

Tax Revenue, Stock Market and Economic Growth of Pakistan

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Abstract: The purpose of this paper is to examine the effects of capital market and fiscal policy influences in determining the nexus of economic growth in Pakistan from July 2003 to July 2012. The authors utilize ADF unit root test, Johansen Cointegration test, VECM test, Granger causality test and variance decomposition analysis to test the relationship among tax revenue, stock market and economic growth in Pakistan. Granger causality analysis is used to answer questions whether “Does tax revenue cause the economic growth?” or “Does tax revenue cause the capital market?”. The results demonstrate that there is a bidirectional casualty between tax revenue and economic growth; and a unidirectional causality from capital market to tax revenue. The estimated result shows that growth of Pakistan economy is strongly contributed from the high collection of direct tax revenue and the development of financial market activity. The findings of this paper have important implications to current and potential investors in Pakistan economy to understand the economic condition of Pakistan and to assist them in making their investment decision.

Keywords: tax revenue; stock market; economic growth; Pakistan.

JEL Classification: F43; G10; H71

1. Introduction

This paper explores how taxation and financial system can affect the economic growth in Pakistan during the period of 2003-2012. This issue becomes our main focus due to the increasing performance of Pakistan economy throughout the study period. As we are aware the fact, that the economy of Pakistan is semi-industrialized with the main industries such as telecommunications, real estate, energy, apparel and textiles. And which currently have the 48th highest GDP in the world, and the second largest economy in South Asia. Historically, from 1960 to 2011, GDP of Pakistan averaged Rs. 4,745.79 billion reaching the all-time high i.e. Rs. 20,529.43 billion in 2011 and a record low of Rs. 359.82 billion in 1960. Most recent, the real GDP growth for 2011-12 has been estimated to increase approximately to 3.7 % as compared to 3.0% in the previous fiscal year 2011.

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The reason of setting the higher growth than previous year 2011 is because of the tax legislation, trade reforms, further privatization of State Owned Enterprises (SOEs), financial sector reforms, human resource developments and social protection. The European Union (EU) approval of duty waiver on textile items is being pursued aggressively, which would help in improving the exports and providing support to the business environment. In recent times, Pakistan has also undergone political and constitutional changes. The civil societies and the other organizations are now playing a more active but independent role with government reforms are helping economic growth (Ministry of Finance [MoF], 2012).

Pakistan also reported an increase amount in the tax revenue collection. The total revenues reached to Rs 1,747.0 billion during July-March 2011-12, where 37% came from direct tax revenue contribution. Pakistan also reported an increasing investment in the capital market. Even though with the global economic imbalance that strike the world, Pakistan still manages to record the tremendous growth in the twelve month periods ended June 30, 2012. During this period the KSE-100 index rose by 10.4% from 12,496 points as at June 30, 2011 to 13,801 points as at June 30, 2012 which ranked Pakistan as the 3rd best emerging market in Asia. Since then, up to November 03, 2012 the Index rose to 16,101.15 points and crossed the barrier of 16,000 points first time in the history of Pakistan. Thus, in calendar year to date, KSE-100 Index has increased by 37%, making it the best performing emerging market in Asia. The average daily volume of shares traded was 131 million in FY-12 versus 95 million in FY11, while the average daily value traded was Rs. 3.97 billion versus Rs. 3.75 billion in FY-11. This report indicates that the market rally was driven by smaller stocks in calendar year 2012 (Karachi Stock Exchange [KSE], 2012).

As an emerging economy, it is crucial for the government of Pakistan to come forward with the strategy that might help to boost up the growth performance of the country. A research conducted by Shahbaz, Ahmed and Ali (2008), in the context of the stock development and economic growth of Pakistan from 1971 to 2006, shows that there is a positive relationship of stock market and the economic growth. The country growth rate can be increased by stabilizing the stock market. Another study by Ahmad, Khan and Tariq (2012) has been conducted to study the same context, but it is a comparative study of Pakistan and Bangladesh. Bangladesh stock market had better performance than Pakistan due to liquidity and stock market contribution in the economy growth.

Moreover the theoretical and empirical studies of some researcher such as Romero-Ávila and Strauch (2008), Soli, Harvey and Hagan (2008), Ilyas and Siddiqi (2010), Ocran (2011) and Taha, Loganathan and Sukemi (2012) investigated the nexus among the stock market, the fiscal policy and the public debt that play a vital role to increase the country's economic growth rate. They suggested that taxation

and financial market play pivotal role to determine the growth performance. Back to the origin of the linkages between such variables, the endogenous growth models have advocated that the relationship of stock market and tax revenue, mutually affect the economic growth. It is a model that explains that how a financial market and tax revenue both can affect the economic growth (Levine, 1991). As indicated above, voluminous research has been conducted to empirically examine the relationship between the stock market and the economic growth. However, the purpose of this study is to examine the joint effect of tax revenue and stock market, and to observe, how these economic indicators contribute in the economic growth. An accomplished stock market provides the investment opportunity, productivity, saving, the facility of goods and service that increase the economic growth. This paper contributes to the literature on the relationship between taxation, stock market and economic growth of Pakistan. Since, to the best of our knowledge, this is the first paper to concurrently examine such relationship in the context of Pakistan.

In this study, the relationship between capital market and fiscal policy has been determined in nexus of economic growth by using econometric technique. The unit root test shows that all variables are “integrated order 1”. The long-term equilibrium relationship exists among the variables devoting 2 cointegrating vectors. The VECM results show that there is short term relationship between economic growth and direct tax revenue. It implies that previous value of direct tax and the development of stock market show crucial role in economic growth. The granger causality results show that there is bidirectional causality between the tax revenue and the economic growth.

The organizations of this study are as follow. The next section discussed chronologically of past studies followed by methodological section. We continue the discussion with the findings and conclude with the brief summary.

2. Literature Review

In 1911, the evidence was revealed that the financial development being one of the reasons for uplifting the economic development by using the society’s savings (Schumpeter, 1912). Many other economists, also, explored and found that the financial developments are closely related to economic growth and gave the opinion that high economic rate can only be achieved through financial development (Goldsmith, 1969; Mckinnon, 1973). The dwelling financial system has been considered as the main component of the modern economic development. In addition Hicks (1969) claimed that many of long term projects require huge investments that could not be financed by individual investors or through retained

earnings. In order to accomplish these projects, the huge investments have been taken through individuals or consortium of financial intermediaries and the financial markets. The development of endogenous growth model theory, also, unfolded the fact that there is an effect of taxation on the economic growth. The tax revenue has been considered as the main stream of revenue for the state in order to meet their development and current expenditures. The economic theory has found the evidence of negative effect of higher tax rate on state economic efficiency. Marsden (1983) and Koester and Kormendi (1989) supported the supply side of hypothesis that the nations with the greater rate of tax causes with the lesser growth rate.

Realizing the importance of this issues Golob (1995) focused on the analysis; whether taxes are directly or indirectly linked with the financial markets. He suggests that the tax reforms affect on the financial market and is generalized into three categories. Firstly, the interest in loan is taxable; including the financial debt and securities is taxable. Secondly, the municipal securities, of which interest income are not taxable. Lastly, it consists of shares of the corporations that are publically traded. Adding to this, Holcombe and Lacombe (2004) argued with respects to the promising impact of taxes on state economic performance. They found that states that raised their income tax rates more than their neighbours had slower income growth which resulted to the reduction in per capita income. Their argument was supported by Clark (2007), Ardagna (2009) and Arin, Mamun and Purushothman (2009) they suggested that by increasing the tax rate, the private investment will decrease and ultimately will affect the tax revenue collection. Further they stressed that the state tax structure had a significantly influence on the returns of the stock market.

Much later Taha, Loganathan and Colombage (2011) tried to determine the role of economic growth in fostering government tax revenue in Malaysia. The results suggested that there is one way causal relationship between economic growth (GDP) and government tax revenue. They recommended that policy makers should consider the effective taxation policy formulation and implementation, in line with dynamic nature of economy. According to Ilyas and Siddiqi (2010), suggested that without imposing high tariff and tax rates, the state tax revenue collection can be enhanced by widening the tax network and by narrowing and mending the tax administration in the Pakistan.

A few studies have been done in order to investigate the relationship among the stock market, the tax revenue and the economic growth. Levine (1991), first time, described that the trading of financial assets in a stock market and the tax policy of the state effect the economic growth. He analysed the endogenous growth model with and without stock market; examined the implication of stock market trading for risk sharing; allocation of resources; and growth and implication of tax policy

had effected in the long run. However, his study concluded that the growth was directly affected and functioning of financial markets was indirectly affected by the tax policy. Futagami, Morita and Shibata (1993) described that the relationship exists, but there is low growth rate and suggested that there was need of further study to explore the relationship. Taha, Loganathan and Sukemi (2012) also examined the relationship among the stock market, the tax revenue, and the economic growth in the context of Malaysia. The results of this study supported that economic growths affected the pattern of tax revenue. The strong short run relationship of direct tax revenue and stock market with economic growth had been determined. It had been recommended that efforts should be made to intensify the economy to confirm that the state must maintain a maximum collection of revenue and to strengthen the investor's faith in the stock market.

The objective of this study is to explore the relationship among tax revenue, stock market and economic growth in the context of Pakistan. Pakistan is a developing country and tax is a main source of the state and much expenditure are covered through tax revenue. Thus, this study will be helpful for fiscal policy makers, either in favour of tax revenue or in promoting the stock market.

3. Research Methodology and Model

The main objective of this paper is to study interlinks among the three important macroeconomic variables, namely: economic growth, stock market and tax revenue in Pakistan. To realize this, we have to utilise monthly data from July 2003 to July 2012 of gross domestic product (GDP), the closing value of KSE-100 Index, and direct tax revenue to proxy economic growth stock market, and tax revenue respectively. All the data is in local currency unit (Rs.) and has been transformed to natural log prior analysis. The source of data for GDP, Direct Tax and KSE-100 Index were obtained from State Bank of Pakistan (SBP), Federal Board of Revenue (FBR) and Karachi stock exchange (KSE) respectively. Although there is no monthly GDP data available we have split the data into monthly basis (Baxter, 1998). The different econometrics tools have been used to measure the relationship among the tax revenue, stock market and economic growth. Figure 1 visualised the research methodology that has been adopted in order to measure the relationship in this study.

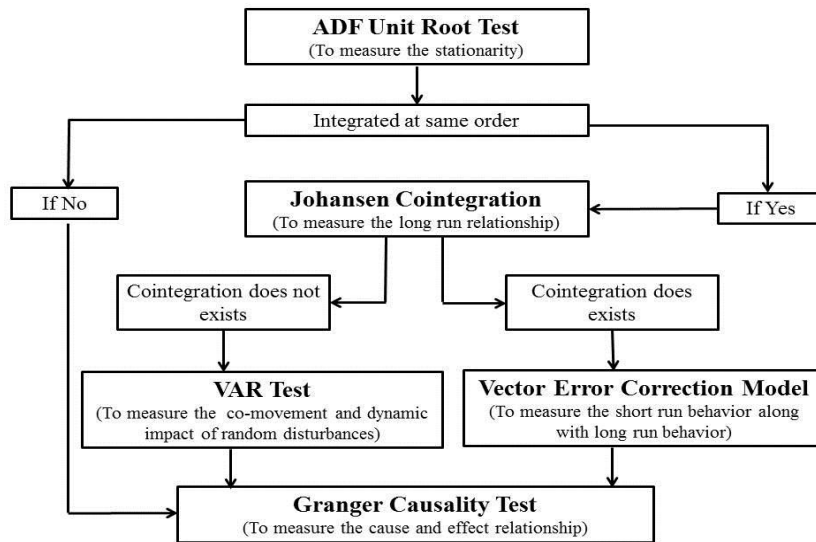


Figure 1. Flow Diagram of Research Methodology

In order to analyse the data, firstly, the Augmented Dickey Fuller (ADF) Unit Root test has been applied for detecting the stationarity of data whether there is unit root in every variable. The Schwarz Info Criterion (SBC) has been used for choosing the lag differences. If the data becomes stationary at the same order (are cointegrated), then Johansen Cointegration Test will be used to measure the long term relationship among the DTAX, KSE-100 and GDP. Thirdly, in order to find the short term relationship, VECM has been applied, to explain the short term change in one variable. The Granger Causality Test has been applied in order to measure the bi-directional cause and effect relationship means that both variables can cause and affect each other. In the end, the Variance Decomposition indicates the amount of information each variable contributes to the other variables in a vector auto-regression (VAR) models (Lütkepohl, 2007). Variance decomposition determines how much of the forecast error variance of each of the variable can be explained by exogenous shocks to the other variables. Variance decomposition reveals how much of the changes in each variable may be explained by itself, and how much is explained by other variables.

4. Analysis and Discussion

The descriptive statistics of direct tax (DTAX), stock market (KSE-100 Index) and economic growth (GDP) have been estimated in order to analyse the mean, standard deviation and normality of data. The results are shown in Table 1.

Table 1. Descriptive Statistics of DTAX, KSE-100 Index and GDP

Description	DTAX	KSE-100	GDP
Min	8.72	8.24	12.77
Max	11.83	9.62	13.17
Mean	10.15	9.12	13.02
Standard Deviation	0.74	0.36	0.11
Skewness	-0.03	-0.76	-0.57
Kurtosis	2.24	2.60	2.23
Jarque-Bera	2.62	11.32	8.65
	[0.27]	[0.00]	[0.01]

Source: Author calculations. DTAX, KSE-100 and GDP are expressed in natural logarithms and are calculated in local currency (Rupee). P-values are given in parenthesis.

The results of Table 1 show that the results of skewness of DTAX, KSE-100 Index and GDP are negatively skewed, and the data series exhibit increasing trend throughout the sample period. The JB-stats show that the KSE-100 Index and GDP series have highly significant results at 5% level and the acceptance of hypothesis show that the series are not normally distributed except direct tax. At the first step, ADF Unit Root test has been used to check that the economic variables are stationary. The ADF test includes constant with no trend and constant with trend at zero difference level $I(0)$, and, then, at first difference level $I(1)$ of every variable. The lag differences (k) incorporated in ADF test has been chosen by using Schwarz Info Criterion (SBC). The test results of ADF are given in Table 2.

Table 2. Unit root estimation results

	Level			First difference			$I(d)$
	DF-GLS	ADF	PP	DF-GLS	ADF	PP	
DTAX	3.88	-2.11	0.28	-1.93*	-8.97*	-39.09*	$I(1)$
KSE-100	0.13	-2.02	1.35	-2.19	-8.83*	-8.81	$I(1)$
GDP	-1.61	-2.09	-13.48	-13.48*	-13.89*	-104.96	$I(1)$

Notes: Asterisks () denote statistically significant at 1% significance levels*

According to results shown in Table 2, the time series data of each variable (i.e. DTAX, KSE-100 and GDP) at zero level $I(0)$ is nonstationary at 10% level of significance by using SBC lags criterion. At order $I(1)$ at 1% level of significance, DTAX, KSE-100 and GDP became stationary by using SBC lags criterion. So, the data of each variable became stationary, this suggests that entire shocks that would

be impermanent and their effects would be abolished over time as the data regresses to their long run variance.

The long run relationship has been tested by using Likelihood Ratio (LR) Tests in order to find the number of cointegrating vectors proposed by Johansen (1995). The test results along with Trace Statistics Tests and Maximum–Eigen Statistics for DTAX, KSE-100 and GDP, shown in Table 3.

Table 3. Johansen Cointegration Test for DTAX, KSE-100 and GDP

Hypothesized no. of CE	Eigen Value	Trace Statistics	Critical Value	Prob**	Results
None* r=0	0.21	41.62	27.07	0.00	Yes
At Most 1* r≤1	0.12	17.17	13.43	0.02	Yes
At Most 2* r≤2	0.03	3.52	2.71	0.06	Yes
Hypothesized no. of CE	Eigen Value	Trace Statistics	Critical Value	Prob**	Results
None* r=0	0.21	24.46	18.89	0.00	Yes
At Most 1* r≤1	0.12	13.65	12.30	0.06	Yes
At Most 2* r≤2	0.03	3.52	2.71	0.06	Yes

Note: Cointegration Test of DTAX, KSE-100 and GDP of Pakistan. * denotes rejection of hypothesis at the 10% significance level. ** MacKinnon –Haug-Michelis (1999) p-values.

Table 3 described that the long term equilibrium relationship exists among DTAX, KSE-100 and GDP in terms of Pakistan. The results of trace statistics and Maximum –Eigen Statistics has indicated that there are three (3) numbers of cointegration vectors exist at the 10% level which endorse the outcome of the Pesaran, Shin and Smith(2001) cointegration approach. As the long term relationships had been estimated, the next step is to measure the short term coefficients.

Based on the VECM result shown in Table 4, there is short term relationship between economic growth and direct tax revenue. It implies that previous value of direct tax and the development of stock market show crucial role in economic growth.

Table 4. VECM Estimates

VECM	ΔGDP_t	$\Delta DTAX_t$	$\Delta KSE-100_t$
ECT _{t-1}	0.01 (1.18)	-0.88* (-4.19)	-0.05 (-1.04)
Constant	0.00* (3.89)	0.07 (1.55)	0.01 (0.63)

Note: VECM Test Statistics of DTAX, KSE-100 and GDP of Pakistan. * significance at the 10% level. T-statistics are given in parentheses.

The Granger Causality test has been applied in order to measure the direction of cause and effect among the variables, shown in Table 5.

Table 5. Granger Causality Results

Null Hypothesis	F-stat	Prob*	Causality
DTAX does not Granger cause GDP	5.39	0.01*	Yes
GDP does not Granger cause DTAX	3.02	0.05*	Yes
Null Hypothesis	F-stat	Prob*	Causality
DTAX does not Granger cause KSE-100	1.04	0.36*	No
KSE-100 does not Granger cause DTAX	7.67	0.00*	Yes
Null Hypothesis	F-stat	Prob*	Causality
KSE-100 does not Granger cause GDP	2.71	0.07	Yes
GDP does not Granger cause KSE	0.75	0.47	No

Table 5 results indicate that there is bidirectional causality relationship between direct tax (DTAX) and growth (GDP) at 10% level of significance. But, there is unidirectional causality between stock market (KSE) and direct tax (DTAX) at 10% level of significance.

In the end, the case of stock market (KSE) and economic growth (GDP), there is also unidirectional causality at 10% level of significance. The findings of the variance decomposition analysis of GDP, DTAX and KSE-100 at seven different periods, i.e. 1, 5, 10, 15, 20, 25 and 30 horizons show in Table 6, Table 7 and Table 8.

Table 6. Variance Decomposition of GDP, DTAX and KSE

Variance Decomposition of GDP			
Period	GDP	DTAX	KSE-100
1	100.00	0.00	0.00
5	97.75	2.18	0.07
10	97.86	1.94	0.20
15	97.54	1.97	0.50
20	97.13	2.01	0.84
25	96.74	2.08	1.18
30	96.38	2.14	1.48

Table 6 shows that the forecast error variance of economic growth due to stock market is relatively low than the forecast error variance of economic growth due to government tax revenue.

Table 7. Variance Decomposition of DTAX, GDP and KSE

Variance Decomposition of DTAX			
Period	GDP	DTAX	KSE-100
1	0.03	99.97	0.00
5	1.25	95.14	3.61
10	2.63	93.75	3.62
15	3.69	92.62	3.70
20	4.60	90.67	3.74
25	5.36	90.88	3.77
30	5.99	90.22	3.79

Table 7 shows that the forecast error variance of direct tax revenue due to stock market is relatively low than the forecast error variance of direct tax revenue due to economic growth. Table 7 shows that the forecast error variance of stock market due to direct tax revenue is relatively low then the forecast error variance of stock market due economic growth. The variance cause by dependent and independent variables due to the past innovation is becoming less significant. Overall the variance composition results lead us to conclude that the strong growth of Pakistan economy is strongly contributed the high collection of direct tax revenue and the development of financial market activity. In last, the results of the forecast error variance suggest that the feedback of stock market to direct tax revenue and economic growth is relatively stronger and consistent with the long run and short run results.

Table 8. Variance Decomposition of KSE-100, GDP and DTAX

Variance Decomposition of KSE-100			
Period	GDP	DTAX	KSE-100
1	2.18	1.41	96.40
5	10.41	2.78	86.82
10	12.67	2.91	84.42
15	14.18	2.83	83.00
20	15.34	2.76	81.90
25	16.25	2.71	81.04
30	16.97	2.68	80.36

5. Conclusion

The relationship among the fiscal policy, the capital market and the economic growth has been the subject of extensive research of the current decade. The research is going on to explore the relationship among tax revenue, KSE-100 index and economic growth in case of Pakistan. Initially,

ADF Unit Root and PP Unit Root test have been applied to determine whether these economic variables have unit root. The test result indicates that the time series data is stationary at order one. Secondly, Johansen test has been used to measure the long run equilibrium relationship and the results of test reported that there long run equilibrium exists among the variables. The short term relationship determined by using VECM, shows that the previous value of direct tax and the development of stock market play a crucial role in economic growth. The Granger causality test has been used to verify the direction of causality between the variables of Pakistan. The test results show that there is: only bidirectional causality among tax revenue and economic growth; and there is a unidirectional causality between KSE index and economic performance. The results of the current research suggest to policy makers that there is a relationship among the tax revenue, stock index and economic growth. While formulating any new fiscal or capital market policy, the impact of the designed policy on the other market must be kept in mind. The investor while making investment in the capital market must know about the tax system of the country. The analysis shows that the present tax system of Pakistan is not so efficient to attract the persons to invest in its capital market. The government of the state should focus on the efficient tax collection system, because it's the only way to bring the developments and to meet the expenditures.

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