



AN EMPIRICAL INVESTIGATION INTO THE ROLE OF PUBLIC DEBTS ON STOCK MARKET OF PAKISTAN

Dr. Aftab Alam¹, Manzoor Ahmad² and Ibrahim³

¹Assistant Professor Department of Management Science Abasyn University Peshawar

²College of Business Administration King Saud University Saudi Arabia

³MS Scholar Department of Management Science Abasyn University Peshawar

Abstract

The aim of the study was to analyze the impacts of public debt on the stock market performance of Pakistan. Data on public debt and the stock market for the period from 01/07/1995 to 30/06/2017 was analyzed. The long-run association between the debt and PSX-100 index was analyzed using the Johnson co-integration test and the error correction model. The results of the autoregressive model presented that the lag values of the debt in Pakistan has significant impacts over the stock market performance in Pakistan. The co-integration results presented that there exists one co-integration vector and hence suggests long-run equilibrium between the variables. The ECM further clarifies this fact and signifies the presence of long-run equilibrium. Granger causality analysis was used to check the causal relationship between the two and from the results of the test, it is evident that debt granger causes the PSX-100 index; however, the PSX-100 does not explain the debt in the economy.

Keywords: Public Debt, GDP, Stock Market Performance, AR, Pakistan stock exchange

Introduction

Emerging economies around the world are to a greater extent dependent upon the domestic and foreign debt for their economic development. The ineffective management of debt in these economies further leads to higher debt burden in these economies which further leads to risky markets and has negative impacts on the stock markets in the developing economies. Previous studies present that public debt if utilized effectively can lead to positive financial development in the economy, however, the evidence yet suggest that in most of the case debt is found to have negative impacts on the stock markets. In Pakistan, studies have identified the role of public expenditure and public debt with the economic growth however the direct impacts of public debt on stock markets have not been significantly analyzed.

Sustainable economic growth, guided by positive stock market performance, stands as the core objective of an economy, especially the emerging economies around the world uses resources from multiple sources to expedite their economic growth. In emerging and underdeveloped economies, Public debt is used as the main tool for financing public expenditure (Nabila & Rehman, 2011). In order to achieve the economic objectives, the emerging economies are confronted with some serious challenges which include the financing of their current account deficit, managing the debt portfolio, cost of debt and cutting back expenditures to discharge the liabilities of the country (Presbitero, 2011).

In addition to public debt, the domestic stock market of an economy also play a crucial role in the development of the country and almost all the dimensions of an economy are interconnected with the stock market performance (Aminu *et al.* 2013). In the year 2007, it was revealed that soaring level of public debt can lead to increased financial risk in an economy and may result in in a deep financial crisis like the one experienced in the last decade (Cebula, 2014). Subsequently, during the financial crisis, the public debt of the economies increased and the stock market was trading negatively thus, placing strict constraints on the developmental prospect of these economies with high debt service and low returns at the stock markets (Spencer, 2015).

The effective and efficient utilization of public debt is imperative to the development and economic growth of the country (Sam and Salami, 2014). However, in case the public debt is not effectively managed, it may result in constraints for economic growth and may become a curse for the economy. Verily Kolapo and Adaramola (2012) argues that the public debt may influence the performance of the stock markets and holds that public debt, when issued for investment may results in positive impacts on the stock markets as a result of the higher expected future yields. Contrary to this, public debt when issued for serving of existing debt may further erode the economic performance and may lead to lower stock returns, as it is assumed that the government fiscal revenues are not significant to cover the future expenditure and the existing funds are not utilized efficiently.

Establishing a pattern of relationships between the two variables is of much significance for the policymakers to determine their debt burden and to arrive at an optimal debt level, where the public debt does not negatively influence the economic growth and stock markets in the economy. public debt, preceded by stock market changes provides predictability of the stock market as well.

In order to develop a pattern of relationship between public debt and stock market performance, several studies have been conducted and studies such as (Adenuga, 2012; Kolapo and Adaramola, 2012; Owolabi and Ajayi, 2013) suggest a positive relationship between the two in cases where the public debt is efficiently utilized. However, on the contrary, other studies such as Aigheyisi *et al.* (2013) have presented that public debt and the stock market move in the opposite direction in cases where the public debt has not effectively channelized to the outlined economic objectives.

Pakistan since 1947 has been stuck with its public debt and has not been able to resolve the challenges surrounding the public debt levels, moreover, the situation is worsening and the debt level has soared to an alarming level in the recent past (Raiz & Anwar, 2012). Further, to add to this despair, the public debt in the recent past has been mainly issued for servicing of the existing the liabilities. Given the emerging nature of Pakistani stock markets, the soaring level of debt presents an interesting area of investigation. In Pakistan previously studies such as (Akram , Nabila *et al* (2011) Raiz *et al* (2012) have analyzed the impacts of public debt on economic growth in Pakistan however, literature on relation of public debt and stock markets in Pakistan is inadequate to clarify the potential impacts of public debt in respect to the Pakistani stock market.

Research Question

The study has the following research question,

- How does the level of public debt impact the stock market of Pakistan?

Research Objective

The main objective of the study is as follow,

- To examine the impact of public debt on the stock market of Pakistan

Literature Review

Monetary factors have been considered as a predominant indicator of determining stock market return. According to Fama (1981), different macroeconomic factors such as interest rate, inflation, capital expenditure, and money supply are correlated with stock market return and concluded that economic factors are the useful measure to predict stock market return. Abdullah & Hayworth (1993) also stated that growth rate of domestic money supply and inflation rate have a positive correlation with stock market return in the United States stock market.

Copeland (2008) argues that overshooting model and Mundell-Fleming model implies that the majority of macroeconomic variables such as interest rate, exchange rate, and inflation are related to each other. These models reveal that a change in one macroeconomic variable can cause a change in another macroeconomic variable.

However, in earlier studies little focus was put on determining the relationship between a country economic health and stock market performance. Recent studies were focused on determining the linkage between stock market return and country economic health as shown by different economic health measuring agencies.

According to Kaminsky & Schmukler (2002) argues that the rating of emerging economies as provided by different measuring agencies have a direct impact on a country stock market performance. A study conducted by Brooks, Faff, and Hillier (2004) suggests that developing markets are more vulnerable to changes in agency rating than emerging markets.

Berben & Brosens (2007) argues that high public debts have a negative impact on private consumption, thus when high public debt countries go to borrow more loans it reduces the level of private consumption in the country. Schmukler & Kaminsky (2002) state that sovereign downgrade leads to higher country risk which in turn has negative impact on stock market performance.

According to Martin (2009) government has two options to fulfill their financial needs (a budget deficit), the first option is to impose higher taxes and the other option is to borrow loans. Higher taxes results in reducing economic activities in a country, thus slowing down economic progress.

The need and size of the debt to borrow depends on fiscal policy and the source from which to borrow debt relies on monetary policies and debt management (Tobin, 1963). Bonds issuance is a common source for many governments to create its debt where they enter into a legal contract with bondholders. The government receives funds against the bonds issued for specific period and then obligated to repay the principal amount on due date with interest payment at different intervals till maturity date (Buchanan, 2008).

The holders of government bonds can be individuals, institutions, corporations or other government. These holders can either be internal (domestic) debt holder or external (foreign) debt holder or both at the same time. Government bonds can also vary in term of risk, liquidity, maturity, and sale on the secondary market (Nelson, 2012).

There are financial intermediaries within a financial market such as stock market, which brings two different parties to deal with each other, where one party desires to borrow assets and the other party desires to lend the assets (Mankiw, 2003). Arestis and Luintel (2001) argues that banks work as a substitute to the stock market, therefore, an increase in interest rate has a negative impact on stock market as it attracts investors to deposit their money in banks instead of investing it in stock markets

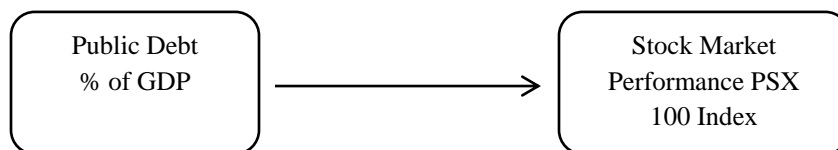
Public finance has become an important challenge for the government and it must be handled with care. Despite all the benefits of debt financing, higher debts can lead to higher debt cost which in turn reduce GDP. Berben & Brosens (2007) argues that high public debts have a negative impact on private consumption, thus when high public debt countries go to borrow more loans it reduces the level of private consumption in the country. According to Aiyagari and Mcgrattan (1998) that optimal debt level and private consumption are closely related to each other. He suggests that public debts are sustainable in those countries where private consumption is constantly growing

(Claeys et al., 2012) through panel data analysis technique for a sample of 46 countries concluded that the public debt both external and domestic leads to negative impacts on the stock markets in the developing economies as such public debt was not appropriately managed in the sampled countries of the study. Kutivadze (2011) however in an analysis of a sample of 130

countries using the panel data analysis approach has concluded a positive relationship between financial development and public debt

Theoretical Framework

It can be stated that if variables are relevant to affect stock prices they do so without any delay depending on if the stock market is efficient or not (Fama, 1969). Hence, in case of an efficient market, if public debt levels are relevant to affect the stock market performance they do so, without any delay. Based on the theoretical grounds presented above the study has the following theoretical model



In the figure given above the debt as a percentage of GDP is the independent variable of the study while the stock market index is the dependent variable of the study

Hypothesis

H₁: There is a significant impact of public debt on stock market performance at Pakistan stock exchange

Research Methodology

This section of the study presents the research design outlined for the analysis of the research question and also presents the respective tools and techniques used by the study in line with its research design, for collection and analysis of the data

Nature of the study the study is quantitative in nature as variables include numeric data from secondary sources. Research Design The study is descriptive cum correlational in nature as it aims to describe the role of public debt in the stock market of Pakistan. This study will describe the impacts of public debt on stock market in Pakistan, if there exist any and will also present the nature of the relationship between these variables under analysis

Research Philosophy

The research philosophy refers to the development of knowledge which is the basis for the methodological approaches of any research (saunders, et al, 2007). Normally, two main types of research philosophies namely positivism and constructionism/ interpretivism (Saunders et al.2007a). The positivist philosophy refers to the philosophical stance of natural scientists (saunders, et al 2007a) which states that the positivist philosophy the social world exists objectively and externally. Positivism is normally based on facts gathered from surveys and experiments and measured empirically using quantitative methods and statistical analysis (cryer, 2000.) Here it is very clear that the researcher has already formulated hypothesis and is interested to measure the relationship between government debt and stock market performance. Therefore, this study uses the Positivist research philosophy for the study.

Type of investigation

The study is an observational-based on the nature of the investigation and will investigate the relationship between public debt and the stock market index. Under the observational research paradigm, the study uses correlational research approach for investigating the relationship between the variable. In respect of the time horizon the study is time series analysis and will investigate the relationship between the variables over a period of time.

The population of the study

The study aims at investigating the relationship between the stock market and public debt of Pakistan. The Karachi stock exchange was established in 1949 hence the period from 1949 to 2017 constitutes the population of the study.

Sample and Sampling Technique

The study will use the PSX 100 index as the Pakistan stock exchange. As this index was launched in 1991, therefore a sample of the study is selected based on the purposively based sampling technique. The time period from 1995 to 2017 will be used as the sample of the study and time-series data of the PSX-100 index and public debt for the period will be used as the sample data of the study.

Data and Data Sources

The study uses the time series of variables for the period from 1995 to 2017 as a sample period of the study and the data set contains annual statistics for all the variables. Data for all the variables in the analysis are collected in the selected period of the study and then analyzed data for the public debt is collected from the world bank economic indicators from official website of

the bank. The data from the World Bank database is collected for the period from 1995 to 2017 and the series obtained are on yearly basis. Some of the data which is not available on the World Bank website was then collected from IMF website and central bank of Pakistan. The stock market data is also collected from the PSX website and in case data is not available there then the yahoo finance is used for collecting the data.

Econometric Models

Based on the theoretical framework and the intuition from the empirical literature reviewed earlier, Public debt can influence the stock market (Akanni and Osinowo, 2013). The possible effect of Public debt will then depend on model specification.

Therefore, to specify the stock market growth equation starting with the popular simple linear equation function, we have;

$$Y = f(X)$$

Where: Y = stock market index

X = public debt

We start by assuming that the variables are related to simplex possible mathematical form, which is the relationship between Stock Market and Public Debt is linear of the form;

$$Y_t = \beta_0 + \beta_1 + \epsilon$$

$$Y_t = \beta_0 + \beta_1 \text{Debt\%GDP}_t + \epsilon$$

Data Analysis

Technically, the analysis constructs structural equation model which incorporates the dynamic short-term relation among variables in the model, such that:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \dots + \beta_k y_{t-p} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \dots + \alpha_q x_{t-q} + \epsilon_t$$

In this study use the following E-views Test **i-** Unit Root **ii-** Johnson Multivariate Co Integration **iii-** Autoregressive Model **iv-** Error Correction Mechanism **v-** Granger Causality Test

Analysis and Results

In order to analyze the impacts of public debt on the stock market of Pakistan yearly time series data for the period from 01/07/1995 to 30/06/2017 has been collected. The data is analyzed using

different times series analysis techniques. A systematic econometric analysis approach has been used by the study where the data was first analyzed for the presence of unit root in the data. Afterward, the autoregressive model, co-integration analysis and Granger causality analysis have been employed by the study to explain the relationship between the variables. The analysis results are presented in the following section of the study

Data Description

The descriptive statistics for the variables of the study are presented in Table-1 of the study below. In the table, it can be observed that the mean value for PSX100 index is 12011 while the mean value for public debt as % of GDP is 76% during the analysis period. The standard deviation from the mean for PSX100-Index and the Debt% GDP is 13189 and 17% respectively.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Skewness	Ex. kurtosis
PSX100	12011.	13189.	0.03203	0.66045
PD	76.022	17.436	0.0540	0.65210

The skewness value for both the variables is almost equal to zero and hence suggest that the data is normally distributed and has no skewness problem. Likewise, the kurtosis values for both the variables is less than 3 and hence suggest the normality of the distribution.

Figure-2 of the study presents the time series of the PSX100 Index from 1995 to 2017. In the graph it can be observed that the PSX100 index has shown an increasing growth over the study period. The index has shown a steady growth from 1995 to 2005 to 20000 basis points, afterward, there is decline during the period from 2005 to 2008 mainly as a result of the global financial crisis. Since 2008 the stock exchange has shown tremendous growth and has crossed the 40000 basis points during 2015 and is on the rise till the end of 2017.

Figure 1: PSX100 Index

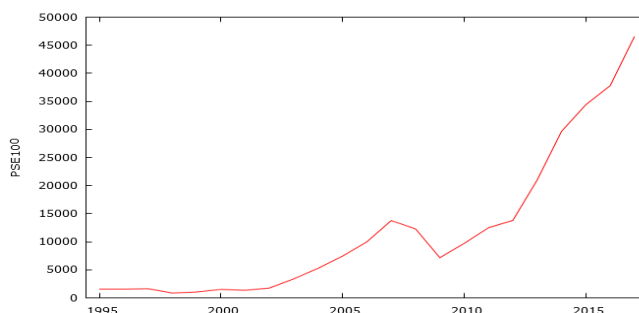
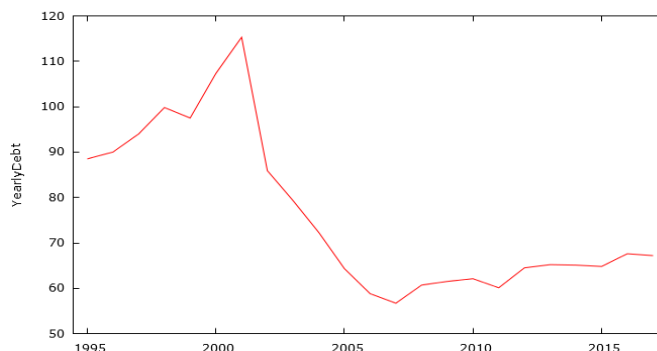


Figure-3 of the study presents the time series graph for annual debt as a percentage of GDP.

Figure 2: Debt as % of GDP



In the figure, it can be observed that the Public debt of Pakistan has remained on the rise from 1995 to 2000 and exceeded the total GDP of the country. Since 2000 up to 2005 there has been a significant decline in the total public debt and has decreased from 110% to 60%. Since 2005 there has been a steady growth again in the public debt and has reverted back to almost 80% of the total GDP of the country.

Unit Root Test

To diagnose the data for the presence of stationarity the Augmented Dicky Fuller test analysis has been used in the study. Under the null hypothesis of the ADF test, the data has unit root and is considered non-stationary. The alternate hypothesis suggests that the data is stationary. Table 2 of the chapter presents the ADF test results at level and 1st difference.

Table 2: Unit Root Test

Variables	Augmented Dicky Fuller Test		
	Level	1 st Difference	P-Value
PSX100	2.63465	3.46871*	.0215
PD (Debt as % of GDP)	-2.3653	4.334021**	.0384

*, **, *** shows significance at 1%, 5% and 10% respectively

In the table, it can be observed that the level data has a test statistic of 2.63 while for debt%gdp the test statistic is -2.36. For both the variables the test statistic for the level data is less than the critical value required for significant and hence suggest the presence of unit root in the data. The table then shows that the test statistics for different data of both the variables 3.46 and 4.3 respectively suggesting that values are significant and hence imply the stationarity of the data. Based on the results of the ADF test this study will use the difference data for further analysis.

Autoregressive Model

In order to analyze the relationship of debt with the stock market of Pakistan an autoregressive model is used. The AR model incorporates the impacts of current as well as lags value of the explanatory variables on the dependent variable under the analysis of the study. The autocorrelation graphs or the trial and error method can be used for determining the number of lag to be used in the analysis. The results of the autoregressive model of the study are presented in the following table of the study.

Table 3: AR, using observations 1995-2017

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
Const	5047.68	531.096	9.504	<0.0001	***
d_Debt%GDP_1	915.209	250.525	3.653	0.0081	***
d_Debt%GDP_2	107.149	100.726	1.064	0.3227	
d_Debt%GDP_3	-604.555	199.474	-3.031	0.0191	**
d_Debt%GDP_4	-10.5834	75.3988	-0.1404	0.8923	
d_Debt%GDP_5	532.449	126.481	4.210	0.0040	***
d_Debt%GDP_6	268.329	80.3120	3.341	0.0124	**
Mean dependent var	4692.761	S.D. dependent var		4522.695	
Sum squared resid	37471994	S.E. of regression		2313.686	
R-squared	0.792023	Adjusted R-squared		0.613758	
F(6, 7)	7.112335	P-value(F)		0.010314	
Rho	-0.557974	Durbin-Watson		2.077092	

In the table, it can be observed that the F value for the model is 7.11 implying the goodness of fitness of the overall AR model of the study. The R square value of 0.79 and the corresponding adjusted R square value of 0.61 suggest that the lag values of debt provide almost 60% of explanation of the variation in the PSX100 index during the period of the study. Table-3 further presents that the Lag values of debt at Lag 1, Lag 3, Lag 5 and Lag 6 show a significant P-value and hence implies that the debt at these lags has significant impacts on the stock market in

Pakistan. The autoregressive results imply that the value of debt in Pakistan has significant impacts on the stock markets.

Johnson Multivariate Co Integration

In order to select the maximum lag length, Schwarz and Akaiken Criterion and an Interval of 1-1 were provided for the determination of the Co-Integration. The trace tests and the eigenvalues were used for determining co-integration vector in the series. The trace test results are presented in Table-5 of the study where it can be observed that hypothesis of $r=0$ is rejected and hence suggest the presence of at least 1 co-integration. The hypothesis for presence of less than or equal to 1 co-integration vector is accepted and hence, the combined results of $r=0$ and $r \leq 1$ implies presence of one co-integration in the data.

Table 4: Trace Test of Co-Integration

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
$r=0$	0.44663	36.017	47.8563	0.0952
$r \leq 1$	0.15718	23.568	29.7977	0.2253
$r \leq 2$	0.12199	7.78981	15.4941	0.4887
$r \leq 3$	0.02148	1.12559	3.84166	0.2887

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

The Eigen test results are presented in Table-5 of the study where it can be observed that the hypothesis of $r=0$ is rejected and hence suggest the presence of at least 1 co-integration. The hypothesis for presence of less than or equal to 1 co-integration vector is accepted and hence, the combined results of $r=0$ and $r \leq 1$ implies presence of one co-integration in the data.

Table 5: Maximum Eigen Values Co-Integration Test

Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

Hypothesized	Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
r=0	0.527196	38.9581	27.5834	0.002
r ≤1	0.266281	18.1070	21.1312	0.210
r ≤2	0.120199	6.55922	14.2660	0.532
r ≤3	0.021418	1.12559	3.84166	0.287

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

Results of both Trace statistics and the Max-Eigen tests support the presence of 1 co-integration vector in the data hence implies that there exists a long-run relationship between the time series of the data. Presence of cointegration vector suggest that PSX100 index and Debt% GDP have long term equilibrium

Error Correction Mechanism

The error correction model on the basis of the presence of co-integration checks the presence of long term equilibrium and the speed of adjustment toward long term equilibrium. The adjustments refer to the speed at which any disequilibrium is corrected in the next period.

Table 6: Error Correction Model Estimates Dependent Variable Δd_PSX100

Equation 1: d_d_PSX100

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>
Const	437.561	693.633	3.6308	0.0357
EC1	-0.00253562	0.0145251	-4.1746	0.02633
Mean dependent var	418.1786	S.D. dependent var	3060.646	
Sum squared resid	1.87e+08	S.E. of regression	3137.641	
R-squared	0.21601	Adjusted R-squared	0.2050946	
Rho	-0.139991	Durbin-Watson	2.012958	

The R square value in the table implies that debt level explains almost 21% of the variation in the equilibrium level and the same is supported by the adjusted r-square value of the model. The alpha value in the model is 437.561 and has a corresponding T ratio of 3.63 hence suggesting that there exists a long-run equilibrium between the PSX100 index and the debt level in Pakistan. The error correction value in the table presented above is -0.0025 with a T value of - 4.17 thus presenting the speed at which the equilibrium position is reverted back by the explanatory variable.

Granger Causality Test

The Granger causality analysis was used for analyzing the pair-wise bi-directional relation between time series of PSX100 index and debt% GDP in the analysis. The results for the test in Table-7 present the causal relationship between both these variables. In the table it can be observed that the F value for the null hypothesis that debt does not granger cause PSX100 index, is 3.92 hence suggesting the rejection of the null hypothesis and acceptance of alternate which implies that debt granger causes the PSX100 index. The F value for the granger causality under the hypothesis of PSX100 index is not granger causing debt is 1.60. This implies that the acceptance of the null hypothesis debt cannot granger cause PSX100 index. The overall results of the test suggest that there is a unidirectional Granger causality between the PSX100 index and the public debt where public debt of Pakistan granger causes the stock market performance of Pakistan economy.

Table 7: Pairwise Granger Causality Tests

Pairwise Granger Causality Tests			
Null Hypothesis:	Obs	F-Statistic	Prob.
Debt does not Granger Cause PSX100	23	3.92325	0.0266
PSX100 does not Granger Cause Debt		1.60834	0.9770

Discussion

In order to find out the impacts of public debt on the stock market of Pakistan, this study used a time series of the variables and analyzed it using autoregressive model, ECM and Granger casualty analysis. Using time-series data of PSX100 index and debt%gdp from 1995 and 2017 this study analyzed the impacts of public debt on the stock market of Pakistan. The analysis of the data presented that the time series data has normal distribution and there was no problem of skewness and kurtosis in the data.

The ADF results, however, presented that the data was not normally distributed and hence needed transformation of the data as was the case with previous studies such as (Demetriades and Rousseau, 2010). As suggested by Afonso and Sousa, (2012) the non-stationary adds significant biasness to the results and are not reliable, therefore transformation of the data using log values or difference values is often used. Accordingly, the level data was transformed into the first difference 1(1) and was then used for further analysis.

The results of autoregressive model presented that the lag values of the debt in Pakistan has significant impacts over the stock market performance in Pakistan as previously presented by (Chatziantoniou et al., 2013; Croce et al., 2016). The results recommend that the lag value in year 1, 3, 5 and 6 shows significant association with the stock market in Pakistan. This implies that the current Index at PSX100 index is influenced by the debt values in previous years as presented by the results of the AR model. Liu (2016) and Croce et al. (2016) also presented in their studies that public debt is an important determinant of future stock. Liu (2016), particularly presented that debt-GDP ratio outperforms other predictors of stock markets. Similarly, in Asian markets studies such as (Yartey, 2008, Gowriah et al., 2014) also presented the debt to GDP ratio of these emerging economies as one of the strongest determinants of the stock markets in these economies.

The long-run association between the debt and PSX100 index was analyzed using the johnson co-Integration test and the error correction model as previously used by (Liu, 2016). The co-integration results presented that there exists one co-integration vector and therefore suggest

long-run equilibrium between the variables as presented previously in studies such as (Hussain et al. (2009); Rehman et al. (2009); Shahe and Subika (2008)).

The occurrence of long term equilibrium between the variables under analysis presents the basis for short term revert towards the equilibrium position. As presented by Gowriah et al., (2014) the variables in order to maintain the long-run equilibrium revert back to the equilibrium position in short-run when displaced from the state of equilibrium. The ECM is one of the most widely used technique for analysis of the short-run equilibrium between time series variable having a long-run equilibrium among them provided by the presence of co-integration vector (Hsing, 2013).

The ECM further clarifies this fact which signifies the presence of long-run equilibrium and the adjustment vector suggesting the revert to equilibrium position once deviation is caused by equilibrium position. The results of the ECM test are in line with the previous studies such as (Mahmood and Yartey, 2008, Dinniah, 2009; Gowriah et al., 2014) suggesting the presence of short-run equilibrium between the time series of debt and stock market indices. The results of the co-integration test and the ECM suggest that there exists a long-run relationship between the debt to GDP ratio and the PSX100 index. Likewise, the ECM further signifies this fact and adds that at times when the state of equilibrium disturbed the association between these variables move back towards the equilibrium point.

Finally, after the validity of long-run and short-run equilibrium between the two variables Granger causality analysis was used to check the causal relationship between the two and from the results of the test it is evident that debt granger causes the PSX100 index, however, the PSX100 does not explain the debt in the economy. The overall results support the results of previous studies such as (Oyinlola (1993); Liu and Hsu, (2005); Younis (2008)) and are also in line with the economic growth relative to the findings from Loizides and Vamvoukas (2005) which suggest supports the Wagner's law.

Conclusion

Pakistan since 1947 has been stuck with its public debt and has not been able to resolve the challenges surrounding the public debt levels, moreover, the situation is worsening and the debt level has soared to an alarming level in the recent past. Further, to add to this despair, the public debt in the recent past has been mainly issued for servicing of the existing the liabilities. Given the emerging nature of Pakistani stock markets the soaring level of debt presents an interesting area of investigation. Emerging economies around the world are to a greater extent dependent upon the domestic and foreign debt for their economic development. The ineffective management of debt in these economies further leads to higher debt burden in these economies which further leads to risky markets and has negative impacts on the stock markets in the developing economies. Previous studies present that public debt if utilized effectively van lead to positive financial development in the economy, however, the evidence yet suggest that in most of

the case debt is found to have negative impacts on the stock markets. The literature suggests that the issue has been mainly analyzed using the panel data and ADRL analysis technique. secondly in Pakistan, studies have identified the role of public expenditure and public debt with the economic growth however the direct impacts of public debt on stock markets has not been significantly analyzed. This study, therefore, used the co-Integration and granger causality analysis technique for asserting the role of public debt of Pakistan in its stock market performance.

In order to analyze the impacts of public debt on the stock market of Pakistan yearly time series data for the period from 01/07/1995 to 30/06/2017 was collected. The data were analyzed using different times series analysis techniques. A systematic econometric analysis approach was used by the study where the data was first analyzed for the presence of unit root in the data. Afterward, autoregressive model, co-integration analysis and Granger causality analysis were employed by the study to explain the relationship between the variables.

The results of Autoregressive model presented that the lag values of the debt in Pakistan has significant impacts over the stock market performance in Pakistan. The long-run association between the debt and PSX100 index was analyzed using the Johnson co-integration test and the error correction model. The co-integration results presented that there exists one co-integration vector and hence suggest long run equilibrium between the variables. The ECM further clarifies this fact which signifies the occurrence of long-run equilibrium and the adjustment vector suggesting the revert to equilibrium position once deviation is caused by equilibrium position. Finally, after the validity of long-run and short-run equilibrium between the two variables Granger causality analysis was used to check the causal relationship between the two and from the results of the test it is evident that debt granger causes the PSX-100 index, however, the PSX100 does not explain the debt in the economy.

Recommendation of the Study

Based on the discussion and the results of the study the following recommendation are presented,

- The policymakers would be quite concerned about the soaring level of Pakistan economy as the debt level has remained on the higher side as percentage of GDP.
- The period of higher debt proportions has resulted in negative impacts on the overall performance of the stock market and it is therefore recommended the debt availed for government expenditure should be efficiently and effectively utilized in order to attain the desired developments and to minimize the debt serving cost for enhanced economic performance.

- It should be realized at some point that the Pakistan government has to focus on generating resources for public expenditure so as to reduce the debt burden in the economy.
- Pakistan needs a debt reduction strategy which has to focus on reduction in deficits. Such objectives can be achieved using fiscal revenue, economic growth, and concessionary rates.
- Debt in itself is not a bad thing however, management of the debt is the most important thing in this regard that can turn the debt into a productive or nuisance for the economy.
- Similarly, the debt should be obtained for projects or productivity that can generate returns higher than what has to be paid as interest. Furthermore, the productivity of the debt should be tangible and should be measurable.

Limitation and Future Research work

This study is based on few limitations which can be used as future research in order to enhance the scope of the study and getting more insight information for the policymakers and scholars/practitioners. Firstly, the study used data for the period from 1995-2017 for 22 years because data was not completely available on the secondary sources. Secondly, the study analyzed the impacts of public debt on stock market performance however, did not control for other factors that may have impacted the stock market for the period of the study. The relationship can be further explored by probing the utilization of the public debt and its benefits in the respective sectors by introducing some moderating variables like role of regulatory bodies and government interference which will provide more significant insights into the issue.

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