 will be replaced by the new regulations, which will cover a wide range of batteries, including industrial, portable, automotive, and electric vehicle batteries.

The government's 'Make in India 2.0' program is now focused on 27 categories, including 15 manufacturing and 12 service sectors, one of which is automobiles. 24 sub-sectors, including the auto component industry, were selected according to their strength and competitive advantage, the need for import substitution, export potential, and increased employment.

## III THE NATIONAL STOCK EXCHANGE

In 1992, the NSE was established. After it was licensed as a stock exchange by SEBI in April 1993, the wholesale debt market and the cash market sector were introduced in 1994. The microstructure, trading volumes, and protocols of the Indian securities market have all been modernized in large part because to the NSE. To provide an effective and transparent trading, clearing, and settlement mechanism, as well as other product and service developments, the market now employs cutting-edge information technology, viz.

The NSE was established as a demutualized exchange, which implies that ownership, management, and trading are overseen by three different bodies. The NSE is controlled by major financial institutions, banks, insurance companies, and other financial intermediaries. It is run by experts who do not directly or indirectly trade on the Exchange. Consequently, the NSE may now actively promote policies and practices that advance the public interest as there is no longer a conflict of interest. However, the NSE model promotes trading members' involvement, help, and contributions in any way. The Board consists of one full-time Exchange CEO, public representatives, SEBI candidates, recognized experts in law, economics, accounting, finance, and taxation, and top executives from promoter institutions.

## IV GDP AND INDIAN AUTOMOBILE SECTOR

India's automobile sector is an important economic driver. It is an important growth driver because of its strong backward and forward linkages. Recent liberalization and deliberate government actions have created a dynamic, competitive market that has drawn many new companies, expanding the automobile industry's capacity and creating a sizable number of jobs.

This industry today makes up over 7.1% of the country's GDP, up from 2.77% in 1992–1993. Nearly 19 million people are employed by it, both directly and indirectly. In 2021–2022, two-wheelers and passenger vehicles held 77% and 18% of the market share, respectively, in the Indian vehicle industry. The great majority of passenger car sales are made up of small and medium-sized automobiles. A 35.9% rise in total automobiles delivered occurred from 4,134,047 in 2020–21 to 5,617,246 in 2021–22. By the end of 2024, India hopes to have sold 15 lakh crores worth of cars. The industry received $33.77 billion in foreign direct investment (FDI) between April 2000 and September 2022, which makes up around 5.48% of all FDI inflows to India during that period.

Over the last two decades, the Indian automotive sector has grown dramatically, attracting international attention and establishing itself as a formidable competitor for the top table. Two-wheeler production ranks second globally, followed by commercial vehicles, passenger vehicles, and tractors. Over the last ten years, India has eclipsed a number of established locales to become one of the world's most desirable locations for producing premium automotive components and vehicles of all types.

Over the next ten years, the automobile industry is expected to see considerable changes on a global scale. Three major changes have occurred in the automotive industry: the proportion of electronics in cars has increased, making them "computers on wheels and connected to the Internet"; the demand for cars has shifted from developed to developing countries (primarily BRICS); and designers and engineers have been relentless in their pursuit of economies of scale and scope in the design and engineering of cars and their components, while also looking for low-cost manufacturing locations.

## V OBJECTIVES OF THE STUDY

a) To highlight the role that GDP has had in the growth of India's AUTO industry.
b) Comparing the GDP growth rates to the Nifty AUTO Index growth rates.
c) To project the growth of the Nifty AUTO Index using GDP.

## VI METHODOLOGY OF STUDY

The study is based on data already available from the official NSE website. The data was collected between 2012 and 2022, a span of 11 years.

### Tools for analysis based on statistics

One-way ANOVA and other descriptive statistics were employed in the study to examine the data.

## VII DATA ANALYSIS

**Table - 1**
**Annual growth rates of GDP and Nifty AUTO**

(Figures in %)

| Year | GDP | Nifty AUTO |
|---|---|---|
| 2012 | 5.46 | 42.47 |
| 2013 | 6.39 | 9.41 |
| 2014 | 7.41 | 56.69 |
| 2015 | 8 | -0.32 |
| 2016 | 8.26 | 10.75 |
| 2017 | 6.8 | 31.37 |
| 2018 | 6.45 | -23.09 |
| 2019 | 3.74 | -10.69 |
| 2020 | -6.6 | 11.46 |
| 2021 | 8.95 | 18.96 |
| 2022 | 7.00 | 15.31 |
| **Average** | **5.624** | **14.756** |
| **Standard Deviation** | **4.294** | **22.766** |
| **Co-efficient of Variance** | **0.764** | **1.543** |

(Source: Calculation based on information from web)

Table 1 shows that throughout an 11-year period, the annual growth rates of the GDP and Nifty AUTO were compared. There was variation in GDP growth rates across all years. The growth peaked in 2021 at 8.95 and peaked in 2020 at -6.60. GDP growth from 2012 to 2018 was more than 5%. It steadily declined starting in 2016 and went from 8.26% to -6.60% by 2020. COVID-19 caused a 10.34% decline in GDP growth in 2020. Nifty AUTO growth rates peaked in 2014 at 56.69 and fell to a low of -23.09 in 2018. All years saw a constant fluctuation in growth returns, with a few exceptions.

**Table - 2**
**Descriptive Statistics of GDP and Nifty AUTO**

| | GDP | Nifty AUTO |
|---|---|---|
| Mean | 5.624 | 14.756 |
| Standard Error | 1.295 | 6.864 |
| Median | 6.8 | 11.46 |
| Standard Deviation | 4.294 | 22.766 |
| Sample Variance | 18.439 | 518.313 |
| Range | 15.55 | 79.78 |
| Minimum | -6.6 | -23.09 |
| Maximum | 8.95 | 56.69 |
| Sum | 61.86 | 162.32 |
| Count | 11 | 11 |

Table 2 depicts the statistical central tendency of GDP growth rates and Nifty AUTO. The GDP growth rate ranges from 8.95 to -6.60, with a standard deviation of 4.294. The average GDP growth rate is 5.624, the median growth rate is 6.8, and the range is 15. 55. The GDP growth rate variance is 18.439. Nifty AUTO's maximum growth rate is 56.69, while its minimum growth rate is -23.09. This produces a standard deviation of 22.766. The average growth rate for the Nifty AUTO is 14.756, with a middle rate of 11.46 and a range of 79.78. The Nifty AUTO growth rate variance is 518.313.

**One-way ANOVA test**

**H0:** The growth rates of GDP and Nifty AUTO are consistent throughout the study period.
**H1:** There is no consistency in the growth rates of GDP and Nifty AUTO during the study period.
The appropriate level of significance is 5%.

**Table 3**
**One way ANOVA Test**

| Source of Variation | Sum of Squares (SS) | Degrees of Freedom (Df) | Mean Square (MS) | F Calculated Value | F Table Value |
|---|---|---|---|---|---|
| Between Groups | 458.7369 | 1 | 458.7369 | 1.709306 | 4.351244 |
| Within Groups | 5367.521 | 20 | 268.3761 | | |
| Total | 5826.258 | 21 | | | |

Table 3 shows a one-way examination of the growth rates of GDP and Nifty AUTO. The hypothesis is tested at the 5% level of significance. Here, the tabulated value is more than the calculated value. So H0 is accepted. It can be inferred that the growth rates of GDP and Nifty AUTO were consistent throughout the study period.

## VIII CONCLUSION

This study shows that, for the bulk of the years, the two parameters—GDP and Nifty AUTO—move in the same direction. This demonstrates that the GDP has an impact on the auto sector and that the growth rates of both variables are heading in the same direction. Additionally, it can be seen that the GDP growth rate has been positive for all save 2020 due to the effects of COVID-19, and that the growth of the Nifty AUTO has fluctuated in various years due to changes in the capital market during the study period. It is evident that there has been homogeneity in the GDP and Nifty AUTO growth rates, indicating that the growth rates of these two parameters occur at the same frequency.

## IX REFERENCES

1. The Indian Economy in Global Context. In: Krueger, A.O and Chinoy, S. (Eds.) Economic Policy Reforms and the Indian Economy. Oxford University Press, New Delhi, pp. 9-46.
2. Indian Automobile Industry on a High Growth Trajectory, Press Information Bureau, Govt. of India, Dec. 19, 2011.
3. Barnes, T., Das, K.S.L. and Pratap, S. (2016), "Incorporating labour research into studies of global value
4. chains: lessons from India's auto industry", Global Labour Journal, Vol. 7 No. 3, pp. 240-256
3. Bhasker, V. V. (2013). Indian Auto Component Industry: A Decade of Growth and Way Forward, Research Journal of Management Sciences, Vol. 2(3), 19-27.
4. Ranawat, M. and Tiwari, R. (2013). Influence of Government Policies on Industry Development: The Case of India's Automotive Industry, Working Paper No. 57.
5. Badri Narayan, G and Vashisht, P (2008) Determinants of Competitiveness of the Indian Auto Industry. Available at: http://icrier.org/pdf/Working%20Paper%20201.pdf (accessed 7 June, 2021)
6. D'Costa, A (2011). Globalisation, crisis and industrial relations in the Indian auto industry. International Journal of Automotive Technology and Management. DOI: 10.1504/ IJATM.2011.039540
7. Ghosh Chowdhury S and Chatterjee, S (2020) Determinants of Indian Automobile Industry growth. Eurasian Journal of Business and Economics, 13(26): 65-91
8. Piplai, T (2001) Automobile Industry: Shifting Strategic Focus", Economic and Political Weekly, 36(30): 2892-2897
9. Ray, S (2012) Economic Performance of Indian Automobile Industry: An Econometric Appraisal. Business Intelligence Journal, 5(1): 151-162
10. Barnes, T., Das, K.S.L. and Pratap, S. (2016), "Incorporating labour research into studies of global value
11. chains: lessons from India's auto industry", Global Labour Journal, Vol. 7 No. 3, pp. 240-256
10. https://auto.economictimes.indiatimes.com/news/industry/changing-auto-landscape-will-india-miss-orcatch-the-bus/64029513