

Empirical Analysis of Tax Revenues and Its Impact on Economic Growth of Pakistan

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Abstract

Tax is being considered as the leading source of government revenues in the history of mankind. The same is true for current advanced countries as well as for Pakistan. Government revenues play the leading role in economic growth of every country. In Pakistan Income tax, Sales tax, custom duties, excise duties, worker welfare tax and surcharges etc. are the main sources of tax revenues. This study was conducted to find the relationship between different kinds of taxes and GDP of Pakistan for years 1979-2010 using time series data. Statistical techniques used in analysis include Regression analysis, Unit root test, co-integration test, white test, and so other tests for reliability of the study. The study shows that there is significant positive impact of taxation on economic growth of Pakistan except WWT.

Keywords: Income Tax, Sales Tax, Custom and Excise Duties, Workers Welfare Tax, GDP, Pakistan.

1. Introduction

Tax is a compulsory financial charge levied on the citizens who in turn enjoy socio-economic prosperity. It keeps the economy alive and enables the government to practice numerous economic activities which lead to economic development. It holds the increase in debt to GDP ratio in balancing budget deficit to control the rate of inflation and practice fiscal stabilization. Pakistan is a developing economy with very limited capital and private initiatives. The government has to implement strong fiscal and international trade policies to cope with widening gap between public revenue and expenditures. In Pakistan, taxes are imposed on individuals and legal entities in the form of income tax, wealth tax, corporate tax, sales tax, custom duties, excise duties etc under the Income Tax Ordinance 1979, which was publicized from 1 July 1979 by the Government of Pakistan. In Pakistan, more than 70 different taxes are imposed and managed by 37 government agencies. (Horrigan, Kevin 2010)

Taxation is the major fiscal tool and source of revenue collection for government in both developed and developing economies. Effective tax system is crucial and indispensable for economic growth in developing economies, where large portion of income is utilized in unproductive channels. Taxation diverts the conspicuous and wasteful expenditures into the acceleration of investment and formation of socio-economic overheads. Policies regarding tax considerably differ between poor and rich countries. In rich countries the contribution of tariffs in total tax revenues is lower than other taxes like income and consumption taxes. While in poor countries, tariffs and excise taxes play a vital role in tax revenues of the country (Gordon and Li, 2005).

Taxes are important for expenditure of government to manage, redistribute income among people and different sectors of the economy, market regulation and so forth. Pakistan has collection of indirect taxes as a big contribution of total tax revenues, while direct taxes have low level of revenues for government as it has failed to collect taxes from every sector or individual due to corruption and tax evasion. According to International Development Committee, only 0.57 % of Pakistanis pay income tax. Most of the evasion occurs because of corruption, bribes and false assessments by the tax collectors. (Transparency International Pakistan 2002). The tax to GDP ratio in Pakistan is very low at hardly 8.5 % in FY 2013-2014 which is lower than 15 % for developing economies and 30 % for developed economies. (OECD tax to GDP 2013-14).

In developing economies like Pakistan, the poor are suffering more from the burden of taxes as indirect taxes (sales tax) on basic necessities is rising because of inelastic demand compared to tax rate on luxury goods, which sounds regressive, where rich are paying less than poor as compare to their tax to income ratio. The tax

system is designed by the elite class who are either part of or bought out the Parliament to have a clear way for tax evasion and corruption. This has shifted the tax burden from rich onto the poor which results in utilization of their income on basic consumption and with very little or no saving of the masses. Such taxation policies failed to resort to forced savings. This leads to considerable portion of higher income people in hoardings, jewelry and demonstration effect. Optimal tax rate is necessary in both direct and indirect taxation to reduce market distortions and inefficiency along with high revenues for public expenditures. This will decrease burden on both the consumers and producers.

Empirically there is lot of the controversies about the impact of taxes on economic growth among authors, that their empirical study shows some differences about the impact. Many of the authors concluded that there is positive relationship overall between taxes and economic growth, and some concluded this relationship as negative. Few study results state that there is no relationship between taxes and economic growth.

1.2 Theoretical Relationship

Theoretically we know that the burden of tax may have worse effects on economic growth of a country through different ways. First, the tax burden may lead to fall in investment and stock of capital or it may discourage the level of investment, which lowers the efficiency of economy. Second, tax policy may depress the productivity growth of research and development (R and D) which is the only way to improve the productivity of labor and capital. Third, taxes can also lead to fall in intensive to work which lead to fall in the contribution of labor productivity by reducing their hours of work. Fourth, tax may lead to fall in marginal productivity of capital as it force capital to leave high taxed sector which is more productive to low taxed sector which has low productivity (Harberger).

There are also some evidences that show a positive impact of taxes on economic growth. (Johansson et al) conclude that taxes can lead to economic growth. According to his analysis, corporate taxes are proved to be harmful for growth as they discourage investment.

1.3 Objectives of the Study

This study aims that whether taxes can play a vital role in economic growth of Pakistan or not. And the relationship of different types of taxes with GDP of the country in question. The study tries to conclude the importance of tax reforms on the basis of lower than average tax revenues and inconsistent GDP growth of Pakistan.

1.4 Organization of the Study

The study has been organized as Section 1 contain introduction, theoretical relationship and objectives of the study. The literature review about this study has been included in section 2. In Section 3 the data is described and model is specified. In section 4, the data is analyzed and results are concluded. In section 5, conclusion is made and recommendations are put forward.

2.Literature Review

There are a lot of studies done by researchers on tax and GDP relations in the world, and the same is for Pakistan. We will now discuss the studies and conclusions made by these researchers on this area of discussion. Different people concluded different relationship between GDP and taxation. And also suggested some practices for government to adopt for economic growth.

Bilquees (2004) studied the elasticity of taxation in Pakistan for the period of 1973 to 2003 using Divisia Index Approach. Her estimates of elasticity coefficients concluded no significant revenue growth with tax changes. However the high coefficient of sales tax with respect to GDP base reflected the need of broaden sales tax net, which has adverse impacts on poor.

Lutfunnahar (2007) identified the determinants of tax share and revenue performance for Bangladesh along with 10 other developing countries for the 15 years through a panel data analysis. The results suggested international trade, external debt and higher population growth are significant determinants of tax efforts. The study concluded low tax to GDP ratio for Bangladesh and other economies by not utilizing their tax revenue at full capacity which results in budgetary imbalance through raising tax revenue.

Ahmed, S. and Sheikh 2011, had research on tax reforms in Pakistan. They used secondary data from Pakistan Economic Survey, Government of Pakistan, Economic Advisor's Wing and Finance Division. For the analysis they converted all the data of current prices to constant prices of 1990-00 by using the GDP deflator. The objective of their study was to find whether it is good to reduce indirect taxes like tariffs and excise to increase the contribution of direct tax in the country. They concluded that tax to GDP ratio in Pakistan need to be improved almost doubled to achieve an enough level of government spending.

Shafqat Rasool et al studied the effect of taxation on economic growth on the basis of comparative analysis of different countries in the region. By comparing their tax revenues and GDP, they concluded that 80%

of the total revenue is collected through different taxes in Pakistan. And for generation of more revenues government has to increase indirect taxes and so prices of basic Utilities and petroleum to meet the expenditures required in modern age.

On the same relationship there is another work done by (Ihtsham and Naeem). Their study includes seven Asian countries like, Pakistan, India, Indonesia, Philippines, Nepal, Sri Lanka and Thailand. They got data from International financial Statistics of period 1971-2007. For checking the panel data they used Breitung and PPP-Fisher unit root test. Their tests concluded that there is no evidence that the tax rates can permanently change growth rate. Secondly, a high tax rate can permanently cause to fall in output.

A research by (Roshaiza et al. 2011) was about the relationship of economic growth and taxation revenue. This study included the annual data from 1970 to 2009 of Malaysia. They used the GDP as measure of economic growth. All the variables were converted in constant price using 2000 as base year. ADF and PP test used by researchers as Unit Root test for stationary in time series data. For co-integrated time series they used Vector Error Correction Model (VECM). They concluded that changes in taxes have no effect on economic growth.

3. DATA AND METHODOLOGY

3.1 Sample Design and Data Description

The analysis is carried out using time series data of Income Tax, Sales Tax, Excise Duties, Custom Duties and Workers Welfare Tax for the period of 32 years from 1979 to 2010. The data is secondary and collected from World Data Bank, Federal Board of Revenue (FBR) Quarterly Reports, Organization for Economic Co-operation and Development (OECD) and Index mundi.

3.2 Model Specification

Multi Linear Regression Model (MLR) is used on time series data to estimate the model and find out the relationship between GDP and five kinds of major taxes of Pakistan. The dependant variable is GDP of Pakistan and independent variables included are Income Tax (IT), Sales Tax (ST), Custom Duties (CD), Excise Duties (ED), and Workers Welfare Tax (WWT). A unit root test is used for stationarity of the data and Co-integration test for long-run association.

The general equation of the model is

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Y = GDP

X₁ = IT

X₂ = WWT

X₃ = CD

X₄ = ED

X₅ = ST

4. Data Analysis and Results Interpretation

4.1 Regression

Source	SS	df	MS	Number of obs =	32
Model	4.5949e+14	5	9.1898e+13	F(5, 26) =	10128.96
Residual	2.3589e+11	26	9.0728e+09	Prob > F =	0.0000
				R-squared =	0.9995
				Adj R-squared =	0.9994
Total	4.5973e+14	31	1.4830e+13	Root MSE =	95251

gdp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
IT	5.74663	1.060503	5.42	0.000	3.566735 7.926525
WWT	-52.01199	20.41513	-2.55	0.017	-93.97589 -10.04809
CD	3.590121	1.139544	3.15	0.004	1.247755 5.932487
ED	12.44263	2.172595	5.73	0.000	7.976796 16.90846
ST	18.92872	.8796718	21.52	0.000	17.12053 20.73691
_cons	41844.8	46595.48	0.90	0.377	-53933.58 137623.2

Interpretation

The regression analysis shows the impact of different variables on GDP which are included in the model. Coefficients show the direction of the variable that they are positively or negatively affecting the dependent

variable. The predictor variables IT, CD, ED and ST have significant positive impact on GDP with p-values are less than 5 % significance level and significant T-statistic values. But the WWT has negative significant coefficient which results in negatively affecting the GDP. F-statistic shows the overall significance of the model and it is 10128.96 with p-value less than significance level and R^2 is 0.9995 which in econometric sense means that independent variables are explaining 99.95% variation in the dependent variable GDP. The R^2 sounds too high in the model which may be due to time series analysis and so due to Multicollinearity, but the model don't has the problem of Multicollinearity which we will defend with tests.

4.2 Unit root test for GDP

Dickey-Fuller test for unit root		Number of obs = 30		
Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z (t)	-6.317	-3.716	-2.986	-2.624

MacKinnon approximate p-value for Z(t) = 0.0000

Interpretation

The series of GDP is not stationary at the level, that's why we take the first difference of the series and tested it again using Dickey-Fuller test for unit root. The test statistic of (-6.317) of the test in absolute sense is greater than the critical values -3.716, -2.986 and -2.624 at 1%, 5% and 10% confidence levels respectively, and the p-value is less than 0.05, which conclude that there is no unit root or the data is stationary at 1st difference.

4.3 Unit root test for IT

Dickey-Fuller test for unit root		Number of obs = 30		
Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z (t)	-5.008	-3.716	-2.986	-2.624

MacKinnon approximate p-value for Z(t) = 0.0000

Interpretation

As above the same is true for data of IT that it is not stationary at the level, and we took the 1st difference of the data and tested again. Now the test statistic (-5.008) in absolute sense is greater than all the critical values -3.716, -2.986 and -2.624 at 1%, 5% and 10% respectively and p-value is very small and less than 0.05, which concludes that to reject the H_0 the hypothesis of Unit Root in the data and shows that the data is stationary at 1st difference.

4.4 Unit root test for CD

Dickey-Fuller test for unit root		Number of obs = 30		
Test Statistic	Interpolated Dickey-Fuller			
	1% Critical Value	5% Critical Value	10% Critical Value	
Z (t)	-5.395	-3.716	-2.986	-2.624

MacKinnon approximate p-value for Z(t) = 0.0000

Interpretation

The Data of CD is not stationary at the level. Taking the 1st difference and testing again for stationary finds the results that the test statistic -5.395 in absolute sense is greater than the critical values -3.716, -2.986 and -2.624 at

confidence levels 1%, 5% and 10% respectively. The p-value is so small and less than 0.05 which states that to reject H_0 and conclude that the data is stationary at 1st difference.

4.5 Unit root test for ED

Dickey-Fuller test for unit root Number of obs = 30

Test Statistic	Interpolated Dickey-Fuller		
	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.442	-3.716	-2.986
			-2.624

MacKinnon approximate p-value for Z(t) = 0.0002

Interpretation

Testing the ED data for unit root at 1st difference as it is not stationary at the level. The test shows that the test statistic -4.442 in absolute sense is greater than the critical values -3.716, -2.986 and -2.624 at confidence levels 1%, 5% and 10% respectively. And p-values 0.0002 is less than 0.05 which clearly allow us to reject H_0 (the hypothesis of unit root) and concludes that the data of ED is stationary at 1st difference.

4.6 Unit root test for WWT

Dickey-Fuller test for unit root Number of obs = 30

Test Statistic	Interpolated Dickey-Fuller		
	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-4.315	-3.716	-2.986
			-2.624

MacKinnon approximate p-value for Z(t) = 0.0004

Interpretation

Taking the 1st difference and testing the WWT data for stationary. The test shows that the test statistic -4.315 in absolute sense is greater than the critical values -3.716, -2.986 and -2.624 at confidence levels 1%, 5%, and 10% respectively. And the p-value 0.0004 is very less than 0.05 allowing us to reject H_0 and conclude that the WWT data is stationary at 1st difference.

4.7 Unit root test for ST

Dickey-Fuller test for unit root Number of obs = 30

Test Statistic	Interpolated Dickey-Fuller		
	1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	-5.115	-3.716	-2.986
			-2.624

MacKinnon approximate p-value for Z(t) = 0.0000

Interpretation

After taking the 1st difference of ST data, we are testing it for stationary. The test shows the test statistic is -5.115 and it is in absolute sense greater than the critical values -3.716, -2.986 and -2.624 at confidence level 1%, 5% and 10% respectively. The p-value is very less than 0.05 allowing us to reject H_0 (the hypothesis of non-stationary) and to conclude that the data of ST is stationary at 1st difference.

4.8 Auxiliary Regression for Multicollinearity

Source	SS	df	MS			
Model	5.7124e+11	4	1.4281e+11	Number of obs =	32	
Residual	8.0671e+09	27	298781307	F(4, 27) =	477.97	
				Prob > F =	0.0000	
				R-squared =	0.9861	
				Adj R-squared =	0.9840	
Total	5.7930e+11	31	1.8687e+10	Root MSE =	17285	

IT	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
CD	-.0235618	.206744	-0.11	0.910	-.4477654	.4006418
ED	1.345315	.2973385	4.52	0.000	.735227	1.955403
WWT	5.120017	3.571306	1.43	0.163	-2.207697	12.44773
ST	.5246114	.1236526	4.24	0.000	.2708972	.7783255
_cons	-22200.66	7296.888	-3.04	0.005	-37172.64	-7228.687

Interpretation

The Auxiliary regression is being run for testing of Multicollinearity. It is a Klein Rule of Thumb that if the R^2 of Auxiliary regression is greater than the R^2 of overall model then there is the problem of Multicollinearity in the model. Now in our case the R^2 of Auxiliary regression is 0.9861 and R^2 of the overall model is 0.9995, means that the R^2 of Auxiliary regression is less than the R^2 of overall model in our study, which concludes that there is no Multicollinearity problem in the model. And so all the t-values in the overall model are significant, which means that high R^2 does not matter in our model.

4.9 Testing Heteroskedasticity

White's test for H_0 : homoskedasticity
 against H_a : unrestricted heteroskedasticity

chi2(20) = 27.15
 Prob > chi2 = 0.1311

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	27.15	20	0.1311
Skewness	4.31	5	0.5061
Kurtosis	.	1	.
Total	.	26	.

Interpretation

H_0 for the test is there is no Heteroskedasticity or there is Homoskedasticity in the model. And test statistic is 27.15 where p-value is 0.1311 which is greater than 0.05. In this case we can't reject H_0 , and conclude that there is no Heteroskedasticity in the model.

having elastic demand.

3. Custom duties and Excise duties should be increased on luxury goods and restrict their imports as compare to basic need goods. It will help in diverting private consumption into productive investment.

4. Income tax collection is comparatively low because of tax evasion and corruption. Government should bring tax reforms on a progressive scales and regulate the violation of taxation principles in Pakistan economy.

5. Large number of MNCs export "Super Profits" to their home countries by repatriation and using other corporate tax avoidance tactics. Strong policies are required to stop large sum of income transfer from Pakistan.

6. The tax net should be broaden to cover the tribal areas of the country to substantially increase tax revenues and realization of tribal areas earners national responsibilities.

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