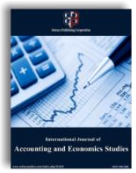
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Research paper



Value Added Tax Over Sales Tax: The Revenue Impact of Change in Tax Regime for Indian Economy

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Abstract

This paper evaluates the fiscal implications of transitioning from a Sales Tax to a Value Added Tax regime in India, with a focus on state-level revenue performance. Using cross-sectional data from Indian states and a sectoral breakdown of Net State Domestic Product, the study analyzes changes in tax collection efficiency, economic output, and revenue generation before and after VAT implementation. The analysis employs a regression framework to estimate untaxed portions of output, using perceived anti-corruption effort as a key proxy for institutional effectiveness. Results indicate that while VAT initially increased the untaxed share of output—likely due to transitional administrative challenges, it also enhanced transparency and demonstrated a stronger correlation with improved tax compliance over time. The construction sector emerged as a consistently significant contributor to commercial tax revenue, highlighting sector-specific variations in tax performance. Overall, the findings suggest that despite early setbacks, VAT holds long-term potential for improving tax efficiency and state revenue mobilization in India.

Keywords: *VAT, Sales Tax, Revenue*

1. Introduction

Taxation is one of the most important ways a government raises revenue, and in India, taxes are broadly divided into two categories: direct and indirect. Direct taxes are those that individuals or entities pay straight to the government, such as income. These are imposed directly on earnings or profits, and the responsibility for payment cannot be transferred to someone else. Indirect taxes, in contrast, are levied on goods and services and are typically included in the final price paid by consumers. Taxes like the Value Added Tax (VAT) and sales tax are collected by businesses or service providers at the point of sale and then passed on to the government. While these intermediaries handle the transaction, it's the consumer who ultimately pays the tax.

Direct taxes, like income tax, are paid directly by individuals or organizations to the government. Indirect taxes, on the other hand, such as sales tax, Value Added Tax (VAT), and the Goods and Services Tax (GST), are collected by intermediaries (like shopkeepers or service providers) from consumers, who ultimately bear the cost.

In 2003, the Government of India introduced VAT as part of a broader tax reform aimed at improving transparency and making the tax system more efficient (Empowered Committee of State Finance Ministers, 2009). For decades after independence, India followed a tax structure that involved cascading taxes—where a tax was levied on top of a tax at each stage of production and distribution, without allowing for deductions on taxes paid earlier. This system distorted economic incentives, encouraged inefficient business practices like unnecessary vertical integration, and ultimately hindered economic growth (Purohit, 1986; Gurumurthi, 1997).

These cascading effects reduced the overall efficiency of the tax system and limited the government's ability to generate and mobilize revenue. VAT was seen as a solution to these problems. By allowing tax credits for inputs, VAT aimed to eliminate the cascading effect, simplify the tax structure, and improve compliance. Many experts (Purohit, 1993) viewed it as a significant step forward in India's indirect tax reform journey.

However, a truly integrated tax framework emerged only with the introduction of the Goods and Services Tax (GST) in July 2017, which subsumed most indirect taxes levied by both the Centre and states. GST was envisioned as a "one nation, one tax" system that would improve compliance, reduce transaction costs, and enhance revenue buoyancy through a destination-based, input-credit-enabled structure. Recent studies underscore both the transformative potential and early challenges of GST implementation. For instance, Rao and Chakraborty (2018) argue that while GST enhances efficiency and transparency, its initial rollout was marked by compliance burdens and IT-related issues. Bhanumurthy et al. (2020) find that GST has improved tax buoyancy in several states, although the extent varies due to state capacity and structural differences. Further, Chakraborty and Gupta (2019) show that the GST Council's design—based on cooperative federalism—has played a pivotal role in facilitating fiscal coordination across states.

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Empirical evidence since GST's implementation also suggests that commercial taxes (including GST revenues) remain a vital source of income for governments. According to the 15th Finance Commission (2020), GST contributes a substantial and growing share of total tax revenue, despite initial volatility due to compensation requirements and rate rationalizations.

This paper focuses on how indirect taxes—especially commercial taxes on goods and services—contribute to revenue generation across Indian states. Data from multiple sources show that commercial taxes consistently account for nearly one-fourth of the total revenue collected nationwide. In recent years, these taxes have remained a major source of income for both state and central governments.

2. A Numerical Exploration of Revenue Impact on the Pre & Post VAT Regime

Let us now turn to an analysis of the economic performance of Indian states before and after the introduction of VAT. To understand this shift, we use three key indicators: Net State Domestic Product (NSDP) at constant prices—as a proxy for economic growth, Revenue Receipts—to gauge the direct fiscal impact, and the ratio of Revenue Receipts to NSDP—to assess how much tax revenue contributes to a state's overall income.

A review of economic growth trends shows that, in the post-VAT period, nearly half of the states experienced a rise in average NSDP by up to 50 percent, with Gujarat, Maharashtra, and Delhi emerging as the top performers (see Appendix Table 1). In contrast, states like Punjab, West Bengal, and Bihar did not show any notable improvement in domestic output after VAT was introduced. Interestingly, among larger states, the impact of VAT on economic growth appears mixed, while among smaller states, the trend is more uniform—most of them recorded low growth in the post-VAT period. This could suggest that smaller states were less able to capitalize on the benefits of the new tax regime.

Next, we examine the impact on Revenue Receipts, which was one of the most debated aspects of VAT implementation. A closer look at the data reveals that revenue receipts increased significantly across nearly all states, with most seeing more than a 100 percent rise post-VAT (Appendix Table 1). States like Odisha, Chhattisgarh, Delhi, Uttar Pradesh, and Andhra Pradesh recorded increases exceeding 150 percent, indicating substantial improvement in tax collection. However, states such as West Bengal, Punjab, Kerala, and even Gujarat were less successful in boosting their revenue to that extent.

The third indicator, the ratio of revenue receipts to NSDP, offers a more nuanced understanding of VAT's impact. While states like Gujarat, Maharashtra, and Delhi show strong growth in both revenue receipts and NSDP, this ratio reveals a different story. The contribution of tax revenue to the overall income in these states is relatively low, suggesting that their NSDP growth may have been driven more by production and economic activity than by VAT-related improvements in tax efficiency. In essence, the increase in revenue seems to be a result of higher output and not necessarily a more effective tax system.

This is why the ratio of revenue to NSDP is such a useful metric—it helps isolate the effect of VAT from other growth factors. For a clearer picture of VAT's real impact, one should assess revenue performance while holding NSDP constant. In other words, the true measure of VAT's effectiveness is whether it improved tax collection from the same base of economic activity.

Overall, the empirical findings suggest that the introduction of VAT has played a significant role in boosting both revenue receipts and the share of tax revenue in state income across most states. However, to thoroughly evaluate the success of VAT compared to the old Sales Tax regime, one more critical factor should be considered: whether VAT has succeeded in broadening the tax base by reducing tax evasion. This could be the strongest indicator of the system's long-term effectiveness.

3. Model framework to assess the relative efficacy of VAT over Sales Tax

In India, the taxation of commercial activity involves the imposition of indirect taxes on the exchange of goods and services carried out by businesses. These levies are typically assessed as a proportion of the transaction value, meaning that higher levels of business turnover naturally yield greater tax collections. Consequently, the aggregate revenue from such taxes serves as a proxy for the scale of monetized economic transactions. Since Gross Domestic Product measures the overall market output of goods and services produced within the country, there is generally a positive correlation between GDP expansion and the volume of indirect taxes gathered from commercial enterprises.

However, it is important to note that not all parts of the economy are included within this taxable framework. India's tax code limits the scope of commercial taxation to specific sectors, thereby excluding certain areas—such as informal or non-market production—from indirect tax obligations. Recognizing this selective applicability of tax rules across industries, we propose the following modeling approach:

$$T = \sum_j \beta_j x_j$$

Let T represent the aggregate revenue from indirect taxes. Consider x_j as the output of the j^{th} commercial sector, which is taxed at a rate β_j . In practice, however, a portion of each sector's output escapes taxation due to factors such as loopholes in tax administration, unregistered or informal economic activities, and intentional evasion. As a result, the effective tax collected from each sector is less than the theoretical amount, and the total collection can be modeled accordingly:

$$T = \sum_j \beta_j x_j \ - \gamma$$

Where, $\gamma\left(\equiv \sum_j \gamma_j\right)$ captures the total amount of tax that goes uncollected across all sectors.

The Value Added Tax was implemented to address shortcomings in the tax collection mechanism (Sundaram, Pandit, & Mukherji, 1995). To assess its impact, the parameter λ serves as a useful metric for comparing the effectiveness of the VAT system against the earlier sales tax regime. In this study, we focus on estimating λ for India under both systems to evaluate the relative efficiency gains brought about by the adoption of VAT. This analysis encounters a few notable limitations. First, the period during which VAT has been uniformly implemented across most Indian states is relatively short, leaving us with an insufficient number of observations for reliable time series econometric analysis. Second, the adoption of VAT was not simultaneous across states—Haryana introduced it as early as 2003, while Uttar Pradesh delayed implementation until 2008. This staggered rollout undermines the feasibility of using standard cross-sectional data, which, within a single-country context, tends to offer limited insights. To overcome these constraints, we employ an alternative strategy: we treat individual Indian states as microcosms of the national economy. This allows us to derive estimates of the parameters α_i and λ based on inter-state variation.

Thus, we proceed to estimate the parameters α_i and λ using the following relationship

$$T_i = \sum_j \beta_j x_{ij} - \gamma \quad (1)$$

In this expression, T_i represents the sales tax revenue from state i, while x_{ij} indicates the output produced by the j^{th} sector within that state. Due to the diverse economic and administrative conditions across states, it is important to incorporate state-specific factors into the model. To capture these differences, we allow the uncollected tax component γ to vary by state, denoted as γ_i :

$$T_i = \sum_j \beta_j x_{ij} - \gamma_i \quad (2)$$

Since our goal is to estimate a common baseline value of γ, we rearrange the equation as follows:

$$T_i = \sum_j \beta_j x_{ij} - \gamma + (\gamma - \gamma_i) \quad (3)$$

To quantify the variation $(\gamma - \gamma_i)$We introduce an explanatory variable Z_i , which serves as a proxy. Specifically, we use the Perceived Anti-Corruption Effort (PACE) index, compiled by Bhandari and Debroy, to approximate this state-level difference.

Yet another problem needs to be resolved. Even if we assume that the states do not differ concerning their tax rates for the various sectors, since the states' sector's sector-wise production differs, we face a problem of aggregation. Consider a state 'i producing two goods x_{1i} and x_{2i} with the associated tax rates β_1 and β_2i.e., the tax rates do not vary across the states. If data is available only at the aggregate level (i.e., the total amount of production of the two goods x_{1i} and x_{2i}), we can think of an aggregate tax rate β_i such that $\beta_i(x_{1i} + x_{2i}) = \beta_1 x_{1i} + \beta_2 x_{2i}$ or $\beta_i = \beta_1[x_{1i}/(x_{1i} + x_{2i})] + \beta_2[x_{2i}/(x_{1i} + x_{2i})]$. If we collect the aggregate data for two goods for different states, the associated β_i's may not be the same across the states owing to their differences in sector-wise outputs.

When performing the empirical evaluation of equation (1), addressing potential misspecification is crucial. To tackle this, we disaggregate the Net State Domestic Product (NSDP) into its components, which helps minimize aggregation-related errors. Our analysis employs regression methods with standard errors robust to heteroscedasticity to ensure reliable inference. Using the sectoral breakdown of NSDP allows us to pinpoint which sectors play a major role in shaping the tax revenue and to examine how VAT implementation may have varied effects across these sectors compared to the earlier sales tax regime.

$$R_i = \sum_j \beta_j x_{ij} - \gamma + PACE_i + \epsilon_i \quad (4)$$

The equation labeled as (4) serves as the final specification for our estimation. Our primary attention is directed toward the first three elements of the equation. The initial term represents the overall average tax collection, while the second term, acting as the intercept, indicates the country's average level of tax evasion. The third term captures the state-level differences in tax evasion, which can result from multiple factors. To identify a reliable proxy for this variation, we evaluated factors like literacy rates, per capita NSDP, and corruption; among these, corruption proved to be the most effective in explaining the variation in tax evasion across states. The fourth term, related to variations in sectoral tax rates (βj) across states, is of less concern in this study. However, since it may cause heteroscedasticity in the error structure, we have adjusted the regression accordingly to account for this issue.

4. Data Source

The analysis relied on publicly accessible secondary data concerning the fiscal performance of Indian states and their respective GSDP figures. Among the principal data sources was the Reserve Bank of India's Handbook of Statistics on the Indian Economy. Complementary financial and revenue-related information was extracted from documents issued by the Ministry of Finance's Department of Revenue, as well as budgetary and economic reports from individual state finance departments. Understanding of citizen perspectives on anti-corruption initiatives drew upon findings presented in the 2011 publication by Bhandari, L., & Debroy, B. (2011).

5. Descriptive Statistics

An examination of the state-level data in Appendix Tables 1 and 2 reveals notable patterns in economic and fiscal performance following the introduction of the Value Added Tax (VAT) in India. Overall, VAT's rollout was accompanied by substantial increases in both Net State Domestic Product (NSDP) and revenue receipts in most states, though the scale and nature of these gains varied widely. These differences reflect the interplay of economic structure, administrative capacity, and how effectively VAT-related reforms translated into improved revenue mobilization.

In the post-VAT period, most states experienced significant increases in average NSDP at constant prices. The largest gains were recorded in Gujarat, Maharashtra, and Delhi, where increases exceeded 67 percent, supported by diversified industrial bases and stronger growth in services. Mid-level performers such as Andhra Pradesh, Karnataka, and Odisha also showed strong double-digit gains, while smaller states like Meghalaya and Tripura posted moderate but steady increases. In contrast, Punjab, West Bengal, and Bihar recorded more modest NSDP growth, suggesting that VAT's impact on output was less pronounced in these economies. The variation in growth outcomes indicates that while VAT may have complemented economic expansion in some regions, its influence on overall output was not uniform across the country.

Revenue collections expanded even more dramatically, with many states achieving revenue growth well above their NSDP increases. Odisha, Chhattisgarh, and Delhi led the way, each recording gains of over 160 percent, indicating marked improvements in commercial tax mobilization. Even states with relatively weaker economic structures, such as Assam, Bihar, and Himachal Pradesh, registered revenue growth above 135 percent, suggesting that VAT may have contributed to a broader tax base and better compliance. The lone outlier was Punjab, where revenue growth of 98 percent fell below the nationwide trend, reflecting persistent enforcement challenges despite the policy change.

A closer look at growth rates rather than average levels shows that the introduction of VAT coincided with an acceleration in NSDP growth for several states. Maharashtra, Madhya Pradesh, and Karnataka saw increases of more than three percentage points in their average annual growth rates, reinforcing the possibility that VAT reforms complemented broader economic momentum. On the other hand, states such as

Assam, Himachal Pradesh, and Tripura experienced slower NSDP growth after VAT, underscoring that revenue gains in some cases may have been driven more by improved administration than by faster economic expansion.

The ratio of revenue receipts to NSDP—an indicator of tax buoyancy—provides further insight into VAT's effectiveness. Increases in this ratio were particularly large in Jammu & Kashmir, Assam, and Bihar, where gains exceeded 20 percentage points, suggesting a substantial improvement in the fiscal yield relative to the size of the economy. Larger industrial states like Gujarat and Maharashtra saw smaller proportional increases despite their high absolute growth in both NSDP and revenue, indicating that their revenue expansion was driven more by rising output than by enhanced efficiency in tax collection.

Taken together, these results suggest that VAT's introduction had a broadly positive effect on state finances, though the nature of this effect differed substantially across the country. In some states, VAT served primarily to amplify existing economic growth, while in others it significantly boosted the efficiency of tax collection relative to economic activity. These differences highlight the importance of administrative capacity, enforcement practices, and the underlying structure of state economies in shaping the success of indirect tax reforms. Over time, as administrative systems adapt and compliance mechanisms strengthen, the potential exists for VAT to deliver even greater gains in both revenue efficiency and economic performance.

6. Results and Discussion

Table 1 presents a summarized overview of all variables across the years studied. For the sales tax period, except for the year 2001, our estimates of the sales were statistically insignificant. In contrast, during the VAT period (from 2005 onward), the estimated γ values were significant in all years except 2009. This suggests that the explanatory variables used under the sales tax framework were inadequate in capturing the full variation in tax revenues. Using the 2001 estimate of γ as a reference point for the sales tax regime and comparing it with the VAT period estimates from 2005 to 2008 reveals a sharp increase in γ. This pattern indicates that the introduction of VAT may not have achieved its intended goal. Additionally, the anti-corruption index shows a marked decline over time, losing statistical significance toward the end of the study period, implying that tax collection under VAT has become more transparent relative to the sales tax era.

Table 1: Estimated Coefficients for Tax Revenue Models under Sales Tax and VAT Regimes

Year	Intercept (Untaxed Part)	*Coefficient for* Registered Manufacturing	Construc-tion	Transport, Storage & Communication	PACE	Adjusted R^2	Number of Obs.
1999	-84088.44	-0.07	0.38**	0.29**	22.35**	0.87	15
2000	-75203.60	-0.05	0.44**	0.21	21.40***	0.87	15
2001	-128463.90***	-0.07	0.42**	0.21	38.41**	0.86	15
2002	-118150.90***	-0.04	0.36**	0.28***	34.35**	0.86	15
2003	-90190.37	-0.01	0.22	0.34**	31.24	0.84	15
2004	-191596.60	-0.05	0.36**	0.20	44.51***	0.85	15
2005	-245796.90*	0.08**	0.46*	-0.01	57.03*	0.96	15
2006	-208326.70***	0.08**	0.33*	0.16	23.18	0.94	15
2007	-243774.50***	0.05	0.40*	0.11	20.29	0.94	15
2008	-236785.00***	0.04	0.39*	0.13	13.30	0.95	15
2009	-118945.90	0.03	0.42*	0.05	-14.96	0.96	15

*Note: *, **, and *** denote significance at the 1, 5, and 10 percent level, respectively*

An additional key finding from our analysis is the notable impact of the construction sector on sales tax revenues, observed consistently across the years studied, except 2003. In contrast, the role of the registered manufacturing sector appears limited, showing insignificant influence for the majority of the period. Interestingly, under the Sales Tax regime, the manufacturing coefficient was negative, whereas it shifted to a positive value under the VAT system. However, even under VAT, the initial statistical significance of the manufacturing sector's contribution diminished in subsequent years.

Although the implementation of VAT corresponds with an increase in the share of untaxed output, this should not be interpreted as evidence of VAT's ineffectiveness. The transition to the VAT framework required considerable adaptation by tax administration systems, which may have temporarily affected collection efficiency. As the system matured and more longitudinal data became available, it is likely that VAT matched or even outperformed the earlier sales tax structure in terms of tax collection. Moreover, one positive outcome of VAT's introduction has been a move toward greater uniformity among states, as suggested by the declining statistical significance of the PACE variable over time.

A closer inspection of the regression output reveals that certain years produced statistically insignificant estimates, notably 2001 during the sales tax era and 2009 under the VAT regime. These outliers merit special attention to properly interpret the robustness of our findings.

(i) Year 2001 (Sales Tax Period):

The estimates for 2001, particularly the coefficient for the untaxed portion of output (γ), are statistically insignificant. This suggests that the explanatory variables used—such as sectoral output and perceived anti-corruption effort—were insufficient in capturing the variance in tax collection for that year. One plausible explanation is the volatility in state fiscal behavior at the turn of the century, a period marked by shifting policy orientations and uneven enforcement of sales tax provisions. Additionally, the lack of detailed data granularity or inconsistencies in state reporting for this year may have affected the accuracy of sectoral output measurements, thereby weakening model performance.

(ii) Year 2009 (VAT Period):

Similarly, 2009 stands out as the only year during the VAT era where the γ coefficient is statistically insignificant. This could be attributed to a combination of macro-level disruptions and VAT system saturation effects. The global economic crisis of 2008–09 may have introduced exogenous shocks that affected tax collection independent of VAT performance. For example, reduced business turnover and consumption could have dampened tax receipts, thereby diluting the observed relationship between sectoral output and revenue. Moreover, by 2009, most Indian states had been under VAT for at least three years, potentially leading to a leveling-off effect where initial improvements in compliance and collection had already been realized, leaving limited year-on-year variation for the model to detect.

In both cases, the lack of statistical significance should not be interpreted as evidence against the broader effectiveness of VAT or sales tax systems. Rather, it underscores the importance of contextual factors—such as data quality, economic shocks, and administrative stability—that can influence empirical results in individual years.

While the Value Added Tax (VAT) reform aimed to streamline tax collection and improve compliance, its implementation encountered several administrative barriers that varied significantly across states. One of the most pressing challenges was the high compliance burden, particularly for small and medium enterprises (SMEs). VAT introduced formal bookkeeping, invoice tracking, and periodic returns, which many small businesses were ill-equipped to handle. This administrative complexity increased the cost of compliance and pushed several informal businesses further away from formalization, defeating one of the reform's primary objectives.

Another critical issue was the lack of uniformity in administrative capacity across states. States like Maharashtra, Gujarat, and Karnataka, where digital infrastructure and tax department staffing were relatively more developed, adapted more quickly to VAT's requirements. In contrast, resource-constrained states such as Bihar, Jharkhand, and the North-Eastern states struggled with outdated systems, inadequate training of tax officers, and low taxpayer outreach, all of which hampered effective enforcement.

Moreover, coordination between the Centre and states remained limited in the VAT era. The absence of a centralized clearing mechanism meant that inter-state trade often faced inconsistencies in credit availability, tax refund delays, and duplicative compliance requirements. Businesses operating across multiple states frequently report confusion over varying rules, which undercut the goal of harmonizing the tax system.

These issues had real fiscal consequences. States with weak enforcement mechanisms and poor taxpayer services tended to see lower revenue gains even after VAT adoption. This explains, in part, why states like West Bengal, Punjab, and Kerala—despite reasonable economic performances showed relatively modest increases in revenue receipts post-VAT.

To address these disparities, any tax reform must go beyond policy design and invest in administrative modernization. This includes digital filing platforms, data-sharing frameworks, grievance redress mechanisms, and tailored support for SMEs to meet compliance standards. Moreover, tax reform must be seen as a continuous process, where feedback loops from local administrations are systematically integrated into reform evaluation and redesign.

7. Conclusion and Policy Suggestions

Our study suggests that after the shift to a Value Added Tax (VAT) system, a larger portion of economic activity appears to have gone untaxed—at least in the early stages. But this doesn't necessarily mean VAT has failed. Any major policy reform, especially one that changes how taxes are collected and reported, takes time to settle in. Government departments and tax officials need time to adjust to new processes, train staff, and build the infrastructure required to make the system work efficiently. What we're likely seeing is a period of adjustment rather than a sign that VAT is inherently less effective than the old sales tax system.

As the system matures and more data becomes available, VAT may prove to be more efficient and productive than what came before. One of VAT's biggest advantages is that it creates a clearer, more traceable record of transactions, which helps reduce evasion and encourages better compliance. Unlike the older sales tax regime, which often varied across states and lacked uniformity, VAT offers a more consistent and transparent way of tracking tax liabilities. Over time, this kind of structure tends to improve both trust in the system and actual revenue collection.

But good policy design alone isn't enough. For VAT to truly deliver on its promise, it needs strong administrative support. That means investing in better digital systems, training personnel, and helping businesses—especially smaller ones—understand how to comply. When the government equips tax departments with the right tools and knowledge, the system works better for everyone.

We also found that much of the focus so far has been on the construction sector, which is, of course, important. However, there are many other areas of the economy—like small-scale manufacturing, retail, and services—where tax collection remains weak. These sectors offer real opportunities to boost public revenue, but they require more attention and smarter strategies to bring them into the formal tax fold. If done right, this could make the VAT system more robust and inclusive, helping states improve their finances without placing undue burden on any one group.i

Future Research Directions

While this study offers a detailed state-level assessment of the shift from Sales Tax to VAT in India, several avenues remain open for further exploration that could deepen our understanding of tax reform impacts in developing economies.

I. Longitudinal Evaluation of VAT and GST Impacts:

Given the relatively short period of uniform VAT implementation across states—and the subsequent transition to GST—future research should prioritize longitudinal panel studies that examine fiscal, administrative, and economic impacts over extended periods. This would help assess whether the initial gains or inefficiencies observed under VAT persist, stabilize, or reverse with time, especially when contextualized against newer frameworks like GST.

II. Comparative Federalism in Tax Policy:

India's experience with staggered VAT and GST rollouts provides a unique opportunity for comparative studies with other federal economies that have implemented VAT systems, such as Brazil, Canada, or South Africa. Cross-country comparisons could yield insights into best practices in tax harmonization, revenue sharing, and subnational compliance enforcement.

III. Sector-Specific and Firm-Level Analyses:

Further research could adopt microeconomic approaches, using firm-level data to understand how VAT affected different sectors or business sizes, particularly SMEs in the informal sector. Such analysis would clarify which industries benefited or struggled most with compliance and formalization, providing a more granular policy roadmap.

IV. Administrative and Technological Readiness:

Another important direction involves examining the role of digital infrastructure and administrative capacity in facilitating or impeding the success of VAT and GST. This includes evaluating how tools like electronic invoicing, return-filing portals, and real-time audit mechanisms influence tax efficiency and evasion.

V. Behavioral Dimensions of Tax Compliance:

Finally, incorporating insights from behavioral economics—such as trust in government, perceived fairness of tax regimes, and taxpayer morale—could help explain why similar VAT policies yield different outcomes across regions. Experimental or survey-based studies could help design more citizen-centric tax systems that encourage voluntary compliance.

By addressing these dimensions, future research can build a richer, more dynamic understanding of how indirect tax reforms affect economic governance in emerging markets like India.

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Appendix

Appendix Table 1: NSDP and Revenue Receipt – Before and After the Implementation of VAT

State	VAT Introduced (Year)	Average Net State Domestic Product *(In Rs. Crore)*				Average Revenue Receipt *(In Rs. Crore)*			
		Post VAT	Pre VAT	Overall	Percentage Change	Post VAT	Pre VAT	Overall	Percentage Change
Andhra Pradesh	2005	201207	135926	168566	48.03	58292	23332	40812	149.84
Assam	2005	41656	35220	38438	18.27	18570	7506	13038	147.40
Bihar	2005	68560	53438	60999	28.30	30793	12679	21736	142.87
Chhattisgarh	2006	41923	27225	33349	53.99	16320	6020	10701	171.11
Delhi	2005	98266	58534	78400	67.88	16551	6341	11446	161.01
Gujarat	2006	187742	107710	141057	74.30	39899	17854	27039	123.47
Haryana	2003	81705	52966	72126	54.26	17387	7150	13975	143.19
Himachal Pradesh	2005	19892	14493	17192	37.26	9049	3789	6419	138.83
Jammu and Kashmir	2005	20940	14789	17865	41.59	16072	7189	11631	123.57
Jharkhand	2006	47568	34884	41930	36.36	15561	7488	11973	107.80
Karnataka	2005	147911	96943	122427	52.58	42995	17550	30272	144.99
Kerala	2005	103102	69879	86490	47.54	23053	10415	16734	121.35
Madhya Pradesh	2006	95794	72971	82481	31.28	36774	15598	24422	135.75
Maharashtra	2005	400034	233755	316894	71.13	77542	32214	54878	140.71
Meghalaya	2005	5287	3718	4502	42.22	2862	1268	2065	125.66
Orissa	2005	63957	41829	52893	52.90	22760	8201	15481	177.52
Punjab	2005	81662	65855	73758	24.00	21261	10717	15989	98.39
Rajasthan	2006	110814	81167	93520	36.53	34243	14276	22596	139.87
Tamilnadu	2007	221644	137694	165677	60.97	57705	24563	35610	134.93
Tripura	2005	7791	5546	6668	40.46	4140	1904	3022	117.49
Uttar Pradesh	2008	234290	176491	190941	32.75	95790	37999	52447	152.09
West Bengal	2005	178620	142143	160381	25.66	33809	15128	24469	123.48

Source: Authors' calculation based on Handbook of Statistics on Indian Economy, Reserve Bank of India

Appendix Table 2: Growth of NSDP, Revenue Receipts, and Revenue Share of NSDP – Before and After VAT Implementation

State	VAT Introduced (Year)	Average Growth Rate of NSDP			Average Growth Rate of Total Revenue Receipt			Average Revenue receipt as percentage of Average NSDP		
		Post VAT	Pre VAT	Change	Post VAT	Pre VAT	Change	Post VAT	Pre VAT	Change
Andhra Pradesh	2005	7.19	6.44	0.75	18.65	13.85	4.80	28.97	17.16	11.81
Assam	2005	3.53	4.15	-0.63	13.54	26.24	-12.70	44.58	21.31	23.27
Bihar	2005	6.87	5.92	0.95	18.69	6.92	11.77	44.91	23.73	21.19
Chhattisgarh	2006	9.04	5.71	3.33	15.50	47.84	-32.33	38.93	22.11	16.82
Delhi	2005	10.21	6.34	3.87	20.60	13.75	6.85	16.84	10.83	6.01
Gujarat	2006	10.54	6.83	3.71	18.35	8.90	9.45	21.25	16.58	4.68
Haryana	2003	8.09	7.27	0.83	16.27	14.51	1.76	21.28	13.50	7.78
Himachal Pradesh	2005	4.90	6.51	-1.61	18.61	5.45	13.17	45.49	26.14	19.35
Jammu and Kashmir	2005	6.62	4.08	2.54	16.14	12.60	3.53	76.75	48.61	28.14
Jharkhand	2006	6.15	5.99	0.16	21.56	6.70	14.86	32.71	21.47	11.25
Karnataka	2005	7.93	3.98	3.95	14.99	14.82	0.16	29.07	18.10	10.96
Kerala	2005	7.28	6.15	1.13	14.54	12.66	1.88	22.36	14.90	7.46
Madhya Pradesh	2006	6.88	1.58	5.30	18.18	11.19	6.99	38.39	21.38	17.01

Maharashtra	2005	10.69	4.76	5.93	16.96	11.49	5.48	19.38	13.78	5.60
Meghalaya	2005	5.93	5.88	0.05	17.05	13.11	3.95	54.12	34.11	20.01
Orissa	2005	7.09	6.08	1.01	19.38	14.55	4.83	35.59	19.61	15.98
Punjab	2005	5.27	3.51	1.76	12.97	16.12	-3.15	26.04	16.27	9.76
Rajasthan	2006	6.90	3.95	2.95	19.05	12.61	6.44	30.90	17.59	13.31
Tamilnadu	2007	9.20	5.61	3.59	15.78	14.34	1.43	26.04	17.84	8.20
Tripura	2005	6.04	8.15	-2.10	14.89	11.19	3.70	53.14	34.32	18.82
Uttar Pradesh	2008	6.62	3.53	3.09	18.18	16.08	2.11	40.89	21.53	19.35
West Bengal	2005	4.74	5.35	-0.61	16.69	15.84	0.85	18.93	10.64	8.28

Source: Authors' calculation based on Handbook of Statistics on Indian Economy, Reserve Bank of India