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Value added tax (VAT) and Property taxes: Their Roles in Public Revenue Generation and Economic Impacts

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ABSTRACT

This study investigates the impact of Value Added Tax (VAT) and property taxes on public revenue generation and economic indicators in India over the past decade. Utilizing a mixed-methods approach, including quantitative analysis of government data and qualitative insights from expert interviews, the research reveals that VAT significantly influences total public revenue, with a 1% VAT increase leading to a substantial INR 11,080 rise in revenue. Property taxes exhibit varied relationships with GDP growth, investment levels, and employment rates. While property taxes do not significantly impact revenue, they interact differently with economic indicators. The study suggests enhancing VAT policies, optimizing property tax systems, and fostering investment to maximize tax revenues.

Keywords: *Value Added Tax, property taxes, public revenue generation, economic impact, India, mixed-methods approach, GDP growth, investment, employment rates.*

The generation of public revenue is a vital function of governments, and tax policies play a crucial role in this process. Value-Added Tax (VAT) and property taxes are two significant instruments used by governments to raise revenue and influence economic activity. VAT, a broad-based consumption tax, and property taxes, a tax on real estate and other immovable properties, contribute substantially to public revenue. However, their economic impacts extend beyond revenue generation, influencing consumer behaviour, economic growth, and income distribution. This research paper aims to explore the roles of VAT and property taxes in public revenue generation and their economic impacts, examining their effectiveness, advantages, and limitations in achieving fiscal objectives and promoting economic development.

Objectives:

1. To evaluate the contribution of value-added tax (VAT) to total public revenue generation and its effectiveness as a revenue-raising tool.
2. To assess the economic impact of property taxes on key indicators such as GDP growth, Investment level and employment rates.
3. To compare the roles of VAT and property taxes in public revenue generation and analyse their combined effects on the economy.

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Null Hypothesis:

1. The implementation of Value-Added tax (VAT) has no significant impact on the total public revenue generation
2. There is no significant relationship between property taxes and economic growth indicators such as GDP growth, Investment levels, and employment rates.
3. The economic effects of VAT and property taxes are independent of each other and do not interact to influence public revenue generation.

Research design:

This study employs a mixed-methods approach, integrating both qualitative and quantitative analyses to evaluate the roles of Value Added Tax (VAT) and property taxes in public revenue generation and their economic impacts. The research design includes descriptive and inferential statistical techniques to analyze secondary data, supplemented by qualitative insights from expert interviews. Data was collected from a variety of sources, including Indian government publications, financial reports, academic journals, and international organizations such as the Reserve Bank of India (RBI), Ministry of Finance, National Statistical Office (NSO), World Bank, and International Monetary Fund (IMF). The data types included annual public revenue reports, VAT and property tax collections, GDP growth rates, investment levels, and employment statistics, covering the last 10 years to ensure comprehensive analysis. regression analysis was employed to test the hypotheses and examine the relationships between VAT, property taxes, and economic indicators. Specifically, regression analysis was used to assess the impact of VAT on total public revenue generation, and correlation and regression analyses were used to evaluate the relationships between property taxes and GDP growth, investment levels, and employment rates. Multiple regression models analysed the interaction effects between VAT and property taxes on public revenue generation.

Data Collection:

1 Secondary Data:

Sources: Data was gathered from Indian government publications, financial reports, academic journals, and international organizations such as the Reserve Bank of India (RBI), Ministry of Finance, National Statistical Office (NSO), World Bank, and International Monetary Fund (IMF).

Types: The data included annual public revenue reports, VAT and property tax collections, GDP growth rates, investment levels, and employment statistics.

Period: The study focuses on the last 10 years to ensure a comprehensive analysis.

Data Analysis

1. Descriptive Analysis:

Summary Statistics: Descriptive statistics were used to summarize the data, including means, medians, and standard deviations of VAT and property tax collections, GDP growth, investment levels, and employment rates.

Inferential Analysis:

Regression Analysis was used to test the hypotheses and examine the relationships between VAT, property taxes, and economic indicators.

Hypothesis 1: Regression analysis has been used to test the impact of VAT on total public revenue generation.

Hypothesis 2: Correlation and regression analyses has been used to assess the relationships between property taxes and GDP growth, investment levels, and employment rates.

Hypothesis 3: Interaction effects between VAT and property taxes on public revenue generation has been used to analysed using multiple regression models.

Ethical Considerations

Data Integrity: Ensuring the accuracy and integrity of the data by using reputable sources and cross-verifying information.

Transparency: Clearly documenting the data sources, methodologies, and analytical techniques used in the research to enhance transparency and reproducibility.

Table No.1

Economic Indicators of India (2012-2022)

Sr. No.	Year	GDP Growth rate	Investment Level	Employment Rate
1	2012	5.5 %	510	41.0 %
2	2013	6.4 %	550	43.0 %
3	2014	7.4 %	570	42.5 %
4	2015	8.0 %	590	42.0 %
5	2016	8.2 %	610	41.8 %
6	2017	7.0 %	640	41.2 %
7	2018	6.1 %	656	40.7 %
8	2019	4.2 %	667	39.5 %
9	2021	8.7 %	687	40.1 %
10	2022	7.0 %	737	39.3 %

Note: Skipped year of 2020 as it not normal year due to covid-19

Source: National Statistical Office, Government of India. (2022). *National Accounts Statistics 2022*. Retrieved from http://mospi.nic.in/publication/national-accounts-statistics-2022

Over the 10-year period from 2012 to 2022, India's economic indicators show some fluctuations but an overall positive trend.

GDP growth rate started at 5.5% in 2012 and peaked at 8.7% in 2021 before dropping slightly to 7% in 2022.

Investment levels steadily increased over the period, starting from 510 in 2012 and reaching 737 by 2022.

The employment rate varied between around 39-43% with no clear upward or downward trend, hovering around the 41-42% range for most of the period. In short, India experienced relatively high GDP growth, rising investment levels and stable employment over the past decade, indicating a generally healthy economy.

Table No.2
Tax Revenues and Total Public Revenue of India (2012-2022)

Sr. No.	Year	VAT Revenue (In Bil. INR)	Property Tax Revenue (In Bil. INR)	Total Public Revenue (In Bil. INR)
1	2012	1710	290	12600
2	2013	1800	300	13500
3	2014	1850	490	15100
4	2015	2000	450	16300
5	2016	2200	420	17600
6	2017	2278	410	18900
7	2018	2337	400	19900
8	2019	2605	450	21180
9	2021	2781	490	24830
10	2022	2968	535	27500

Note: Skipped year of 2020 as it not normal year due to covid-19
Sources:

1. Ministry of Finance, Government of India. (2019). *Economic Survey 2018-19*. Retrieved from https://www.indiabudget.gov.in/economicsurvey/
2. Reserve Bank of India. (2021). *Annual Report 2020-21*. Retrieved from https://www.rbi.org.in/Scripts/AnnualReportPublications.aspx?head=Annual+Report

Over the course of 10 years from 2012 to 2022, India saw significant growth in its tax revenues and total public revenues. Value Added Tax (VAT) revenue increased from 1710 billion INR in 2012 to 2968 billion INR in 2022, nearly doubling over the period. Property tax revenue also increased from 290 billion INR to 535 billion INR. The total public revenue grew from 12600 billion INR to 27500 billion INR from 2012 to 2022, more than doubling over the period. This shows a steady growth in India's tax collection capability and overall government revenues over the past decade.

Null Hypothesis (H_0):
"The implementation of Value-Added tax (VAT) has no significant impact on the total public revenue generation"

Model Summary			
R	R Square	Adjusted R Square	Std. Error of the Estimate
.990[a]	.980	.977	719.391

ANOVA[a]					
Model-2	Sum of Squares	Df	Mean Square	F	Sig.
Regression	202670305.177	1	202670305.177	391.616	.000[b]
Residual	4140184.823	8	517523.103		
Total	206810490.000	9			

Coefficients[a]					
Model-3	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-6220.999	1281.739		-4.854	.001
VAT	11.080	.560	.990	19.789	.000

This study aimed to determine the impact of implementing Value-Added Tax (VAT) on total public revenue generation. The results show that implementing VAT has a significant impact on public revenue.

The regression model was significant, with an R value of 0.990 and an R-square value of 0.980, indicating that VAT explains 98% of the variation in total revenue. The ANOVA results showed that the regression model was significant (p = 0.000) and the VAT variable had a significant impact on total revenue (p = 0.000). The coefficient for VAT was 11.080, indicating that for every 1% increase in VAT, total revenue increases by 11,080.

the results suggest that implementing VAT is an effective way to increase total public revenue, according to the statistical analysis conducted. The regression model shows a strong positive relationship between VAT and total revenue generation.

Null Hypothesis (H_0):
"There is no significant relationship between property taxes and economic growth indicators such as GDP growth, Investment levels, and employment rates".

Model Summary			
R	R Square	Adjusted R Square	Std. Error of the Estimate
.992a	.985	.977	719.253

ANOVA[a]					
Model-2	Sum of Squares	Df	Mean Square	F	Sig.
Regression	203706543.460	3	67902181.153	131.256	.000b
Residual	3103946.540	6	517324.423		
Total	206810490.000	9			

Coefficients[a]					
Model-3	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	34123.142	18398.165		1.855	.113
GDP	617.962	224.244	.175	2.756	.033
Investment	49.692	6.621	.713	7.505	.000
employment	-1228.618	381.552	-.318	-3.220	.018

This study investigates the relationship between property taxes and economic growth indicators such as GDP growth, investment levels, and employment rates. The null hypothesis is that there is no significant relationship between the two.

The model summary shows that the independent variables of GDP, investment, and employment have a high correlation (R = 0.992) with the dependent variable (property taxes), explaining 98.5% of its variation. The ANOVA table shows that the regression model is statistically significant (p = 0.000), with the independent variables together explaining a significant proportion of the variation in property taxes.

The coefficients table shows that individually, GDP and investment levels have a significant positive relationship with property taxes, while employment has a significant negative relationship. GDP has the weakest effect while investment has the strongest effect on property taxes.

the study found strong evidence against the null hypothesis, indicating that there are significant relationships between property taxes and the economic growth indicators of GDP, investment, and employment. Higher GDP and investment are associated with higher property taxes, while higher employment is associated with lower property taxes.

Null Hypothesis (H_0):
"The economic effects of VAT and property taxes are independent of each other and do not interact to influence public revenue generation".

Model Summary			
R	R Square	Adjusted R Square	Std. Error of the Estimate
.993[a]	.985	.981	656.825

ANOVA[a]					
Model-2	Sum of Squares	df	Mean Square	F	Sig.
Regression	203790555.357	2	101895277.679	236.186	.000[b]
Residual	3019934.643	7	431419.235		
Total	206810490.000	9			

Coefficients[a]					
Model-3	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-7027.087	1272.697		-5.521	.001
VAT	10.248	.726	.916	14.110	.000
Property	6.327	3.926	.105	1.611	.151

Above table presents statistical data from a study analyzing the impact of value-added tax (VAT) and property taxes on public revenue generation. The null hypothesis is that VAT and property taxes are independent and do not interact to influence revenue.

The model summary table shows that the independent variables VAT and property taxes have a high correlation (R = 0.993) with the dependent variable total revenue, explaining 98.5% of its variation. The ANOVA table indicates that the regression model is significant (p = 0.000) in predicting total revenue.

The coefficients table shows that VAT has a significant positive effect on total revenue ($p = 0.000$), while the effect of property taxes is not significant ($p = 0.151$). The constant term is also significant, indicating the model's ability to predict total revenue when VAT and property taxes are zero.

The statistical analysis found that VAT has a strong positive impact on public revenue generation, while the impact of property taxes was not significant based on the data studied. This provides some evidence to support the null hypothesis that VAT and property taxes do not interact to influence revenue.

FINDINGS:

The study discusses the roles of value added tax (VAT) and property taxes in public revenue generation and their impacts on the economy. The following findings are as:

1. VAT and property taxes are significant instruments used by governments to raise revenue and influence economic activity. They contribute substantially to public revenues.
2. VAT, a broad-based consumption tax, tends to be more effective at increasing total public revenue compared to property taxes, according to the statistical analysis in the text. VAT revenue showed a strong correlation with total government revenue.
3. Property taxes are correlated with some economic indicators. Higher GDP growth and investment levels were associated with higher property tax collections, while higher employment rates showed a negative correlation.
4. Though VAT has a strong positive impact on public revenue, the impact of property taxes alone was not found to be statistically significant. This provides some evidence that the economic effects of VAT and property taxes operate independently and do not interact to influence revenue generation.

While both VAT and property taxes contribute to public revenues, VAT seems to be a more effective revenue-raising tool. The statistical analysis also indicates that the economic impacts of the two taxes may operate independently rather than interacting to affect government revenues.

SUGGESTIONS

1. **Enhancement of VAT Policies:** Given the significant impact of VAT on public revenue, policymakers should consider further strengthening VAT policies. This could involve broadening the VAT base and improving collection mechanisms to maximize revenue.
2. **Optimization of Property Tax Systems:** Despite property taxes not having as significant an impact as VAT, they still play a crucial role in revenue generation. Efforts should be made to streamline property tax assessment and collection processes to ensure they are more effective and efficient.
3. **Investment Incentives:** Since higher investment levels are strongly associated with increased property tax revenues, creating favorable conditions for investment could indirectly enhance property tax collections. This includes offering incentives for businesses and improving infrastructure to attract more investment.
4. **Balancing Employment and Taxation:** The negative relationship between employment and property taxes suggests a need for balanced policies that do not overly burden employers. Careful consideration should be given to the tax policies to ensure they do not hinder job creation.

CONCLUSION

This study highlights the significant roles of VAT and property taxes in public revenue generation and their broader economic impacts. VAT has a strong positive effect on public revenue, making it an effective tool for governments. Property taxes also contribute to revenue but have a more complex relationship with economic indicators. Policymakers should focus on optimizing both VAT and property tax systems to enhance their effectiveness. By doing so, they can ensure stable and substantial public revenue streams that support economic growth and development. The findings provide valuable insights for enhancing tax policies to achieve fiscal objectives and promote economic stability.

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Conflict of Interest

The author declared no conflict of interest.

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