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Abstract

Economy of Pakistan has been facing depressed economic condition for several years since many years. Debt to GDP has marked its peaks of Rs 21408.7 billion in 2017. State of Pakistan has taken measures to reduced it. Various economic policies with amendments are being introduced by state’s authorities to make the favorable economic conditions but still there are some factors which are creating economic instability in Pakistan such as increase in Public Debt Burden is one of them. So, this study primarily focuses on exploration of causal relationship between public debt and economic indicators of Pakistan. Secondarily it focuses on analyzing relationship between public debt and economic indicators such as market capitalization, reserves, exchange rate and fiscal deficits. The study has employed both type analysis qualitative and quantitative. Quantitative data is analyzed through statistical software EVIEWS. 16 years data of Public Debt and economic indicators of Pakistan from 2002 to 2017 has been analyzed. Standardized criteria adopted to accept or reject the hypothesis. Based on inferences, policies and implication are given in the shape of recommendation for corrective measure.

Keywords: Twin deficit, Debt Overhang situation, budget deficit, crowding out situation
Introduction

Economy of Pakistan is facing a depressing and challenging situation. Due to depressing economic condition government of Pakistan and state bank of Pakistan are doing amendments to make the economic condition favorable for growth but still there are some factors which are creating economic instability in Pakistan such as Increase in Public Debt Burden is one of them.

Pakistan total debt has reached Rs 21408.70 billion in 2017 including domestic and foreign debt. Government of Pakistan is facing fiscal deficits and to finance this deficit government is taking additional debt from 2012-2017 government debt has increased by 100%. Following graph is presenting historical debt to GDP ratio of Pakistan’s economy:

![Source: Trading economics.com: Central Bank of Pakistan](image_url)

Study reveal during 2002-2017, Pakistan has been facing decrease in investments due to negative credit rating, the main reason behind this high credit profile of Pakistan’s economy. Credit rating represents degree of risk allied with investing in a specific country including political risks. In current scenario, MOODY’S give B3 rating to the economy of Pakistan with negative outlook. This debt overhang is creating worst situation also for the market capitalization in Pakistan because of high liquidity and depreciation of PKR creating repatriation problems for foreign investors as well.
Study reveal Pakistan needs to pay back $1.2 billion to the IMF in 2012 including $230 million on account of interest payments, $2.9 billion during 2013, $4.3 billion during 2014, and $2.6 billion during 2015. The worst situation is yet to commence, as from 2017 Pakistan will have to start paying back the rescheduled $8.9 billion loan of the Paris Club. The immediate challenge before the new economic managers coming as a result of expected general elections would be how to arrange such heavy amounts to retire only the IMF debt. Government of Pakistan is further planning borrowing more money from the IMF to return the borrowed money resulting to deep spending cuts and enhancement in tax rates leading to high social unrest. In fact, Pakistan has been trapped into a Greece-like debt situation.

Fiscal and monetary policies are the tools of determining growth of any country. Monetary policy includes money supply and interest rate which is determined by the central bank of any country while the fiscal policy includes government revenues and expenditures which are done by the government of country. They both interact with one another if one is adopting tight policy then other one will adopt expansionary policy to balance the economy which gives direct impact on economic indicators such as GDP, Inflation etc. The level of the stock market is a key variable which indicates the pulse of economic activity in a country and together with other variables such as the real Gross Domestic Product, the unemployment rate, the inflation rate, the interest rate and the exchange rate give a summary of the macro economy. The supply of money, the condition of credit and the price level influence the performance of the stock market over the short, medium and long run period.

Debt to GDP ratio is the percentage of public debt over gross domestic product of a country. Low debt to GDP ratio indicates excess of production to payback amount of debt. Government wants to maintain low GDP ratio but also can face risk of high debt ratio if there is a chance of high profit margin on production.

Open market operation declarations to buying or selling government securities in capital market. Increase in Federal Reserve’s refers to buying of bonds and t-bills from the public which leads increase in money supply and devaluation of home
currency indirectly and in short run influencing interest rate which helps to attract investment opportunities in the country and to pay debt repayment amount.

Michael Parkin reveal open market operation in his studies that When the FED buys securities in an open market operation, bank reserves increase, bank increase their lending, and the quantity of money increases and vice versa.

High debt profile of a country requires high collateral for investors, while high debt holding countries have chance to become in solvent in future, so debt amount of a country matters for investors of the same country. There are two situations which can be occurred due to high public debt either investor will be fled out from the country due to insolvency chances of a country or the investors will have a chance to increase their capital because of highly demanded shares as compares to public bonds-bills etc.

Exchange rate refers to purchasing power of a home currency in another currency. Exchange rate is influenced by different factors but sometimes it is highly influenced by amount of public debt which is repaid at the higher interest rate and establishes demand and supply forces to determine a new exchange rate.

Possible Outcomes of Public debt

Debt overhang situation

A situation in which an organization or government cannot borrow more money having positive NPV of future projects is not to be flourished due to existence amount of debt. When amount of debt repayment become more than its principle amount, Debt overhang condition can be developed in an economy. Dr. Ishrat Hussain (2017) pointed out debt servicing profile of Pakistan’s economy in his research article and concluded that amount of debt servicing from IMF is to be paid in foreign exchange so that growing trend of interest rate is the major problem for paying back debt amount to the debtors.

Following graph is showing trend of debt servicing in Pakistan in which 2002-2008 is declining phase while from 2008 it started to increase and now it would move towards is at peak due to foreign debt burdens.
Crowding out effect

Government facades deficits and to finance deficits government start borrowing, at the high level of borrowing and the result is increase in interest rate which leads to a decrease in private consumption and investment. In other words, “crowding out effect” refers to goods and services which are provided by government would be offered by private investors. Privatization of SOE’s is one of the examples of crowding effect. In the eras of privatization banking and energy sector are at the top of the list. Muhammad Shahid, Mahmood Shah and Farhat Parveen (2016) quoted in their study that debt burden leads to increase in taxes and decrease in investment in the long run prevailing crowding out effects in an economy.

Twin deficits

Economies that have both a fiscal deficit and a current account deficit are often referred to as having "twin deficits." Twin deficit refers to a situation when a country is facing current account deficit as well as budget deficit. When government spending become high as compared to revenues and government takes debt to finance its deficits and this debt create high debt repayment outflow in current account in balance of trade, it is known as twin deficit. Anjum Aqeel and Muhammad Nishat (2000) described that there is a linear relationship budget deficit and tax rate which would resulting decrease in national savings and increase in current account deficit.
This phenomenon is called twin Deficit. As shown in the following graph of Pakistan’s twin deficit trend that there is a linearity between public debt and fiscal deficit.

**Scope of Study**

This study will be beneficial for:

- Government of Pakistan to develop strategies for debt management and focus on variables which are highly responsible for high Public Debt.
- State Bank to adopt policies which can create favorable environment for growth of economy.
- Ministry of Finance to identify the sources of finance without affecting economic health of Pakistan.
- Capital market to attract investors and borrowers.

**Purpose of Study**

This study is conducted to determine the impact of the following on Public Debt of Pakistan from 2002-2017:

- Fiscal Deficit
- Exchange rate
- Market Capitalization
- Federal Reserves
Literature Review

Mohammad Ishfaq (1999) published in The Pakistan Development review 38:4 regarding fiscal deficit and debt dimensions of Pakistan, he stated that fiscal deficits and debt burden are causes and effects of each other. Mr. Parvez Hasan (1999) added in The Pakistan Development review 38:4 regarding debt burden in different regimes, he stated that the democratic govt was struggling with debt burden and unable to manage debt and fiscal deficits.

Asad Sayeed and Ejaz Rashid (2003) highlighted causes and remedies of external debt burden, they stated that increase in debt burden is creating economic instability which is arising due to poor policies and decision making of government while Abdul Qayyum Khan (2008) published regarding budget deficits and its resources and stated that there is a relationship in budget deficits and foreign borrowings.

Benedict Clements, Rina Bhattacharya, Toan Quoc Nguyen (2005) summarized for IMF regarding debt relief and economic growth of poor countries, they stated that impact of debt on growth is greater when have positive effects on public investment and fiscal balances. On the other hand, Abid Hameed and Hammad Ashraf (2008) stated in International Research Journal of economics and Finance regarding external debt and its impact on economic growth in Pakistan, They stated that there is a long run and short term relation between debt service and its impact on Economic and business growth of Pakistan. Cristina Checherita and Philipp Rother (2010) published in working paper series of European central bank no.1237 regarding high govt debt and economic growth of country; they stated that there is a non-linear relationship between GDP and public debt.

Baïlo Diallo (2009) published regarding external debt and financing of economic growth, she stated that debt burden and economic slippages create economic instability in country which arise chances of insolvency of country and turn away financing and investing bodies from country. Thomas Philippon (1999) defined in Jacques Polak Annual Research Conference (IMF) regarding debt overhang situation
in country, he stated that in debt overhang situation bank’s bonds can create positive NPV.

Muhammad Nadeem Qureshi (2010) published in international research journal of economics and finance regarding political instability and economic development of Pakistan he stated the economic policies are made but not implemented properly due to irregular change in govt and leaders.


Mohammad Ayoub (2012) published in universal journal of management and sciences regarding debt burden and its impact by examining debt policy statement during 1990-2000, he stated that the actual expenditures on debt services are the main causes of less productivity, unemployment and low contribution in manufacturing sector.

Rebecca M. Nelson (2013) published in CRS report R41838 regarding sovereign debt, stated that increase in government spending, decrease in revenue and additional debt are the causes of high public debt. Shahid Hassan and Dr. Rukhsana Kalim published regarding macroeconomic variables and fiscal deficits of Pakistan, they stated that fiscal deficit is the result of increase in high external and internal debt to fill gap of resources. Rifaqat Ali published regarding long term impact external debt accumulation and economic growth in the time period of 1970-2010 and found that long term debt burden has created debt overhang situation in Pakistan. External debt and labor force effects negatively while human capital and investment effects positively economic growth of Pakistan.
Methodology

Data Collection Technique

As there are two methods of collecting data Primary and Secondary, but this study is totally based on Secondary data.

Sources of Secondary Data

- Debt policy Statements
- Articles, Journals and Publications
- State bank of Pakistan’s annual records of trade and payments
- Financial market data from State Bank of Pakistan
- Fiscal policy Statements

Sample Size

Time period from 2002-2017 is taken as a sample period because in this era different nature of economic policies were introduced under different political regimes in the country and there is an increment in public debt which adversely affected economy as well.

Modeling Framework

Econometric Model

\[ Y = \beta_0 + \beta_1 (\chi_1) + \beta_2 (\chi_2) + \ldots + \mu \]

Model Driven

\[ \text{PUBDEBT} = \beta_0 + \beta_1 \text{BDFCT} + \beta_2 \text{MC} + \beta_3 \text{RSRVS} + \beta_4 \text{XRATE} + \mu \]

Where,

\[ \text{PUBDEBT} = \text{Public Debt (Dependent variable)} \]

\[ \text{FSDFT} = \text{Fiscal Deficit (Independent variable)} \]
Functionality between economic indicators and debt crisis of an economy: A causal study on Pakistan’s economy (2002-2017)

XRATE=Exchange rate (Independent variable)

MRCPT=Market Capitalization (Independent variable)

RSRVS=Total Reserves (Independent variable)

**Expected Signs**

- $\beta_0=0$
- $\beta_1>0$
- $\beta_2<0$
- $\beta_3<0$
- $\beta_4<0$

**Hypotheses**

$H_0_1$: Budget deficit does not give impact on public debt.

$H_1$: Budget deficit gives impact on public debt.

$H_0_2$: Exchange rate does not give impact on public debt.

$H_2$: Exchange rate gives impact on public debt.

$H_0_3$: Market capitalization does not give impact on public debt.

$H_3$: Market capitalization gives impact on public debt.

$H_0_4$: Total reserves do not give impact on public debt.

$H_4$: Total reserves give impact on public debt.

**Data Handling**

Data is handled through EVIEWS software by analyzing statistical tests:
Statistical Tests

- level of significance=95%
- Probability≤0.05
- Correlation
- T-test value>2

Results Estimation

Descriptive Statistics Table

<table>
<thead>
<tr>
<th></th>
<th>FSDFT</th>
<th>MRCPT</th>
<th>PUBDEBT</th>
<th>RSRVS</th>
<th>XRTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>5.387</td>
<td>3976265.00</td>
<td>9979.269</td>
<td>1.41E+10</td>
<td>79.171</td>
</tr>
<tr>
<td>Median</td>
<td>5.400</td>
<td>3403398.00</td>
<td>8368.500</td>
<td>1.36E+10</td>
<td>81.150</td>
</tr>
<tr>
<td>Maximum</td>
<td>8.800</td>
<td>9522358.00</td>
<td>21408.70</td>
<td>2.20E+10</td>
<td>104.697</td>
</tr>
<tr>
<td>Minimum</td>
<td>2.300</td>
<td>411576.00</td>
<td>3636.000</td>
<td>7.65E+09</td>
<td>57.574</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>1.763</td>
<td>2666499.00</td>
<td>6175.461</td>
<td>4.21E+09</td>
<td>18.96</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.269</td>
<td>0.637930</td>
<td>0.532154</td>
<td>0.259</td>
<td>0.129</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>2.504</td>
<td>2.371188</td>
<td>1.871250</td>
<td>2.105</td>
<td>1.356</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>0.356</td>
<td>1.348816</td>
<td>1.604553</td>
<td>0.713</td>
<td>1.846</td>
</tr>
<tr>
<td>Probability</td>
<td>0.836</td>
<td>0.509</td>
<td>0.448</td>
<td>0.699</td>
<td>0.397</td>
</tr>
<tr>
<td>Sum</td>
<td>86.200</td>
<td>63620237</td>
<td>159668.3</td>
<td>2.25E+11</td>
<td>1266.745</td>
</tr>
<tr>
<td>Sum Sq. Dev.</td>
<td>46.637</td>
<td>1.07E+14</td>
<td>5.72E+08</td>
<td>2.66E+20</td>
<td>5396.082</td>
</tr>
<tr>
<td>Observations</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

The above table shows the mean, median, standard deviation of each variable, the highest the mean and standard deviation show highest deviation in data.
Correlation Matrix

Table 2: Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>FSDFT</th>
<th>MRCPT</th>
<th>PUBDEBT</th>
<th>RSRVS</th>
<th>XRTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSDFT</td>
<td>1.000</td>
<td>0.272</td>
<td>0.419</td>
<td>-0.103</td>
<td>0.503</td>
</tr>
<tr>
<td>MRCPT</td>
<td>0.272</td>
<td>1.000</td>
<td>0.921</td>
<td>0.618</td>
<td>0.837</td>
</tr>
<tr>
<td>PUBDEBT</td>
<td>0.419</td>
<td>0.921</td>
<td>1.000</td>
<td>0.633</td>
<td>0.969</td>
</tr>
<tr>
<td>RSRVS</td>
<td>-0.103</td>
<td>0.6180</td>
<td>0.633</td>
<td>1.000</td>
<td>0.598</td>
</tr>
<tr>
<td>XRTE</td>
<td>0.503</td>
<td>0.837</td>
<td>0.969</td>
<td>0.598</td>
<td>1.000</td>
</tr>
</tbody>
</table>

The data has analyzed through Eviews software by using correlation and regression. The correlation test indicates the relationship between the variables. According to above table there is a positive correlation between dependent and independent variables. Exchange rate and Market capitalization have very strong correlation with public debt while others are moderately correlated with public debt.

Estimated Equation

Table 3: Dependent Variable: PUBDEBT

| Variable     | Coefficient | Std. Error | t-Statistic | Prob.
|--------------|-------------|------------|-------------|------
| C            | -6934.319   | 26165.83   | -0.265      | 0.795|
| LOG(RSRVS)   | -142.020    | 1132.679   | -0.125      | 0.902|
| LOG(FSDFT)   | -621.812    | 1021.486   | -0.608      | 0.555|
| MRCPT        | 0.000814    | 0.000186   | 4.367       | 0.001|
| XRTE         | 227.371     | 31.64681   | 7.184       | 0.000|

In the above equation: R Square Show Coefficient of Determination defines the square of Coefficient of Correlation. The R Square value (0.9807) means 98.075% reliable to be used for estimation of population. The Std. Error is important because
they reflect how much sampling Fluctuation a statistic will show. The R change shows the differences between R-value & Adjusted R square.

Durbin Watson test value lies in significant region which indicates that there is no autocorrelation in the samples. The F change shows the combination of all variable and overall significances of the Model.

**Actual, Fitted, Residual Graph**

The above graph shows the tracing of model, the tracing of the model indicates minor error in a model as adjusted R-Squared indicated as well.

**Results and Analysis**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Coefficient</th>
<th>t-value</th>
<th>Prob.</th>
<th>Correlation</th>
<th>Hypotheses Accepted/Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>FSDFT</td>
<td>-621.8126</td>
<td>-0.608733</td>
<td>0.5551</td>
<td>0.419928</td>
<td>Ho: Accepted</td>
</tr>
<tr>
<td>XRATE</td>
<td>227.3712</td>
<td>7.184647</td>
<td>0.0000</td>
<td>0.969785</td>
<td>Ho: Rejected</td>
</tr>
<tr>
<td>MC</td>
<td>0.000814</td>
<td>4.367441</td>
<td>0.0011</td>
<td>0.921124</td>
<td>Ho: Rejected</td>
</tr>
<tr>
<td>RSRVS</td>
<td>-142.0205</td>
<td>-0.125385</td>
<td>0.9025</td>
<td>0.633816</td>
<td>Ho: Accepted</td>
</tr>
</tbody>
</table>
Conclusion

Pakistan enters 2018 with Rs 21,408.70 billion public debt, fiscal deficit of 5.8 percent with dollar touching close to Rs104.62 Pakistan is at 40th rank in the world of high debt countries, bearing 67.20% debt of GDP in 2017. Public Debt of Pakistan is creating debt overhang and crowding out situations in Pakistan, resulting increase in M2 and interest rate on borrowing causing decrease in investment and consumption and to finance budget deficit Government is taking additional debt. By going through this situation there are some variables which are seemed to be responsible factors behind this situation.

Since last 12 years’ debt financing is taking root in our economy and creating worst situation in economy. So, this study was conducted to measure the variables which are the reasons behind increase in public debt in the time span of 2002-2017. From the above analysis it is shown that public debt is affected by market capitalization and exchange rate because the probability values of both are <0.05 and t-test values are >2, are on the accepted region while not affected by fiscal deficit and reserves because the probability values of both are >0.05 and t-test values are <2, are not on the accepted region. So, it can be concluded that Results of the above research deny the secondary causes of increasing public debt while primary causes have been found significant.

Policies and Implications

- Pakistan’s Debt to GDP ratio at its peak, so that Govt should offer stock instead of issuing bonds to increase inflows free of interest expenses.
- Sustainable growth should be focused to invest in a field which should be free of environmental and financial risk.
- Central bank should cut interest rate on borrowing which will enhance investment opportunity as production as well as. Through high production balance of trade can achieve surplus and debt repayment would not disturb as much balance of payment.
- Government securities should be sold out to decrease money supply.
- State bank of Pakistan should restrict debt amount for Government and should adopt expansionary monetary policy for private investors.
Energy sector of SOE’s is going down into the deficits which is also an expenditure for economy of Pakistan. Providing energy power plants at lower rate can be a solution to overcome on the shortage of energy and deficits.

Rescheduling of the debt would be beneficial for decreasing debt burden from the balance of payment.

References


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