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Institutional Quality and Tax Capacity: Evidence from SAARC Countries

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ABSTRACT

Analyzing the impact of institution quality on tax capacity across the seven SAARC nations is the study's primary goal. Data on tax income, institutional quality, and other associated variables from 1996 to 2020 are gathered for this purpose by the study. To empirically estimate the results the study first applies the pre-estimation test like the unit root test, cointegration test, and slope heterogeneity test. The results of these tests indicate that variables have a mixed order of integration, the long-run relationship exists among the variables and slopes are heterogeneous across the cross-section units. Finally, the study applies the fixed effect model and PMG model. The estimated results from the fixed effect model indicate that institutional quality significantly and positively influences tax capacity. Furthermore, the PMG model's findings show that institutional quality eventually and favorably increases tax capacity. There are also some control factors in the study. Population, GDP per capita growth rate, and gross capital formation—the control variables—all exhibit a statistically significant positive correlation with tax capacity over the long term. FDI and inflation are two more control factors that have an inverse long-term relationship with tax capacity. However, these two factors have a short-term favorable impact on tax capacity. Based on the results, the study recommends that the economies' top objective should be to raise the caliber of their institutions in order to promote long-term economic growth.

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1. Introduction

Differences across "institutions" have recently received much attention as one of the most critical drivers of long-run economic development (Asghar, Safdar, Zubair, & Hanif, 2024; Law & Azman-Saini, 2012; Zhao et al., 2023). According to North (1989), institutions are the rules of the game in a society or, to put it another way, the humanly constructed limitations that affect human interaction. Unambiguously, institutions are the most important regulatory bodies in every country. Good institutional quality improves the performance of every sector of the economy. According to Azam, Hunjra, Bouri, Tan, and Al-Faryan (2021), institutional quality positively associated with sustainable development. It is also generally accepted that

countries with good institutions are economically more robust than those with bad ones. Poor institutions lead to tax evasion and avoidance within the country (Akhtar, Chishti, & Bilal, 2023).

Moreover, today's economies are facing the challenge of sustainability; a study conducted by Barbier and Burgess (2023) reveals that institutional quality is an essential factor that helps achieve sustainable development goals. Touchton, Wampler, and Peixoto (2019) reveal that institutional quality and tax capacity have a bidirectional relationship and reinforce each other. In the same way, Sen Gupta (2007) shows that good governance also improves the willingness to pay taxes. Therefore, it is entirely reasonable to understand how institutional quality influences tax revenue in South Asian countries.

Every country has many institutions that cooperate to bring people the facilities they expect from the government and provide them with a safe and secure place to live their lives and enjoy being citizens and inhabitants of that country. A study explains that institution quality mitigates public spending (Barra & Ruggiero, 2023). These institutions are present in different fields and walks of life, like health, education, infrastructure services, and more. Most institutions come under the umbrella of the federal and provincial governments and provide different services to society. For example, the police institution is created to protect people, and the judiciary is present to give people justice in their conflicts and affairs. Institutional quality is a necessary component of economic growth Young and Sheehan (2014), as the quality of governance institutions may encourage or discourage economic activity in any economy. In recent years, researchers have paid more attention to the function of institutions since there is a potential that macroeconomic factors alone are not the sole determinant of economic success but also the level of institutional quality prevalent in society (Iheonu, Ihedimma, & Onwuanaku, 2017).

Acemoglu, Gallego, and Robinson (2014) also explains that the significant difference in countries' economic development is due to institutional differences. Another study reveals the long-run relationship between public spending and economic growth is strongly linked with institutional quality Khan, Raza, and Vo (2024) that Pragmatically, the most fundamental objective of every nation is to achieve a better financial condition, and all countries depend on tax revenue to mobilize the economy. With time, people have recognized that good institutional quality is essential for an effective tax revenue system and the development of a nation. Countries that need more institutional quality are facing a problem of tax evasion and avoidance on a large scale. Institutional quality is considered one of more revenue. There is much literature available on institutional quality and tax revenue mobilization. However, not enough research has been done on the effect of institutional quality on tax income in South Asian nations.

The purpose of this study is to implicit the relationship between institutional quality among control variables that are GDP per capita growth rate, population, and gross capital between SAARC countries.

The main objective of this study is to test whether or not there is a significant relationship between institutional quality and control variables or an insignificant relationship between control variables and institutional quality.

Therefore, the current research is based on the selected South Asian countries that are economically and globally connected to explore how the quality of institutions can influence the revenue collection in these countries.

2. Literature Review

Institutional quality is one of the only factors protecting tax capacity and is vital for a country's growth. Governments worldwide are involved in allocating different resources, providing public goods, building a functional state, improving human development, and forming relationships with other states. All of these governments need taxes, and it is understood that the better the tax collection, the better the government's performance will be. Amedanou (2021) utilize data from 1990 to 2017 for eight West African states to understand the nexus between economic institutions, political regimes, and tax collection. The empirically estimated result clarifies that tax collections improve financial institutions' performance and lead to a more democratic political system. In addition, the author concludes that institutional reforms, democracy, and political regimes upsurge tax collection while autocracy is inversely related to tax collection. A study also reveals that different determinants of institutional quality influence tax capacity (Tagem & Morrissey, 2023). The researcher investigates the impact of natural resources, institutional quality, and interaction terms of these two variables on tax revenue for SSA countries. The author concludes that resource revenue reduces tax revenue when institutions are weak. Thus, institutional quality further improves the tax revenue, and the interaction term stays significant after controlling the per capita GDP.

Additionally, there are some contradicting findings in the literature about the effect of institutional quality on tax income. The recent study by Diabaté and Koffi (2023) also demonstrated that tax efforts are not much impacted by the modifications made by tax institutions. According to a different study, regulatory quality lessens the beneficial impact of foreign direct investment on tax revenue rather than substantially increasing it in ASEAN nations (Anwar & Wijaya, 2023).

Nnyanzi, Bbale, and Sendi (2018) take data from 1990 to 2014 for East African countries and investigate how financial development. Control of corruption and political action enhance tax revenue using the GMM model for results. The results of the GMM approach reveal that economic growth and financial institutions significantly contribute to tax revenue. Mourfou and Ouedraogo (2021) investigated the impact of institutional quality on different types of tax revenue (total tax, direct tax, and domestic indirect tax) by utilizing data from 1996 to 2015 for West African economic and monetary union countries. The results obtained from the PMG model reveal that institutional quality positively influences all types of taxes. In addition, these results are robust to different indicators used to measure institutional quality. Daniels and Trebilcock (2004) emphasizes that factors other than political institutions significantly contribute to tax revenue collection. The author explains that other factors like per capita income, control of corruption, and the size of the agriculture sector play a mitigating role in constraints on an institution's performance. Results also show that the dependent variable (tax revenue) is positively impacted by independent variables: per capita income, control of corruption, and the agriculture sector.

Similarly, another study by Hussain and Ilahi (2016) describes the linkage between institutional quality, governance, and tax GDP ratio using six-year data for 26 countries. Institutional quality and governance can be indicated through the six World Bank governance indicators. The simple OLS method checks the relationship between tax revenue generation, institutional quality, and governance. The analysis shows that improving institutional quality and governance will improve revenue. Additionally, the country's institutional quality influences how policies are made. Nguyen, Nguyen, and Nguyen (2017) examine how institutional quality affects the fiscal policies of the Asia-Pacific region. Five world governance indicators are used for measuring institutional quality. Twelve years of data from 28 Asia Pacific countries were used in this analysis, and Kozan's model was used for estimation. The findings of this study show a substantial direct association between the growth rate of tax collection in Asia Pacific nations and the five institutional quality metrics. These studies show that institutional quality is an essential determinant in any economy and an important factor in government policies.

Corruption and governance are essential factors in a country's tax revenue. Numerous research studies have investigated how corruption and governance parameters affect tax income. Epaphra and Massawe (2017) pointed out how corruption and governance indicators will affect tax revenue in Africa. The authors used data from 30 African countries between 1996 and 2016. A random effect model was used for the estimation, and empirical analysis showed that tax revenue collection in African nations would be low while corruption was strong. Still, it will increase when the governance indicators of the rule of law, the effectiveness of the government, regulatory quality, and voice and accountability are high. When corruption is very high in any country, there is a problem with raising tax revenue, so corruption negatively impacts institutional quality because when tax revenues are low due to corruption, it is difficult for any country to grow.

Ajaz and Ahmad (2010) also analyze how tax revenue is impacted by corruption. Data from 25 countries from 1990 to 2005 is collected for this analysis. GMM regression analysis indicates that governance and corruption influence tax revenue collection in these countries. The study shows that when corruption in these countries is high, the collection of tax revenue decreases, which shows that they have an inverse relationship with each other and governance indicators have a positive relationship, as shown when these governance indicators increase in these developing countries then tax revenue collection will be increased. So, empirical evidence shows that to increase tax revenue in developing countries, there is a need to strengthen these governance indicators.

Langford and Ohlenburg (2015) examined tax revenue collection efforts using data from 85 nations over a 27-year period. Using the SFA technique, the analysis demonstrates that institutional factors like law and order, democratic accountability, and corruption have a significant impact on the nation's revenue collection. The outcome also demonstrates that, in comparison to upper-middle-class and higher-income countries, where tax revenue collection is close to 70%, tax revenue collection in lower-income and lower-middle-income countries is about 60%. Panel data from 2003 to 2012 were subjected to panel regression and a fixed effect model by Syadullah (2015).

Using six variables that gauge the degree of governance in these nations, he looks into how tax revenue is affected by governance in the ASEAN region. The study's findings indicate that in ASEAN nations with strong legal systems and effective regulatory practices, the tax ratio has declined as a result of political unrest, corruption, and a lack of free speech. Therefore, there was also a negative correlation between tax revenue and corruption, political instability, and a lack of individual rights freedom. The fact that these nations' tax ratios are unaffected by government efficacy is one sign of good governance.

Soro (2020) has conducted a variety of studies to investigate the impact of institutional quality on tax collection in an attempt to comprehend the relationship between tax revenue and institutional quality in the informal economy. The authors use the Autoregressive Distributed Lag Model on annual data from 1984 to 2016. The study demonstrates that a large informal economy and low institutional quality are the direct causes of low tax revenue collection. The results also show a clear correlation between tax revenue and GDP share of services, GDP per capita, and educational attainment.

Likewise, Johnson and Omodero (2021) conducted a second analysis of the Nigerian economy to investigate the relationship between tax revenue collection and Nigeria's degree of governance from 2000 to 2020. The study suggests using the ordinary least square (OLS) approach for empirical analysis. The results of the study show that tax revenue is favorably and strongly impacted by political stability, corruption, and governance measures. The results of this study therefore examined the relationship between tax income and political stability. Economic growth is a natural result of political stability and peace in any country.

Mallick (2021) uses data from 1990 to 2018 and the OLS method to assert the impact of governance and information and communication technology infrastructure on tax revenue collection in India. This analysis demonstrates that these factors have no discernible effect on India's ability to collect taxes. Many studies have yet to examine how a nation's political risk variables impact the mobilization of tax income within that nation. The findings show that these institutions have little bearing on tax income since the government enacts laws that make it so that no single factor can affect how taxes are collected.

Mueni, Wawire, and Onono (2021) investigate the political factor that affects tax revenue collection in Kenya using data for the three important political risk variables—democratic accountability, bureaucratic quality, and internal conflict in Kenya—from 1984 to 2016. This data is subjected to the ordinary least squares approach, and the regression results indicate that political variables like democratic accountability and bureaucratic quality are positively correlated with tax collection in Kenya. On the other hand, as Kenya's internal turmoil escalates, tax revenue will decline. The results indicate that in order to enhance revenue collection, Kenya must fortify its institutions and manage terrorism within the nation.

Sebele-Mpofu (2020) examines the relationship between tax morale and governance quality and tax compliance in Zimbabwe through mixed-method research. For this study, the authors gathered both primary and secondary data, and they created a questionnaire to do so. The governance quality is assessed using six factors. The results indicated that tax morale has a positive association with the dependent variable and that these indicators have an impact on tax compliance in Zimbabwe. Using data from 1999 to 2016, Simbachawene (2018) examines the possible drivers of the economic, institutional, structural, and finance aspects of tax that will influence tax revenue collection in Tanzania.

The findings show that these possible factors have a substantial impact on tax revenue collection; additionally, the percentage of loans and mining have a substantial impact on tax revenue. Tax income has been negatively impacted by government effectiveness. Tax revenue is positively impacted by the rule of law, the fight against corruption, regulatory quality, manufacturing, construction, and services, whereas tax revenue is negatively impacted by foreign direct investment. According to the authors, relying more on the industrial sector will result in an increase in the number of taxpayers and tax income collected.

The focus of Houssa and Megersa (2017) is on VAT adoption. The authors investigate whether implementing a VAT policy improved developing nations' ability to collect taxes. For 149 developing nations, including those in sub-Saharan Africa, the panel data set covering the years 1970–2013 was utilized. The data demonstrates that governments that choose not to implement VAT collect more taxes and have higher-quality institutions overall. The outcome also shows that adopting VAT will boost tax revenue collection in these nations, demonstrating the favorable impact of VAT on tax revenue.

Similarly, Abdul Rahman, Ridzuan, Harun, and Sa'ait (2020) investigated the effects of population, GDP, import and export, unemployment rate, and inflation on tax income in Malaysia. Using time series data spanning from 1976 to 2015, the authors applied the VECM model and the Granger causality test. According to the study's findings, tax revenue collection in Malaysia rises in tandem with inflation and exports, while imports and the jobless rate have the opposite effect.

Pratomo (2020) investigated how tax collection in developing countries was impacted by foreign direct investment. The information was gathered for 80 developing nations between 2000 and 2016. For this set of data, the fixed effect model and 2sls are applied. Results indicate a direct correlation between tax revenue and foreign direct investment, with a rise in net inflow of foreign direct investment in these eighty nations corresponding to increases in tax

revenue. In any nation, increasing tax revenue is greatly influenced by foreign direct investment.

The relationship between foreign direct investment and Zimbabwe's economic expansion was emphasized by Binha (2021). Time series data from 1980 to 2010 are subjected to OLS. The findings demonstrate a clear relationship between foreign direct investment and Zimbabwe's ability to generate tax income. Gasparėnienė, Kliestik, Šivickienė, Remeikienė, and Endrijaitis (2022) looked into the impact of foreign direct investment on tax revenue using data spanning 28 EU countries from 1999 to 2019. When pooled ordinary least square is used to analyze this data, it becomes clear that while FDI outflows from EU nations enhance tax collection, FDI inflows decrease tax collection in those countries. Quader (2009) investigates the connection between foreign direct investment (FDI) and Bangladesh's tax collection using the dynamic ordinary least square approach. The fifteen-year time series data used by the authors

Islam, Rashid, Hossain, and Hashmi (2020) examined the impact of economic and non-economic governmental policies on tax evasion from 1998 to 2015 using panel data from seven SAARC nations. The study used fixed and random effect models with ordinary least squares to evaluate the data. The results of the study show that when economic freedom increases, tax evasion rates decrease. Furthermore, although having a beneficial effect on these issues, government measures pertaining to property rights, financial freedom, fiscal freedom, and investment freedom have a negative impact on tax evasion. Religiosity and public sector leadership both harm tax evaders.

2.1. Conclusion

Institutional quality refers to the set of formal and informal rules, norms, and practices that shape the behavior of individuals, firms, and governments in a society. In general, institutional quality is positively correlated with economic growth and development. There are specific theoretical channels through which institutional quality can translate into economic decay. When institutions are weak, public officials may abuse their power and engage in rent-seeking activities that divert resources from productive activities. This can lead to efficient allocation of resources and higher economic growth. Poor institutional quality can also lead to political instability, discouraging investment, and reducing economic growth; in such an environment, businesses may be hesitant to make long-term investments due to the uncertainty of the political situation.

Poor institutional quality can lead to inadequate property rights, discouraging investment and innovation. If individuals and firms do not have secure property rights, they may be less willing to invest in long-term projects that require significant upfront costs. When an institution is weak, powerful interest groups can capture the regulatory process and use it to their advantage. This can lead to regulatory policies that benefit a small group of insiders at the expense of the broader public. The relationship between institutional quality and economic growth is complex and multifaceted. While strong institutional quality is generally associated with higher economic growth, weak institutional quality can lead to economic decay through various channels.

In summary, the literature on the relationship between institutional quality and tax revenues demonstrates unequivocally how important institutional quality is to increase tax revenue collection. Almost all studies in this section show a direct relationship with tax capacity. In addition, institutional quality is measured through different indicators; therefore, some researchers were also interested in analyzing the impact of various indicators of institutional quality on tax capacity. According to the research, there is a strong positive

correlation between tax revenue and other governance measures, corruption, the rule of law, and regulatory quality.

3. Methodology

Our study aims to investigate the impact of institutional quality and the relevant control variables like GDP, inflation, population size, foreign direct investment, and gross capital formation on the tax-to-GDP ratio in SAARC countries. The regression model is based on (Epaphra & Massawe, 2017; Hussain & Ilahi, 2016; Soro, 2020). The primary specification for the model is given below.

$$TaxR_{it} = \beta_1 + \beta_2 (INSQ)_{it} + \beta_3 (GDP)_{it} + \beta_4 (POP)_{it} + \beta_5 (FDI)_{it} + \beta_6 (INF)_{it} + \beta_7 (GCF)_{it} + \varepsilon_{it} \quad (1)$$

In equation (1), the dependent variable is i at time t, and TAXR stands for tax revenue as a proportion of GDP for the nation. The institutional quality index of the nation I at time t is represented by the symbol INSQ. The main variable of importance is this. The variables that serve as controls include the gross domestic product (GDP), the total population (POP), the foreign direct investment (FDI), the inflation rate (INF), and the gross capital formation (GCF). Tables 7 and 8 in Appendix A contain the full description, sources, and summary statistics for the variables. Additionally, Appendix B provides a graphic representation of the correlation between tax income and institutional quality in each of the seven SAARC countries.

3.1. Testing for Stationarity

Over a 25-year period, we have used panel data from seven South Asian nations. First, we make sure the variables in our model have a unit root or are stationary. To check the stationery of the variable, we employed the panel unit root test. The unit root test by Pesaran and Yamagata (2008) keeps a variable from being stationary. The idea that all variables have a unit root is the null hypothesis. We accept the alternative hypothesis and reject the null hypothesis if the probability value is less than 0.05.

3.2. Random and Fixed Effect Model

Firstly, we estimate the random and fixed effect model under the assumption of slope homogeneity. Intercepts vary amongst subjects in the fixed effect model, but intercepts for any given entity do not vary over time. In panel data, cross-sectional specific effects that are time-invariant are captured by the fixed effect model. The independent variable's slope coefficients in the fixed effect model remain constant over time. Because it eliminates the bias from the omitted variable, the fixed effect model applies to the panel data. The fixed effect model's general form is represented by equation 2.

$$TaxR_{it} = \alpha_i + \beta X_{it} + \nu_{it} \quad (2)$$

in this equation, TaxR is the dependent variable for individual "I" at the time "t." I represent the cross-section units, while t represents the period from 1990 to 2020. The term "α_i" indicate the individual-specific intercept. he "X_{it}" contain the set of all the independent variables.

$$TaxR_{it} = \alpha + \beta X_{it} + U_{it} \quad (3)$$

$$u_{it} = \mu_i + \nu_{it} \quad (4)$$

Equation (3) represents the specification of the random effect model. The random effect model assumes the individual-specific effects are randomly distributed. That is why the error term comprises two parts: the individual-specific random effect and the distinctive error.

Hausman test helps to choose between fixed and random effect models. We used a fixed effect if the Housman test p-value is less than 0.05. And if this value is more significant than 0.05, we used a random effect model.

3.3. Testing for Slope Heterogeneity

The slope homogeneity is examined using the subsequently updated by Pesaran and Yamagata (2008). We used this test to check slope heterogeneity in a panel data set.

$$TaxR_{it} = \alpha_i + \beta \boldsymbol{i} X_{\boldsymbol{it}} + \nu_{\boldsymbol{it}} \quad (5)$$

The heterogeneity mode endorses the possibility of difference across cross-section units that may not capture the observed variables in the model. In equation (5), the term "$\beta \boldsymbol{i}$" allows the effect of independent variables on dependent variables to vary across the different cross-section units. In this test, the homogeneity of slope coefficients is the null hypothesis, while the heterogeneity of slope coefficients is the alternative hypothesis. The alternative hypothesis is accepted and the null hypothesis is rejected if a test's p-value is less than 0.05.

3.4. Testing for Cointegration

The panel data set's cointegration is examined using the Pedroni cointegration test. This test's primary goal is to determine whether cointegration occurs in the panel. This test determines whether there is a long-term relationship between the variables. The null hypothesis in the Pedroni cointegration test is that there is no cointegration in the panel, while the alternative hypothesis is that cointegration exists in the panel. If the p-value is less than 0.05, we reject the null hypothesis and adopt the alternative hypothesis that cointegration occurs in the panel.

$$TaxR_{it} = \alpha_i + \beta X_{\boldsymbol{it}} + u_{\boldsymbol{it}} \quad (6)$$
$$u_{\boldsymbol{it}} = \rho u_{\boldsymbol{it-1}} + \epsilon_{\boldsymbol{it}} \quad (7)$$

Equation (6) contains the set of non-stationary dependent and independent variables that may be co-integrated. In equation (7), the term "ρ" ensures the existence of cointegration. If its value is less than one ($|\rho| < 1$), then $u_{\boldsymbol{it}}$ It will be stationary, which indicates that the variables under consideration have long run relationship.

3.5. Pooled Mean Group Model

The study utilizes the mean group (M.G.) and pooled mean group (PMG) estimation techniques to empirically estimate the short-run and long-run coefficients of independent variables. These techniques are applicable when variables have a mixed order of integration. The model M.G. considers the changing of intercept, slope coefficients, and variance of error terms across groups. It estimates the equation for each cross-sectional unit and then takes the average of cross-sectional slope coefficients. The PMG model estimation considers variation in intercepts and slope coefficients while giving the same long-run coefficients across cross-sectional units. Further, the Hausman test checks which model is appropriate for our data.
Long run equilibrium

$$TaxR_{it-1} = \alpha_i + \phi X_{\boldsymbol{it-1}} + u_{\boldsymbol{it}} \quad (8)$$

In equation (8), the dependent and independent variables are in the lag form, and the term "ϕ" represents the long-run coefficients of the PMG model.

Short run dynamics

$$\Delta TaxR_{it} = \lambda i(TaxR_{it-1} - \phi x_{it-1}) + \sum_{j=0}^{p-1} \theta_{ij}\Delta x_{it-j} + \sum_{j=1}^{q-1} \gamma_{ij}\Delta y_{it-j} + \epsilon it \quad (9)$$

In equation (9), "Δ" denotes the first difference of the variables, and the term "λi" indicates the speed of adjustment towards equilibrium. While "θ_{ij}" And "γ_{ij}" indicate the short-run coefficients of variables.

4. Results and Discussion

It is essential to investigate the hidden properties of the variables prior to estimating. In order to determine if the variables under examination are stationary or non-stationary at the level, we will first do the panel unity root test. Secondly, to confirm if there is a long-term link between the variables, we will employ the panel cointegration test. The cointegration findings will be shown. Lastly, we will provide the anticipated outcomes from the PMG and fixed effect models.

4.1. Unit Root Test Result

The lm Pesaran and Shin (IPS) unit root test is applied to check the variables' stationery Im, Pesaran, and Shin (2003). The results in Table 1 indicate that the variables have a mixed order of integration. The variables TAXR, INSQ, GDP, and GFC became stationary at the first difference, while POP, FDI, and INF were stationary at a level.

Table 1
Panel Unit Root Test

Variable	t-statistic	p-value	Decision
TAXR	-1.9617	0.0249	I (1)
INSQ	-6.929	0	I (1)
GDP	-4.4926	0	I (1)
GCF	-2.2883	0.0111	I (1)
LOGPOP	-5.84	0	I (0)
FDI	-3.3873	0.0004	I (0)
INF	-2.7083	0.0034	I (0)

4.2. Cointegration Test

The Pedroni cointegration test was employed to examine the long-term correlation between the independent and dependent variables. The Augmented Dicky Fuller exam, the Phillips-Perron test, and the modified Phillips-Perron test make up its three subtests. According to the cointegration test, there isn't any cointegration between the variables. The test's findings are displayed in Table 2. We shall reject the null hypothesis that there is no cointegration because it can be demonstrated that the p-value is less than 0.05.

Table 2
Cointegration Test Results

Cointegration Test(s)	t-statistic	p-value
Augmented Dicky Fuller Test	-1.5893	0.054
Phillips-Perron Test	-2.1658	0.0152
Modified Phillips-Perron Test	3.1211	0.0009

4.3. Fixed Effect Model

Assuming slope coefficients homogeneity, the fixed and random effect models are estimated. We have applied the Hausman test, and the result of the Hausman test indicates that the fixed effect model is preferable, so we have reported the results of the fixed effect.

The results shown in Table 3 indicate that a 1-unit increase in institutional quality will lead to a 0.87-unit rise in tax revenue. Our results support the theory that institutional quality is essential to increase tax revenue. The findings from this study are also related to the previous studies we have presented in the literature. Based on these results, we have concluded that in SAARC countries, institutional quality has a tremendous impact on tax revenue. If the institutional quality improves, it will positively impact the tax collection and tax revenue.

Table 3
Fixed Effect Model Results

Variables	Coefficients	S.E	p-value
INSQ	0.871***	0.326	0.008
GDP	0.023	0.032	0.47
LOGPOP	13.084***	1.402	0.00
FDI	0.155	0.109	0.155
INF	0.042	0.038	0.264
GCF	0.054***	0.02	0.007

Note: ***, **, and * indicated significance at 1%, 5%, and 10% respectively.

The relationship between GDP and tax revenue is positive, but as the p-value indicates, it is insignificant. Although it affects the tax revenue capacity, its presence is negligible according to the fixed effect model. The population shows a significant positive connection to tax revenue. The estimated coefficient indicates that a one percent increase in population increases the tax revenue by 0.13 units. Theoretically, a large population creates a big market of goods and services, ultimately generating tax revenue. FDI is also a variable whose coefficient shows a positive sign, but its p-value portrays it as insignificant. The same is the case with the inflation variable. Lastly, gross capital formation shows a strong positive significant association with tax revenue. The coefficient value indicates that a 1 unit increase in gross capital formation will lead to a 0.54 unit increase in tax revenue collection.

4.4. Slope Coefficient Homogeneity-Heterogeneity Test

Table 4
Slope Coefficient Homogeneity-Heterogeneity Test Results

7 South Asian Countries			
Delta	**p-value**	**Adjusted Delta**	**p-value**
5.442***	0	6.599***	0

***: Indicate the significance at 1% significance.

4.5. Pooled Mean Group Model

Table 5
Pooled Mean Group Model Results

	Variables	Coefficients	S.E	p-value
Long Run	INSQ	0.733**	0.0374	0.05
	GDP	0.133***	0.048	0.006
	LOGPOP	10.255***	1.652	0
	FDI	-0.056	0.124	0.649
	INF	-0.101***	0.032	0.002
	GCF	0.142***	0.026	0
Short Run	INSQ	-0.009	0.156	0.954
	GDP	-0.032**	0.017	0.064
	LOGPOP	68.263	51.66	0.186
	FDI	0.09	0.179	0.624
	INF	0.055***	0.016	0.001
	GCF	0.04	0.055	0.474
	ECT	-0.327**	0.149	0.045

In Table 4 the results indicate that the slope coefficients are heterogeneous across the cross-section units. Now we will go for the PMG model estimation.

Table 6
Countries wise Analysis (Short Run Results)

Countries	Variables	Coefficient	S.E	P-value
	INSQ	0.128	0.637	0.841
	GDP	-0.092	0.043	0.033
	LOGPOP	14.622	61.978	0.813
India	FDI	-0.031	0.194	0.874
	INF	0.026	0.033	0.442
	GCF	-0.044	0.044	0.311
	ECT	-0.796	0.137	0.000
	INSQ	-0.391	0.351	0.265
	GDP	-0.1	0.085	0.236
	LOGPOP	-16.371	20.895	0.433
Bangladesh	FDI	0.009	0.219	0.967
	INF	0.072	0.033	0.026
	GCF	0.296	0.208	0.154
	ECT	-0.036	0.121	0.763
	INSQ	0.217	0.455	0.634
	GDP	-0.018	0.071	0.797
	LOGPOP	314.705	118.834	0.008
Pakistan	FDI	-0.516	0.177	0.003
	INF	0.1	0.03	0.001
	GCF	-0.165	0.074	0.026
	ECT	-0.981	0.174	0.000
	INSQ	-0.503	1.352	0.08
	GDP	-0.004	0.074	0.953
	LOGPOP	-46.524	62.639	0.458
Bhutan	FDI	0.111	0.205	0.587
	INF	0.091	0.055	0.098
	GCF	0.048	0.033	0.143
	ECT	-0.230	0.131	0.080
	INSQ	-0.095	0.481	0.843
	GDP	-0.024	0.017	0.155
	LOGPOP	69.958	21.588	0.001
Maldives	FDI	-0.055	0.067	0.415
	INF	0.084	0.048	0.08
	GCF	-0.039	0.021	0.064
	ECT	-0.146	0.066	0.026
	INSQ	-0.143	0.488	0.769
	GDP	-0.009	0.053	0.859
	LOGPOP	-47.852	16.499	0.004
Nepal	FDI	1.056	0.5	0.035
	INF	-0.001	0.034	0.97
	GCF	0.129	0.034	3.8
	ECT	-0.016	0.048	0.737
	INSQ	0.725	0.846	0.392
	GDP	0.023	0.09	0.802
	LOGPOP	189.3	94.904	0.046
Sri lanka	FDI	0.057	0.289	0.845
	INF	0.01	0.035	0.783
	GCF	0.054	0.095	0.573
	ECT	-0.083	0.100	0.407

Table 5 shows the estimated results from the pooled mean group (PMG) model. The coefficient of institutional quality indicates that it has a significant positive association with tax revenue. It elaborates that when institutional quality increases by one index point, it increases tax revenue by 0.73 units in the long run. However, the relationship between tax revenue and

institutional quality is negative and insignificant in the short run. These findings are consistent with previous studies Iheonu et al. (2017); Johnson and Omodero (2021); Nguyen, Su, and Nguyen (2018); Sebele-Mpofu (2020) From these results, we come to the point that institutional quality is essential in these countries. When institutions improve, tax revenue collection improves; hence, the country's economic growth also increases. When a government has more tax collection, it spends more on public projects, so the poverty level in the economy also declines. If a country wants to improve tax revenue, the focus should be improving control of corruption. When corruption in a country decrease, people cannot use their public seats for private interest; instead, they use their power for the public interest. When other indicators we use for measuring institutional quality are improved, it will also increase the tax revenue generation in countries.

Furthermore, the model's control variable has an impact on South Asian nations' tax revenues. According to the findings, there is a long-term rise in tax income of 0.13 units for every unit increase in GDP per capita growth rate. Furthermore, over the long run, there is a strong positive link between GDP and tax revenue, despite the near-term large adverse relationship between the two. The GDP growth rate indicates an increase in overall economic activity, which expands the tax base. The population and tax revenue have a long-standing, positive, and significant relationship; as the population increases, so does the revenue, as the accompanying table shows. The results indicate that there is a small but positive link between population size and tax revenue in the near run, but that a 1% increase in population size improves tax income by 0.10 units in the long run.

A huge population helps the nation because it attracts both domestic and foreign investors to the enormous market. A substantial market allows for labor force competition, which eventually promotes national development and growth and increases tax income. Over the long term, foreign direct investment has a negative but negligible association with tax income; in the near term, the link is positive but negligible. Inflation has a positive and significant association with tax income in the short term, but a negative and significant relationship with tax capacity in the long run. One definition of inflation is a rise in the average level of prices. Individuals' purchasing power is diminished by inflation, which eventually lowers aggregate demand. Low production as a result of decreased aggregate demand causes the economy to slow down. Inflation eventually reduces tax income through this avenue. Long- and short-term relationships between gross capital formation and tax revenue are both positive and significant; nevertheless, these relationships are only somewhat related. Investing in fixed assets such as plants, machinery, equipment, and other raw materials boosts the nation's economic activity and, consequently, its tax revenue.

In the case of India, the short-run results indicate that only GDP significantly and negatively influences the tax revenue. All other variables are insignificant. For Bangladesh, only inflation significantly and positively affects tax revenue. All other variables are unimportant. For Pakistan, GDP and institutional quality are insignificant, and other variables significantly affect tax revenue. For Bhutan, institutional quality negatively and significantly affects tax revenue. Institutional quality is insignificant in Nepal, Maldives, and Sri Lanka.

5. Conclusion

Using a panel data set comprising seven SAARC nations (India, Bangladesh, Bhutan, Maldives, Nepal, Pakistan, and Sri Lanka), the study looks at the link between tax revenue capacity and institutional quality from 1996 to 2020. The study develops a comprehensive index of institutional quality based on the following standards: political stability, voice and accountability, regulatory quality, rule of law, efficacy of government, and absence of violence. Initially, the fixed effect model is estimated on the presumption that the slope coefficients in a panel data set are homogeneous. To address the slope heterogeneity problem, the pooled

mean group model is computed in the subsequent regression stage. The outcome demonstrates that, over time, there is a positive and substantial association between tax revenue and institutional quality. Nonetheless, institutional quality has a negligible and short-term negative effect on tax capacity. Over time, South Asian countries' tax revenue collection was positively and significantly correlated with their GDP per capita growth rate, population size, and gross capital formation. Over time, these countries' tax income was negatively correlated with foreign direct investment and inflation.

The findings demonstrate that tax revenue in seven South Asian nations is positively impacted by institutional quality. In these nations, tax income rises in tandem with improvements in institutional quality. In many nations, tax revenue is also influenced by other macroeconomic factors. Based on our findings, it has been recommended that SAARC governments focus on strengthening institutional quality since, over time, it greatly and favorably increases tax capacity. Second, as our estimated results indicate a positive correlation between GDP per capita and capital formation and tax income, the governments of SAARC nations should also concentrate on other factors that raise GDP per capita and capital formation. Finally, our results indicate that to achieve high standards, the governments of SAARC nations need also to control inflation.

5.1. Policy Recommendations

Governments in SAARC countries should be at the front line of this process by defining and implementing initiatives dedicated to improving every aspect of governmental quality. It also covers the reduction of the mismanagement rate of the state, the prevention of corruption, the establishment of the law of the country, the increase in the quality of regulation, and the sureness of the control and security of the state. There are opportunities for the government to have higher tax revenue in the future, a chance that can arise with increased investment in these areas.

Promoting Macroeconomic Stability

Policymakers should see that the general economy is stable by ensuring growth in GDP per capita and gross capital formation. Policies that aim for economic prosperity and capital asset building will increase the state's tax revenues in due course. For instance, infrastructure construction, education, and technology projects can cause a surge in economic activity and bring in an extra source of income from taxes.

Addressing Inflationary Pressures

The government may implement tools to fight inflation since excessively high inflation rates may harm the spread of tax revenue accounting. Addressing rising inflation can be done using techniques such as a careful policy of monetary matters, sufficient maintenance of government finances, and structural reforms aimed at eliminating supply-side restraints. Addressing inflationary pressures is one of the fundamental targets of fiscal policy as it helps ensure that taxpayers' earnings are not eroded, thereby stabilizing the government tax collections.

Attracting Foreign Direct Investment (FDI)

Long-run research confirms that FDI grants subsidies to the tax inwards, though FDI outflows remain crucial. The policymakers will try to balance the investment inflows and good tax revenue collection by applying tax reforms. This can be done by proposing an investment framework with the aid of which the objectives of the fiscal budget can be followed and by putting in place a taxation scheme that can capture the money invested from foreign investors.

Continued Monitoring and Evaluation

Governments must create mechanisms for continuous control and evaluation of the performance of taxation reforms and institutions. Continuous assessment of the effectiveness of the tax measures and the proclamation of the financial reforms can help the leaders figure out the areas that need to be addressed and where the reforms are likely to be improved. Flexibility and adaptability in policy formulation and implementation are paramount among the various organizational factors a successful tax reform strategy requires. Considering the changing environment and addressing emerging challenges and opportunities is crucial.

Author's Contribution:
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Sahrish Zameer: Writeup, editing, formatting, reviewing.
Muhammad Sohail Akhtar: Formal analysis, project administration, methodology, software, empirical analysis, writing and reviewing.

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Appendix A

Table 1A
Variables Description and Data Sources

Variable	Description	Unit of measurement	Source
TAXR	Tax revenue	Percentage of GDP	WDI
COC	Control of corruption	Index	WGI
GE	Government effectiveness	Index	WGI
PSV	Political stability & absence of violence	Index	WGI
VA	Voice and accountability	Index	WGI
RQ	Regulatory quality	Index	WGI
RL	Rule of law	Index	WGI
GDP	Gross domestic product	% Per-capita growth (Annual)	WDI
POP	Population	Population total	WDI
FDI	Foreign direct investment	Net inflow % of GDP	WDI
INF	Inflation rate	Annual %	WDI
GCF	Gross capital formation	Share of GDP	WDI

Table 2A
Summary Statistics of Data

Variables	Obs.	Mean	Std. Dev	Min	Max	Skewness	Kurtosis
TAXR	175	11.749	3.469	5.757	20.152	0.483	2.427
INSQ	175	0.558	1.479	-1.927	3.872	0.143	1.929
GDP	175	3.319	4.816	-34.679	23.075	1.779	4.924
LOGPOP	175	16.957	2.758	12.465	21.045	1.011	4.713
FDI	175	1.842	2.752	-0.675	17.138	3.042	13.107
INF	175	6.225	4.199	-18.108	22.564	-0.464	9.861
GCF	175	33.157	13.682	14.120	69.484	1.012	3.295

Appendix-B
Relationship of Tax Revenue & Institutional Quality in 7 Countries

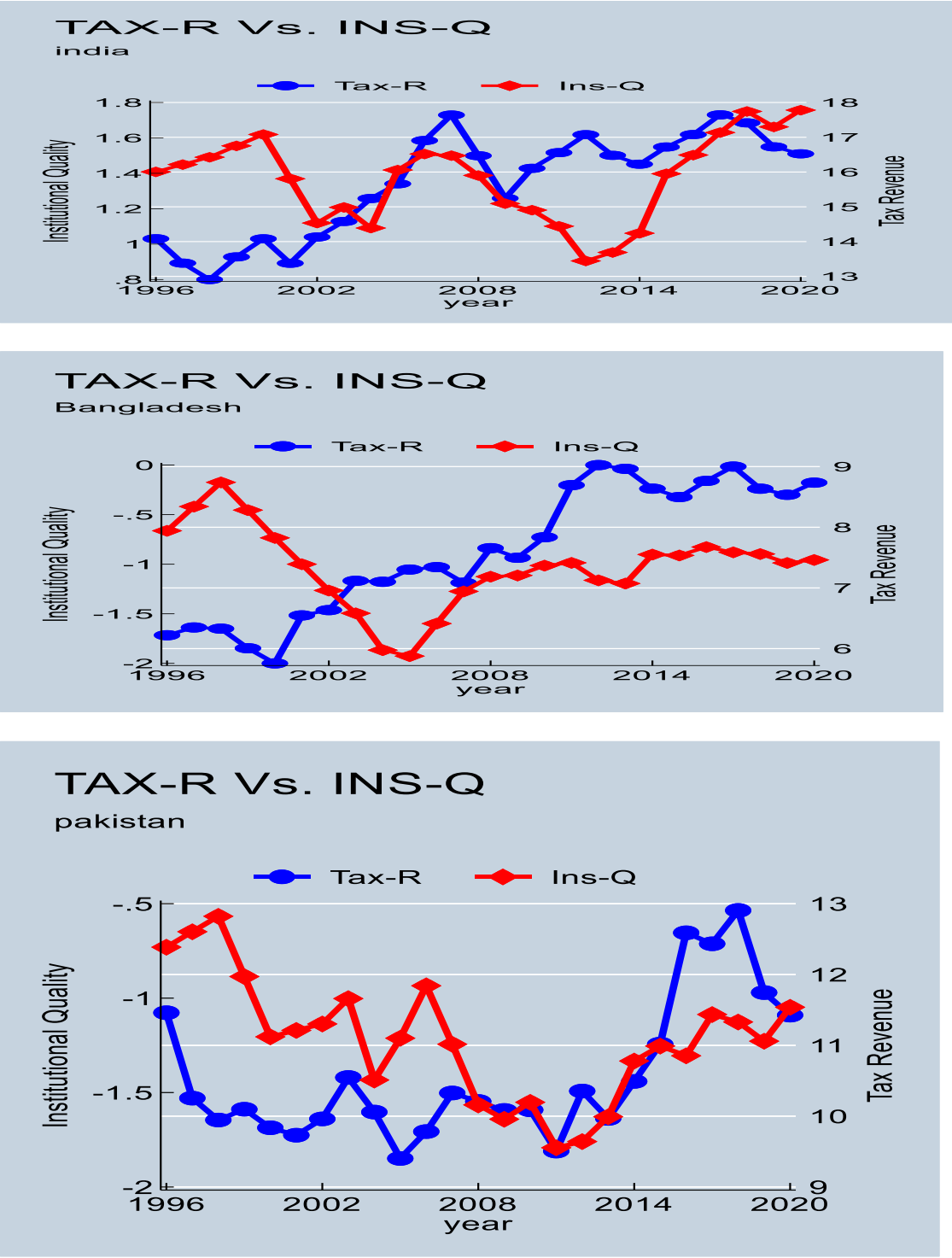

Figure 1-B: TAXR vs Institutional Quality (Pakistan)

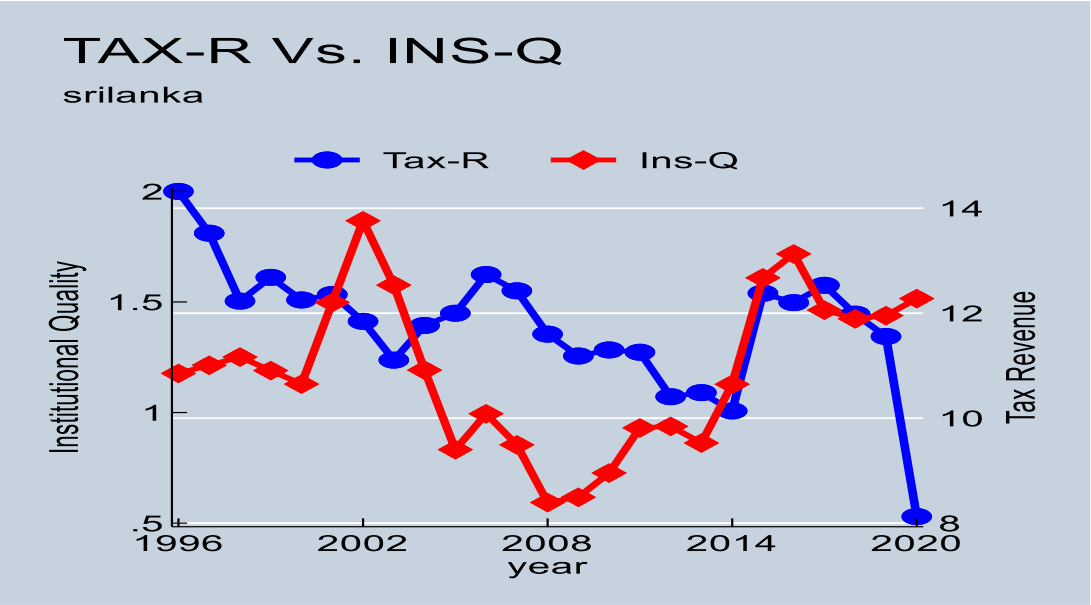

Figure 2-B: TAXR vs Institutional Quality (Sri Lanka)

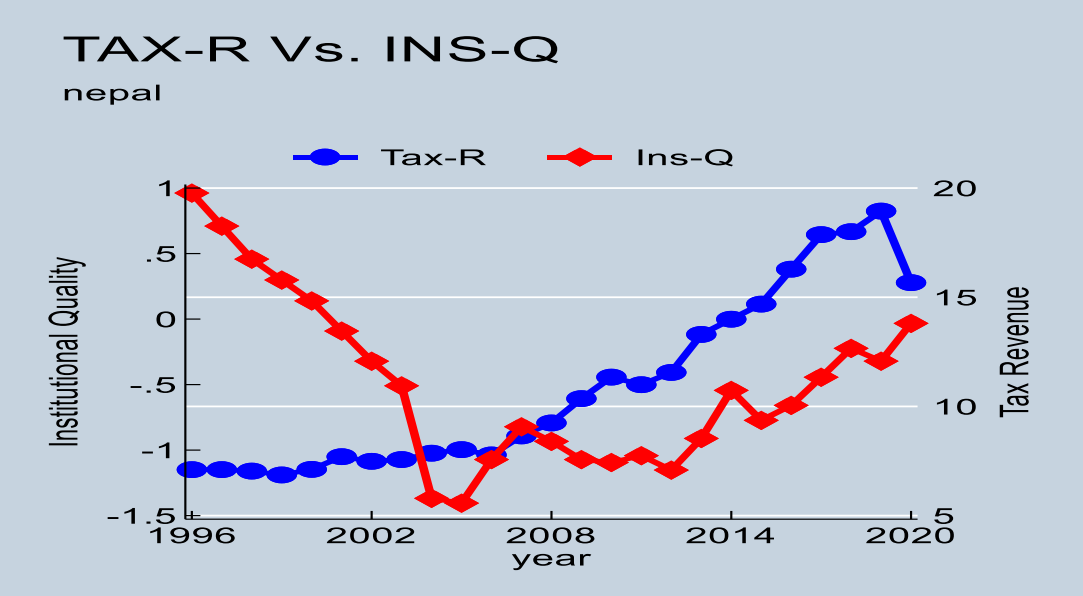

Figure 3-B: TAXR vs Institutional Quality (Nepal)

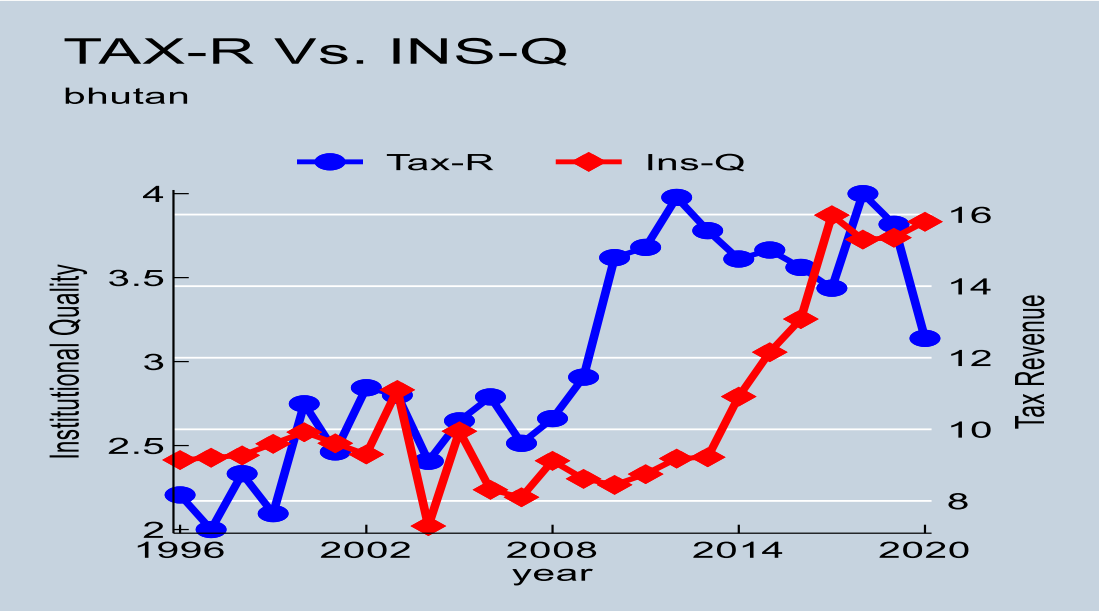

Figure 4-B: TAXR vs Institutional Quality (Bhutan)

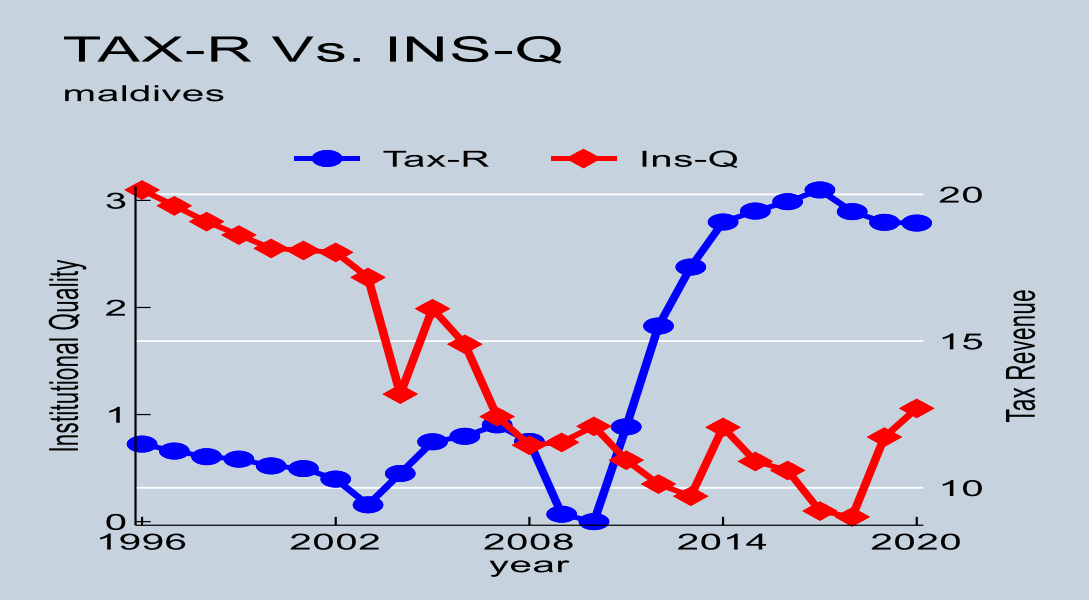

Figure 5-B: TAXR vs Institutional Quality (Maldives)