Available Online
Journal of Education and Social Studies
ISSN: 2789-8075 (Online), 2789-8067 (Print)
http://www.scienceimpactpub.com/jess

UNDERSTANDING THE DYNAMICS OF THE FISCAL LANDSCAPE THROUGH INSTITUTIONAL LENSES: A CASE STUDY OF SOUTH ASIA

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ABSTRACT

Tax revenue is crucial for governments to finance essential expenditures, social welfare programs, and infrastructure development, which are vital for economic advancement and social well-being. A high tax-to-GDP ratio indicates a strong fiscal position and substantial revenue, which are fundamental for maintaining financial stability and ensuring long-term sustainability. Every country aims to enhance its revenues through various reforms. This study conducted a comprehensive analysis of tax reforms in selected South Asian economies from 2002 to 2022, focusing on their influence on the tax-to-GDP ratio. The outcomes of the Breusch-Pagan and Hausman tests suggest that the Random Effects Model (REM) is suitable for this estimation. Findings of the REM reveal significant and positive associations between government effectiveness, law and order, political stability, and tax-to-GDP share, as one percent rise in the respective variables leads to 3.3%, 1.5%, and 2.02% per one percent improvement in the tax-to-GDP share. The Dumitrescu-Hurlin Panel Causality Tests find no homogeneous causality among related variables. Recommendations include prioritizing government effectiveness, improving the law-and-order situation, maintaining political stability, and enhancing GDP growth to boost tax revenues. Future research will focus on optimizing fiscal policies and revenue mobilization strategies in the region.

Keywords: Gross domestic product (GDP); Government effectiveness (GE); Political stability (POL); Rule of law (RL); Random effect model (REM); Fixed effect model (FEM).
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https://doi.org/10.52223/jess.2024.5211
Received: February 18, 2024; Revised: May 27, 2024; Accepted: June 02, 2024

INTRODUCTION

Tax collection is an important source of revenue to effectively run the economic affairs of any country. Enough tax revenue for the Gross Domestic Product (GDP) share is necessary for the smooth running of state machinery and to improve the living standards of the masses (Moore & Prichard, 2017; Shabeer, 2022). Tax reforms included liberal changes to a country's tax system, consisting of improving voluntary tax compliance, enhancing structures and administration, and coping with tax avoidance and evasion with the key objectives of enhancing efficiency and increasing revenue. These reforms are assumed to produce enough revenue for public expenses, expand economic growth, ensure equal distribution of tax burdens, simplify tax methods, enhance transparency, and improve efficiency in tax collection (Shabeer et al., 2021b; Oz-Yalaman, 2019). The reforms usually target key areas such as the widening of the tax net, tax administration processes, and the total tax structure to create a favorable environment for economic development and prosperity (Mallick, 2020). One of the most important issues is the collection of tax revenue because, despite differences in economic conditions, different nations have different taxation structures. However, many countries share a parallel structure for sales taxes, excise taxes, and customs duties (Baunsgaard & Keen, 2010; Shabeer & Rasul, 2024b).

Indeed, a high tax-to-GDP share indicates strong government revenue capacity, enabling investment in public services, social welfare, and infrastructure and fostering fiscal sustainability. The tax-to-GDP share is an indicator of the percentage of tax revenue to the gross domestic product (Dahal, 2020; Shabeer & Rasul, 2024a). A World Bank report in 2021 depicted that the average tax to GDP share in the world's countries was 15.8%. However, the ratio of tax significantly varies across countries, with naturally higher tax-to-GDP ratios in high-income nations as compared to low- and middle-income states. For example, a 2019 World Bank report revealed that high-income countries have a 31.2% average tax-to-GDP ratio, while low-income countries have 12.6%. Additionally, tax policies and structures widely differ among countries concerning the administration process, tax rate variation, and type of tax levied. Despite these differences, tax reforms are still a common theme across countries to generate high revenue, expand economic growth, reduce tax burdens, and simply increase efficiency and transparency in tax collection. Understanding the diverse procedures of tax collection and reforms in South Asian countries needs valuable insights into the effectiveness of such strategies on a more localized scale (Shabeer et al., 2021a; Gnawali, 2018).

Many South Asian countries face financial crises and have necessitated fiscal reforms to stabilize macroeconomic processes. More specifically, Pakistan has made several attempts, such as the value-added tax structure, the founding of the Federal Board of Revenue, and the Tax Administration Reform Project, to boost tax to GDP share. Despite this, these restructuring challenges persist, including a low tax base and administrative incompetence aimed at restructuring the nation's revenue mobilization approaches. These restructurings resulted in a substantial rise in the tax collection ratio, but it is still not following international standards and capacity. On the other hand, tax reforms in India were pursued in different ways, marked by their series of strategies aimed at enhancing revenue mobilization. One of the notable reforms in this regard was the introduction of the GST in July 2017 (Samantara, 2018). The GST exchanged complex state-level taxes with a unified indirect tax regime to boost efficiency and foster tax revenues. A World Bank report depicted, that India's tax-to-GDP share rise from 9.2% in 2000 to 11.3% in 2020. It shows a favorable impact on revenue mobilization. Moreover, Bangladesh has implemented many tax reforms in this context. One crucial reform was introduced by the Value Added Tax (VAT) Act in 1991, which reshaped the Sales Tax Act of 1951. This restructuring widened the tax base and improved efficiency. Since the part of tax collection in national income remains low compared to high-income nations. This shows the need for further reforming to raise tax collection (Chowdhury & Hossain, 2019; Shabeer et al., 2024).

Additionally, Nepal has also carried out various steps of tax restructuring. One significant reform was the performance of the Value Added Tax Act in late 1997. It produces vital efficiency in tax revenue mobilization (den Braber et al., 2018). Besides, Bhutan has introduced substantial revenue restructuring in sales tax (Sales Tax Act 2000) to enhance Tax to GDP share. Moreover, the government has strived to increase direct tax governance (Baquero et al., 2022). In contrast, the Sri Lankan government also produced various steps in tax reform especially in Value-Added Tax (VAT) Act in 2002. Despite these restructuring, there are still various issues existing to collect magnificent amounts of tax and a large informal economy persists (Di John, 2011).

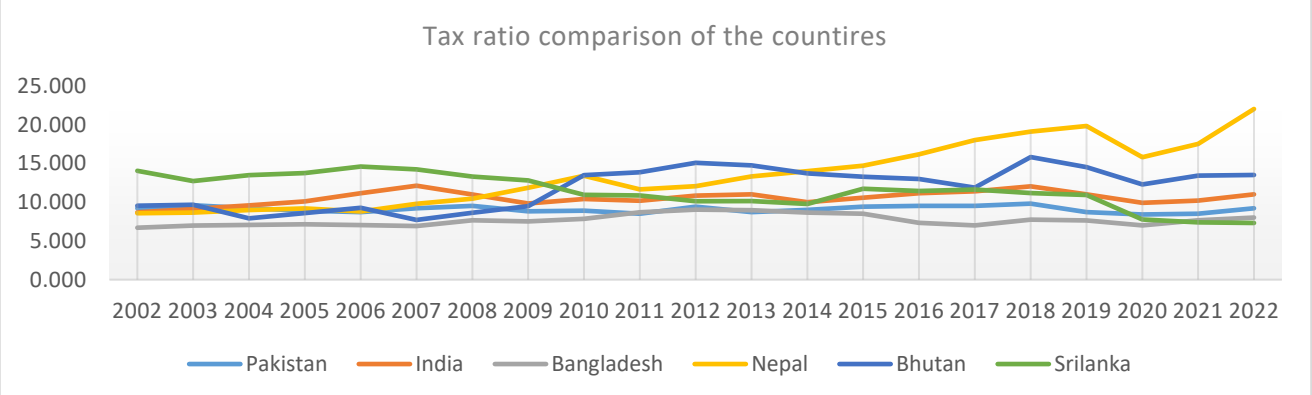

Figure 1. Tax ratio of the selected countries.

Figure 1 shows the tax revenues of various countries. Indeed, it revealed that Sri Lanka and Nepal have the greatest revenue collection in the said region as compared to the other countries. Additionally, Bhutan has also collected a magnificent amount of revenue.

The main objective of this analysis is to examine a comprehensive structure of tax reforms in the selected nation for the data period covering 2002–2022. This study aims to bridge the important gap of the existing literature by analyzing the various institutional factors such as the rule of law (constitutional supremacy), government effectiveness (good governance), political stability, regulatory quality, and GDP on tax to GDP share in the selected economies. In the existing literature various studies have been carried out such as time series analysis, tax administrative reforms etc but no one have assessed this area and variables. Obviously, the results of this study will add in literature that institutional factors may play a vital role in revenue mobilization and enhance tax to GDP ratio. By scrutinizing this empirical analysis, evaluates the influence of tax reforms on the tax-to-GDP ratio and fiscal sustainability.

LITERATURE REVIEW

In this part, the analysis overviews various studies, such as Musaeva et al. (2015) examined analysis of 39 nations for the data period 1980 to 2005. The said analysis takes various factors of revenue collection like organization, transparency, and efficiency. The outcomes of the study find that the agriculture sector has an adverse impact on tax to GDP ratio and the trade openness has a favorable impact. While GDP per capita and urbanization have a favorable influence on revenue mobilization. However, foreign debt and aid have a negative impact on tax to GDP share. Patwary and Rashid (2022) assessed the impact of legal implications and tax evasion in the SAARC economies from 2002 to 2015. In the said empirical analysis three statistical techniques were used. These include OLS, fixed effect, and random effect estimation methods. The outcome suggests that legal implementation and good governance have a stable impact on the public sector in the SAARC countries: The empirical analysis.

Similarly, Hassan et al. (2021) observed the connection between governance and tax revenue in Pakistan for the period 1976–2019. The study used the autoregressive distributive lag (ARDL) estimation technique to examine the effect of govt on tax income. The results reveal a substantial and positive effect of governance on tax collection. This indicates that improved governance would increase revenue collection and lead to economic development and prosperity in Pakistan. Additionally, the value-added of industry and inflation have a positive impact on tax collection. The findings of the analysis depicted the importance of the government striving to strengthen governance and endorse industrial activities to enhance tax collection. In contrast, Di John (2011) observes that taxation revenue is the state's capacity and power dynamics in society. It assesses economic, administrative, and political approaches to taxation. The study highlights disparities in tax collection across regions. It considered the historical context and social consensus in tax reform, endorsing strategies and politically informed approaches. Additionally, it emphasizes the need to differentiate between low-income and post-war countries and middle-income countries in designing tax restructuring, considering appropriate factors for sustainable capacity-building.

Baig et al. (2023) evaluated the tax reforms' impact on the economic progress of Pakistan for the period 1978–2011. The study used the autoregressive distributive lag (ARDL) approach to discover the short-run and long-run relations among the variables. The results disclose a significant and diverse influence of tax reform on GDP progress in both the short run and long run. Musaeva et al. (2015) inspected the relationship between tax efficiency, tax relief, and types of taxes in the Russian Federation based on the data from 1990 to 2000. The analysis highlights the need to transform tax relief into robust economic stimulus. It discloses monitoring, organizational, and administrative challenges in assessing tax advantages at the regional level. The study provides recommendations to cope with these challenges and boost the effectiveness of tax incentives in motivating economic progress and living standards. The other scholars who have worked on this subject matter are Arshed et al. (2022), Gul et al. (2022), Huang et al. (2023), Wang et al. (2023), Zain ul Abedeen et al. (2024), and Zubair et al. (2023). The literature has revealed that various studies have been

conducted from different angles, such as political dynamics, economic factors, and the outcomes of tax reforms, etc., but no one has analyzed the influence of tax reforms on the share of tax to GDP in the context of South Asia. Hence, this analysis will bridge the gap in the cited literature.

METHODOLOGY

Data Description

Every state needs revenue to finance various essential expenditures such as education, defense, health, infrastructure, subsidies, and transfer payments. An efficient taxation system is crucial for revenue generation and financing these expenditures. In this study, an efficient taxation system is assessed through factors like the rule of law, govt efficiency, political strength, and governing quality's influence on the ratio tax to GDP for the panel of six selected countries, namely Pakistan, India, Sri Lanka, Bangladesh, Bhutan, and Nepal. The study chose these countries because they collectively describe economic variability and geopolitical importance in the region. Additionally, other countries in South Asia have not found concern data. The data period included 2002–2022, because of data availability. The data has been sourced from reputable organizations; the tax-to-GDP ratio has been taken from the Economic Survey of Pakistan; and the remaining variables have been sourced from World Development Indicators.

Justification of Variables

The study takes six reputable variables for this analysis, which constitute a comprehensive set of governance and economic factors crucial for understanding the dynamics of tax-to-GDP share. These variables include Tax to GDP share is a dependent variable in the model, an increase in the tax-GDP ratio indicates that the government is collecting a higher proportion of its revenue relative to the overall economic output, or gross domestic product. On the other hand, independent variables can be explained as Tax reforms are all the struggles and efforts done for the enhancement of tax revenue collection in a country. Regulatory quality, which means the assessment of the effectiveness of regulations, leads to an impact on economic activities and tax compliance. Moreover, political stability is another independent variable that measures the scale of political unrest, while government effectiveness is a key variable that assesses the efficiency of public administration. Lastly, the rule of law evaluates the strength of legal frameworks, which play a key role in setting the business environment and impacting tax compliance. This set of variables jointly offers a distinction examination of the tax-to-GDP ratio.

Model Specification

In this section, the study empirically investigates an appropriate empirical model to explore the influence of tax reforms on the ratio of tax to GDP in selected South Asian countries. This study employed panel data, which was able to capture time series and cross-sectional variations. The functional form of the given variables is given below:

Tax to GDP = f (Government Effectiveness, Rule of Law, Political Stability, Regulatory Quality, GDP)

The econometrics model of the above functional form could be as follows:

$$TAXRV_{it} = \alpha_0 + \beta_1 \ln RQ_{it} + \beta_2 \ln PS_{it} + \beta_3 \ln GE_{it} + \beta_4 \ln RL_{it} + \beta_5 \ln GDP_{it} + \mu_{it} \quad (1)$$

$TAXRV_{it}$, represents the Tax to GDP share for entity i at time t and are the independent variables representing the RQ, POL, GE, RL, and GDP for entity i at time t. While is the intercept term and the coefficient responding to each independent variable. Lastly, the is the error term. It serves as the basis for empirical analysis.

Now, the study must choose an appropriate estimation technique. For this purpose, the panel data course suggested three fundamental techniques, namely POLS, FEM, and the random effect model. By considering the panel data as pooled cross-sectional data, POLS assumes that there are no substantial individual-specific effects impacting the independent variables. Individual-specific intercepts are used to account for

unobserved heterogeneity in the fixed effects model because individual-specific effects are correlated with the independent variables. Assuming that these individual-specific effects are uncorrelated with the independent variables and taking into account both within-entity and between-entity variances, the Random Effects Model make sense. To select the appropriate technique, the study first needs to evaluate the Breusch-Pagan test (Selvaraj et al., 2020).

Breusch-Pagan test (BPT)

The BPT is typically used to check for the existence of hetero in the residuals of a specific model. For panel data analysis, the BPT can be adapted to assess heteroscedasticity across different entities (cross-sectional units) and periods (Shabeer et al., 2024). In a more formal representation:

H0: *Var(εit)* =σ^2 for all *i* and *t* (homoscedasticity).

HAar(εit) is not constant for at least one *i* or *t* (heteroscedasticity).

The null hypothesis (H_0) of the BP test, POLS, is more suitable than REM/FEM. If the p-statistic is larger than 0.05, the study accepts the (H_0) and goes for POLS. In contrast, if the p-value is less than 0.05, we rejected $H_1$and we go for REM/FEM. In our analysis, the null hypothesis is not accepted. Therefore, the result of the BP test revealed that the error term variance is not constant across all entities and periods (heteroscedasticity). Consequently, we can't use the POLS estimation technique in this case. Now, we may choose either REM or FEM to evaluate this issue. For this purpose, the distinguish econometrics test is used, the Hausman test, to decide which estimation method is appropriate between the FEM and REM (Bollen & Brand, 2010; Gill et al., 2023).

Hausman Test

This test is employed to choose either the Fixed Effects Model (FEM) or Random Effects Model (REM) for panel data estimation (Bollen & Brand, 2010). The test assesses whether the individual-specific effects (captured by fixed effects) relate to the independent variables, indicating potential endogeneity. The test involves estimating two models: one using FE and the other using RE. The general equation of the test is as follows:

$$\text{Hausman Test Statistic} = (\beta_{FE}^{\wedge} - \beta_{RE}^{\wedge})'[Var(\beta_{FE}^{\wedge} - \beta_{RE}^{\wedge})^{-1}(\beta_{FE}^{\wedge} - \beta_{RE}^{\wedge})$$

Here's a breakdown of the components:

$\beta_{FE}^{\wedge}$: Coefficient from the Fixed Effects Model.

$\beta_{RE}^{\wedge}$: Coefficient estimates from the Random Effects Model.

$Var(\beta_{FE}^{\wedge} - \beta_{RE}^{\wedge})$: The variance-covariance matrix of the difference in coefficient estimates between the FE and RE models. The (H_0) is that the coefficients of the fixed effects are consistent with the random effects thus we use the Random Effects Model.

Hence, we analyzed and concluded that the Hausman test p value is insignificant and revealed that the individual-specific influence is uncorrelated with the explanatory variables, assessing both within-entity and between-entity variability. Hence the study chooses the REM in this study (Mitze, 2009; Shabeer & Rasul, 2024a).

Random Effect Model

Random effects models (REM) are used in panel data analysis to account for unobserved individual heterogeneity or unobserved time-invariant effects (Mitze, 2009). These models are particularly useful when there are unobserved, individual-specific factors that may be linked with the independent variables.

$$Y_{it} = \beta X_{it} + \alpha_i + \varepsilon_{it} \quad (2)$$

Where:

Y_{it} denotes the dependent variable, X_{it} and shows the explanatory variables for individual i at time t. While β representing the coefficients and α_i represents the individual-specific random effects, which capture the unobserved heterogeneity. Lastly, ε_{it} represents the error term. Lastly, it represents the error term.

Besides, the study conducted a cross-sectional dependence test to examine the presence of correlation or interdependence among observations across different entities in panel data (Chudik & Pesaran, 2013).

Cross-Section Dependence Test

This test is used to assess cross-sectional dependency among the observations in panel data. This test is essential because standard panel data techniques assume independence among cross-sectional units. The equation for the cross-section dependency test typically involves estimating the correlation or covariance structure among the cross-sectional units. One common approach is to use the Pesaran CD test, suggested by (Chudik & Pesaran, 2013), which is based on the cross-sectional average of individual correlation coefficients. The test statistic is calculated as follows: $CD = T.r^{-}$

The CD dependence test: *T* represents the periods, and r^{-} is the average of the correlation coefficients between the cross-sectional units.

The test statistic is then compared to critical values from the distribution to determine if there is significant CD dependence (Chudik & Pesaran, 2013).

Dumitrescu-Hurlin Panel Causality Test (DHPCT)

The test is used to assess causality between variables in panel data settings while accounting for cross-sectional dependence. These tests extend standard Granger causality tests to panel data by seeing the potential occurrence of cross-sectional dependence between the observations. The equations Tests depend on the specific version of the test being used. However, the basic idea is to estimate panel regression models with lagged variables and test for the significance of coefficients associated with the lagged values of the potential causal variable.

One common version of the DHPCT involves estimating the following panel regression model:

$$Y_{it} = \alpha_i + \beta Y_{i,t-1} + \gamma X_{i,t-1} + \delta Z_{it} + \varepsilon_{it} \quad (3)$$

Where:

$X_{i,t-1}$ represents the potential causal variable for the individual, $Y_{i,t-1}$ represents the lagged values of the dependent variable for *i* at t−1, and Z_{it} represents additional control variables. While α_i it represents individual-specific fixed effects. Moreover, *β*, *γ,* and *δ* represent the coefficient of interest for the lagged values of *Y*, capturing potential autocorrelation, and *∈it* represents the error term.

After estimating the panel regression model, this test involves testing the joint significance of the coefficients *β* and *γ* to assess whether there is evidence of causality from *X* to *Y* after controlling for potential autocorrelation in *Y* and other control variables.

RESULTS AND DISCUSSION

Table 1 summarizes the crucial statistics of the data set for its key variables, such as the tax-to-GDP ratio, GE, POL, RL, RQ, and GDP. Notably, the mean tax-to-GDP ratio stands at approximately 10.65%, with a minimum of 6.69% and a maximum of 22%, indicating the variability in tax income relative to the GDP over the observed period. Other variables exhibit varying measures, such as government effectiveness with a mean value of around 0.35, and regulatory quality with a mean value of approximately 2.12. Skewness and kurtosis values provide insights into the distributional characteristics, indicating deviations from normality and potential asymmetry in the data.

Table 1. Descriptive statistics.

Statistics	TAX	GE	LAW	POL	RQ	GDP
Mean	10.65226	0.345596	2.470482	3.108798	2.117368	29.28941
Median	9.800000	0.438364	2.484907	3.149883	2.302585	29.70738
Maximum	22.00000	1.135350	2.833213	4.605170	2.397895	33.23832
Minimum	6.691384	-0.701730	1.098612	0.639606	0.000000	23.95480
Std. Dev.	2.895912	0.495322	0.301209	0.998417	0.394860	2.329645
Skewness	1.252263	-0.392656	-1.871994	-0.519792	-3.183197	-0.609554
Kurtosis	4.802663	1.912777	8.504084	3.128548	15.75846	2.610757
Jarque-Bera	49.59504	9.368592	230.7937	5.714889	1058.903	8.529862
Probability	0.000000	0.009239	0.000000	0.057415	0.000000	0.014053
Sum	1331.532	43.19946	308.8103	388.5997	264.6710	3661.176
Sum Sq. Dev.	1039.902	30.42260	11.25014	123.6077	19.33339	672.9786
Observations	125	125	125	125	125	125

Moreover, other associated statistics further evaluate the normality assumption and model fitting. This information collectively provides a distinction in consideration of the dataset's distributional properties and interpretation.

Table 2. Correlation matrix.

Correlation	TAX	GE	LAW	POL	RQ	GDP
TAX	1					
GE	-0.11744	1				
LAW	-0.01550	0.42359	1			
POL	0.36087	-0.63848	-0.54868	1		
RQ	0.07773	0.33968	0.90478	-0.38466	1	
GDP	-0.23124	0.28890	0.56329	-0.49126	0.64759	1

In Table 2, each box demonstrates the correlation coefficient between the corresponding couple of variables. Coefficients of correlation assess the strong point and way of association between two variables. A correlation value near 1 shows a positive and linear connection, while a coefficient near -1 shows a strong negative and linear association. A coefficient near 0 suggests little to no linear relationship. For instance, we observe that POL and RQ have a relatively high correlation of 0.90478, suggesting a robust positive linear connection between the two variables. Conversely, POL and GE have a relatively high negative correlation of -0.63848, revealing a strong negative linear association among them. Understanding these correlations is crucial for assessing the interrelationships between the variables and identifying potential patterns or dependencies within the datasets.

Table 3. Breusch-Pagan Lagrange multiplier test.

	Hypothesis		
Breusch-Pagan	Cross-section	Time	Both
	218.5048	5.294345	223.7991
	(0.0000)	(0.0214)	(0.0000)

Table 3 shows The Breusch-Pagan test that is typically employed to test for the occurrence of heteroscedasticity in the error term of a regression model. But here the study was conducted to assess which POLS were appropriate for panel data analysis or not. The null hypothesis of BP test POLS is more suitable than REM/FEM. If the critical value is a higher threshold limit, accept the H_0 and go for POLS. In contrast, if the critical value falls from the threshold limit, then the H_0 will not accept and suggest REM/FEM. In our analysis, the critical value is 0.0000, which indicates the (Ho) is rejected. Therefore, the BP test result revealed that the POLS estimation technique cannot be used in this case. Now, we may choose either REM

or FEM to evaluate this issue. For this purpose, the distinguish econometrics test is used, the Hausman test, to decide which estimation method is appropriate between the FEM and REM.

Table 4. Hausman specification.

Test review		Chi-Sq. Statistic	Prob.	
Cross-section random		0.000000	1.0000	
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var (Diff.)	Prob.
LNLAW	3.257961	3.302454	-0.083592	0000
LNPOL	1.510613	1.558643	-0.048695	0000
LNGE	2.221395	2.020778	0.122365	0.5663
LNGDP	1.613795	1.437226	-0.033423	0000

The Hausman test results given in Table 4 suggested there is no substantial change between the REM and FEM based on the cross-section random test, with a chi-squared statistic of 0.000000 and a p-stat of 1.0000, representing no indication to reject the Ho of random effects. Comparisons of variance differences between the two models for individual variables show mixed results; while LAW, P. ST, and GDP exhibit negative variances, suggesting a potential preference for the fixed effects model, GE presents a slightly positive variance difference, though statistically insignificant. Overall, these findings imply that the REM is suitable for the dataset.

Table 5. Random effect model outcomes.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN_LAW_3	3.302454	0.763828	4.323558	0.0000
LN_POL_3	1.558643	0.455336	3.423061	0.0008
LN_GE	2.020778	1.058023	1.909957	0.0585
LN_GDP_3	1.437226	0.720317	1.995269	0.0483
C	-19.94875	7.404640	-2.694088	0.0081

Table 5 shows the Random effect Model results. The REM is employed to analyze panel data by accommodating unobserved individual-specific characteristics and treating them as random variables with specific distributions. It enables the estimation of time-varying effects while controlling for individual-specific heterogeneity, offering more efficient and unbiased coefficient estimates. The outcomes reveal several important insights regarding the associations between the explanatory variables and the other variables. Firstly, the coefficient values of LAW and political stability are both significant, with values of 3.3 and 1.5, respectively. It indicates robust positive relations with the dependent variable (tax-to-GDP). This implies that as the station of law and political permanence, it is preferable to increase the tax-to-GDP share. In addition, the coefficient value of GDP is 0.05, showing a favorable association with the tax-to-GDP ratio. This demonstrates that surges in the GDP have to increase the dependent variable, although to a smaller extent as compared to LAW and political stability. However, it's noteworthy that the coefficient value of GE is significant statistically at 6 percent, signifying that the connection between GE and the dependent variable (tax to GDP) may be robust. This implies that even when all independent variables are zero, there is still a baseline value for the dependent variable. Therefore, it underscores the importance of considering other factors not involved in the model that may influence the dependent variable.

Overall, these findings contribute valuable insights into the factors driving variation in the dependent variable within the context of the random effects model. While LAW, political stability, and GDP emerge as highly significant determinants of the dependent variables, While GE is significant at 6%, it suggests that government effectiveness may lead to a rise in the tax-to-GDP share in these nations.

Table 6. Cross-section dependence test.

Test	Statistic	Prob.
Breusch-Pagan LM	34.21254	0.0032
Pesaran scaled LM	2.412268	0.0159
Pesaran CD	-0.364740	0.7153

Table 6 presents the outcome of the three cross-section dependence tests, namely the Breusch-Pagan LM test, the Pesaran CD test and the Pesaran scaled LM test. These tests evaluate whether there is interdependence or correlation between observations across different units in a panel dataset. The Breusch-Pagan LM test produces a statistic of 34.21254 with a p-value of 0.0032, indicating a significant cross-sectional correlation. Similarly, the Pesaran-scaled LM test produces a statistic of 2.412268 with a p-stat of 0.0159, also suggesting the presence of cross-sectional dependence. Conversely, the Pesaran CD test reports a statistic of -0.364740 with a p-value of 0.7153, demonstrating no significant indication of cross-sectional dependence. These tests are crucial for guaranteeing the reliability of panel data analysis by classifying and addressing potential issues.

Table 7. Dumitrescu-Hurlin panel causality tests.

Null Hypothesis:	W-Stat.	Zbar-Stat.	Prob.
LN_RQ does not consistently cause TAX	1.58354	-0.66524	0.5059
TAX doesn't homogeneously/equally cause LN_RQ	1.42781	-0.80340	0.4217
LN_POL does not equally cause TAX	2.58031	0.21913	0.8266
TAX does not consistently cause LN_POL	3.77221	1.27661	0.2017
LN_LAW does not homogeneously/equally cause TAX	1.48299	-0.75445	0.4506
TAX does not consistently /equally cause LN_LAW	1.67576	-0.58341	0.5596
LN_GE does not homogeneously/equally cause TAX	0.76458	-1.39184	0.1640
TAX does not homogeneously/equally cause LN_GE	4.26784	1.71635	0.0861
LN_GDP does not homogeneously/equally cause TAX	3.41543	0.95094	0.3416
TAX does not homogeneously/equally cause LN_GDP	2.28908	-0.04353	0.9653
P. ST does not homogeneously cause Regularity quality	1.58937	-0.66006	0.5092
Regulatory quality does not equally cause P. ST	5.08401	2.44048	0.0147
LAW and order do not equally cause Regulatory Quality	4.99300	2.35973	0.0183
RQ does not homogeneously cause LAW and Order	10.6777	7.40337	1.E-13
LN_GE does not consistently / equally cause Regulatory Quality	2.52698	0.17181	0.8636
Regulatory Quality does not homogeneously GE	9.31973	6.19852	6.E-10
GDP does not homogeneously/ equally cause Regulatory Quality	1.87252	-0.41132	0.6808
RQ does not consistently / equally cause LN_GDP	3.59176	1.10663	0.2685
LAW does not homogeneously cause POL	6.69930	3.87360	0.0001
POL does consistently cause LAW	5.48170	2.79332	0.0052
GE does not consistently cause POL	4.40523	1.83825	0.0660
POL does not consistently cause GE	6.48039	3.67938	0.0002
GDP does not consistently cause POL	16.3044	12.3309	0.0000
POL does not consistently cause GDP	0.55158	-1.57760	0.1147
GE does not equally cause LAW	2.15115	-0.16164	0.8716
LAW does not equally cause GE	4.95413	2.32524	0.0201
GDP does not equally cause LAW	8.37623	5.33092	1.E-07
LAW does not equally cause GDP	3.31302	0.86052	0.3895
LN_GDP does not homogeneously/ equally cause LN_GE	3.28897	0.83929	0.4013
LN_GE does not equally cause LN_GDP	1.36352	-0.86072	0.3894

In Table 7, the estimation has been illustrated to analyze the connection between the independent variables of tax reform and the tax/GDP share. The outcomes show that RQ, law, GDP, and other variables do not significantly and homogeneously cause variations in the tax-to-GDP share in the region. The estimated p-values across these tests recommend no significant indication to reject the Ho of no homogeneous causality between the variables. Lastly, this test concluded that there was no significant homogeneous causality among independent variables and the ratio of tax to GDP.

CONCLUSIONS AND RECOMMENDATIONS

This study aimed to empirically examine the impact of various institutional factors on the tax to GDP share in South Asia countries for the period 2001–2022. The Breusch-Pagan and Hausman tests suggest that the Random Effects Model (REM) is a suitable statistical technique for this analysis. The outcomes of the random effects model disclose several key findings. Firstly, the analysis illustrates significant and positive associations between government effectiveness, law and order, political stability, and the share of tax to GDP. It demonstrates that a one percent surge in government effectiveness, strengthened law and order situations, and political stability leads to 3.3%, 1.5%, and 2.02% rises in the tax-to-GDP ratio, respectively. Additionally, the results reveal a notable association between gross domestic product and the tax-to-GDP share. This suggests that a one percent surge in GDP led to a 1.43% increase in the tax-to-GDP share in the region. However, the Dumitrescu-Hurlin Panel Causality Tests did not express favorable evidence of homogeneous causality among various variables of the tax restructuring and tax-to-GDP share in the region. These results collectively underscore that government effectiveness, law and order situation, political stability, and expansion in GDP eventually boost the ratio in this region.

The government has to overcome bureaucratic hurdles, increase transparency, and improve the delivery of public services. Additionally, improve the law-and-order situation so that everyone has equal importance in the country. The government has to create a stable political environment by enhancing democratic processes, eliminating favoritism, and conducting free and transparent elections for the vast national interest. Obviously, it produces a favorable climate for foreign investments, international trade, and the economic development of the countries, which eventually increases the tax-to-GDP share. There is a need for further tax reforms to make the tax system more equitable, transparent, and efficient. These reforms include increasing the tax net, increasing voluntary tax compliance, easing tax laws, and using technology for better tax administration. Definitely, valuable tax policy and management can considerably increase the tax-to-GDP ratio.

Future research could investigate ways to optimize fiscal policies, revenue mobilization strategies, and government expenditures. Additionally, exploring the effects of tax policies on export competitiveness and economic growth would provide valuable insights for policymakers and experts.

Disclosure

Author Contributions Statement: All authors contributed to the conception and design of the study.

Conflict of Interest Statement: The authors declare that they have no conflicts of interest.

Data Access Statement: The datasets generated and analyzed during the current study are available from the corresponding author on request.

Ethics Statement: All participants provided informed consent.

Funding Statement: This research received no external funding.

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