Impact of Institutional Quality and Governance on Tax-GDP Ratio: A Cross Country Analysis

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Abstract

This endeavour intends to examine the impact of institutional quality and governance indicators on tax to GDP ratio utilising cross country empirical analysis. Generally, amount of tax revenue collection is considered a pure economic phenomenon related to level of economic activity in a certain country. This paper deviates from this common perception. Hence it utilises new institutionalists' stance that governance and institutional quality are major determinants of economic and government efficiency in a country consequently revenue collection too. It also focuses the examination of efficiency and effectiveness impacts of tax administrations in order to achieve enhanced revenue collection targets. In the wake of measuring impact of governance and institutional quality, six World Bank governance indicators namely corruption, political stability, rule of law, government effectiveness, regulatory authority, and voice and accountability have been regressed with tax to GDP ratio as dependant variable. Panel data is used for a span of six years. Inclusion of population, economic growth rate, imports as percent of GDP and exports as percent of GDP as control variables are used to test robustness of the model. A stratified random sample of thirteen developing and thirteen developed countries tests the validity of the model. Empirical analysis suggests a positive relationship between tax to GDP ratio and the above mentioned six governance indicators. It provides empirical evidence that by improving governance in areas like political stability, corruption, regulatory effectiveness, voice and accountability likely to provide more robust policy options for enhancing revenue collection rather increasing tax rates and tax base. The paper also presents comprehensive set of policy options based on empirical results and literature on the subject for policy practitioners.

Keywords: Institutional Quality, Governance, Tax-GDP Ratio, Cross Country Analysis

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Introduction

An efficient administration is necessary to increase revenue collection. In developing countries, the major reasons for low tax-GDP ratio are mismatch between sectoral shares in taxes and GDP, narrow tax base and poor compliance by taxpayers. Too many exemptions hamper the smooth implementation of legal frame work. Presence of large underground economy and informal sector is largely attributable to documentation problem. Leakages and evasion due to administrative weaknesses are common issues amongst developing countries. Too much centralisation and adverse taxpayer's perception that the collected amount is not spent on basic needs makes citizens away from ownership and tax responsibilities.

A country seeking to enhance revenue collection can either look for potential areas for taxation or improve its ability to govern. Developing countries with narrow tax base have limited tax potential. Additional taxation retards economic growth and has sever repercussion on political economy. Moreover, citizens from all strata of society feel the taxation additional burden on their business and disposable income. Particularly, developing countries through constitutional protection often provide tax exemption to protect agricultural sector. Taxing this sector can affect the livelihood of the already downtrodden. A significant portion of revenue in developing countries stems from indirect taxes. According to Khan (1999) any further imposition of higher rate of indirect taxes inevitably leads to higher inflation and hurts the poor. Indirect taxes are regressive in nature and lead to higher inflation and lower spending. Gera (2007) asserts that the recent Structural Adjustment Program of the IMF and World Bank for the developing countries aims at fiscal prudence through imposition of broad based General Sales Tax and taxation of the agricultural sector.

Institutional Quality and Governance are important factor according to New Institutionalists' paradigm. Daron & James (2006) describes:

> 'The institutions of a country may create incentives for investment and technology adoption, for its businesses to invest, and the opportunity to accumulate human capital for its workers, thus enhancing economic growth. Or they may discourage such activities, leading to stagnation. They may create incentives for politicians to work towards creating a growth-enhancing environment. Or they may encourage rent seeking activities, corruption, poverty, illiteracy and the unfettered pursuance of personal gain at great cost for the rest of the society.'

Improvement in governance is an optimal solution. The paper provides empirical evidence to suggest that improvement in institutional quality and governance indicators enhances tax to GDP ratio of a country. The

government needs to emphasize on governance in order to enhance its revenue potential.

Developing countries are unable to impose taxation measures due to their socio-economic and political repercussions. However, empirical evidence suggests that strong political and administrative desire creates an efficient and effective tax administrative mechanism (Bird & Jantsher, 1992). Improvement in institutional quality and governance affects revenue collection in a positive manner.

Literature Review

Without the ability to raise revenues effectively, governments are limited in the extent to which they can provide security, meet basic needs, and foster economic development. Taxation can stimulate calls for more representative governments, while the need to increase revenues can stimulate institution-building. Funding state expenditures primarily through resources that are raised without much effort (foreign aid or revenues derived from oil and other natural resources) does little to stimulate the development of state capacity (Bird, 1992).

In developed countries, taxes not only help to create the state, they also help make it democratic. Charles (1985) concludes that there is a linkage between democratic forms of government and evolution of taxation. Formed originally to finance wars, the revenue authorities became essential supports for European economic development. Kaldor (1963) points out the linkage between state capacity and taxation by stating that, "No underdeveloped country has the manpower resources or the money to create a high-grade civil service overnight". Kaldor (1963) asserts that it is not sufficiently recognized that the revenue service is the 'point of entry'; if they concentrated on this, they would secure the means for the rest. In his view, political will is the sine qua non of any successful tax reforms. According to Torgler (2007), tax system is a reflection of the stability of a country's political institutions. Torgley reports the existence of a strong relationship between procedural fairness and high tax revenues in the developed countries.

Tanzi (1992) describe that there is a large gap between tax-to-GDP ratio of developing and developed countries on account of a number of challenges. First, a large sum of working population of developing countries is employed in the informal agricultural sector. Significant amount of earnings remain out of the ambit of income tax. Second, absence of trained tax officials and transparent tax procedures allows tax officials and tax payers to exploit the system. Third, developing countries find it difficult to develop reliable statistics in presence of an undocumented economy. As a result significant revenue potential remains unrealized. Fourth, inequalities in income distribution in the developing countries lead to regressive taxation. The rich and

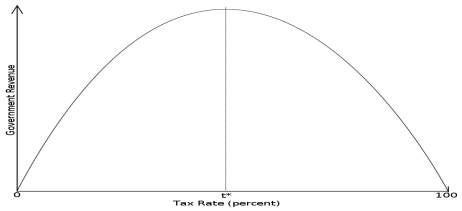
politically powerful are able to prevent fiscal reforms to implement progressive taxation. Daron & James (2006) give a detailed elaboration of this failure of progressive taxation in developing countries through the following derived mathematical model:

$$\frac{(1 - X)(1 - \theta) + X^{\theta}}{(1 - X)(1 - \partial) + X^{\partial}} = 1 - C'(T(X))$$

X implies political power of the elites; θ indicates share of income of the rich; δ stands for the number of elite in a society while T is the tax rate. Increase in political power of the elites increases the left hand side of the equation which affects the right hand side. In order for the right hand side to increase, *C' (T(X)* declines. Thus, an increase in the power of the rich to influence the policy making in a democratic developing country pulls the tax rate down to their level of satisfaction (Daron, 2010).

Developing countries mainly rely on indirect taxes for their revenues. Increase in tax rates is the only option in the wake of their narrow tax base. However, increase in tax rates does not necessarily result in an increase in government revenues. Laffer (2004) advocates lowering tax rates in order to increase tax revenues. The figure 1 at illustrates that tax revenues start to decline with an increase in tax rate beyond t*. Laffer (2004) asserts that the practice of reliance on higher tax rates for higher revenue yields has failed in developing countries.

Figure 1: Laffer Curve

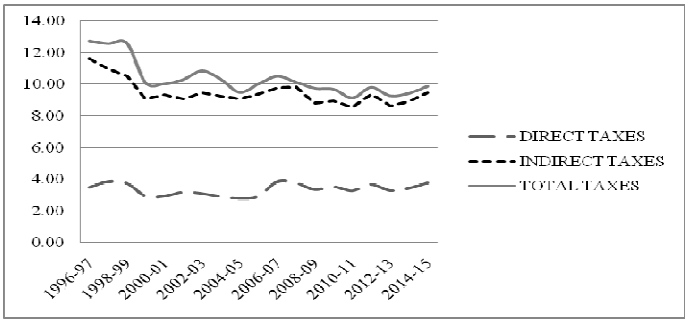


Source: Laffer, A. B. (2004)

Pakistan is one such example where despite several tax reforms and increase in tax rates for General Sales Tax, tax-to-GDP ratio has remained stagnant. Tax policy and tax administrative reforms have failed to make any significant break-through. A narrow tax base, failure to curb evasion and delay in bringing new forms of incomes in the tax net, has resulted in an inelastic tax structure. Ahmed & O'Donoghue (2009) state that despite high economic growth rate during 2000 to 2006, tax-to-GDP ratio has not improved. Pakistan is an ideal application of Daron (2010) model where there is a greater reliance on indirect taxes as depicted in Fig 2. The data on Pakistan's tax composition is exhibited in

Table 2A in the appendix A. This is the reason that tax to GDP ratio has remained at 10% since the year 2000.

Figure 2: Composition and Trend of Tax-GDP ratio in Pakistan



Source: Economic Survey of Pakistan and FBR data base 2014-15

High tax-GDP ratios in the West are partly explained by the high social security contributions which pay for several welfare schemes. Another major caveat is the method of taxation. Poor and common citizens face tax burden in case of indirect taxation. On the contrary, if, like European countries, taxes are levied on personal and business income, common citizens are not burdened. Evolution of civic sensibility, maturity of ruling classes and corruption are the key elements that differentiate the high and low tax-to-GDP ratio countries.

The state-building role of taxation is a central issue for those concerned with the problem of collapsed states, weak governments, and the lack of democracy across the developing world. Economic self-sufficiency is possible through achievement of optimal revenues. Tax policy needs to be designed in a progressive manner. The literature indicates that transparent tax laws in addition to stable political infrastructure and effective governance have a positive impact.

The developing countries need to improve governance of their institutions to enhance tax-to-GDP ratio. World Bank Governance Indicators (WGI) is a depiction of the quality of governance in a country. The WGI consist of six aggregate indicators of governance covering over 200 countries, combining cross-country data on governance provided by 30 different organizations. WGI indicators for the period 2008-13 have been tested for the purpose of this study. The governance index of the World Bank consists of several hundred measuring perceptions of governance and derives from 30 different data sources (Kaufmann & Aart, 2008). All scores lie between -2.5 to +2.5, with higher scores corresponding to better institutional frameworks.

Governance indicators are based on perceptions collected through surveys conducted by various international organizations in a country. There are certain limitations to these indicators. These include comparability over time and across countries, biases in expert assessments, correlated perception errors, definitional issues, and reliance on subjective data.

Methodology, Hypotheses and Model Specification

The paper utilizes the pooled data for 26 countries for a span 6 years; its estimation is modeled as:

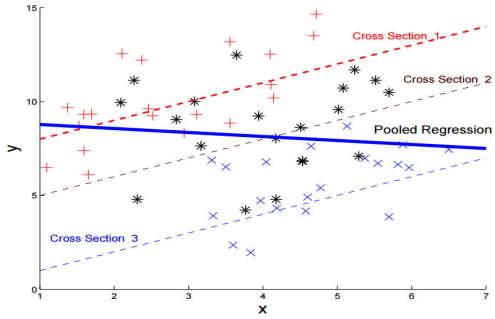
$$Y_{it} = X'_{it}\beta + \alpha + \varepsilon_{it}$$

$$Y_{it} = \alpha_1 D_i^1 + \ldots + \alpha_n D_i^n + X'_{it}\beta + \varepsilon_{it},$$

with $D_i^j = 1$ if $i = j$ and zero if $i \neq j$.

The dummies are used for each year under consideration to smoothen the model for estimation cross-section panel data. The estimation procedure of polled data exhibited in Fig-2 described that all the countries with certain years converted into single series and OLS estimation is carried out to determine parameter with an assumption of no presence of heteroskedasticity. In order to capture effects of endogenous on exogenous variables in cross-sectional data across the countries for a certain time period, this method is useful despite some weaknesses.

Figure 3: Estimation Design of Pooled Data



According to the theory, better governance plausibly should enhance tax-to-GDP ratio. The test of following sub-hypothesis corroborates the assumptions of the principle hypothesis.

H_{01}: An accountable State with adequate public representation has no impact on tax to GDP ratio.

H_{11}: An accountable State with adequate public representation results in a higher tax to GDP ratio.

H_{02}: A politically stable country has no impact on tax to GDP ratio.
H_{12}: A politically stable country results in a higher tax to GDP ratio.

Multiple regression analysis between tax-to-GDP ratio and voice and accountability provides results for relationship between the two variables. The data for selected countries is available at the World Bank database. Descriptive analysis of the data in time series indicates that developed countries have a higher ratio as compare to their developing counterparts.

The test of governance indicator for Voice and Accountability with tax to GDP ratio is the primary basis for hypothesis testing. Population, economic growth rate, import as percentage of GDP and export as percentage of GDP are the confounding variables. Voice and Accountability is a predictor in this empirical model. According to the hypothesis there is a positive relationship between tax to GDP ratio and voice and accountability. Mathematical representation of the model is:

$$\text{Tax to GDP Ratio} = \beta_0 + \beta_1(\text{VOICE AND ACCOUNTABILITY}) + \beta_2 (\text{POP}) + \beta_3 (\text{GROWTH}) + \beta_3 (\text{IMPORT}) + \beta_4 (\text{EXPORT}) \text{------(1)}$$

Poirson (2006) describes that in countries with faster growing population, tax system may lag behind in the ability to capture new taxpayers. This suggests a negative relationship between population and tax efforts.

The most traditional explanatory variables in the conventional tax literature are those controlling for a country's economic structure. Trade taxes are often a major source of national revenues in less developed countries because they are easier to collect. The tax ratio is positively correlated with trade taxes. A large number of countries have proceeded over the past decade to lower tariffs as part of their trade liberalization and economic reforms policies under the WTO agenda. Hence the earlier strong link between international trade and revenue collection may have weakened.

As regards the indicator for political instability, correlation test indicates existence of multi-collinearity between political stability and Voice and Accountability as shown in Table 1 of Appendix A. A separate regression analysis of tax-to-GDP ratio and political stability in the presence of control variables depicts presence of relationship. The final model equation is

$$\text{Tax to GDP Ratio} = \beta_0 + \beta_1(\text{POLTICAL STABILITY}) + \beta_2 (\text{POP}) + \beta_3 (\text{GROWTH}) + \beta_3 (\text{IMPORT}) + \beta_4 (\text{EXPORT}) \text{----------(2)}$$

Deniz & Ceyhun (2009), in their study on the impact of political stability on tax to GDP ratio provide proof that there is a direct relationship between the two. The data analysis should show a direct relationship between the two variables in the presence of control variables along with dummy variables for the country difference and time effect. Significance of country variable would indicate that the tax-to-GDP ratio is higher for developed countries.

H_{03}: A country with effective & efficient bureaucratic infrastructure will have no impact on tax to GDP ratio.

H_{13}: A country with effective & efficient bureaucratic infrastructure will have a higher tax to GDP ratio.

H_{04}: An effective regulated framework in a country will have no impact on tax to GDP ratio.

H_{14}: An effective regulated framework a country will have a higher tax to GDP ratio.

The testing of hypothesis that there exists relationship between tax to GDP ratio and government effectiveness and regulatory framework is identical to the steps taken in hypothesis 1. The test includes insertion of two new governance indicators of government effectiveness and regulatory authority through a step wise regression analysis. There is a separate analysis for each indicator on account of multi-collinearity as shown in table A-1 of Appendix A. The new equation for government effectiveness is as follows:

$$\text{Tax to GDP Ratio} = \beta_0 + \beta_1(\text{GOVERNMENT EFFECTIVENESS}) + \beta_2 (\text{POP}) + \beta_3 (\text{GROWTH}) + \beta_3 (\text{IMPORT}) + \beta_4 (\text{EXPORT}) \text{----------} (3)$$

Similarly the model for regulatory authority is as follows:

$$\text{Tax to GDP Ratio} = \beta_0 + \beta_1(\text{REGULATORY AUTHORITY}) + \beta_2 (\text{POP}) + \beta_3 (\text{GROWTH}) + \beta_3 (\text{IMPORT}) + \beta_4 (\text{EXPORT}) \text{----------} (4)$$

Data for governance indicators for regulatory authority is available at the World Bank's data source (World Bank, 2013).

Population, economic growth rate and openness of the economy act as confounding variables and make the model dynamic and robust. Population and economic growth should have negative relationship with statistical significance. Similarly openness of the economy should have a positive relationship. However, in view of the recent WTO regulations signed by a number of developing countries this is insignificant relationship. According to the hypothesis there needs to be a positive

direct relationship between tax to GDP ratio and Government Effectiveness and Regulatory Authority. Multiple regression analysis provides the results of the relationship.

H_{05}: A state with improved rule of law will have no impact on tax to GDP ratio.

H_{15}: A state with improved rule of law will have a higher tax to GDP ratio.

H_{06}: A state with higher controls on corrupt practices will have no impact on tax to GDP ratio.

H_{16}: A state with higher controls on corrupt practices will have a higher tax to GDP ratio.

Is it possible to increase tax to GDP ratio by improving rule of law and reducing corrupt practices? The analysis includes multiple linear regressions of the two indicators against tax to GDP ratio separately due to existence of high correlation amongst them as shown in table 1 in the appendix A. Analysis includes addition of the four control variables; population, economic growth rate, percent import of GDP and percent export of GDP. A dummy variable for distinguishing developed country from developing country makes the model more robust. The inclusion of dummy variables for time effect would examine whether there is any impact on tax-to-GDP ratio over a period of time. The model equation for rule of law is as follows:

$$\text{Tax to GDP Ratio} = \beta_0 + \beta_1(\text{RULE OF LAW}) + \beta_2\,(\text{POP}) + \beta_3\,(\text{GROWTH}) + \beta_3\,(\text{IMPORT}) + \beta_4\,(\text{EXPORT}) \quad \text{----------(5)}$$

Similar empirical analysis on control of corruption depicts the following model equation:

$$\text{Tax to GDP Ratio} = \beta_0 + \beta_1(\text{CONTROL OF CORRUPTION}) + \beta_2\,(\text{POP}) + \beta_3\,(\text{GROWTH}) + \beta_3\,(\text{IMPORT}) + \beta_4\,(\text{EXPORT}) \quad \text{----------(6)}$$

Data for governance indicators for rule of law and control of corruption is available at the World Bank's website for the World Bank Governance Indicators (World Bank 2013). According to the hypothesis there needs to be a positive direct relationship between tax to GDP ratio and rule of law and control of corruption. Significance of the dummy variable can predict the fact that whether developed countries have a higher tax to GDP ratio while controlling for all other factors given in the model. The regression results provide an indication of the direction of the relationship of each of the independent variable with tax to GDP ratio.

Model Estimation and Results

Multiple Regression Analysis of the dataset indicates a positive relationship between governance indicators and tax to GDP ratio while controlling for other factors during the time period 2009-13. The findings are in accordance with the assumptions laid out in the methodology. It also corroborates with the findings of Martinez & Bird (2006) regarding the existence of positive relationship between the governance indicators and TGR (tax to GDP ratio). Regression results for six equations are exhibited in tables 1 to table 3.

Table 1: Regression - Tax to GDP Ratio and Voice and Accountability & Political Stability.

Model Dependent Variables	OLS Results of Eq-1 Tax-GDP Ratio		OLS Results of Eq-2 Tax-GDP Ratio	
Independent Variables	Coefficients	SE	Coefficients	SE
INSTITUTIONS				
Voice and Accountability	2.828*	(0.980)	--	--
Political Stability	--	--	3.500*	(0.920)
REGIONS				
Developed	9.726*	(1.754)	8.463*	(1.766)
DEVELOPMENT				
Population	-5.62E-09**	(2.4E-09)	-5.1E-09*	(2.6E-09)
Economic Growth rate	-1.229**	(0.629)	-1.660*	(0.617)
OPENNESS				
Percent of Imports of GDP	0.150***	(0.098)	0.161***	(0.096)
Percent of Exports of GDP	-0.141***	(0.087)	-0.174***	(0.085)
Year 2009	1.826	(1.938)	3.041	(1.909)
Year 2010	0.677	(1.951)	1.991	(1.921)
Year 2011	0.551	(1.920)	1.317	(1.891)
Year 2012	-0.302	(1.920)	-0.181	(1.883)
Year 2013	0.576	(1.930)	0.762	(1.891)
F-Test : INSTITUTIONS	21.943*		23.353*	
Multiple R	0.791		0.800	
R Square	0.626		0.641	
Adjusted R Square	0.598		0.613	
Standard Error	6.889		6.754	
Observations	156		156	

** indicates significance at the 1 percent level ,*
*** indicates significance at the 5 percent level*
**** indicates significance at the 10 percent level. Robust standard errors in parentheses.*

Table 2: Regression –Tax - GDP Ratio & Government Effectiveness & Regulatory Authority

Model	OLS Results of Eq-3		OLS Results of Eq-4	
Dependent Variables	Tax-GDP Ratio		Tax-GDP Ratio	
Independent Variables	Coefficients	SE	Coefficients	SE
INSTITUTIONS				
Government Effectiveness	2.907*	(1.140)	--	--
Regulatory Authority	--	--	2.415**	(1.093)
REGIONS				
Developed	8.414*	(2.273)	9.998**	(1.940)
DEVELOPMENT				
Population	-6.7E-09*	(2.4E-09)	-6.7E-09*	(2.4E-09)
Economic Growth rate	-1.497*	(0.630)	-1.361*	(0.633)
OPENNESS				
Percent of Imports of GDP	0.195***	(0.100)	0.155**	(0.099)
Percent of Exports of GDP	-0.205***	(0.089)	-0.167***	(0.088)
Year 2009	2.330	(1.946)	2.442	(1.959)
Year 2010	1.095	(1.957)	1.348	(1.971)
Year 2011	0.549	(1.932)	0.863	(1.944)
Year 2012	-0.404	(1.932)	0.033	(1.948)
Year 2013	0.649	(1.941)	0.747	(1.951)
F-Test : INSTITUTIONS	21.522*		21.148*	
Multiple R	0.789		0.786	
R Square	0.622		0.618	
Adjusted R Square	0.593		0.588	
Standard Error	6.931		6.968	
Observations	156		156	

** indicates significance at the 1 percent level ,*
*** indicates significance at the 5 percent level*
**** indicates significance at the 10 percent level. Robust standard errors in parentheses.*

Table 3: Regression –Tax - GDP Ratio & Rule of Law & Control on Corruption

Model	OLS Results of Eq-5		OLS Results of Eq-6	
Dependent Variables	Tax-GDP Ratio		Tax-GDP Ratio	
Independent Variables	Coefficients	SE	Coefficients	SE
INSTITUTIONS				
Rule of Law	2.833*	(1.073)	--	--
Control on Corruption	--	--	1.909**	(0.917)
REGIONS				
Developed	8.847*	(2.088)	9.865*	(2.058)
DEVELOPMENT				
Population	-7.0E-09*	(2.4E-09)	-6.6E-09*	(2.4E-09)
Economic Growth rate	-1.379**	(0.629)	-1.498**	(0.635)
OPENNESS				
Percent of Imports of GDP	0.158***	(0.099)	0.184***	(0.101)
Percent of Exports of GDP	-0.166***	(0.087)	-0.192**	(0.090)
Year 2009	2.352	(1.943)	2.551	(1.967)
Year 2010	1.246	(1.955)	1.354	(1.975)
Year 2011	0.790	(1.929)	0.765	(1.946)
Year 2012	-0.101	(1.930)	-0.204	(1.946)

Year 2013	0.795	(1.937)	0.817	(1.955)
F-Test : INSTITUTIONS	21.630*		21.021*	
Multiple R	0.789		0.785	
R Square	0.623		0.616	
Adjusted R Square	0.594		0.587	
Standard Error	6.920		6.981	
Observations	156		156	

** indicates significance at the 1 percent level ,*
*** indicates significance at the 5 percent level*
**** indicates significance at the 10 percent level. Robust standard errors in parentheses.*

Discussion about Estimation & Results

The analysis of the correlation results (Table A-1 in Appendix A) indicates that there is a high correlation amongst all governance indicators and is greater than the correlation between governance indicators and tax to GDP ratio. This indicates presence of multicollinearity. In order to test hypotheses presented in the previous sections for statistical significance, pool of data for 26 countries for time span of 6 years has be utilized to examine the relationship of each governance indicator with tax to GDP ratio. Regression analysis of tax to GDP ratio against each World Bank Governance Indicator have used as main variable of interest in the study. Population, GDP growth rate, total imports as percent of GDP and total exports as percent of GDP are the control variables which make the model dynamic and robust. Longitudinal study for the time period 2009 to 2013 highlights the effects of time period. The benefit of a longitudinal study is its ability to distinguish short term results from long term.

Estimation result of Equation 1 described in the table describes that estimated value of coefficient of voice and accountability taken as exogenous variable is highly significant at 1%. Hence hypotheses H^{o}_{1} that Voice and accountability has no effect lies in area with high probability of rejection. As policy matter the results tells that public participation and accountability measures adopted will affect tax-GDP ratio more than double i.e. The value of coefficient of dummies for developed and developing countries is highly significant and Ho is rejected at one percent probability. In case of developed countries occurrence of higher Tax-GDP ratio may take more than nine times than that of developing countries. It also depicts that developing countries need more efforts to enhance level of participation and to enhance effectiveness and efficiency of accountability apparatus. Economic growth though significant at 5% percent confidence interval, however its sign, which is negative, depicts against the general perception that higher growth will increase Tax-GDP ratio. The data shows that countries with high level of Tax-GDP ratio like France, Sweden, Canada and USA has

low level of growth indicators because of high GDP base in comparison with countries like Pakistan, India, Bangladesh , Philippines . In these developing countries Tax-GDP ratio is low but it has been observed higher level of economic growth coupled with higher population growth. Coefficients of Ratios of export-GDP and import-GDP as indicators of openness are significant only at 10% confidence interval hence predicts a mixed trend over data. Negative value of coefficient of population is significant at 5% confidence interval which speaks that countries with high population tend to pose higher threat on Tax-GDP ratio. As a consequence of rise of electronic and social media, the accountability mechanism and public participation have enhanced manifolds than that of earlier decades.

Coefficients based on equation-2 depict relationship between political stability and tax-GDP ratio. The coefficient equivalent to 3.5 is highly significant and H_{02} is rejected at one percent of confidence interval that political stability has no impact on Tax-GDP ratio. It is worth noting that in all six estimated equations impact of political stability is highest in term of value. Hence it prescribes that as principal of first-come-first, political stability should given top priority in improving institutions and governance policies in developing countries. Higher frequency of political turmoil leads to an economy more fragile towards tax collection efforts. Consequently it weakens the tax administration apparatus which is an indispensable tool of tax collection. The political instability also hampers the confidence that their tax money is properly utilized or not.

Coefficient of Government effectiveness in equation 3 is significant at 1% level of confidence, hence H_{03} is rejected. It describes that enhance of government effectiveness will likely to enhance tax-GDP ratio around three times of the efforts exerted. Civil services are backbone of the government. Though political leadership provides better vision and enhanced policy options but bureaucracy are ultimate tools of implementation of policies and execution of ways and means in an economy. The results conclude that effective government will generate true value of public money and contribute economic growth along with public confidence on the government machinery.

Selectivity in implementation under the influence of ruling parties a subtle act generally committed in most of the developing world particularly countries with fragile political and accountability structure. In order to verify the fact empirically that effective and efficient regulatory apparatus in a country has any effect in Tax-GDP ratio, the estimation results of Equation 4 rejects the null hypothesis $H_{04.}$ The coefficient value 2.415 is significant at 5% confidence interval. Hence efforts exerted to enhance regulatory efficiency will likely to generate more than double the increase in Tax-GDP ratio. The empirical results

of this study speak that better governance and enhanced institutional quality in developing countries will enhance economic activity, higher efficiency of revenue collecting apparatus and consequently higher degree of tax-GDP ratio.

The rule of law is an encompassing concept in the areas of governance and institutional quality. It covers depiction of situation covering the areas like policing, judiciary, functionary of ministries, recruitment policies, financial prudence in the government functionaries etc. Estimation results of the Eq-5 depicts that coefficient of rule of law is significant at 1% confidence interval and null hypothesis. Hence H_{05} stands rejected. The coefficient of dummy depicting regional identification is highly tilted towards developed countries. Hence asserts that developed countries likely fetch around 8.847 times more revenue as percentage to GDP than that of in case of developing countries.

Estimation results of Eq-6 containing control on corruption describe that null hypothesis H_{06} is rejected due to the reason that coefficient of control on corruption variable is significant at 5% confidence interval. The results say that corruption eradication efforts will likely fetch around double more revenue at a certain level of GDP. The tax evasion and theft in corroboration with tax machinery is century old phenomenon. Transparency International has also created local chapters in many countries in order to watch corruption and anti corruption policies.

Detailed analysis of the regression results corroborate the findings of earlier empirical studies of Bird (2007), Bahl (1971), Bird (2003), Poirson (2006) and Deniz & Ceyhun (2011). Following is a summary of each of these findings:

- All governance indicators are not only positively related to tax to GDP ratio but are also statistically significant. The findings match Bird's results (2007). This indicates that effective governance leads to higher tax-to-GDP ratio.
- Population is statistically significant. Furthermore, it is negatively related with tax to GDP ratio which is in line with studies of Bahl(2003). This implies that taxation structure is unable to capture entire population under the tax net.
- Economic Growth remains negatively related and statistically insignificant to tax-to-GDP ratio. This agrees with cross country studies conducted by Poirson (2006). This indicates stagnancy of tax-to-GDP ratio amongst developing countries. Despite economic growth, the developing countries are unable to capture the expansion in economy on account of their narrow tax base.
- There is a strong positive relationship in imports and tax to GDP ratio which indicates that developing countries have a strong dependency on their import taxes. However, negative

relationship in exports is the result of duty exemptions to raw materials imported for goods, which are subsequently exported. An increase in exports would mean an increase in import of exempted goods which would have a negative effect on tax to GDP ratio.

Limitations the Model and Estimation

Following are the limitations to the empirical model:

i). The study analyzes data for only thirteen developing and thirteen developed countries. Using data for a greater number of countries can make the analysis reliable and statistically significant.

ii). Five years data is the basis for the longitudinal study. An analysis over a larger time frame can provide better estimates.

iii). The study includes only four control variables in addition to the predictor variable of governance. Additional independent variables such as Foreign Direct Investment and per capita income can provide a better estimate of the model.

iv). There are several limitations to the World Bank Governance Indicators. First, there are concerns about the over-time and cross-country comparability of the WGI. There are substantive margins of error in the dataset. Second, there are significant biases in expert assessments. Third, critics have suggested that expert assessments make similar errors when assessing the same country, leading to correlations in the perception errors across various expert assessments. Fourth, there is no consensus on the definition of governance indicators. Fifth, there is a greater reliance on subjective data in the formulation of governance indicators.

Recommendations & Conclusion

In view of the above mentioned policy options, following are recommended to enhance the tax to GDP ratio of a developing country:

- Developing countries should focus on progressive taxation in order to enhance their tax-to-GDP ratio.
- In order to gain maximum representation in tax policy making, Chamber of Commerce and Industry should be involved in the formulation of tax policies.
- Accountability Commissions should be managed by people of professional integrity.
- Government expenditures create opportunities for employment and economic growth. Optimal tax collection can lead to higher public expenditure in development program.

- Tax reforms should be framed and tested at a pilot level before embarking on a larger scale in order to test the efficiency of reforms.
- Change in tax policies should happen only once a year during the budgetary exercise of the parliament. Repeated shifts in tax policies make the system ambiguous and open to criticism.
- The Upper and Lower House of the parliament should thoroughly debate budgetary proposals before making any amendments in tax policies.
- Tax policies should be framed in a transparent and effective manner with exact rules for implementation. The tax machinery run by bureaucrats should ensure implementation of each rule and regulation.
- In order to eliminate the menace of corruption from the taxation infrastructure, it is imperative that taxation officers and officials are hired on market based salaries. There is a need to reduce the redundant lower level staff through the introduction of automation. Financial incentives in the form of annual rewards for outstanding performance can play a major role in controlling corruption index.

Empirical analysis indicates the importance of effective governance. Legitimate and responsive state is therefore an essential pre-condition for attainment of higher tax to GDP ratio. Developing countries cannot rely on increasing tax burden on an already narrow tax base for higher tax growth. The study also suggests that a stable legal framework along with improved controls on corrupt practices contributes toward reduction in tax evasion. The following policy solutions, if implemented, results in a to a higher tax-to-GDP ratio. First, creation of a tax accountability and vigilance commission can result in unearthing of mega tax frauds. Second, there is a need to keep a vigilant watch on corrupt practices by tax officials in collusion with the business community. Third, implementation of consistent tax policies depicts a stable political framework. Empirical studies show that Multi National Corporations consider political stability in the host country as one of the most important determinants in investment decision making. Optimal tax levels lead to large economic growth and social welfare. Third, clear, concise and transparent laws promote investor confidence resulting in higher revenue generation. Fourth, tax laws should be transparent in every manner. Fifth, government in a developing country should strive for an independent and efficient tax bureaucracy along with transparent automated taxation systems. Empirical evidence suggests that where governments reduce bureaucracy and increase the control of corruption, tax compliance is at its highest. Sixth, developing countries need to have

a transparent budget making process with adequate public representation. Implementation of the above policy options can result in a higher tax to GDP ratio which is essential for socio-economic development of any developing country.

Appendix A

Table 1-A: Correlation between Tax to GDP Ratio and the Six Governance Indicators

	Taxes	Pols	Ge	Reg	Law	Corruption	Va
taxes	1						
Pols		1					
ge			1				
reg				1			
Law					1		
corruption						1	
va							1

Table 2-A: Composition of Tax to GDP Ratio in Pakistan

(Rs. Million)

YEARS	GDP *	DIRECT TAXES		INDIRECT TAXES		SURCHARGES *		TOTAL TAXES *WITHOUT SURCHARGES*		TOTAL TAXES *WITH SURCHARGES*		
	(mp)	Collection (Net)	Tax/GDP Ratio (%)	Collection (Net)	Tax/GDP Ratio (%)	Collection (Net)	Tax/GDP Ratio (%)	Collection (Net)	Tax/GDP Ratio (%)	Collection (Net)	Tax/GDP Ratio (%)	
	1	2	3	4	5	6	7	8	9	10	11	12
1996-97	2,428,312	85,060	3.50	197,027	8.11	27,317	1.12	282,087	11.62	309,404	12.7	
1997-98	2,677,656	103,182	3.85	190,449	7.11	42,911	1.60	293,631	10.97	336,542	12.6	
1998-99	2,938,379	110,207	3.75	198,302	6.75	61,927	2.11	308,509	10.50	370,436	12.6	
1999-00	3,826,111	112,950	2.95	234,154	6.12	38,912	1.02	347,104	9.07	386,016	10.1	
2000-01	4,209,873	124,585	2.96	267,692	6.36	30,200	0.72	392,277	9.32	422,477	10.0	
2001-02	4,452,654	142,505	3.20	261,565	5.87	54,854	1.23	404,070	9.07	458,924	10.3	
2002-03	4,875,648	151,898	3.12	308,729	6.33	68,230	1.40	460,627	9.45	528,857	10.8	
2003-04	5,640,580	165,079	2.93	355,764	6.31	61,400	1.09	520,843	9.23	582,243	10.3	
2004-05	6,499,782	183,372	2.82	407,015	6.26	26,769	0.41	590,387	9.08	617,156	9.5	
2005-06	7,623,205	224,988	2.95	488,454	6.41	50,800	0.67	713,442	9.36	764,242	10.0	
2006-07	8,673,007	333,737	3.85	513,499	5.92	64,546	0.74	847,236	9.77	911,782	10.5	
2007-08	10,284,380	387,861	3.77	620,230	6.03	35,178	0.34	1,008,091	9.80	1,043,269	10.1	
2008-09	13,199,707	443,548	3.36	717,602	5.44	126,026	0.95	1,161,150	8.80	1,287,176	9.8	
2009-10	14,866,996	525,977	3.54	801,405	5.39	114,650	0.77	1,327,382	8.93	1,442,032	9.7	
2010-11	18,276,440	602,451	3.30	955,563	5.23	113,103	0.62	1,558,014	8.52	1,671,117	9.1	
2011-12	20,046,500	738,424	3.68	1,144,269	5.71	83,329	0.42	1,882,693	9.39	1,966,022	9.8	
2012-13	22,489,077	743,409	3.31	1,202,951	5.35	141,837	0.63	1,946,360	8.65	2,088,197	9.3	
2013-14	25,401,895	877,255	3.45	1,377,277.0	5.42	142,064	0.56	2,254,532	8.88	2,396,596	9.4	
2014-15	27,384,000	1,033,720	3.77	1,556,258	5.68	115,316	0.42	2,589,978	9.46	2,705,294	9.9	

* Source: Pakistan Economic Survey 2014-15 (Table 4.3) and FBR Data base

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