

A COMPARATIVE STUDY OF INDIRECT TAX REVENUE WITH GDP IN INDIA, CANADA AND BRAZIL: WITH SPECIAL EMPHASIS ON GOODS AND SERVICE TAX NETWORK (GSTN) IN INDIA

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ABSTRACT

With an emphasis on the revolutionary effects of the Goods and Services Tax Network (GSTN) in India, this study thoroughly compares indirect tax revenue performance in India, Canada, and Brazil. To assist the fiscal effectiveness of GST systems in these three economies, the study looks at revenue, trends, volatility, patterns, and correlation dynamics with GDP. Using quantitative research with the help of secondary data for the period of 2020 to 2024, the paper compares the GST implementation scenarios of India with a well-established GST framework in Canada and an indirect tax framework in Brazil, to evaluate the performance indicators of indirect tax systems. Key performance indicators include tax to GDP ratios, system stability metrics, revenue, growth rates, and correlation coefficients with economic growth indicators. The results show that the GST implementation in India has produced outstanding results, with revenue, growth of a hundred, and a tax-to-GDP ratio of 31.25%, highlighting the revolutionary potential of complete GST reform. Comparatively speaking, Canada and Brazil have more developed and stable systems, but India's system suggests that indirect tax administration has successfully undergone structural change. The research shows that India's GST system has substantially achieved its primary revenue enhancement and fiscal efficiency objectives. The stability and ideal GDP correlation seen in more developed systems like Canada are still challenging to achieve. Still, the overall success of India's transformation confirms the strategic digitalisation GSTN has taken. The comparative frame of the study demonstrates that well-designed GST systems, supported by strong digital infrastructure and ongoing improvement procedures, can significantly boost fiscal performance and further economic development objectives. To guarantee the continuous advancement of India towards reaching international benchmarks in indirect tax administration, the study suggests a constant emphasis on system optimisation, improved stakeholder participation, and sophisticated technological integration.

Keywords: GST, Indirect Tax Revenue, GSTN, GDP, India, Canada, Brazil, Correlation, Digital Infrastructure, Fiscal Efficiency.

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INTRODUCTION

Background of the Study

Taxation is any country's economic backbone, which directly influences the fiscal sustainability and delivery of public services. Out of all the taxes imposed in any economy, the indirect taxation, which might include Goods and Services Tax (GST), Value Added Tax (VAT), Excise duty and sales tax, etc., and the taxes so imposed and collected are a significant source of revenue, especially in federal countries having fiscal decentralization.

The Goods and Services Tax (GST) has emerged as the preferred framework for comprehensive indirect tax administration, and the evolution of the indirect tax system has been a cornerstone of fiscal policy reforms in the 21st century (Radhakrishnan et al., 2019). There has been a shift from fragmented, cascading tax structures to the unified, value-added taxation mechanism, which improves revenue efficiency and simplifies compliance, apparently resulting in the adoption of the GST system. In a federal democracy, where coordination among many governmental levels poses exceptional implementation opportunities and obstacles, this shift has been especially worthwhile.

In India, on the first day of July 2017, the most significant reform in the indirect taxation system took place, and GST was implemented as the most comprehensive tax reform (Nayyar & Singh, 2018). A cutting-edge digital platform was created to enable the smooth tax administration throughout the federal structure of nation, which supported the comprehensive indirect tax framework in the system, known as goods and service tax network (GSTN) by replacing complex chunk of numerous local levies such as Central excise duty, service tax, VAT, and various other indirect tax levies. Through better compliance, procedure, and digital integration, the reform aims to reduce the cascading effect of taxes, establish a unified indirect taxation system and a single national market, and achieve a massive increment in revenue collection efficiency.

The Indirect tax reform in India, GST, serves as a model for other developing nations to overhaul their taxation system on a larger scale, which makes India's GST system very significant as it extends beyond the domestic impact. However, in order to assess the relative performance, identify the areas for optimization, and establish a benchmark for continuous optimal development, a comparative analysis against the current GST system in a comparable federal context is required to ascertain the accurate picture of the success of this reform.

Research Problem

The implementation of GST in India has advanced significantly, but a comprehensive comparative analysis against international benchmarks is required. There is a lack of a systematic assessment of revenue performance, inadequate analysis of volatility and patterns, and a lack of knowledge of GDP. Correlation analysis is addressed in this study. In order to help the policy makers make well-informed judgements about system optimization and strategic development priorities, an evidence-based recommendation for improvement in GSTN has also been given

backing to this study.

Objectives of the Study

1. To analyze the revenue trends, volatility, and correlation with GST to assess the fiscal efficiency of GST systems.
2. To offer suggestions for improvement for GSTN in India.

Scope and Significance

This study compares the performance of India, Canada, and Brazil with respect to indirect tax revenue. It offers information for statistical validation and trend analysis, with an emphasis on the maturity of the GST system in India. Revenue trends, volatility analysis, GDP correlation analysis, the evolution of the tax-to- GDP ratio, and statistical significance tests are included in the Indian analysis.

With the exception of specific tax rates or compliance concerns, the research seeks to provide practical suggestions for improving the GSTN based on the comparative performance studies and global best practices.

LITERATURE REVIEW

Theoretical Framework of the GST System

The theoretical underpinnings of the goods and service tax system are firmly rooted in Optimal Taxation Theory and Public Finance Principles developed by influential works of fiscal economics. With a focus on the concept of revenue, adequacy, economic efficiency, and administrative feasibility, the fundamental framework for comprehending indirect tax efficiency, which now serves as a guide for the design of the modern GST.

(Diamond & Mirrlees, n.d.) continued with theoretical development with their optimal taxation theory, which demonstrated that uniform taxation of final goods, as achieved through GST systems, produces better efficiency outcomes as compared to selective or cascading tax structures.

Theoretical Foundations and Digital Economy Challenges

In the modern economy, digitalization has had a significant impact on the theoretical foundations of GST. In their thorough analysis of taxing products and services in the digital sphere, Agrawal and Fox (2021) draw attention to the difficulties that arise when conventional tax regimes are applied to contemporary digital commerce. Fundamental challenges in applying GST principles to digital transactions are revealed by their research, especially with regard to value attribution and jurisdiction determination in cross-border digital services.

Overview of GST Frameworks in Federal Countries

Canada: Implemented in 1991, the GST framework of Canada is an established example of federal-provincial coordination in indirect taxation. The Canadian system uses a complex dual structure in which the provinces retain flexibility through their own, provincial sales tax, or by joining the Harmonised Sales Tax (HST) system, while the federal government manages the GST.

The standardized tax-based definitions, coordinated audit processes, and federal. Provincial

tax collection agreements are among the institutional arrangements that have been documented as contributing to the stability of GST in Canada. These procedures show how good revenue sharing plans and distinct jurisdictional lines promote long-term intergovernmental collaboration, which leads to a remarkable system and efficient revenue sharing arrangements and one of the most stable indirect taxation systems.

Brazil

With several overlapping levies and substantial integration, the indirect taxation system in Brazil offers a complicated federal framework. Varsano (2014) offered a thorough examination of federal taxes of Brazil, such as the Excise Tax (IPI), the Programa de Integração Social (PIS), and Contribution of the Financing of Social Security (COFINS), as well as state-level ICMS (Imposto sobre Circulação de Mercadorias e Serviços).

Though the cascading structure of the system generates significant revenue, it also leads to administrative complexities and economic problems. There are difficulties in balancing various state-level levies with federal mandates. Brazil has achieved very high tax-to-GDP ratios and strong revenue-GDP correlations despite this structural complexity, proving that even flawed systems can produce successful fiscal outcomes with constant enforcement and excellent administrative practices (Ter-Minassian, 2012).

India

With the implementation of GST, India established a special dual structure that divides taxation authority among the Central GST (CGST), State GST (SGST), and Integrated GST (IGST) for interstate transactions. The GST council mechanism permits cooperative decision-making between the federal and state governments while upholding the ideals of constitutional federalism. In the complex federal context of India (Rao & Chakraborty, 2010), the difficulties of establishing a dual GST structure include requirements for administrative coordination, revenue sharing agreements, and dispute resolution procedures. Both the novel features of India's strategy and the continuous difficulties in guaranteeing smooth coordination among 36 tax jurisdictions were noted in this study.

The GST implementation in India has been extensively studied, and it reveals both opportunities and challenges. Bindal and Gupta (2018) examined the effects of GST on the Indian economy, pointing out both advantages and challenges associated with its implementation. According to their research, the GST replaced several indirect taxes, simplifying the tax system; however, there were major administrative and compliance issues during the transition period.

Kaur and Singh (2021) analysed the GST implementation in India using a special SAP-LAP-Twitter analytical viewpoint, offering insights into public opinion and real-world challenges. The research indicates that social media analysis can be a valuable instrument for comprehending the perspective of the public regarding tax reforms and the difficulties associated with their immediate implementation. According to the research, digital platforms can offer user feedback channels for improving policies.

Building on implementation challenges, Shacheendran (2024) concluded the constraints faced by the Indian business owners, using an interpretative structural modelling (ISM) technique. This study offers a structured knowledge of how diverse obstacles interact and aggravate one another by identifying hierarchical linkages among them. According to the research, operational challenges are frequently caused by technological impediments, indicating that coordinated

improvements in a number of areas are necessary for the successful implementation of GST.

Empirical Studies on GST Performance:

Comparative Analysis: Learning from International Models

The literature and comparative analysis offer insightful information about how the GST is designed and applied in various jurisdictions. The GST systems in Canada and India are thoroughly compared by Kumar and Sharma (2021), who found notable variations in their rates, administrative procedures, and structure. According to their analysis, India can learn from more developed GST systems like Canada, especially in the area of administrative effectiveness and compliance simplification.

By using the Canadian model as a standard for the design of Indian GST, Patel and Mehta (2017) expanded on this comparative method. Their research highlights how crucial stakeholder participation and phased implementation are to the effective adoption of GST. According to the study, other nations that are thinking of implementing comparable reforms may use Canada's series of CGST, including its early difficulties and later improvements. Singh and Gupta (2018) offered a thorough examination of the GST system in India, placing it within the larger framework of tax reform goals. Their study looks at the potential of GST to improve tax-to-GDP ratios while sustaining the momentum of economic growth, as well as how it fits into the larger economic liberalisation goal of India.

Past Research on Compliance and Stability

Specific compliance studies revealed significant cross-country differences, with Canada maintaining high GST compliance rates (approximately 95%) and Brazil showing lower but improved compliance rates (75 to 80%) with regional variations.

(Mukherjee, 2020) showed a significant compliance improvement, post GST implementation, with compliance rates rising from 65% pre GST to over 85% by 2020, despite variations across sectors and regions.

Alm and Torgler (2011) in their GST compliance research revealed that the compliance rates significantly impact revenue levels and volatility patterns, with digital administration platforms, clear regulatory frameworks, and effective taxpayer services contributing to higher compliance and a stable revenue stream.

Research on third-party information reporting in tax systems by Kleven et al. (2016) revealed that the comprehensive cross-verification mechanism leads to higher compliance rates, particularly in India and Canada.

Talking about the revenue stability research by Aizenman and Jinjark (2008), the study confirms that it establishes benchmarks for comparing GST system performance, showing mature systems typically have coefficients below 0.15, while developing systems often exceed 0.25 during the implementation.

RESEARCH GAP

Lack of cross-country econometric comparison using real GST data

The literature highlights the gap in cross-country econometric analysis that uses actual GST data.

This study relies on small data sets, which makes it challenging to assess system complexity across various economic contexts and federal institutions. Previous studies used limited datasets, lacking rigorous statistical testing. The current study addresses these gaps by providing a comprehensive econometric analysis using real GST data from 2020 to 2024, across three major Federal systems, including formal statistical testing, and integrated analysis of multiple performance dimensions.

RESEARCH METHODOLOGY

Research Design

This study employs a quantitative method of research, which is based on secondary data for comparative research. The objective of this study is to analyse the relationship between indirect taxation and GDP in India, Canada, and Brazil. The time span which has been considered for the study is from 2020 to 2024.

With respect to the secondary data pertaining to indirect taxation, the data for India and Canada consist of the goods and services tax (GST) revenue, whereas it is not so in the case of Brazil, as it still follows a fragmented indirect taxation system.

Data Sources and Variables

The study contains two variables for each country: indirect tax, revenue and GDP. The data relating to GST for India has been collected from the Central Board of Indirect Taxes and Customs, CVC and GST Council reports. The data relating to Canada for GST/HST has been connected to statistics, Canada and the Canada Revenue Agency, CRA. For Brazil, the direct tax revenue data has been collected from Receita Federal and the Brazilian Institute of Geography and Statistics (IBGE).

The data pertaining to GDP of each country (in USD Billion) is retrieved from reliable sources like the World Bank, International Monetary Fund and the country's respective national statistics offices.

Justification for the Study Period

The time period which has been taken for this study spans from 2020 to 2024, as the most recent years have standardized and comparable data across the countries, especially in the case of Goods and Service Tax (GST) related aspect, as it is the most recent and influential reform which is taking place all across the world. The span of 2020 to 2024, which can be termed the Post-COVID-19 recovery phase, makes it quite relevant to understand the current economic patterns and policy effectiveness. Being the new-normal economic era, the years 2020 to 2024 represent the impact of the pandemic, its recovery and policies for recovery, and the global patterns that have resulted from it.

Justification of Countries Considered for Study

This study has been done with respect to three countries, India, Canada, and Brazil, as these countries are already following or plan to follow the Dual GST Model. India and Canada are already using the dual GST model, whereas Brazil is planning to implement the GST as its indirect tax.

Tools and Techniques

This study employs tests with the help of Excel, as mentioned below:

Descriptive Statistics

Descriptive statistics are used to summarise and simplify complex data sets in order to provide a foundation for further analysis and identify the potential relationship between variables.

Growth Rate Calculation

The year-over-year growth rate calculation is helpful in understanding the changes, revealing trends and patterns, which take place in variables over time. It helps identify growth dynamics, assists with past performances, and makes informed decisions.

Pearson Correlation Analysis

It provides a simple and effective way to quantify the strength and direction of the linear relationship between two continuous variables in order to know if the variables are moving together, and if so, then how strongly.

Regression Analysis

It is used to understand and quantify the relationship between the variables in order to establish the nature of the relationship and predict the outcomes. While the person correlation assesses the strength and direction of the linear association, the combined approach helps in exploring and interpreting data to draw meaningful conclusions from existing datasets.

Statistical Significance Test

It involves evaluating the reliability and validity of conclusions drawn from data collected by others. It's crucial to consider the sources, quality, relevance of the research question and potential bias before performing any statistical analysis. It has two parts: the first is variance testing, that is, the F-test, which is used to test if the variances are equal or not in order to choose the t-test type. In this study, for India versus Canada and India versus Brazil, the P value was less than 0.05, which means there is unequal variance and for that purpose. So, in these two cases, we have used a type 3 t-test. Whereas in the case of Canada versus Brazil, the P value is 0.05, which means it has equal variance, so we have used a Type 2 t-test. The calculation of these values has been done with the use of formulas and data analysis in Excel.

Limitations of the Study

1. The study is limited to three countries only.
2. The time span covered under this study may not capture the long-term economic trends or reforms fully.
3. Though the currencies are converted into USD Billion as per the applicable rates, there are still chances that variations in exchange rates across years could affect the accuracy.
4. The calculation methods for GDP and tax revenue vary in all the countries taken up for this study.

DATA ANALYSIS AND INTERPRETATION

Revenue Trend Analysis

As evident in Table 1, the revenue from indirect tax from the year 2020 to 2024 in Brazil, Canada and India shows an apparent decline that corresponds to the different phases of GST implementation and economic system in the respective nations. With an indirect tax revenue increment of roughly 100 per cent from USD 1182.39 billion to USD 2362.44 billion in 2024, India exhibits the most striking revenue growth trajectory. Improved compliance procedures and the mature GST system of India, which was put into place in 2017, are the reasons for this significant growth.

Over the same period, the indirect tax revenue of Canada increased by 29.6%, from USD 38.51 billion to USD 49.93 billion, demonstrating steady, but moderate growth. The economic climate of Canada and its well-established tax structure are reflected in this measured growth. The constant rise in Brazil's tax revenue from USD 89.37 billion to USD 123.84 billion, or a 38.5% increase, is consistent with its well-established, indirect tax structure and economic recovery trends.

As evident in Table 2, the year-on-year growth rate analysis reveals intriguing trends. In 2021, the growth rate of India peaked at 33.66%. In 2022, it increased by 20% and it moderated to 11.73% in 2023 and 11.49% in 2024. With the growth stabilising as the system develops, this pattern points to the early advantages of GST digitisation and compliance enhancements. The comparably steady growth rates in Canada, which ranged from 5.12% to 8.60%, suggest a well-established system with steady revenue trends. Similar constancy was seen in the growth rate of Brazil, which ranged from 5.81% to 11.73% and demonstrated steady tax administration effectiveness.

Table 1 COUNTRY-WISE INDIRECT TAX REVENUE			
Year	India IDT Revenue (USD Billion)	Canada IDT Revenue (USD Billion)	Brazil IDT Revenue (USD Billion)
2020	1182.39	38.51	89.37
2021	1580.43	41.83	99.85
2022	1896.51	45.07	110.28
2023	2118.94	47.50	117.04
2024	2362.44	49.93	123.84

Table 2 GROWTH RATE TABLE			
Year	India	Canada	Brazil
2021	33.66	8.60	11.73
2022	20.00	7.75	10.44
2023	11.73	5.39	6.13
2024	11.49	5.12	5.81

Volatility Assessment

As evident in Table 3, the coefficient of variance analysis is a vital source of information about revenue volatility in the three nations. Given the transformative period of its GST implementation, it is not surprising that India has the highest volatility, with a coefficient of variation of 0.253. Although it indicates uncertainty, this increased volatility also shows that the system has the potential to significantly improve as it stabilizes.

The country with the least volatility is Canada, which has a coefficient of variance of 0.101, indicating a very stable and predictable indirect tax revenue structure. This stability is a feature of well-established federal GST systems with reliable economic performance and compliance procedures. Brazil has moderate volatility of 0.127, which places it between Canada and India, reflecting that the system of tax administration is both stable and an evolving tax administration framework.

Though significant revenue growth suggests that the GST system of India has potential, the volatility patterns reveal that additional stabilisation mechanisms are needed to bring it closer to the ability of more established systems like Canada.

Table 3 DESCRIPTIVE STATISTICS ANALYSIS			
Basic Statistical Measures	India	Canada	Brazil
Mean	1828.14	44.57	108.08
Median	1896.51	45.07	110.28
Maximum	2362.44	49.93	123.84
Minimum	1182.39	38.51	89.37
Standard Deviation	461.8097434	4.520140533	13.70231721
Standard Deviation/Mean	0.252611349	0.101423651	0.12678232

GDP Correlation Analysis

As evident in Table 4, the correlation analysis between indirect tax revenue and GDP shows that different levels of fiscal integration are found in the three nations. The indirect tax system of GST is quite sensitive to the trends and economic growth, as seen by the country's most excellent correlation (0.984).

This robust correlation implies that Brazil's tax structure is accurate, it records its economic activity, and it responds appropriately to changes in GDP.

With the moderate correlation of 0.744, India offers both opportunities and difficulties. Although this association shows that the GST system responds to economic expansion, its moderate strength raises the possibility of inefficiencies or gaps in tax collection that may be fixed by system upgrades.

The federal GST system of Canada is effective at ensuring the proportionate revenue collection in relation to the economic performance of the country. Strong correlation of 0.878.

Table 4 CORRELATION ANALYSIS OF IDT REVENUE AND GDP			
Correlation analysis			
IDT revenue versus GDP correlation	India	Canada	Brazil
	0.744355123	0.878300177	0.984132009

Tax-to-GDP Ratio Analysis

As evident in Table 5, the tax-to-GDP ratio progression provides critical insights into fiscal efficiency improvements. India's ratio improved from 4.8% in 2020 to 6.3% in 2024, representing a 31.25% improvement in fiscal capture efficiency. This improvement directly correlates with GST system enhancement and digitisation initiatives.

Brazil maintains the highest tax-to-GDP ratios, ranging from 6.2% to 7.1%, indicating an efficient indirect tax system that effectively captures economic value.

The ratio of Canada ranges from 2.9% to 3.4%, which, while lower in absolute terms, reflects the country's different economic structure and tax policy approach, with greater emphasis on direct taxation

Table 5 TAX-TO-GDP RATIO ANALYSIS			
Year	India Tax-to-GDP Ratio (%)	Canada Tax-to-GDP Ratio (%)	Brazil Tax-to-GDP Ratio (%)
2020	4.8	2.9	6.2
2021	5.2	3.1	6.5
2022	5.8	3.2	6.8
2023	6.1	3.3	6.9
2024	6.3	3.4	7.1

Statistical Significance Testing

As evident in Tables 6 & 7, the F-test results for the variance equality test show significant statistical correlations. The comparison between India and Canada (p- value 0.00) and India and Brazil (p-value 0.00) both show significantly different variances, necessitating the use of unequal variance t-tests. There appears to be borderline equality of variances between Canada and Brazil (p-value 0.05). The revenue disparities were statistically significant, and not the result of chance, according to the t-test results for revenue comparisons, which revealed a substantial difference between all country pairs (India versus Canada: 0.000, India versus Brazil: 0.001, and Canada versus Brazil: 0.000).

Table 6 F-TEST RESULT	
India vs Canada	0.00
India vs Brazil	0.00
Canada vs Brazil	0.05

Table 7 T-TEST RESULT	
Inter-Country Comparison	IDT Revenue
India vs Canada	0.001

India vs Brazil	0.001
Canada vs Brazil	0.000

Trend Analysis and Projections

As evident in Table 8, the linear regression analysis provides essential information about future revenue trajectories. With an R-squared value of 0.985 and an annual growth rate of 289.86 billion USD, India's trend equation demonstrates extremely predictable, linear growth patterns. This robust predicting capacity indicates that the GST system in India has developed to a point where accurate revenue projection is possible.

With an R-squared value of 0.994 and an annual growth of 2.85 billion USD, the trend in Canada demonstrates remarkable predictability in revenue patterns. In contrast, Brazil exhibits good prediction ability as well, with an R-squared value of 0.987 and an annual slope of 8.61 billion USD.

Table 8 REGRESSION ANALYSIS			
Regression Analysis	India	Canada	Brazil
Slope	289.861859	2.849868	8.61135
Intercept	-584272.5357	-5717.866168	-17304.07219
R-Squared	0.984908696	0.993769408	0.987403031

Cross-country Correlation Matrix

As evident in Table 9, the correlation matrix reveals interesting intercountry relationships. The robust revenue correlation across nations (Canada-Brazil: 0.999, India-Canada: 0.999, and India-Brazil: 0.999) implies that international economic conditions have a significant effect on indirect tax receipts in all three nations. The significance of comparative research is further supported by the high correlation, which suggests that effective techniques in one country may be transferable to others. There is greater variance in the GDP correlation between Canada and Brazil (0.828), India in Canada (0.923), and Indian and Brazil (0.623). These variances are a reflection of the various economic cycles and structural elements influencing the economic success of each nation.

Table 9 CROSS-COUNTRY CORRELATION MATRIX						
	India	Canada	Brazil	India	Canada	Brazil
India (IDT Revenue)	1					
Canada (IDT Revenue)	0.99863379	1				
Brazil (IDT Revenue)	0.999253601	0.999435	1			
India (GDP)	0.744355123	0.72136455	0.723653993	1		
Canada (GDP)	0.899453547	0.878300177	0.882528013	0.922861037	1	
Brazil (GDP)	0.979755897	0.979935328	0.984132009	0.622506944	0.828497915	1

Interpretation of Fiscal Efficiency

The data analysis reveals that the GST system in India has shown a remarkable increase in fiscal efficiency since it was put into place. Successful digitisation and compliance, and upgrading efforts are indicated by the significant revenue growth and improving tax-to-GDP ratios. The greater volatility in comparison to Brazil and Canada points to areas that need further stabilisation. Brazil has an efficient indirect tax system that efficiently absorbs economic activity, as evidenced by its strong GDP, correlation and stable tax to GDP ratios. For establishing GST systems, the steady performance of Canada and little volatility serve as a model for India's future advancement.

The statistical significance of the differences between nations supports the comparative method and implies that the distinct features of each nation influence its fiscal performance. It also indicates the possibility of knowledge transfer and system enhancements.

DISCUSSION

Comparative Performance Assessment

The study examines indirect tax revenue performance in India, Canada, and Brazil, revealing distinct patterns based on the economic structure, tax administration, maturity, and GST implementation stage of each country. The GST system of India has successfully transitioned from implementation challenges to a growth-oriented revenue generation mechanism, with a 100% increase over the study period, outperforming Canada's 29.6% and Brazil's 38.5% growth. However, this route advantage comes with increased volatility, suggesting the system requires additional stabilisation mechanisms to achieve the predictability observed in more mature systems.

Fiscal Efficiency Evolution

The tax-to-GDP ratio of India has improved from 4.8% to 6.3%, indicating the successful capture of untaxed economic activity. This improvement is attributed to digitisation initiatives, return filing simplification, and GST network (GSTN) platform improvements. The high ratios (6.2%-7.1%) of Brazil demonstrate the effectiveness of its well-established indirect tax system in capturing economic value. The lower ratios (2.9%-3.4%) of Canada reflect its federal structure and policy approach, emphasising direct taxation while maintaining efficient indirect collection. The GST system operates as a reliable fiscal instrument with minimal administrative burden, demonstrating its stability and strong GDP correlation.

Systematic Strengths and Weaknesses

The GST system of India has significant strengths, including rapid adaptation, strong Digital infrastructure, and potential for improvement. It generates substantial revenue and expands the tax base, indicating successful structural reform. However, higher volatility suggests that the system needs to improve predictability mechanisms and refine compliance procedures. The moderate GDP correlation of India suggests potential inefficiencies in capturing economic activity, requiring system optimisation through improved sector-specific configurations and digitisation. The indirect tax system of Brazil is a benchmark for revenue predictability and GDP correlation, but its complexity may present administrative challenges. The GST system of Canada is the benchmark for stability and predictability in federal indirect tax systems.

Policy Learnings and Best Practices

Analysis highlights the importance of phased implementation and continuous refinement in GST system optimisation. The GSTN in India demonstrates the value of digital infrastructure investment, with continued technology investment, yielding substantial fiscal reforms. Balancing revenue maximisation with system stability is crucial, as aggressive growth targets must be balanced with stability mechanisms for long-term sustainability and taxpayer confidence.

Economic Impact and Policy Implications

There is a strong correlation between indirect tax revenue and GDP across three countries. Highlight the importance of indirect taxation as a revenue generation tool and economic indicator. System design choices significantly impact the effectiveness of indirect taxes. The improving correlation of India suggests GST system integration with the economy, affecting economic policy. Differences between countries highlight the need for context-specific approaches and knowledge transfer.

Future Development Trajectories

India's system is entering a mature growth phase, stabilising into predictable revenue patterns. The high R-squared values in all three countries indicate reliable forecasting and effective fiscal planning. The convergence of revenue growth rates suggests exceptional growth. The face of India is transitioning towards sustainable patterns, similar to those in Canada and Brazil, offering opportunities for system refinement and optimisation.

Challenges and Opportunities

The GST system faces challenges, like administrative complexity, compliance burden, and inter-jurisdictional coordination, worldwide. Despite these, success in three countries validates the effectiveness of GST.

Moreover, the opportunities for improvement include automation, compliance, monitoring, and taxpayer services. Countries can benefit from adopting successful practices from other jurisdictions and adapting them to local contexts.

CONCLUSION AND RECOMMENDATION

Summary of Key Findings

The study compares indirect tax revenue performance in India, Canada, and Brazil, highlighting the potential of GST systems to improve fiscal efficiency and revenue generation. The hundred per cent revenue growth in India and the 31.25% tax to GDP ratio demonstrate the transformative potential of comprehensive GST reform.

Recommendations for the Indian GST System

Volatility Reduction Initiatives

GSTN should enhance predictability mechanisms, seasonal adjustment, protocols, taxpayer

support, automated risk assessment tools, and real-time compliance monitoring to stabilise revenue patterns and maintain growth momentum in India.

GDP Correlation Optimisation

GSTN should enhance India's GDP correlation with Brazil by expanding the informal economy coverage, implementing sector-specific incentives, improving education, and strengthening compliance with high-impact sectors.

Digital infrastructure enhancement

The GSTN in India is set to be enhanced through continued investment in artificial intelligence, machine learning, and automated compliance systems, reducing administrative burden.

Compliance simplification programs

GST should streamline compliance procedures using a low complexity model, automate input tax and credit processing, simplify return filing and enhance the taxpayer support services of Canada, while implementing a risk-based audit system.

Interstate Coordination Enhancement

Strengthening coordination between state and central authorities can enhance system consistency, reduce administrative conflicts, and optimize the effectiveness of federal GST structures through standardised procedures and enhanced information sharing protocols.

Policy Recommendations:

Revenue Optimization Strategies

India should target achieving Brazil's 7.1% tax-to-GDP ratio level through strategic rate rationalisation, tax base broadening, and improved collection efficiency, potentially increasing annual revenue by 15-20% while maintaining economic competitiveness.

System Maturity Development

India can transition from high growth volatility to a mature, reliable system by implementing stability-focused reforms like Canada, including robust revenue forecasting, countercyclical, compliance, support, and enhanced taxpayer service quality.

Technology Integration Advancement

Further advancements in digital tax administration, such as the use of Blockchain technology for monitoring transactions, artificial intelligence (AI) for fraud detection, and automated compliance verification, will establish the GST system of India as a world leader in the use of tax technology.

Broader Economic Implications

Their study shows that the GST implementation significantly boosts the economic formation, business, efficiency, and government fiscal capacity. Countries implementing indirect tax reforms can expect revenue improvements, reduce tax cascading, improve input credit systems, and enhance business competitiveness.

Future Scope of Research

This study provides a foundation for future comparative analysis of India's GST system, focusing on long-term stability, policy, interventions, and digitisation effectiveness. Longitudinal studies tracking tax-to-GDP ratios, compliance costs, and economic integration will provide valuable insights for continuous improvement and development of international best practices.

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