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Impact of GST on indirect tax revenue, inflation and CPI

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Abstract
The introduction of the Goods and Services Tax (GST) in India brought about a substantial change in the nation's tax system, with the objective of making the indirect tax structure more straightforward and efficient. This study examines the influence of GST on the overall price levels in India, specifically analyzing the time period before and after its adoption. The study aims to comprehend the impact of GST on revenue collection, price fluctuations, and inflation, and in various sectors. This research utilizes secondary data and performed correlation and regression analysis where the correlation analysis highlights distinct relationships between indirect tax revenue, inflation, and CPI across various categories and regions and regression analysis measures the impact. The study period is categorized into two distinct periods: the pre-GST period, spanning from 2012 to 2017, and the post-GST period, covering the years 2017 to 2021.

Keywords: GST, inflation, CPI, indirect tax revenues

Introduction

The implementation of the Goods and Services Tax (GST) in India on July 1, 2017, marked a historic transformation of the country's fiscal landscape by replacing a fragmented web of more than 17 central and state-level indirect taxes with a unified "One Nation, One Tax" system. This structural reform aimed to create a common national market, simplify compliance, and eliminate the "cascading effect" or tax-on-tax that previously inflated prices. GST has fundamentally altered government revenue generation through increased transparency and a broader tax base. he shifts to a digital, GST Network (GSTN)-driven system and the implementation of e-way bills have enhanced transparency, reduced tax evasion, and brought more businesses into the formal economy. By implementing a seamless input tax credit system, the "tax-on-tax" burden has been removed, leading to better economic efficiency and revenue growth. The changes in the indirect tax system may reflect its impact on the Inflation of the country because indirect tax (GST) are levied on goods and services and usually passed on to the final consumer, any increase in the rates tends to raise prices, contributing to higher inflation while reduction can lower them. Inflation refers to the rate of increase in prices of goods and services over a period of time. It is measured by CPI (Consumer Price Index) which gauges the annual percentage change in the price of a basket of goods and services. Inflation reflects a reduction in the purchasing power as the general price raises each unit of currency buys fewer goods and services.

Literature Review

Mahnot, D. S. (2015) has done reviews empirical and theoretical literature to analyse the impact of GST on price stability in India and reveal a complex relationship influenced by transitional challenges, compliance mechanisms, and structural adjustments, contributing to moderate inflationary pressures initially, followed by trend stabilization

Baliyan, M., & Rathi, P. (2018) [2] have studied the Impact of GST On Different Sectors of Indian Economy. For this secondary data has been collected through different articles, research papers and reports published about GST and found that GST implementation has advantages than to challenges. IT will give Indian economy a strong and smart tax system for economic development.

Dey, S. K., & Jena, A. K. (2018) [4] have studied the related literatures on goods and services tax in India. It also aims to identify the problems in Goods and Services Tax system and studies shows that GST would have a positive impact on economic growth.

Bajpai, E. (2021) [1] has conducted a comparative analysis between the economies of Australia and India in order to study different scenarios that were and are being experienced in these economies. The purpose of this study is to identify, establish and analyse the relation that exists between inflation and taxes. Consumer price and tax revenue has been considered for the variables of inflation and taxes respectively.

Khan, S., & Khan, M. A. (2021) [6] – have examined the impact of uniform GST rate on macroeconomics aggregate household's income and income inequality of Pakistan by employing Computable General Equilibrium (CGE) model and revealed that uniform GST has a positive impact on economic growth and tax revenue and negatively impact on low income households.

Kumar, A. S., & Dash, S. K. (2022) [7] have examined the impact of GST on Inflation employing a Bayesian causal inference model and found that GST positively affects non-food items while negatively affecting food items.

Patel, U., & Jokhi, M. E. (2022) [10] have examined the tax in new era. In light of this research, the report goes on to suggest improvements or requirements that GST should address from the standpoint of the financial services industry.

Dwivedi, H. K., Chakraborty, A., & Sinha, S. K. (2023) [5] have analyzed the impact of GST on state's indirect tax revenue and economic formalization with special focus on West Bengal and this paper have carried out an inter-state comparison of the impact of GST on the indirect tax revenue of the General Category States (GCS) in India with special reference to West Bengal.

Mittal, A., Agrawal, P., & Agrawal, S. (2023) [9] have done tax structure review before and after GST implementation in respect of the various aspects of HAM based PPP projects.
Dandona, I., Tomar, P. K., Gupta, S. K., & Verma, S. K. (2024) [3] have examined the GST dynamics in India: Exploring state revenue trends, GDP impact, and economic resilience. Descriptive statistics, Paired Sample T tests, and Regression were the statistical techniques used for the analysis and results reveal a significant positive impact on government revenue growth post-GST implementation across all states. The regression analysis underscores a significant relationship between GST and GDP, emphasizing its broad economic influence.

Research Gap: After going through the literatures it has been identified that the relation between GST, Indirect tax revenue, Inflation and CPI has not pointed out properly. Hence this paper endeavours to fill this gap.

Research Objectives

- To study the relation between Indirect tax revenue with inflation and CPI before and after GST.
- To study the impact of Indirect tax revenue on Inflation.
- To study the impact of GST on CPI
- To study the impact of GST on Inflation.

Research Methodology: The study followed the quantitative research approach. The data is collected from government website of Department of revenue, Ministry of finance, which provided yearly data for indirect taxes estimates, and Consumer Price Index (CPI) data and inflation rates are obtained from monthly publications by Central Statistics Office, Ministry of statistics and Programme Implementation (MOSPI) and using this secondary data average yearly values are calculated. The study period is categorized into two distinct periods: the pre-GST period, spanning from 2012 to 2017, and the post-GST period, covering the years 2017 to 2021.
The research techniques that have been employed to study the relationship and impact of GST are Correlation analysis and regression analysis. The correlation analyses quantify the intensity and direction of the relationships between GST collections and inflation rates and regression analysis investigate the correlation between the implementation of GST and fluctuations in price levels while accounting for other variables,

Data Analysis

1. Correlation Analysis

Correlation: Correlation is a statistical method that describes the strength and direction of the relationship between two variables. It is used to determine how changes in one variable are associated with changes in another variable. Correlation ranges from -1 to +1.

Table 1: Correlation of Indirect Tax` Revenue with Inflation and CPI

		Correlation between Indirect tax revenue and Inflation (Different components and area)			Correlation between Indirect tax revenue and CPI (Different components and area)		
Different Components	**Area**	**Pearson Correlation**	**Sig. (2-tailed)**	**N**	**Pearson Correlation**	**Sig. (2-tailed)**	**N**
Food and beverages	Rural	-.691 *	0.027	10	.751 *	0.012	10
	Urban	-0.567	0.087	10	.781 **	0.008	10
	Combined	-.658 *	0.039	10	.764 *	0.010	10
Pan, tobacco and intoxicants	Rural	-0.347	0.446	7	.816 **	0.004	10
	Urban	-0.199	0.669	7	.814 **	0.004	10
	Combined	-0.295	0.521	7	.815 **	0.004	10
Clothing, bedding and footwear	Rural	-.716 *	0.020	10	0.573	0.083	10
	Urban	-.743 *	0.014	10	0.301	0.398	10
	Combined	-.755 *	0.012	10	0.512	0.130	10
Housing	Rural	. b		0	. b		0
	Urban	-0.457	0.302	7	.777 **	0.008	10
	Combined	-0.457	0.302	7	.775 **	0.008	10
Fuel and light	Rural	-0.342	0.334	10	.750 *	0.013	10
	Urban	0.191	0.598	10	0.482	0.158	10
	Combined	-0.114	0.754	10	.668 *	0.035	10
Miscellaneous	Rural	.861 *	0.013	7	.778 **	0.008	10
	Urban	.914 **	0.004	7	.750 *	0.012	10
	Combined	.939 **	0.002	7	.765 **	0.010	10
General Index	Rural	-.712 *	0.021	10	.747 *	0.013	10
	Urban	-0.605	0.064	10	.739 *	0.015	10
	Combined	-.676 *	0.032	10	.741 *	0.014	10

The above table demonstrates the correlation of revenue with inflation and CPI in rural, urban and combined (rural and urban) regions separately for different categories.
For food and beverages, the relationship betweenrevenue and inflation is highly substantial in both rural and combined categories. The Pearson correlation coefficient for inflation in rural area is -0.691 with p-value = 0.027 (<0.05), while inflation for combined area, it is -0.658 (p = 0.039), demonstrating a strong negative correlation. Nevertheless, the correlation coefficient for inflation in urban area is not statistically significant (-0.567, p = 0.087). On the other hand, the Pearson correlation coefficient Consumer Price Index (CPI) for rural (0.751, p = 0.012), urban (0.781, p = 0.008), and combined (0.764, p = 0.010) areas all demonstrate a strong positive correlation with revenue.
For pan, tobacco, and intoxicants, there is no statistically significant correlation between inflation and revenue in rural, urban, or combinedareas (p > 0.05). Nevertheless, the Pearson correlation coefficient for Consumer Price Index (CPI) for rural is 0.816 with p-value = 0.004, urban (0.814, p = 0.004), and combined (0.815, p = 0.004) areas exhibit a very strong positive correlation with revenue.

For clothes, bedding, and footwear,the Person correlation coefficient for inflation inrural (-0.716, p = 0.020), urban (-0.743, p = 0.014), and combined (-0.755, p = 0.012) areas indicates that there is significant strong negative correlation with revenue. The Consumer Price Index (CPI), on the other hand, does not exhibit any noteworthy correlation with revenue in any region (p > 0.05).

For housing, there is no relationship between inflation and revenue in the urban and combined regions, as indicated by a correlation coefficient of -0.457 (p = 0.302). Nevertheless, the Pearson correlation coefficient for Consumer Price Index (CPI) exhibits strong positive correlation with revenue in both urban (0.777, p = 0.008) and combined (0.775, p = 0.008) regions.

For fuel and light, there are no significant correlation between inflation and revenue in any region (p > 0.05). On the one hand, the Consumer Price Index (CPI) for rural and combined region has a strong positive correlation with revenue, as indicated by the correlation coefficients of 0.750 (p = 0.013) and 0.668 (p = 0.035) respectively. On the other hand, the urban category does not exhibit a significant correlation with revenue, with a correlation coefficient of 0.482 (p = 0.158).

For miscellaneous category, there are strong positive correlations between inflation and revenue in rural (0.861, p = 0.013), urban (0.914, p = 0.004), and combined (0.939, p = 0.002) categories. The Consumer Price Index (CPI) also exhibits strong positive correlation in the rural (0.778, p = 0.008), urban (0.750, p = 0.012), and combined (0.765, p = 0.010) regions.

For general index category, there is significant strong negative correlation of inflation with revenue in the rural (-0.712, p = 0.021) and combined (-0.676, p = 0.032) regions. However, in the urban region, the correlation (-0.605, p = 0.064) is not significant. The Consumer Price Index (CPI) exhibits strong positive correlations with revenue in rural (0.747, p = 0.013), urban (0.739, p = 0.015), and combined (0.741, p = 0.014) regions.

In summary, there are notable relationships between revenue and several categories of inflation and CPI. Substantial correlations can be observed in numerous categories, such as food and beverages, clothing, bedding and footwear, and other items, as well as in the overall index. However, there is often no substantial correlation between revenue and the inflation in the categories of pan, tobacco, intoxicants, fuel, and light.

Table 1.1: Correlation of Indirect Revenue with Inflation and CPI for before GST

Before GST		Correlation between Indirect tax revenue and Inflation (Different components and area)			Correlation between Indirect tax revenue and CPI (Different components and area)		
Different Components	**Area**	**Pearson Correlation**	**Sig. (2-tailed)**	**N**	**Pearson Correlation**	**Sig. (2-tailed)**	**N**
Food and beverages	Rural	-0.854	0.065	5	0.065	0.917	5
	Urban	-0.843	0.073	5	0.111	0.859	5
	Combined	-0.856	0.064	5	0.080	0.899	5
Pan, tobacco and intoxicants	Rural	-1.000 **		2	-0.138	0.825	5
	Urban	-1.000 **		2	-0.034	0.957	5
	Combined	-1.000 **		2	-0.107	0.864	5
Clothing, bedding and footwear	Rural	-.942 *	0.017	5	-0.203	0.743	5
	Urban	-.909 *	0.032	5	-0.575	0.311	5
	Combined	-.929 *	0.022	5	-0.365	0.546	5
Housing	Rural	. c		0	. c		0
	Urban	1.000 **		2	-0.142	0.820	5
	Combined	1.000 **		2	-0.143	0.818	5
Fuel and light	Rural	-0.713	0.176	5	-0.344	0.571	5
	Urban	-0.874	0.053	5	-0.706	0.182	5
	Combined	-0.820	0.089	5	-0.520	0.369	5
Miscellaneous	Rural	1.000 **		2	-0.232	0.707	5
	Urban	1.000 **		2	-0.217	0.726	5
	Combined	1.000 **		2	-0.232	0.707	5
General Index	Rural	-.890 *	0.043	5	-0.045	0.942	5
	Urban	-.896 *	0.040	5	-0.121	0.846	5
	Combined	-.896 *	0.039	5	-0.085	0.891	5

Interpretation

The above table demonstrates the correlation of revenue with inflation and CPI before GST in rural, urban and combined (rural and urban) regions separately for different categories.

For food and beverages, for pan, tobacco, and intoxicants, for housing, for fuel and light, and for miscellaneous categories, there is no statistically significant correlation of revenue with inflation and CPI in rural, urban, or combined areas (p > 0.05).

For clothes, bedding, and footwear, the Person correlation coefficient for inflation in rural (-0.942, p = 0.017), urban (-0.909, p = 0.032), and combined (-0.929, p = 0.022) areas indicates that there is significant strong negative correlation with revenue. The Consumer Price Index (CPI), on the other hand, does not exhibit any noteworthy correlation with revenue in any region (p > 0.05).

For general index category, the Person correlation coefficient for inflation in rural (-0.890, p = 0.043), urban (-0.896, p = 0.04), and combined (-0.896, p = 0.039) areas indicates that there is significant strong negative correlation with revenue. The Consumer Price Index (CPI), on the other hand, does not exhibit any noteworthy correlation with revenue in any region (p > 0.05).

In summary, for clothes, bedding, and footwear and general index categories, there is significant relationship between revenue before GST and inflation before GST. Whereas no significant relationship is found between indirect tax revenue before GST and CPI before GST in the rural, urban and combined (rural and urban) regions.

Table 1.2: Correlation of Indirect Revenue with Inflation and CPI after GST

After GST		Correlation between Indirect tax revenue and Inflation (Different components and area)			Correlation between Indirect tax revenue and CPI (Different components and area)		
Different Components	**Area**	**Pearson Correlation**	**Sig. (2-tailed)**	**N**	**Pearson Correlation**	**Sig. (2-tailed)**	**N**
Food and beverages	Rural	0.250	0.685	5	.943 *	0.016	5
	Urban	0.361	0.551	5	942 *	0.016	5
	Combined	0.322	0.597	5	.945 *	0.015	5
Pan, tobacco and intoxicants	Rural	0.168	0.787	5	.929 *	0.022	5
	Urban	0.347	0.568	5	.945 *	0.015	5
	Combined	0.242	0.695	5	.934 *	0.020	5
Clothing, bedding and footwear	Rural	0.446	0.452	5	0.709	0.828	5
	Urban	0.445	0.453	5	0.828	0.083	5
	Combined	0.480	0.413	5	0.766	0.131	5
Housing	Rural	. c		0	. c		0
	Urban	-0.693	0.194	5	0.843	0.073	5
	Combined	-0.693	0.194	5	0.843	0.073	5
Fuel and light	Rural	0.308	0.615	5	.896 *	0.040	5
	Urban	.897 *	0.039	5	.984 **	0.002	5
	Combined	0.620	0.265	5	.949 *	0.014	5
Miscellaneous	Rural	0.751	0.144	5	.897 *	0.039	5
	Urban	0.862	0.061	5	.921 *	0.026	5
	Combined	.889 *	0.043	5	.911 *	0.032	5
General Index	Rural	0.526	0.363	5	.921 *	0.026	5
	Urban	0.667	0.219	5	.925 *	0.025	5
	Combined	0.606	0.279	5	.923 *	0.025	5

Interpretation

The table displays correlation of revenue with measures of inflation (Rural, Urban, Combined) and Consumer Price Index (CPI) (Rural, Urban, Combined) after the implementation of GST, respectively, for different categories (Food and beverages, Pan, tobacco and intoxicants, Clothing, bedding and footwear, Housing, Fuel and light, Miscellaneous, and General Index).

For food and beverages, there is no significant correlation between revenue and inflation (rural, urban and combined regions) as p-value is greater than 0.05. On the other hand, the Pearson correlation coefficient Consumer Price Index (CPI) for rural (0.943, p = 0.016), urban (0.942, p = 0.016), and combined (0.945, p = 0.015) areas all demonstrate a strong positive correlation with revenue.

For pan, tobacco, and intoxicants, there is no statistically significant correlation between inflation and revenue in rural, urban, or combinedareas (p > 0.05). Nevertheless, the Pearson correlation coefficient for Consumer Price Index (CPI) for rural is 0.929 with p-value = 0.022, urban (0.945, p = 0.015), and combined (0.934, p = 0.020) areas exhibit a very strong positive correlation with revenue.

For clothes, bedding, and footwear, and for housing, there is no statistically significant correlationof revenue with inflation and CPI in rural, urban, and combinedareas (p > 0.05).

For fuel and light, The Pearson correlation coefficient for urban region is 0.897 with p-value 0.039 (p<0.05) which indicates that there is significant correlation between inflation and revenue in urban region. Whereas, there are no significant correlation between inflation and indirect tax revenue in rural and combined region with p – value (p > 0.05). On the one hand, the Consumer Price Index (CPI) for rural, urban and combined region has a strong positive correlation with revenue, as indicated by the correlation coefficients of 0.896 (p = 0.040), 0.984 (p =0.002) and 0.949 (p = 0.014) respectively.

For miscellaneous category, there are strong positive correlations between inflation and revenue in combined (0.889, p = 0.043) but no correlation withrural (0.751, p = 0.144), and urban (0.862, p = 0.061) regions. On the one hand, the Consumer Price Index (CPI) for rural, urban and combined region has a strong positive correlation with revenue, as indicated by the correlation coefficients of 0.897 (p = 0.039), 0.921 (p =0.026) and 0.911 (p = 0.032) respectively.

For general index category, there is no significant correlation between revenue and inflation (rural, urban and combined regions) as p-value is greater than 0.05. On the other hand, the Pearson correlation coefficient Consumer Price Index (CPI) for rural (0.921, p = 0.026), urban (0.925, p = 0.025), and combined (0.923, p = 0.025) areas all demonstrate a strong positive correlation with revenue.

Table 1.3: Correlation between GST, Inflation and CPI

Correlations				
		GST	**Inflation**	**CPI**
GST	Pearson Correlation	1	.245	.918 *
	Sig. (2-tailed)		.691	.028
	N	5	5	5
Inflation	Pearson Correlation	.245	1	.093
	Sig. (2-tailed)	.691		.882
	N	5	5	5
CPI	Pearson Correlation	.918 *	.093	1
	Sig. (2-tailed)	.028	.882	
	N	5	5	5

From the correlation table, we can infer that the Pearson correlation coefficient between GST and inflation is 0.245 with p-value 0.691 (>0.05) which indicates that there is no significant relationship between GST and inflation. Further, the Pearson correlation coefficient between CPI and GST is 0.918 with p-value 0.028(<0.05) which indicates that there is significant correlation between GST and CPI. Hence, we can state that there is highly strong relationship between GST and CPI.

Regression Analysis

Autocorrelation

Autocorrelation is tested using the Durbin- Watson test. It detects autocorrelation in the residuals of a regression analysis or statistical model. The Durbin Watson test reports a test statistic, with a value from 0 to 4, where 2 is no autocorrelation, 0 to <2 is positive autocorrelation, >2 to 4 is negative autocorrelation. A rule of thumb is that test statistic values in the range of 1.5 to 2.5 are relatively normal. Values outside of this range could be cause for concern.

Autocorrelation for Indirect Revenue

	Durbin-Watson
Indirect Revenue	1.544

Here, the test statistic is of 1.5 which indicates that there is no autocorrelation for residuals in the indirect revenue regression model.

Autocorrelation for Inflation

	Durbin-Watson
Inflation of Food and beverages	1.567
Inflation of Pan, tobacco and intoxicants	2.042
Inflation of Clothing, bedding and footwear	1.624
Inflation of Housing	1.860
Inflation of Fuel and light	1.570
Inflation of Miscellaneous	2.007
Inflation of General Index (All Groups)	1.530

Since all the parameters of Inflation models have Durbin test statistic value of less than 2.5, none of the residuals in the model have an autocorrelation.

Stationary Test

Augmented Dickey-Fuller Test was performed to check stationary of the following variables,

	Test Statistic	p-value	Lag order
CPI of Food and beverages	2.7592	0.281	3
CPI of Pan, tobacco and intoxicants	-2.9061	0.2246	3
CPI of Clothing, bedding and footwear	-1.9599	0.5881	3
CPI of Housing	-1.4065	0.7985	2
CPI of Fuel and light	-2.4374	0.4047	3
CPI of Miscellaneous	-2.5971	0.3433	3
CPI of General Index (All Groups)	-2.3384	0.4427	3
Inflation of Food and beverages	-3.943	0.02438*	3
Inflation of Clothing, bedding and footwear	-3.2217	0.1034	3
Inflation of Fuel and light	-3.1687	0.1237	3
Inflation of Pan, tobacco and intoxicants	-3.1275	0.1429	2
Inflation of Housing	-1.3636	0.8148	2
Inflation of Miscellaneous	-2.1313	0.5224	2

Here the p - value of all the variables except “Inflation of Food and beverages” are greater than 0.05, indicating that these variables are not stationary.

In regression analysis, one of the key assumptions is that the underlying variables should exhibit stationarity. Non-stationary data violates these assumptions, leading to unreliable regression coefficients and spurious relationships. When faced with non-stationary data, log transformation is a widely accepted technique to stabilize variance, linearize exponential growth patterns, and convert multiplicative relationships into additive ones, thereby enabling linear regression to yield valid results. By applying log transformation to non-stationary data, we stabilize variance, address non-linearity, and ensure that the assumptions of linear regression are met.

Regression Analysis

Regression analysis shows whether Inflation has significant relation with Indirect tax revenue and year.

Table 2: (Shows impact of Indirect tax revenue and year on inflation)

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.774 [a]	0.598	0.484	0.27689	1.594

Here R square value is 0.598

ANOVA [a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.800	2	0.400	5.216	.041 [b]
	Residual	0.537	7	0.077		
	Total	1.336	9			

Here p value is less than 0.05, so the model is fit.

Coefficients [a]						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-293.299	242.302		-1.210	0.265
	Year	0.161	0.128	1.265	1.263	0.247
	Log_Revenue	-2.188	1.130	-1.941	-1.937	0.094

The require regression equation is Inflation of General Index= -293.299-2.188(Indirect Revenue) + 0.161(Year)
Here the p value of both Year and revenue are greater than 0.05, so both variables are not statistically significant. Among them revenue has larger coefficients value, hence it has more impact on Inflation of General Index.

Regression analysis for CPI

Here, regression analysis is performed to check whether GST has any impact on the CPI or not. For the analysis, GST is taken as independent variable and CPI is taken as dependent variable.

Table 2.1: Shows impact of GST on CPI

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.918[a]	.843	.790	4.7947186

ANOVA						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	369.845	1	369.845	16.088	.028[b]
	Residual	68.968	3	22.989		
	Total	438.813	4			

Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**T**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	83.210	15.081		5.518	.012
	GST	.0003	.000	.918	4.011	.028

Interpretation

The required regression equation is
Y = 83.210 + 0.0003 (GST)
Here Y = CPI
The model summary table, provides that the R square value is 0.843 which means that 84.3% of the variability in CPI is explained by changes in GST which indicates that the model is a good fit. Further, ANOVA table gives F value 16.088 with p-value 0.028 (<0.05) indicates that the model is statistically significant. Additionally, from the coefficients table, the coefficients value of GST is 0.918 with p-value 0.028 (<0.05) which indicates that on average CPI will increase by 0.918 units with increase in one unit of GST. Hence, we can assert that GST has significant impact on CPI.

Regression analysis: (Impact of GST on Inflation)

Here, regression analysis is performed to check whether GST has any impact on the inflation or not. For the analysis, GST is taken as independent variable and Inflation is taken as dependent variable.

Table 2.2: Shows impact of GST on Inflation

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.245[a]	.060	-.253	5.5602037

Anova[a]						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	5.912	1	5.912	.191	.691[b]
	Residual	92.748	3	30.916		
	Total	98.660	4			

Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	Beta		
1	(Constant)	-.652	17.488		-.037	.973
	GST	0.000013	.000	.245	.437	.691

Interpretation

The required regression equation is
Y = -0.652+ 0.000013 (GST)
Here Y = Inflation
The model summary table provides that the R square value is 0.060 which means that only 6% of the variability in inflation is explained by changes in GST which indicates that the model is not a good fit. Further, ANOVA table gives F value 0.191 with p-value 0.691 (>0.05) indicates that the model is not statistically significant. Hence, we can assert that GST has no significant impact on inflation.

Conclusion

The correlation analysis highlights distinct relationships between indirect tax revenue, inflation, and CPI across various categories and regions. Notably, revenue correlates negatively with inflation and positively with CPI for categories like food and beverages and clothing, bedding, and footwear. This suggests that as inflation rises, the real value of tax revenue from these categories may decline, while higher CPI values (indicative of higher consumer prices) correspond to increased revenue.
The analysis before and after GST implementation shows similar trends, indicating that the structural relationship between these variables remained consistent despite the tax reform. However, the introduction of GST appears to have had a notable impact on CPI, highlighting its role in influencing consumer prices more directly than broad inflation measures.
The regression analysis further supports the correlation findings, revealing no significant impact of indirect tax revenue on inflation for any category. However, times' impact on CPI of housing is significant for post-GST. For analyzing the impact of GST on CPI and inflation, it is found that GST significantly impacted CPI but did not significantly affect inflation.

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