

Indirect Tax Revenue in the Era of GST: A Case of Haryana

Rahul Mongia^{1*}, N.P. Singh²

¹ Research Scholar, School of Business Management and Commerce, MVN University, Palwal, India

² Professor, School of Business Management and Commerce, MVN University, Palwal, India

*Corresponding Author Email: 20ms9006w@mvn.edu.in

Abstract

This research paper examines the patterns of indirect tax revenues during the Goods and Services Tax (GST) era. The study evaluates the influence of GST revenue in India, specifically focusing on the state of Haryana. The GST has been recognized as the most comprehensive and widely adopted tax reform in India's history of indirect taxation, with its implementation occurring on July 1, 2017. The main objective of establishing GST and reforming the long-standing practices of paying indirect taxes was to create consistency and clarity in the existing system while eliminating the complexity of multiple taxes under the previous indirect tax framework. This analysis utilizes statistical data from official websites of central and state government authorities, collecting indirect tax data from the year 2017 to 2024, specifically after the implementation of GST. The Exponential Triple Smoothing (ETS) function and Holt-Winters' Multiplicative Method were employed to forecast tax income and compare it with actual tax collection, excluding the impact of compensation cess until March 2024. The study's findings indicate a rising pattern of indirect tax income in India, with a few exceptions primarily due to the effects of the pandemic and certain unavoidable administrative intricacies. In the context of Haryana, which rank seventh in GST collection among Indian states, it has also been observed that, apart from a few months, there is a steady increase in indirect tax income, indicating the promising expansion of the Indian economy. The study further compares GDP growth and indirect tax performance, revealing a positive correlation between economic growth and tax mobilization within the GST framework.

Keywords

GST, India, Haryana, ETS, Forecasting

JEL classification: H27, O53, C10, C19

INTRODUCTION

The government can achieve vertical equality by prioritizing wealth redistribution and narrowing the wealth gap between the rich and the poor. Every citizen must contribute to the national treasury by paying taxes. The government can levy these taxes based on an individual's earnings (income tax) or their consumption or usage of goods and services (value-added tax, service tax, and customs charge). The government imposes these taxes on the assessee to foster the social and economic prosperity of the country. The government uses the funds from this vital method to support projects that improve society and the economy. Currently, India has a limited number of direct tax procedures. The taxes in India consist of the Income Tax, the Dividend Distribution Tax, and the Securities Transaction Tax. Previously, India had approximately 27 indirect taxes, including the value-added tax, customs duty, excise duty, services tax, entry tax, and luxury tax. However, the implementation of GST replaced these. The complexity of the Indian direct and indirect tax system makes it challenging for the average individual to comprehend, primarily due to various tax brackets.

In their study, authors [1] discovered that only individuals with expertise can effectively comprehend the many tax terminologies and ranges. To improve clarity and convenience for the general public, the list underwent modifications in July 2017, coinciding with the

implementation of the long-awaited tax.

Annually, the finance law modifies the income tax in conjunction with the Union Budget to augment uniformity and streamline comprehension of tax matters. These reforms aim to include a broader range of taxpayers under the direct tax system. However, the objective has not been reached yet. Conversely, India imposes numerous secondary taxes (indirect taxes) that overlap and deter individuals from engaging in business activities. Additional issues with the previous indirect taxation system included double taxation as a result of cascading effects, intricate regulations, the imposition of several taxes on the same product, and the absence of input tax credits across the whole supply value chain. Therefore, on July 1, 2017, the Indian government implemented the Goods and Services Tax (GST) under the motto "one nation, one tax, one market." The tax reform implemented in India, known as the Goods and Services Tax (GST), is widely regarded as one of the most significant and transformative changes in the country's indirect tax system [2]. As author [3] described, India's Goods and Services Tax is a substantial modification to indirect taxes to foster economic growth and integrate the economies of many states. GST is mandatory for all entities, including enterprises, the government, and service providers. The design seeks to enhance India's economy and attract foreign investment. The Goods and Services Tax (GST) has absorbed nearly all the indirect taxes imposed by the state and central governments under the previous indirect tax legislation.

According to author [4], the Goods and Services Tax (GST) implementation in France dates back to 1954. Over one hundred sixty nations have adopted the Goods and Services Tax (GST). Most countries experienced a smooth transition from the previous indirect tax regime to the new one because the central government centralized tax administration. For example, Australia and Germany have significantly low tax rates. Taxation in India is a joint responsibility of the central and state governments. The attainment of stability and resolve necessitates a substantial duration, as seen by the current endeavors in Brazil, Canada, and the European Union, where the execution of change is still underway despite several years of experience.

The new indirect tax regime has several vital features, including the free flow of input tax credit, the absence of double taxes, a digital platform, and user-friendly compliance. It serves as a significant source of income for the

government. However, certain petroproducts such as alcohol for human consumption, aviation turbine fuel, high diesel motor spirit, and natural gases are excluded from the scope of the indirect tax regime. It was found that firms can now streamline sharing their tax returns by utilizing a single web-based tool, eliminating the need to distribute them to various departments. Furthermore, it has also contributed to the rise in export behaviours in India. [5]

The GST is scheduled to mark its seventh anniversary in July 2024, yet the system still necessitates ongoing enhancements to enhance transparency and guarantee adherence to the law. Now, it is essential to evaluate the progress made in implementing the tax, analyse its financial consequences and economic influence, and identify improvement areas to increase revenue efficiency and reduce expenses.

Table 1: "Univariate Feature Selection-Based Ranking of Indian States by GST Collection Performance (2018–2025)"

States	2017-18	Rank 17-18	2018-19	Rank 18-19	2019-20	Rank 19-20	2020-21	Rank 20-21	2021-22	Rank 21-22	2022-23	Rank 22-23	2023-24	Rank 23-24	2024-25	Rank 24-25	Scale 2018	Scale 2019	Scale 2020	Scale 2021	Scale 2022	Scale 2023	Scale 2024	Scale 2025	Combined Scale	Score	Weight	Priority	Final Rank
Jammu and Kashmir	2,320.11	23	3,792.40	23	4,010.38	23	76.18	26	137.62	24	5,245.71	23	6,704.16	22	6,057.55	22	0.020205714	0.02227045	0.02154291	0.00613576	0.0068343	0.01939306	0.0209345	0.02034378	0.1395119	0.00367137	0.00318156	1.1681E-05	25
Himachal Pradesh	5,309.17	20	7,592.74	21	7,959.85	21	510.28	18	800.36	17	8,778.06	21	9,955.73	21	8,653.76	21	0.05047392	0.0445875	0.04278663	0.04109805	0.03974758	0.03245924	0.03109204	0.0206517	0.31131013	0.00819237	0.0070994	5.8161E-05	22
Punjab	9,642.59	18	13,977.05	18	15,234.99	17	1,349.41	14	2,060.80	13	20,949.20	17	24,061.07	17	22,424.83	17	0.0916715	0.08207557	0.0819188	0.10868138	0.10234365	0.07748033	0.07515551	0.07532602	0.69465577	0.01828042	0.01581156	0.00028999	18
Chandigarh	1,170.09	27	1,778.45	27	1,987.54	25	45.59	27	73.33	26	2,365.42	28	2,771.21	26	2,438.87	26	0.0112402	0.01044373	0.01066228	0.00367175	0.00364157	0.00873886	0.00864482	0.00818763	0.06511827	0.00171364	0.00148502	2.5448E-06	26
Uttarakhand	10,967.07	16	15,149.93	17	14,722.19	18	553.37	17	667.72	18	16,845.22	18	19,230.55	18	17,272.33	18	0.10426328	0.0889662	0.07916054	0.04456789	0.03116037	0.06229969	0.06065552	0.05801734	0.51008083	0.01366055	0.01209802	0.0001689	18
Haryana	36,815.08	6	55,232.67	6	59,560.01	6	3,970.67	7	5,969.23	6	86,668.17	6	1,02,914.46	5	98,788.98	5	0.49998979	0.32434739	0.32031831	0.31979673	0.29644665	0.32057505	0.32148452	0.3185439	0.25843963	0.0680221	0.05894703	0.0040097	7
Delhi	26,444.55	7	39,844.74	7	44,161.04	7	1,651.51	12	2,699.52	11	55,843.25	8	66,445.39	7	64,788.80	7	0.2514068	0.23393837	0.23750879	0.13301242	0.13406358	0.2055355	0.2075593	0.21763835	1.62172656	0.04267701	0.03696332	0.00157834	8
Rajasthan	18,463.35	10	30,721.34	10	32,821.37	10	1,728.42	11	2,455.13	12	45,458.38	11	50,174.10	11	44,489.61	11	0.17553	0.18040748	0.17651396	0.13920617	0.12192693	0.16813988	0.15672964	0.14948133	1.26793539	0.03366072	0.02891512	0.00096648	10
Uttar Pradesh	36,857.75	5	61,322.73	5	65,281.03	5	4,209.78	6	5,271.05	7	87,969.83	5	1,01,692.58	6	93,100.44	6	0.35040444	0.36011056	0.35111085	0.33905468	0.26177142	0.3253899	0.3176675	0.312745	2.61825347	0.06809143	0.05970905	0.0041404	5
Bihar	5,531.22	19	10,755.44	19	12,640.60	19	279.12	21	280.45	22	16,547.50	19	18,020.89	19	15,964.90	19	0.0528498	0.06316005	0.06796099	0.02248012	0.01392748	0.06119843	0.05628668	0.05362532	0.39122405	0.01029537	0.00892183	9.1854E-05	14
Sikkim	1,185.94	26	1,917.41	26	2,248.41	24	2.86	35	4.27	35	3,155.74	25	3,707.17	25	3,382.00	25	0.01127468	0.01125978	0.01206548	0.00023042	0.00021197	0.01166226	0.01157225	0.01135587	0.06963271	0.00183244	0.00158797	2.9099E-06	19
Andhra Pradesh	120.33	34	398.27	32	581.11	32	8.98	31	9.20	31	1,022.87	30	1,307.52	30	924.45	31	0.00114401	0.00233881	0.00309722	0.00072299	0.00045703	0.00377276	0.00407602	0.00310028	0.1870911	0.00049234	0.00042666	2.1006E-07	22
Nagaland	104.44	35	226.81	35	316.75	35	1.50	36	6.29	33	566.23	33	711.44	32	541.03	33	0.00099295	0.0013319	0.00167528	0.00012096	0.00031223	0.00206365	0.00221393	0.00181226	0.1054316	0.00027745	0.00024044	6.6709E-08	24
Manipur	122.33	33	309.12	33	434.74	33	2.98	34	7.60	32	614.84	32	669.92	33	591.85	33	0.00116295	0.00181529	0.00230996	0.00023982	0.00037751	0.00223646	0.00208423	0.00198298	0.01223619	0.00032201	0.00027905	8.954E-08	23
Mizoram	66.62	36	213.12	36	295.82	36	4.27	33	11.10	30	418.59	34	499.83	34	424.21	35	0.00063337	0.0012515	0.00154269	0.00034363	0.00055105	0.00153753	0.00155288	0.00141983	0.00882548	0.00023296	0.00020188	4.703E-08	23
Tripura	305.38	31	556.22	31	679.50	31	5.72	32	4.06	36	893.50	31	1,053.29	31	930.47	30	0.00290321	0.0026631	0.0036265	0.00046953	0.00020151	0.00325723	0.00321863	0.0031205	0.02011762	0.00052941	0.00045978	2.428E-07	21
Meghalaya	646.02	29	1,368.41	29	1,516.17	29	19.86	29	53.25	27	2,075.83	29	2,259.53	29	1,709.83	29	0.00616064	0.00030583	0.00815639	0.00159915	0.00264445	0.00786766	0.00704909	0.00573859	0.0470527	0.00123823	0.00107303	1.3287E-06	19
Assam	4,968.77	21	8,988.39	20	10,423.34	20	108.11	25	118.07	25	13,710.37	20	15,601.51	20	14,256.35	20	0.04723777	0.0578324	0.05603752	0.00870746	0.00586331	0.05070387	0.04872881	0.04788583	0.31794781	0.00363676	0.00725077	6.066E-05	14
West Bengal	23,332.65	8	39,780.38	8	43,386.08	8	1,925.50	9	2,790.08	10	58,059.58	7	62,613.00	8	55,268.47	8	0.22182208	0.23360566	0.23340336	0.15507923	0.13856103	0.21475177	0.1955783	0.18565692	1.5784044	0.04153696	0.03599537	0.00149514	7
Jharkhand	14,162.17	14	23,915.87	14	22,846.91	15	225.05	22	386.54	21	32,019.06	14	34,737.99	15	30,213.58	14	0.13463891	0.14044319	0.12286249	0.01812518	0.01919616	0.11842779	0.10850899	0.10140959	0.76369329	0.02009719	0.01741595	0.00035001	11
Odisha	14,848.71	12	26,947.65	11	29,677.25	11	2,730.03	8	4,304.57	8	49,441.89	10	54,747.97	10	49,774.55	10	0.14116582	0.15824691	0.1596021	0.21987582	0.21377378	0.1828749	0.17101789	0.16720132	0.14715854	0.03720417	0.03224063	0.00119949	7
Chhattisgarh	13,008.43	15	22,931.75	15	24,159.90	14	393.12	19	436.80	20	31,968.43	15	34,873.95	14	30,110.57	15	0.12367035	0.13466405	0.12992489	0.03166144	0.02169226	0.11824051	0.10893732	0.10114455	0.7699312	0.02026317	0.01755823	0.00035575	9
Madhya Pradesh	15,543.67	11	25,822.86	12	28,354.48	12	1,558.95	13	1,890.77	14	36,231.74	13	42,173.93	13	36,808.79	13	0.14777278	0.15981959	0.1524871	0.12555722	0.09389947	0.13401051	0.13173802	0.12364573	1.05993042	0.02789291	0.02417161	0.00067422	7
Gujarat	45,904.72	3	73,440.25	3	78,923.32	3	7,918.77	4	12,397.06	3	1,14,221.48	3	1,25,168.37	3	1,13,252.05	3	0.43641345	0.43126932	0.42499118	0.63938599	0.61566374	0.42248495	0.3910032	0.38043995	3.7146156	0.09645162	0.08531684	0.00039958	4
Daman and Diu	921.55	28	1,104.55	30	1,155.14	30	132.85	24	1.13	29	2.93	38	2.73	38	1.55	38	0.00876114	0.00648834	0.00106997	0.00055285	0	0	0	0.03268499	0.00086013	0.00074538	6.4112E-07	12	
Andaman and Nicobar Islands	1,217.96	25	1,718.50	28	1,809.63	27	714.83	15	1,551.01	15	3,770.88	24	4,332.81	24	3,637.09	24	0.01157909	0.01009168	0.00970531	0.0575724	0.07702656	0.01393756	0.01352668	0.01221279	0.20585217	0.0054119	0.00468988	2.5381E-05	9
Maharashtra	1,05,186.31	1	1,70,288.61	1	1,85,917.35	1	12,416.23	1	20,136.08	1	2,70,345.99	1	3,20,116.84	1	2,97,884.61	1	1	1	1	1	1	1	1	1	8	0.21052632	0.1824926	0.03840826	1
Karnataka	48,138.09	2	78,762.48	2	83,408.46	2	12,333.88	2	14,670.28	2	1,45,265.89	2	1,31,949.29	2	1,31,949.29	2	0.45764595	0.4625235	0.44861623	0.99336688	1	0.45430687	0.45778556	0.44324907	4.71349406	0.12403932	0.10749079	0.01333308	1
Goa	2,772.11	22	4,303.17	22	4,279.62	22	344.30	20	554.64	19	5,520.46	22	6,474.95	23	5,865.35	23	0.02635425	0.02409538	0.02299113	0.02772965	0.05709569	0.02040936	0.02021848	0.01969813	0.21859200	0.00575242	0.00484957	2.8676E-05	6
Lakshadweep	7.03	37	20.04	37	20.41	37	1.27	37	0.00	38	20.88	37	45.36	37	17.11	37	6.6843E-05	0.00011768	8.1299E-05	0.00010236	0	6.6397E-05	0.00013317	5.227E-05	0.00062003	1.6317E-05	1.414E-05	2.3071E-06	9
Kerala	10,856.76	17	16,342.51	16	19,234.08	16	557.92	16	901.49	16	27,371.36	16	30,677.22	16	27,385.75	16	0.10321459	0.09956949	0.10342466	0.0493447	0.09280143	0.10123593	0.09582361	0.09199113	0.72940011	0.01919474	0.0166339	0.00031928	5
Tamil Nadu	45,319.19	4	70,561.90	4	74,430.04	4	8,188.61	3	9,714.12	4	1,04,377.24	4	1,21,329.11	4	1,08,625.45	4	0.43083729	0.41436653	0.40032234	0.65950819	1	0.38608097	0.37609078	0.36489883	4.03502394	0.10618484	0.09201835	0.00970995	1
Puducherry	1,317.29	24	1,924.11	25	1,871.30	26	179.21	23	158.21	23	2,373.32	27	2,636.21	27	2,363.19	27	0.01252344	0.0112991	0.01003704	0.0143355	0.0224858	0.00878608	0.00822669	0.00790334	0.0957071				

economy, thereby accelerating its economic growth. However, achieving these benefits requires the development of a strong and efficient framework [8].

The author emphasised that reforms in tax administration are as crucial as tax policy for enhancing revenue generation. The implementation of GST presents significant challenges for individual states in modifying their standard tax structures, thereby making efficient tax management vital for achieving revenue targets [9]. In a later study, [10] it was noted that getting rid of the GST compensation cess (GSTCC) might help some states more than others. Furthermore, delays or non-payment of GST compensation in 2022 could weaken critical components of GST framework.

Author said the GST could be India's most important tax change. Standardizing taxes can make things clearer and easier to understand, which can lead to more people following the rules and more growth in the economy as a whole. The implementation of GST in all states will simplify business operations, facilitate income sharing between the central and state governments, and stimulate economic growth [11]. In the Malaysian context, effective tax collection, prudent financial management, and equitable distribution of resources can reduce reliance on external borrowing, while the adoption of advanced IT systems is essential for establishing and managing a modern tax regime, as observed in countries that have successfully implemented GST [12].

According to author [13], GST will make things clearer, lower the tax burden, raise government income through taxes, fix all the problems that the old tax system caused, and help us export more. Another study [14] examined various factors, including tax structure, supply chain efficiency, tax evasion, small and medium enterprises (SMEs), tax compliance, and consumer prices, to assess the overall effect of GST on the productivity of the retail industry. It was found that the introduction of GST has led to positive outcomes in comparison to the previous systems. It has effectively decreased indirect taxes, simplified input tax credits, and improved efficiency in the supply chain. Author [15] suggests that the implementation of GST in India will enhance transparency in the taxation system and facilitate efficient tax collection, thereby stimulating the country's economy. However, the government must be prepared to handle the issues raised by businesspeople on a regular basis. In another study, it was stated that the advent of GST has brought clarity to the indirect tax system, as it has replaced several taxes formerly categorized as indirect taxes. [16]

Impact of GST on Cost and Compliance

Author [17] observed that the implementation of the Goods and Services Tax (GST) avoids the cascading effects present in the previous tax system. As a result, the overall cost of production and the country's inflation rate will decrease. From the consumer's standpoint, GST enables the unrestricted movement of commodities across states without any limitations imposed by state governments [18]. A study has been conducted in Hisar, Haryana and found that retailers incur a higher cost of compliance. This, in turn, may

necessitate the hiring of additional staff by businesspeople, leading to a reduction in the profit ratio [19]. In another study [20] It was stated that GST has raised compliance costs for MSMEs through frequent return filings, mandatory digital records, and specialised accounting needs, while delays in Input tax credits have added to cash flow constraints. In line with these challenges, [19] argued that the government can increase its tax revenue by reducing expenses related to compliance, collection, and economic costs. Further [21] examined the GST's revenue and compliance gap performance at both the national and state levels in a study. The study reveals a significant discrepancy between the filing returns of GSTR-1 and GSTR-3B, leading to difficulties in claiming input tax credits.

Author [22] noted that the Indian Goods and Services Tax (GST) offers several advantages, including its simplicity, capacity to enhance government revenue, encouragement of market consistency, and promotion of capital investment. The implementation of GST will eliminate cascading effects and reduce consumers' tax burden. Meanwhile, [23] presents a comparative analysis of product and service prices, taking into account the rates before and after the implementation. The findings indicate that the prices of certain products and services have decreased, but for a few other items, costs have increased; [24] argues for a clear agreement on the threshold limit, revenue rate, and inclusion of alcoholic drinks, petroleum products, real estate, and electricity in the GST framework, and [25] contends that GST alleviates the burden on manufacturers and traders by transferring the input tax credit along the supply chain, thereby benefiting business activities. However, the efficiency and sustainability of compliance and support services must still be prioritised.

According to Author [26], The Goods and Services Tax (GST) streamlines the complex framework of indirect taxation in India. It is firmly believed that GST will provide comprehensive advantages to final consumers and play a critical role in India's progress. Whereas [27] notes that determining the effectiveness of the GST in India requires assessing its impact on the entire customer population. Moreover, the author asserts that the GST possesses the potential to streamline the tax system, contingent upon a widespread consensus on the revenue rate, threshold limit, and the inclusion of specific products within the GST framework.

Author reported that the implementation of GST stimulates economic growth and provides advantages to manufacturers, distributors, and customers by reducing product prices. However, the new tax regime does not distinguish between commodity and service tax rates. Services are subject to higher taxes compared to the previous tax system. This will result in a decrease in GST revenue and support the conclusion that GST's overall impact is neither positive nor negative.[28] According to [29] the research findings indicate that small firms have low levels of awareness and compliance with GST. Having a thorough understanding of GST is a reliable indicator of one's adherence to GST regulations. The

government should strive to enhance taxpayers' understanding of GST to boost compliance rates and promote taxpayer awareness. The majority of the research has focused primarily on the impact of GST on the overall economy. Researchers undertake multiple endeavors to examine the theoretical, procedural, and budgetary consequences of the GST. There has been limited research on the development and impact of GST on indirect tax revenue over the eight years since its adoption. The study has formulated the following hypotheses to test, based on the provided information.

H₁1 There has been a substantial rise in the revenue generated from indirect taxes under the New Indirect Tax framework.

H₀1 There has not been a substantial rise in the revenue generated from indirect taxes under the New Indirect tax framework.

H₁2 There has been significant difference between forecasted revenue and actual revenue.

H₀2 There has not been significant difference between forecasted revenue and actual revenue.

OBJECTIVES OF THE STUDY

The primary objective of the study is to analyse the impact of the Goods and Services Tax (GST) on India's overall indirect tax revenue, with a specific focus on the state of Haryana because it is one of the major contributors to GST revenue (Rank 7) due to its strong industrial base, growing manufacturing sectors and strategic location near the nation capital. Additionally, the study aims to achieve several secondary objectives. It seeks to examine the contribution of GST to India's fiscal structure and its broader implications for tax policy. Furthermore, by analyzing historical data and using forecasting techniques, the study aims to provide insights into future GST revenue trends. These insights will help policymakers understand potential revenue growth, anticipate economic challenges, and formulate strategies to enhance tax collection efficiency and financial planning.

NATURE OF STUDY

The study is conducted using an analytical approach and relies on secondary data sources. It spans a duration of twelve years, from 2013 to 2024. The content was sourced exclusively from the official websites of the Central Board of Indirect Taxes (CBDT) and Customs (India), the Press Information Bureau (Government of India), the Commissionerate of CT, and the Government of Haryana.

SCOPE OF THE STUDY

The study focuses on many facets of India and Haryana. By size, Haryana ranks as the 21st largest state; by population, it ranks as the 13th largest. In terms of the economy, it contributes 3.6% of the country's overall GDP. Furthermore, in terms of the total number of active taxpayers registered under the Goods and Services Tax (GST) as of March 31, 2024, Haryana ranked almost tenth among the 29

Indian states. The state of Haryana, which will serve as a typical model of the GST situation, has received particular attention in light of the aforementioned facts.

RESEARCH METHODOLOGY

In the context, Indirect tax revenue collections serve as a significant indicator of economic activity. Analysing their patterns helps to understand the effectiveness of the taxation system after GST Implementation. The present study is analysing the impact of indirect tax revenue on India's overall tax income, with a specific focus on the state of Haryana. It also seeks to forecast future Indirect tax revenue trends using historical data to support better fiscal planning and policy evaluation.

Data Collected: The study adopts both qualitative and quantitative research approaches. Secondary data was collected from government official sources such as state department of revenue, GSTN portal, Haryana state Finance department and official data of GST Statistics available on gst.gov.in covering the period from July 2017 to March 2024. In addition to the statistical data relevant literature, including academic journals, research papers, newspapers, policy reports etc., was reviewed to support conceptual understanding and strengthen the analytical framework.

Data Analysis: For trend analysis and revenue forecasting, time series models such as exponential triple smoothing (ETS) Model and Holt-Multiplicative Method were applied. The above models are effective in identifying growth trends, capturing seasonality, and detecting fluctuations in monthly GST collections over the study period. To ensure more clarity in the analysis, compensation cess was excluded which allowed the focus to remain on core GST revenue streams.

Variables Considered

To achieve study's objectives, the following revenue factors are taken into account: Central Goods and Services Tax (CGST), State Goods and Services Tax (SGST), Integrated Goods and Services Tax (IGST), State Compensation Cess, Active Taxpayers, and GST Returns.

Techniques Adopted

Comparative tables and charts serve to display all factual information. The forecasting of future values was conducted using basic arithmetic mean, rate of change, statistical t-test, and Exponential Triple Smoothing techniques. The analysis was conducted using MS Office 2021 and SPSS.

RESULTS AND ANALYSIS

This section presents a comprehensive analysis and interpretation of secondary data collected from various official sources, including websites, published statistical reports, etc.

The data presented in Table 2 indicates a significant rise in the number of taxpayers who have registered themselves under the GST system. As of March 31, 2024, there are a total of 5,38,917 active taxpayers registered under Haryana.

Contrarily, the total number of active taxpayers in India is 1,46,36,753 as of March 31, 2024. Haryana's average contribution to India's active taxpayers is approximately 4%.

Table 2: Active Taxpayers in GST: A Comparative Status

	Haryana (State level)	India (Federal Level)	Share of HR
Date (updated on)	31-Mar-24	31-Mar-24	31-Mar-24
Normal Taxpayers	5,18,493	1,27,90,865	4.05
Composition Taxpayers	14,470	15,09,790	0.96
ISD	698	8,042	8.68
Casual Taxpayers	9	686	1.31

TCS	1,216	21,166	5.75
TDS	3,997	3,03,260	1.32
NR Taxpayers	3	31	9.68
OIDAR	0	606	0.00
UIN Holders	31	2,307	1.34

Source: [30], [31]

Table 3: and Figure 1 indicate the comparative trend in the number of returns filed by active taxpayers over the last seven years. GSTR-3B, i.e., monthly returns for all regular taxpayers, have been submitted by a minimum of 89% at both the Haryana and all-India levels. Similarly, GSTR-1, which requires outward supply details, has been submitted by at least 87% of qualified taxpayers in Haryana, compared to 86% across India. The efficiency of return filing of Haryana taxpayers is nearly equivalent to the all-India level.

Table 3: Comparative Growth of Return in GST

Name of Return	Year Ending	Haryana			India		
		Eligible no. of Tax Payers	Total Return Filed	Percentage	Eligible no. of Tax Payers	Total Return Filed	Percentage
GSTR-3B	Mar-18	3,43,982	3,25,914	94.75	84,55,633	79,13,357	93.59
	Mar-19	4,21,476	3,74,859	88.94	1,01,74,978	90,41,149	88.86
	Mar-20	4,23,351	3,94,128	93.10	1,04,27,790	96,73,390	92.77
	Mar-21	4,38,177	4,21,862	96.28	1,07,79,583	1,04,04,564	96.52
	Mar-22	4,69,904	4,50,705	95.91	1,16,31,207	1,11,77,591	96.10
	Mar-23	4,85,122	4,81,455	99.24	1,20,67,413	1,19,52,986	99.05
	Mar-24	5,11,329	4,86,422	95.13	1,26,56,060	1,19,28,081	94.25
GSTR-R1	Mar-18	3,43,982	3,21,203	93.38	84,55,633	76,79,741	90.82
	Mar-19	4,21,476	3,67,628	87.22	1,01,74,978	87,21,929	85.72
	Mar-20	4,23,351	3,83,162	90.51	1,04,27,790	91,62,591	87.87
	Mar-21	4,38,177	4,17,597	95.30	1,07,79,583	1,00,65,991	93.38
	Mar-22	4,69,904	4,48,211	95.38	1,16,31,207	1,09,30,192	93.97
	Mar-23	4,85,122	4,82,642	99.49	1,20,67,413	1,19,81,042	99.28
	Mar-24	5,11,329	4,93,553	96.52	1,26,56,060	1,20,91,048	95.54

Source: [30], [31] & Author's Calculation
US \$ 83.52 INR

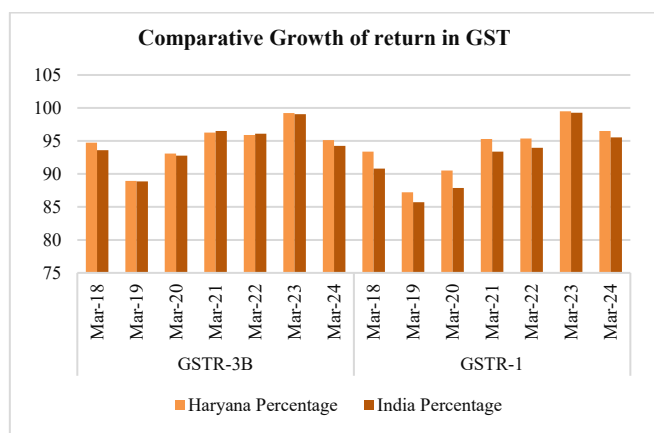


Figure 1: Comparative Growth of return in GST

Table 4: shows the growth rate of Goods and Services Tax (GST) revenue in India since its implementation. The tax

collection in the first quarter of fiscal year 2020–21 reached a record low of 16653.77 million US dollars due to the outbreak of the coronavirus and the following lockdown, which disrupted commercial operations. The revenue collection in the second quarter of 2020–21 experienced a significant surge, primarily attributed to the extraordinary payment of GST from the preceding quarter. The fourth quarter of the fiscal year 2023–24 accumulates the peak amount of GST revenue. GST revenue witnessed a 15 percent increase in the fiscal year 2022–23, as compared to the equivalent fiscal year 2021–22. This signifies the effectiveness of gathering revenue and the economy's overall growth.

Figure 2 shows that the amounts of CGST, SGST, and cess collected stayed the same over the period of time. However, the amounts of IGST collected on interstate goods went up.

Table 4: Growth of Component-wise GST Collection in India (in Millions of US\$)

Year	Quarter	CGST	SGST	IGST	Cess	Total	Q-O-Q Change
2017-18	Q2	3,644.07	5,425.63	6,225.39	1,665.87	16,960.96	
	Q3	5,099.40	7,465.75	8,454.97	2,500.00	23,520.00	0.39
	Q4	5,497.25	7,690.90	8,450.78	2,578.92	24,218.08	0.03
2018-19	Q1	6,042.75	8,309.46	9,457.72	2,597.01	26,407.19	0.09
	Q2	5,568.62	7,725.51	8,769.34	2,583.35	24,646.83	0.07
	Q3	5,954.13	8,186.11	9,152.10	2,549.10	25,841.44	0.05
	Q4	6,676.05	9,166.71	9,537.01	2,724.43	28,104.31	0.09
2019-20	Q1	6,867.31	9,414.13	9,850.66	2,738.80	28,870.78	0.03
	Q2	6,260.48	8,604.07	8,799.76	2,524.31	26,188.50	0.09
	Q3	6,842.51	9,294.73	9,575.21	2,535.93	28,248.50	0.08
	Q4	7,268.74	9,720.84	10,028.74	2,776.65	29,794.85	0.05
2020-21	Q1	4,115.57	5,128.14	5,821.32	1,588.86	16,653.77	0.44
	Q2	5,962.87	7,857.37	8,430.30	2,315.69	24,566.35	0.48
	Q3	7,126.59	9,396.17	10,689.22	2,648.74	29,860.60	0.22
	Q4	7,903.83	10,254.73	11,435.33	2,925.27	32,519.40	0.09
2021-22	Q1	7,220.12	9,185.75	10,542.99	2,749.82	29,698.68	0.09
	Q2	7,580.36	9,809.94	10,860.24	2,767.19	31,017.96	0.04
	Q3	8,433.17	10,803.11	12,052.57	3,055.45	34,344.55	0.11
	Q4	8,998.08	11,424.67	12,689.46	3,269.22	36,381.44	0.06
2022-23	Q1	10,000.12	12,718.56	13,999.40	3,495.09	40,213.17	0.11
	Q2	9,069.70	11,445.63	13,540.36	3,396.17	37,451.74	0.07
	Q3	9,392.93	11,904.79	14,505.51	3,527.07	39,330.18	0.05
	Q4	10,330.42	13,062.99	14,652.10	3,640.36	41,685.87	0.06
2023-24	Q1	11,720.24	14,554.73	16,171.62	3,883.47	46,330.18	0.11
	Q2	10,529.22	13,302.28	15,193.89	3,874.37	42,900.00	0.07
	Q3	10,889.22	13,692.46	16,732.81	4,020.48	45,334.97	0.06
	Q4	11,856.53	14,880.96	17,015.81	4,106.59	47,860.00	0.06
Average		7,661.12	10,015.78	11,208.69	2,927.34	31,812.97	
Source: [30], [31] & Author's Calculation US \$ 83.52 INR							

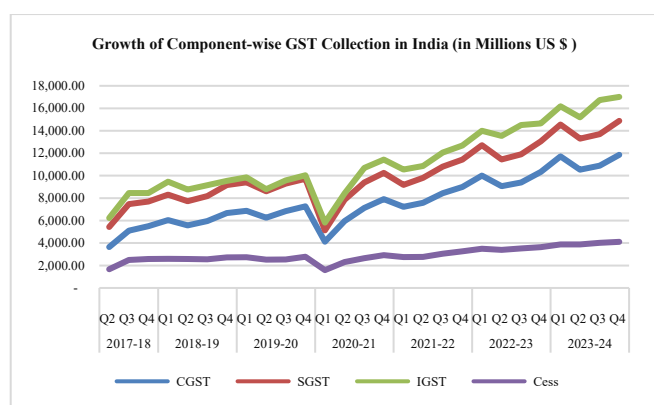


Figure 2: Growth of Component-wise GST Collection in India (in Millions US \$)

Table 5 shows the collection of GST revenue of Haryana state since GST was implemented. It includes CGST, SGST, IGST, and the Government-imposed cess. It highlights a similar pattern of rise throughout the quarters as experienced in the overall India revenue. The revenue collection decreased to 49% % in Q1 of the year 2020-21 compared with the previous quarter. Average SGST collection is 148.89 million US\$, and average total GST collection is 2024 686.35 million US\$. Figure -3 shows uniform pattern of tax collection in the Haryana state.

Table 5: Growth of Component-wise GST Collection in Haryana (in Millions US\$)

Year	Quarter	CGST	SGST	IGST	Cess	Total	Q-O-Q Change
2017-18	Q2	185.93	290.39	651.75	84.54	1,212.62	
	Q3	232.99	380.34	911.11	129.72	1,654.15	36%
	Q4	224.94	352.19	846.33	120.41	1,543.87	-7%
2018-19	Q1	253.08	383.98	950.25	129.83	1,717.14	11%
	Q2	249.15	375.06	808.33	107.66	1,540.20	-10%
	Q3	256.75	370.49	908.60	115.08	1,650.92	7%

	Q4	261.34	390.26	941.61	113.22	1,706.43	3%
2019-20	Q1	284.97	410.77	971.58	115.30	1,782.62	4%
	Q2	266.49	390.67	821.45	102.26	1,580.88	-11%
	Q3	292.63	425.94	1,068.89	110.43	1,897.89	20%
	Q4	300.82	439.91	1,019.16	111.67	1,871.56	-1%
2020-21	Q1	161.35	200.83	556.12	40.93	959.23	-49%
	Q2	243.01	334.63	813.91	113.48	1,505.03	57%
	Q3	322.79	447.30	1,124.01	152.04	2,046.14	36%
	Q4	325.35	448.60	1,135.54	150.56	2,060.05	1%
2021-22	Q1	292.14	388.39	1,001.91	128.62	1,811.05	-12%
	Q2	333.19	448.43	1,039.69	157.66	1,978.97	9%
	Q3	347.43	467.59	1,137.93	142.17	2,095.12	6%
	Q4	376.85	505.91	1,225.22	167.64	2,275.62	9%
2022-23	Q1	427.02	561.57	1,409.07	186.11	2,583.76	14%
	Q2	397.70	521.68	1,409.91	181.53	2,510.82	-3%
	Q3	391.46	524.37	1,433.73	178.44	2,528.00	1%
	Q4	428.07	565.16	1,587.41	176.20	2,756.84	9%
2023-24	Q1	476.76	611.98	1,761.63	176.41	3,026.77	10%
	Q2	433.57	569.31	1,606.69	220.07	2,829.63	-7%
	Q3	479.26	614.20	1,856.83	232.64	3,182.92	12%
	Q4	504.18	639.76	1,927.71	214.11	3,285.76	3%
	Average	108.02	148.89	381.81	47.64	686.35	

Source: [30], [31] & Author's Calculation
US \$ 83.52 INR

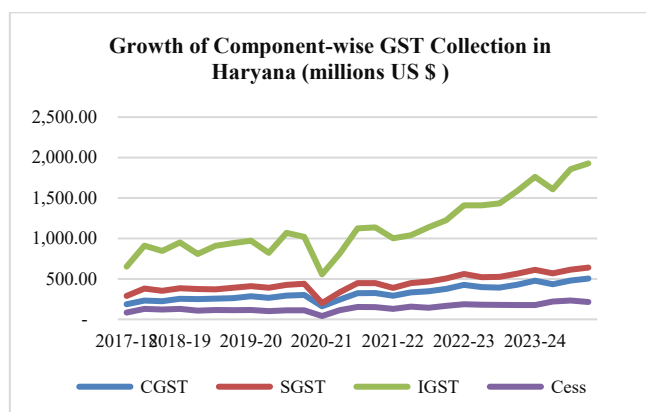


Figure 3: Growth of Component-wise GST Collection in Haryana (millions US \$)

Table 6 shows Haryana's economic growth alongside India, focusing on GDP and indirect tax revenue trends before and after the GST was implemented. Haryana's Compounded Growth Rate (CGR) of indirect tax revenue has steadily increased, indicating improved tax collection efficiency. While India's GDP fluctuates, Haryana has maintained stable revenue growth, especially post-GST. The sharp rise in indirect tax revenue suggests better tax compliance and streamlined policies benefiting Haryana's economy. This highlights Haryana's

strong fiscal performance and reinforces the state's role as a significant contributor to India's indirect tax collection. The analysis helps policymakers refine tax strategies for sustained economic growth in Haryana.

Table 6: Comparative Growth Rate of GDP, India and Haryana State

Year	GDP Growth Rate (in %)	Compounded Growth Rate (CGR) (GDP)	INDIA			Haryana		
			Pre and Post-GST Indirect Tax Revenue (in US\$ Millions)	Pre and Post-GST Indirect Tax Revenue Growth Rate	CGR (Indirect Tax Revenue)	Pre and Post-GST Indirect Tax Revenue (in US\$ Millions)	Pre and Post-GST Indirect Tax Revenue Growth Rate	CGR (Indirect Tax Revenue)
2010	8.5		29,378			1,587		
2011	5.24	13.74	41,323	1.41	1.41	1,924	0.21	0.21
2012	5.46	19.2	46,988	0.14	1.55	2,164	0.12	0.33
2013	6.4	25.6	56,811	0.21	1.76	2,359	0.09	0.42
2014	7.4	33	59,514	0.05	1.80	3,061	0.30	0.72
2015	8	41	65,227	0.10	1.90	3,309	0.08	0.80

2016	8.3	49.3	84,989	0.30	2.20	3,703	0.12	0.92
2017	6.8	56.1	1,03,329	0.22	2.42	5,554	0.50	1.42
2018	6.5	62.6	64,699	-0.37	2.04	4,411	-0.21	1.22
2019	3.9	66.5	1,05,000	0.62	2.67	6,615	0.50	1.72
2020	-5.8	60.7	1,13,103	0.08	2.74	7,133	0.08	1.79
2021	9.7	70.4	1,03,603	-0.08	2.66	6,570	-0.08	1.72
2022	7	77.4	1,31,443	0.27	2.93	8,161	0.24	1.96
2023	7.6	85	1,58,681	0.21	3.14	10,379	0.27	2.23
2024	8.2	93.2	1,82,425	0.15	3.29	12,325	0.19	2.42

Source:[32], [33], [31], [34], [35], [36] and Calculated by author(s)

Table 7: and Figure 4 show the computation of the GST compensation entitlement requested by the state of Haryana from the Central Government. According to the GST (Compensation to State Act) 2017, the federal government must compensate state governments for any loss of revenue resulting from the implementation of GST. This compensation would be provided for the first five years from the implementation of GST, using the state revenue collection of the year 2015-16 as a base year, with a compounded annual growth rate of 14%. Every state must compile and compute its revenue losses and demand compensation cess from the central government each month.

Column a presents the projected revenue for five years, taking an audited collection of 2015-16 as a base year with growth of 14% compounded annually. Column b shows the pre-GST revenue collection for the year 2017-18, which is not provided by the state government in their official document. Columns c and d present the actual revenue collected and realized by the Haryana government. and in the last column, e calculates the amount entitled to compensation as per the GST (Compensation to State Act) 2017 from CG and reveals that the Haryana government realizes approximately 56 % of the amount as compared to projected revenue from GST.

Table 7: Statement Showing Entitlement of Compensation to Haryana State (in Millions US\$)

Year	Projected Revenue with 14 % c.a.	Pre GST-Revenue up to 30th June	Actual Revenue (SGST)	Realized	Entitlement for Compensation
	(a)	(b)	(c)	(b+c)=d	(a-d)=e
2017-18	2,079	N.P.	1,023	1,023	1,056
2018-19	2,370	-	1,520	1,520	851
2019-20	2,702	-	1,667	1,667	1,035
2020-21	3,081	-	1,431	1,431	1,649
2021-22	3,512	-	1,810	1,810	1,702
Total	13,745	-	7,452	7,452	6,293

Source: Author's Calculation
US\$ 83.52 INR

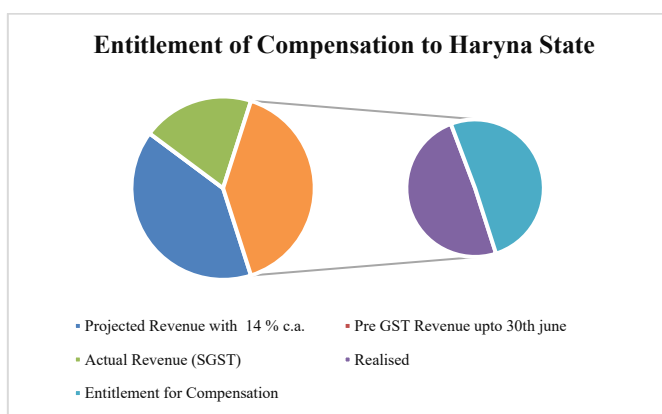


Figure 4: Statement Showing Entitlement of Compensation to Haryana State

The exponential triple smoothing (ETS) method is employed to forecast the forthcoming indirect tax income based on the historical time series data of indirect tax before the implementation of GST. This study takes into consideration the time frame of 2017-2024. This method

employs advanced algorithms for machine learning and is seen as an intuitive approach, rather than one centered on theoretical principles, which practitioners have overly emphasized.

The formulas for exponential triple smoothing with multiplicative seasonality are as follows:

=FORECAST.ETS (target date, values, timeline, [seasonality], [data completion], [aggregation])

target_date (required): The data point for which you seek to forecast a value. The target date might be either a specific date and time or a numerical value.

values: The historical data range that encompasses the specific values to be utilized for forecasting.

timeline: the specific period of dates or times that corresponds to the historical data found in the 'values' range. The desired outcome is to maintain uniformity and arrange the items sequentially based on their time of occurrence.

numerical_value: The default value of 1 in Excel indicates that Excel automatically recognizes seasonality for

the prediction. It uses positive integers to represent the length of the seasonal pattern. A value of 0 shows the absence of any seasonal pattern.

data completion: A parameter that specifies the method for dealing with missing data points. Use the value 0 to represent missing points as zero, or use the value 1 to apply interpolation. (default)

aggregation: Although the timeline demands a consistent step between data points, FORECAST.ETS will aggregate points with the same time stamp. The aggregation parameter is a number that specifies how to combine values with the same time stamp. By default, 0 uses AVERAGE; additional options are SUM, COUNT, COUNTA, MIN, MAX, and

MEDIAN.

Table 8: indicates the projected indirect tax revenue based on the previous indirect tax revenue data. Column 2 depicts actual state tax income generated under the indirect tax system without taking the effect of compensation cess from 2017-18 to 2023-24, whereas column 3 shows the amount of SGST collected after the effect of GSTCC. Column 4 presents the forecasted amount of GST revenue that the Haryana (HR) government is expected to earn from 2025 to 2029. It indicates increasing patterns throughout the period that indicate the successful outcome of the government's actions regarding new indirect tax system.

Table 8: Forecasted Indirect Tax Revenue, Haryana (Millions, US \$)

Year	GST without Compensation Cess	GST with Compensation	Forecasted Indirect Tax on the basis of GST without Compensation
2018	1,022.92	1,357.60	
2019	1,519.80	1,985.59	
2020	1,667.30	2,106.96	
2021	1,431.36	1,888.36	
2022	1,810.31	2,406.38	
2023	2,172.77	2,895.05	
2024	2,435.24	3,278.47	
2025			2,493.83
2026			2,808.54
2027			3,126.89
2028			3,796.25
2029			4,026.35
Source: Author's Calculation US\$ INR 83.52			

Table 9 depicts the predicted indirect tax revenue derived from previous indirect tax revenue, which is now incorporated into the new Indirect regime. This estimation is done using the Holt-Winters Multiplicative approach. The model parameters ($\alpha=0.9$, $\beta=0.5$, and $\gamma=0.5$) result in a well-

balanced smoothing technique, ultimately leading to precise forecasts. (2) represents the amount of GST collected by the UP government before GST was adopted. (6) represents the projected amount of GST that the Haryana government expects to collect in the upcoming years.

Table 9: Forecasting Indirect Tax Revenue, Haryana (millions, US\$) Using Holt-Winters' Multiplicative Method

alpha	0.9					
beta	0.5					
gama	0.5					
Year	Period	At	Lt	Tt	St	Ft
2018	1	8541.39	8541.39	0	1	
2019	2	12690.31	12275.42	1867.014	1.016899	8541.39
2020	3	13921.94	13570.59	1581.091	1.012945	14381.43
2021	4	11951.83	11955.6	-16.9493	0.999842	15347.82
2022	5	15116.09	14801.74	1414.595	1.010619	11936.77
2023	6	18142.65	17667.1	2139.979	1.013459	16388.53
2024	7	20334.27	19853.55	2163.218	1.012107	20073.65
2025	8	20073.65	19835.32	1072.493	1.006008	22283.32
2026	9	22283.32	21931.27	1584.22	1.008026	21033.43
2027	10	21033.43	20964.79	308.8687	1.001637	23704.23
2028	11	23704.23	23399.4	1371.74	1.006514	21308.48
2029	12	21308.48	21380.4	-323.63	0.998318	24932.49
[37] & Author's Calculation US \$ 83.52 INR						

$$\text{Level } L_t = \alpha \frac{A_t}{S_{t-k}} + (1-\alpha) (L_{t-1} + T_{t-1})$$

Where:

L_t is the level at time t

α is the smoothing parameter for the level ($0 < \alpha < 1$)

A_t is the actual value at time t

S_{t-k} is the seasonal component from the same period in the previous season

L_{t-1} is the level at time $t-1$

T_{t-1} is the trend at time $t-1$

$$\text{Trend } T_t = \beta (L_t - L_{t-1}) + (1-\beta) T_{t-1}$$

T_t stands for the trend at time t .

β stands for the smoothing parameter for the trend ($0 < \beta < 1$)

L_t represents the level at time t

L_{t-1} denotes the level at time $t-1$

T_{t-1} represents the trend at time $t-1$

$$\text{Seasonality } S_t = \gamma \frac{A_t}{L_t} + (1-\gamma) S_{t-k}$$

S_t represent the seasonal component at time t .

γ represents the smoothing parameter for seasonality ($0 < \gamma < 1$)

A_t stands for the actual value at time t

L_t stands for the level at the time t

S_{t-k} denotes the seasonal component from the same period in the previous season.

s represents the length of the seasonal cycle

$$\text{Forecast } F_{t+h} = (L_{t-1} + hT_{t-1}) S_{t-k}$$

Where:

F_{t+h} represents the forecasted value for h periods ahead

L_{t-1} stand for the level at time $t-1$

T_t denotes the trend at time t

S_{t-k} is the Seasonal component at the forecasted time

S denotes the length of the seasonal cycle

k = the integer part of $(h-1)/s(h-1)/s$

Table 10: Forecasting Monthly Indirect Tax Revenue, Haryana (Millions, US\$)

Month	Forecasted Revenue	Month	Forecasted Revenue
Apr-24	1,774.94	Apr-25	1,994.50
May-24	1,781.63	May-25	1,998.74
Jun-24	1,784.70	Jun-25	1,999.40
Jul-24	1,795.63	Jul-25	2,105.11
Aug-24	1,806.64	Aug-25	2,033.27
Sep-24	1,817.69	Sep-25	1,583.71
Oct-24	1,830.89	Oct-25	1,676.89
Nov-24	1,841.66	Nov-25	1,904.90
Dec-24	1,852.90	Dec-25	1,860.15
Jan-25	1,864.30	Jan-26	1,952.34
Feb-25	1,876.40	Feb-26	1,941.00
Mar-25	1,888.19	Mar-26	2,009.87
Author's Calculation US\$ 83.52 INR			

Table 10 shows the forecasted monthly indirect tax revenue based on tax collected under GST since July 2017; the predicted value does not include the compensation cess. It shows increasing trends over the years.

CONCLUSION

Goods and Services Tax (GST) has emerged as a transformative reform in India's Indirect Taxation System, which is designed to broaden the tax base and enhance revenue collection in the long run. Since Its Implementation in July 2017, GST has steadily contributed to the nation's economic growth. India's GST average earnings have been over thirty-one thousand eight hundred million US dollars, and in the context of Haryana, it is above six hundred eighty-six million US dollars from the year 2017 to 2024. This big and steady rise in revenue collection shows significant impact in Indian Economy. This is due in large part to stricter surveillance measures being put in place to stop fraudulent billing, the use of advanced data analysis methods that

include data from many sources like GST, income tax, and Customs IT systems, and the smooth running of tax affairs.

However, the benefit of GST has not been fully seen in all states. In Haryana, Revenue growth rate has been slower, and the state depended heavily on Compensation Funds, which ended in July 2022. The cessation of these compensation funds in July 2022 has raised concerns about potential revenue shortfalls for the states.

LIMITATIONS AND FUTURE RESEARCH SCOPE

This study has certain limitations. Firstly, it exclusively focuses on the aggregate indirect tax income included in the GST. Next, it focuses on the state of Haryana and draws comparisons with the entire India. Future studies can take into consideration the comparison of other states. The study's Methodology has used only two methods, i.e., Exponential Triple Smoothing and Holt-Winters' Multiplicative Method. However, models such as ARIMA can also be applied to make better forecasts. Other variables such as direct tax

revenue, gross domestic product, number of taxpayers, tax buoyancy, and total indirect tax revenue should be considered to obtain more accurate results.

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