
IMPACT OF GOODS AND SERVICES TAX ON INDUSTRIAL GROWTH OF GUJARAT

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1. Introduction

Introduction to Goods and Services Tax (GST) in 2017 was the most significant indirect-tax reform in India. Earlier India had very complex tax structure which was responsible for many hurdles in development. This reform merged multiple central and state-level taxes into one unified tax structure. With this new indirect tax structure India was aiming to create a common national market by eliminating cascading taxation, improve compliance, and enhance economic efficiency. The reform was supposed to simplify the indirect tax structure and reduce transaction costs, especially for industrial and manufacturing sectors.

Gujarat is one of most industrialised state of India with very strong manufacturing growth. Petrochemicals, Textiles, pharmaceuticals, and engineering industries are main industries of the state. Industrial sector contributes ~47.42% of GSDP as of FY2025-26, therefore GST is likely to have significant impact on industrial performance of state.

GST can influence Industrial growth through many ways, First removal of cascading effect and introduction of Input Tax Credit reduces may production cost. Second, supply chain efficiency can be improved by removal of interstate trade barriers. Third, in Long run productivity can be increased due to formalisation of firms and tax transparency. Besides this improved tax compliance, simple tax structure can also have some effect on production and cost.

2. Review of Literature

The introduction of the Goods and Services Tax (GST) in India has received a lot of attention from researchers and scholars, especially for impact of GST on economic growth and industrial performance.

Vinod Kumar in his research paper titled “gst implementation and its impact on industrial development: economic perspectives from India” studied the structural implications of GST on the Indian economy and said that the reform was designed to remove cascading taxation and improve indirect tax efficiency. Study was based on descriptive and policy-oriented analysis. It suggests that GST could increase economic growth in the long run by streamlining tax administration and broadening the revenue base.

Eva Van Leemput and Ellen A. Wiencek in their study titled “The Effect of GST on Indian Growth” examine how GST may affect India’s overall economic growth. They used secondary data and compared trends through data of before and after the reforms. The study shows that GST could increase GDP growth by improving tax efficiency and by creating a uniform tax system. However, the authors also point out that the shift to GST involved short-term difficulties and adjustment costs.

Besides this Dr. Deva Rajappa. Sn in his paper titled “impact of gst on the manufacturing sector in india” was more focused on sectoral and industrial implications of GST.

Even though GST’s overall economic impact has been discussed by many researchers, there is still lack of state-level study, especially for highly industrialised states like Gujarat. Most of existing studies do not

clearly separate the effect of GST collection levels and the broader impact of the reforms. They also do not address problems like unstable data over time using growth-based statistical models.

Objectives of study:

1. To analyse the trend and performance of the industrial sector of Gujarat during the study period (2011-12 to 2022-23).

2. To examine the relationship between GST intensity and industrial growth in

3. To distinguish between short-run growth effects and structural reform effects of GST using econometric modeling.

3. Industrial and Indirect-tax Profile of Gujarat

Gujarat is one of the most industrialised states in India. Industrial sector plays a major role in economy of Gujarat and has contributed around 40-45% of the state's GSDP over the past decade. Unlike many other states where service sector dominates, Gujarat's growth is strongly supported by manufacturing and related industries. Key drivers includes in Gujarat's industrial sector includes manufacturing, petrochemicals, pharmaceuticals, engineering goods, and textiles. Because of this strong industrial base Gujarat is a suitable for studying how tax reforms like GST affect industrial growth.

Gujarat's industrial structure is diverse, but still few sectors have dominance

Petrochemicals and Refining – The state has some of India's largest refineries and petrochemical plants in Jamnagar, which contribute heavily to output and exports.

Textiles and Garments – Gujarat is a major producer of cotton and synthetic textiles.

Pharmaceuticals and Chemicals –Gujarat is one of India's leading pharma manufacturing hubs.

Engineering and Auto Components – Industrial clusters like sanand have supported growth in capital goods and engineering production.

Port and Logistics-Based Industries – Strong port infrastructure like mundra, kandla, along helps export-oriented industries to grow.

Since these sectors are closely connected through supply chains, a tax reform like GST can affect production costs, transport efficiency, and trade between states.

3.1 Implementation of VAT in Gujarat:

In Gujarat, Value Added Tax (VAT) was introduced through the Gujarat Value Added Tax Act, 2003. It was implemented in 2006 to replace the previously existing sales tax system. The main aim of VAT system was to create a more effective and transparent tax structure through taxing only the value at each stage of production and distribution. This system helped reduce the cascading effect of taxation, in which firms could claim input tax credit (ITC) for taxes paid on purchases. VAT increased revenue collection for the state government.

However, in spite of these advantages, the VAT system had several limitations. One of the major problem was the lack of uniformity across states, each state had different indirect tax rates and tax rules. This created difficulty for businesses functioning in multiple states. In addition, interstate transactions were still subject to Central Sales Tax (CST), which did not allow full input tax credit, leading to increase in the cost of production and distribution. The existence of multiple indirect taxes such as luxury tax, entry tax, and entertainment tax further increased the compliance burden on industries.

Due to such drawbacks, the VAT system could not fully remove inefficiencies existing in India's indirect tax structure. Therefore comprehensive tax reforms were needed, which eventually led to the introduction of the Goods and Services Tax in 2017 to create a unified national market and simplify the taxation system.

3.2 Adoption of GST in Gujarat:

GST was introduced in India on 1 July 2017 to replace the earlier complex indirect tax system that included VAT, Central Sales Tax (CST), Octroi, Entry Tax, Service Tax, and Central Excise Duty. The previous tax structure was fragmented, as the different states having different tax rates and a cascading effect of "tax on tax", which increased the cost of goods and created problem in interstate trade. GST introduced a single tax on the supply of goods and services based on the principle of "One Nation, One Tax." The reform simplified the tax system and made tax calculation and payment easier for traders and consumers.

The Implementation of GST enhanced tax transparency, reduced tax evasion and simplified compliance process. It also helped to create a more integrated national market by eliminating barriers to the interstate movement of goods and services.

3.3 Conceptual link between GST and industrial growth:

The Goods and Services Tax was implemented to improve the efficiency of the indirect tax system and boost economic growth. Theoretically, GST can impact the growth of industrial sector through several economic channels.

Firstly, GST helped to reduces the cascading effect of taxes by allowing input tax credit at each stage of production. Earlier, multiple taxes like excise duty and VAT without full credit, were paid by industries, which led to increase in production costs. With GST, firms can claim credit for taxes paid on inputs, which may lead to reduction in the production costs and encourage highest output.

Secondly, GST helps create a unified national market through eliminating interstate tax barriers. This helps in improving the movement of goods across states and lets industries to develop supply chains more efficiently, reducing transportation and logistics costs.

Thirdly, GST simplifies the tax structure by replacing several indirect taxes with a single tax system. This reduces compliance and administrative costs for businesses and allows firms to focus more on productive activities such as investment and expansion.

However, the actual impact of GST on industrial growth may be limited. In a highly industrialised state like Gujarat, industrial growth is influenced more by factors such as infrastructure, investment, export demand, and industrial policies. Since taxation forms only a part of production costs, policy changes in taxation may not significantly affect the overall industrial growth.

Although the theoretical framework implies that GST might have an impact on industrial performance, empirical research is required to determine the true impact. In order to investigate this association more thoroughly, the following chapter examines the relationship between GST and industrial growth in Gujarat using econometric models and relevant data.

4. Data and Methodology

4.1 Data Sources

The study is based on annual time-series data of Gujarat during time period of 2011–12 to 2022–23, yielding 11 observations for regression analysis.

The data are collected from the following sources:

Gross State Value Added (Industry) – State Economic Survey / RBI Handbook of Statistics

State Domestic Product Gujarat State 2023-24 - Directorate Of Economics And Statistics Government Of Gujarat

GST Revenue Data – State Budget Documents / GST Portal Releases

Industrial performance is measured using Industrial Gross Value Added (GVA) at constant prices.

GST intensity is constructed as:

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$$\frac{GST\ Intensity_t}{\frac{GST\ Revenue_t}{GSDP_t}}$$

This studies the relative magnitude of GST revenue collection with respect to the size of the state economy.

Industrial growth is measured in two ways:

Annual percentage growth in Industrial GVA

Log-difference of Industrial GVA:

$$\Delta \ln(GVA_t)$$

It helps measure ongoing growth over time and is used in the structural model.

Dummy variables are constructed as follows:

GST Dummy = 1 for post-2017–18 period, 0 otherwise

COVID Dummy = 1 for 2020-21, 0 otherwise

Data:

Table 1: Year-wise data of GSDP, Industrial GVA, Growth Rate, and GST Revenue in Gujarat (2011–12 to 2021–22)

Year	Total GSDP (Constant Prices) (in crore ₹)	Industry GVA (Constant Prices) (in crore ₹)	YoY growth of GVA (in %)	GST Revenue (in crore ₹)
2011-12	615606	241923	-	-
2012-13	682650	286680	18.50	-
2013-14	734284	293108	2.24	-
2014-15	811428	339423	15.80	-
2015-16	894465	395116	16.41	-
2016-17	981342	428528	8.46	-
2017-18	1086570	471623	10.06	45905
2018-19	1183020	523976	11.10	73440
2019-20	1265277	551178	5.19	78923
2020-21	1241118	538006	-2.39	74346
2021-22	1365587	589535	9.58	97115
2022-23	1465998	611830	3.78	114221

Source: Reserve Bank of India. (2023). *Handbook of statistics on Indian states*. Reserve Bank of India., Government of Gujarat. (2023). *Gross State Domestic Product at constant prices*. Directorate of Economics and Statistics, Government of Gujarat.

Above table consists year-wise time series data of Gujarat state's Total GSDP, industrial GVA, and GST revenue. Using this data and econometric models mentioned as below study of impact of GST on industrial growth has been done.

4.2 Econometric Specification

To examine the relationship between GST and industrial performance, two empirical models are used.

Model 1: Baseline Intensity Model

$$Industrial\ Growth_t = \alpha + \beta_1 GST\ Intensity_t + \varepsilon_t$$

This model will study the short-run relation between GST revenue intensity and industrial growth. It will act as the baseline specification.

Model 2: Structural Reform Model

$$\Delta \ln(GVA_t) = \beta_0 + \beta_1 GST\ Dummy_t + \beta_2 COVID\ Dummy_t + u_t$$

This model will tests whether the introduction of GST resulted in a structural break in industrial performance, while controlling for the COVID-19 shock.

The dependent variable is converted into log differences to reduce possible problems caused by trends in the data.

4.3 Estimation Strategy

All models are estimated using Ordinary Least Squares (OLS).

Given the limited sample size (11 annual observations), results are interpreted cautiously. The study reports:

Coefficient estimates

Standard errors

t-statistics

p-values

R-squared and Adjusted R-squared

To avoid spurious regression concerns commonly associated with trending macroeconomic time-series, the primary analysis depends on on growth-based specifications rather than level regressions.

4.4 Limitations

The study is subject to several limitations as below:

Small sample size due to annual frequency data. (limited quarterly data available)

Limited availability of state-level investment data (GFCF).

Potential omitted variable bias, as industrial growth can be influenced by additional macroeconomic factors not included in the model.

These limitations are acknowledged when interpreting the results.

5. Results and Findings

Results and findings of this paper are as below:

5.1 Baseline Growth Model Results

following baseline model was designed to study the short-run relationship between GST intensity and industrial growth of Gujarat:

$$Industrial\ Growth_t = \alpha + \beta_1 GST\ Intensity_t + \varepsilon_t$$

The regression analysis results shows an R^2 of 0.256 and adjusted R^2 as 0.173, meaning that approx. 25 percent of the variation in industrial growth is explained by GST intensity. The F-statistic is not statistically significant at conventional levels ($p = 0.112$).

The estimated coefficient of GST intensity is -96.42 , meaning that one percentage point increase in GST revenue relative to GSDP is linked to approx. 0.96 percentage point decrease in industrial growth. However, this coefficient is statistically insignificant ($p = 0.112$), showing that the observed relationship cannot be distinguished from zero at the 5 percent and 10 percent significance level.

These results says that GST intensity does not have a statistically significant impact on industrial growth in Gujarat in short-run.

5.2 Structural Reform Model Results

To examine whether the introduction of GST resulted in a structural shift in industrial performance, the following model was estimated:

$$\Delta \ln(GVA_t) = \beta_0 + \beta_1 GST\ Dummy_t + \beta_2 COVID\ Dummy_t + u_t$$

R^2 value of this model is 0.470 which means approximately 47 percent of the variation in industrial growth is explained in this model. (Adjusted $R^2 = 0.337$). The overall model is statistically significant at the 10 percent level ($p = 0.079$).

The coefficient of the GST dummy variable is negative (-0.038) but statistically insignificant ($p = 0.247$). This shows that there is no strong empirical evidence of a structural break in industrial growth after the implementation of GST.

The COVID dummy variable is negative and statistically significant at the 10 percent level ($p = 0.095$). The negative coefficient (coefficient is -0.100) value shows that the COVID-19 pandemic had a significant adverse impact on industrial growth during the affected years.

Table 2: Regression Results of Growth and Structural Models

Variable	Model 1 (Growth)	Model 2 (Structural)
GST Intensity	-96.42 (0.112)	—
GST Dummy	—	-0.038 (0.247)
COVID Dummy	—	-0.100* (0.095)
R²	0.256	0.470
Adjusted R²	0.173	0.337
Observations	11	11

Note: p-values are mentioned in brackets. * indicates model is significance at 10 percent level.

5.3 Comparative Interpretation of Models

A comparison of this two models shows three important findings:

There is no statistically significant evidence that GST intensity directly influenced industrial growth in Gujarat.

There was no statistically significant structural break in industrial performance following the implementation of GST.

The COVID-19 pandemic had a measurable negative impact on industrial growth.

Taken together, the findings indicate that Gujarat's industrial growth during the study period appears to have been because of broader macroeconomic factors rather than by GST reform alone.

5.4 Key Findings (Summary)

The analysis shows to the following key conclusions:

GST intensity does not have a statistically significant short-run effect on industrial growth.

No clear structural shift in industrial growth is observed post-GST implementation.

The COVID-19 shock significantly affected industrial performance.

Industrial growth in Gujarat appears to follow broader structural and cyclical trends rather than GST-tax reform intensity alone.

6. Discussion

6.1 Interpretation of GST Intensity Effect

The results of regression analysis indicates that GST intensity does not have a statistically significant on industrial growth in Gujarat in short-run. Although coefficient is negative, it is not statistically distinct from zero. This suggests that variations in GST revenue relative to GSDP may not directly explain measurable changes in industrial output. One possible explanation is that GST revenue reflects economic activity it does not independently drive industrial growth. Moreover, industrial performance in a structurally strong state such as Gujarat may be influenced more by investment, export demand, infrastructure, and macroeconomic conditions than by tax intensity alone.

6.2 Structural Reform Impact of GST

The structural dummy model does not provide strong statistical proof of a structural break in industrial growth following GST implementation.

This finding says that GST can be administratively significant but it is may not have produced an immediate measurable transformation in industrial growth patterns. The reform may have neutral short-run effects, with potential long-run gains not yet observable within the limited sample period.

6.3 Impact of COVID-19 Shock

The COVID dummy variable shows a negative and statistically significant effect on industrial growth. This confirms that the pandemic resulted into a substantial negative impact on industrial activity in Gujarat. Compared to GST reform effects, the pandemic appears to have had a much stronger measurable influence on industrial performance.

7. Conclusion

This study observed the impact of the Goods and Services Tax (GST) on industrial growth in Gujarat using time-series data of 2011–12 to 2022–23. Two econometric models were created using Ordinary Least Squares (OLS) method to analyse the relationship between GST intensity and industrial growth and also to test possible structural changes after GST implementation. The results shows that GST intensity does not have a statistically significant short-run effect on industrial growth in Gujarat. Similarly the structural model

does not provide strong evidence of a significant shift in industrial growth after the introduction of GST. However, the study shows that the COVID-19 pandemic had a noticeable negative impact on industrial performance.

Overall, the findings suggest that Gujarat's industrial growth during the study period appears to be influenced more by broader macroeconomic conditions and other factors rather than GST reform alone. While GST is important institutional reform in India's tax system, its short-run impact on industrial growth in Gujarat is limited. Future research may further extend the analysis using longer time-series data or sector-specific industrial indicators.

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