

The Role of External Debt on Economic Growth: Evidence from Pakistan Economy

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Abstract

External debt plays a major role in shaping the economic activity of any country. The purpose of the study is to determine the role of external debt on economic growth in Pakistan economy. The study incorporate Gross domestic product (GDP) as a measure of economic growth and gross domestic saving (GDS), gross capital formation (GCF) and external debt stock (EDS) as measure of economic debt. OLS regression model has been employed along with descriptive statistics over the time series data for 39 years. The statistical findings of the study reveal that gross capital formation (GCF) and external debt stock has significant positive effect on Pakistan GDP while gross domestic saving does not have significant impact on GDP of Pakistan.

Keywords: External Debt, Gross Domestic Product, and Economic Growth.

1.0 Introduction

Ever since the sovereign debt crisis, which started in eighties and trickled into nineties, the word external debt has been convicted for all the problems of the developing countries. The ubiquitous nature of the terms has led every single entity, be it person or organization especially media, to take the word "external debt" for granted. The reports and articles emanating from these entities profoundly mislead and alarm the masses due to sheer perception on the volume of external debt outstanding against their country. Gross external debt is the amount, at any given time, of disbursed and outstanding contractual liabilities of residents of a country to nonresidents to repay principal, with or without interest, or to pay interest, with or without principal.

Countries resort to external debt due to various reasons such as financing development projects, meeting short-term obligations, meeting long-term obligations, access to foreign currencies, buying of equipment etc. Whatever the reason or motivation is, the external debt so accumulated creates liability on part of the country to pay the amount. All of these transactions are maintained in the current and capital account of the country. Pakistan is one of the developing countries and faces serious debt problems, according to World Bank report 2000-2001, Pakistan is among the Highly Indebted Countries (HICs); because Pakistan's present and future debt situation is very grim. Prior to early 1970s, the external debt of developing countries was primarily small and official phenomenon, the majority of creditors being foreign governments and international financial institutions offer loan for development project (Todaro, 1988). At the same time, current account deficit was common which increased the external indebtedness of the developing countries, until when Mexico, despite an oil exporter, declared in august, 1992 that it could not services its debt ever since, the issue of external debt and its servicing has assumed critical importance and introduced the debt crises debate (Were, 2001).

Effects of external debt accumulation on investment and economic growth of the country are always remaining questionable for policymakers and academicians alike.

There is no consensus on the role of external debt on growth. It has both positive and negative aspect, different experts are in view that external debt will have favorable effect on economic growth because external debt will increase capital inflow and when used for growth related expenditures can accelerates the pace of economic growth. It will not only provide foreign capital for industrial development but will also give managerial know how, technology, technical expertise as well as access to foreign markets for the mobilization of a nation's human and material resources for economic growth. On the other hand when external debt accumulated beyond a certain limit, it will contract the economic growth by hampering investment.

These contradiction results in literature were the basic motivation for this study to determine the effect of external debt on economic growth of Pakistan.

2.0 Literature Review

The classical economic theory focused on the establishment of competitive enterprises and free trade for



economic growth. David Ricardo forwarded the idea that economic growth is dependent on the capital accumulation, which in turn is motivated by rate of return. The well-known development economist Alfred Marshall focused on saving, and existence of free markets among other things for achieving a higher rate of economic growth. Furthermore, Lewis and Schumpeter postulated that human spirit is the main impetus and determinant for economic growth.

However, the idea of requirement and usage of foreign capital has its roots in the depression of 1930's. John Maynard Keynes who is called the founder of the supply-side economics, made the assertion that economic growth can be spurred through investments by the state. Rather than going the usual way of supply of goods or services when demand already exists, he forwarded the idea of creating demand through supplying goods and services. Thus through-targeted investments in sectors like infrastructure and home construction, a government can create jobs and associated industries.

As the developing economies have been categorized by unavailability of adequate capital and technological capacity to undertake large projects, therefore, there has been a tendency towards financing through external debt. The main propagators behind this phenomenon have been the large multinational organizations like World Bank, IBRD, Asian Development Bank, IMF etc. although the sources of financing for majority of countries have not been limited to only these organizations, they have also reverted to commercial banks and other countries in order to pursue their developmental objectives under bilateral arrangements. The analysis of the external debt in financing is the development process that has been discussed by Avramovic (1964 as stated in Safdari and Mehrizi 2011). He documented that external debt was important as it complemented to low level of domestic savings in a developing country economy. However, the impact of the external debt was not realized because the stock of external debt rose steadily than the domestic savings.

Krugman, (1988) and Cohen, (1992) led to the development of debt overhang theory. It says that accumulation of debt after a certain threshold can inhibit the credibility of the debtor to repay its debts. In the recent three decades, researchers and practitioners have raised the idea of debt relief through reduction in debt stock or service as appears a logical step for both creditors and debtors when a debtor is said to be on the wrong side of the debt Laffer curve. Waheed, (2008) documented that it is in interest of the creditors to reduce the level of debt through voluntary debt forgiveness. This results increased investment and growth in a debtor country and subsequently increases debt service payments to the creditors".

The World Bank's study on Turkey (1990) analyzed the issue of illiquidity, and provided a framework for managing the external burden by Turkey due to its ensuing problems. The study determined that during illiquidity, the rising future debt service obligations calls for increasing transfers and/or gross capital inflow. Therefore, a strategy to increase the transfer capacity usually is a perquisite for, and complementary to, a strategy to increase capital inflow. Lenders had demonstrated their cautiousness through rescheduling, and the country had to adjust to transfer more resources abroad. This process of adjustment, called transfer problem in literature, consists of increasing the non-interest current account surplus (NICAS). In this manner, if the rate of growth of exports is not higher than rate of growth of imports, then a country may face the situation where it will not be able to meet the rising costs of interest and debt capital, as happened for many countries during 1980's. This is because country's external transfer abroad is reflected in an improved trade balance, and generally requires a reallocation of resources from non-tradable to tradable production. The revenue earned in this manner can be used to support the debt servicing and debt capital repayment.

Colaco (1985) described the debt service vulnerability in developing countries using three contexts. Firstly, the size of external loans has reached a level much higher than equity finance. Secondly, the use of floating interest rates for servicing debts, thus constraining borrowers to service debts when interest rates rise. Thirdly, shorter maturities due to declining share of official flows have exacerbated debt servicing.

Omotoye et. al. (2006) has concluded that external debt is not the real cause behind the economic problems caused by countries in Sub-Saharan Africa. Rather the corrupt governments, inconsistent policies, creditors' extravagant loans to discredited figures and projects have significantly contributed to the crisis. The study employed panels regressions based on two dependent variables i.e. the ratio of annual change in EDT/GNI and TDS/GNI. Seventeen variables are used in principal component analyses (PCA) in which some of the variables have been lagged by one year.

Adegbite et al., (2008) in their study, confirmed the negative impact of debt and its servicing on economic growth of Nigeria. The paper is based on the neoclassical model of economic growth and employs two models for evaluating its results. The first model employs economic growth as response variable with six independent variables to reveal a linear relationship. The second model along with other changes, adds two other variables (terms of trade variability and public capital expenditure) to the model.

Pattillo, Poirson, & Ricci (2002) employing OLS and System GMM methods revealed that high external debt leads to lowering of economic growth by affecting the efficiency of investment rather than its volume. The marginal impact of external debt starts negative after it reaches values of 80-85% of exports or 17-20% of GDP. Malik, Hayat and Hayat (2010) have shown that the external debt is negatively and significantly related with



economic growth of Pakistan. The GDP has been used as dependent variable and regressed on to two variables i.e. external debt and debt servicing. The authors have treated the problem of stationary through unit root test, and further augmented Dickey-Fuller test has been applied to variables. OLS methodology has been then used to check the impact of external debt and debt servicing on economic growth.

Siddiqui & Malik (2001) showed that the impact of foreign debt on economic growth is positive and statistically significant. The rise in debt servicing affects the level of contribution to investment, but other debt ratios indicate that contribution of investment rate in economic growth is unaffected.

Loganathan, Sukemi, & Sanusi (2010) employing time-series econometric techniques for a period of 20 years i.e. from 1988 to 2008 have shown that the Malaysian external debt is sustainable. They have used four step by step techniques; firstly, stationary tests, second co-integration test, third VECM, and at last Granger causality analysis.

Yilanci & Ozcan (2008) have used time-series econometric techniques for a period of 17 years i.e. from 1990 to 2007. Caner & Hansen (2001) technique was employed to simultaneously test the stationarity and non-linearity of data. Subsequently, after finding out that debt to GDP ratio is non-linear then unit root test was applied. The study concluded that the Turkish external debt is "unsustainable" in long run. Tsintzos & Efthimiadia (2011) in their research paper published by Centre of Planning and Economic Research, Greece, examined the effects of external public debt on a county's economic growth. It showed that as internal-external public debt ratio increases, the public to private capital ratio increases which in turn positively affect the long run economic growth rate. In case of outflows of domestic capital necessary for servicing external debt, the results on economy are negative. Caner et al (2010) studied a panel data of 101 countries for period 1980-2008 employing variables such as gross public debt, GDP growth and a number of control variables. The threshold least squares regression model (Hansen 2000) was used to estimate non-linear function. It concluded that the threshold value for average long-run public debt to GDP ratio on GDP growth is 77 percent for all the 101 countries in the sample, the threshold for the developing countries was 64 percent. Surpassing this threshold for an extended period may cost these countries a decrease in GDP growth.

Krugman (1988) in his influential paper which was a conceptual undertaking delved into issues connected with the debt financing and debt forgiving for a country facing "debt overhang" which is the already accumulated debt that is larger than the present value of the resource transfer that their creditors expect them to make in future. The paper derived that there is a tradeoff between financing versus forgiving a debt burden. It is not feasible in all cases either to finance the debt overhang or to completely forgive it, as these issues have to be seen in context of each country.

Koeda (2008) using OLS and 2SLS techniques on a panel data of 94 countries presented a theoretical model to explain the occurrence of debt overhang in low-income countries and its repercussion on debt relief. It found out the extent of debt overhang and effectiveness of debt relief depends on recipient country's initial economic conditions and level of total factor productivity. Kraay & Nehru (2006) suggested that the three factors namely the debt burden, the quality of policies and institutions, and shocks explain a substantial fraction of cross-country and time-series variation in the incidence of debt distress. The empirical work has been performed on the data of 132 countries (low and middle income countries) covering the time period from 1972 to 2002. The probability of debt distress has been explained by three explanatory variables. The first if debt to export ratio, second is World Bank CPIA rating, third is real GDP growth. Waheed, (2005) analyzed the behavior of public external debt of Pakistan and developed forecasts/scenarios for dealing with the problem. Among eight policy options, the most feasible were said to be increase in exports, increase in taxes, reduction in bond rates, reduction in lending rate, devaluation of currency appears to be significant factors in bringing the external debt to sustainable levels. This paper uses the gap-model based on the neoclassical growth model. The data from 1980 to 1992 is used for different variables depending upon the availability. The model is solved using Gauss-Side iterative technique and was also further solved for each period using the dynamic simulation.

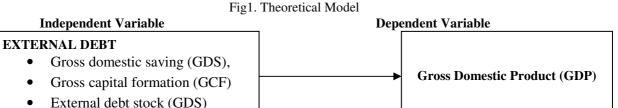
3.0 Theoretical Framework & Hypotheses Development

The classical economic theory focused on the establishment of competitive enterprises and free trade for economic growth. David Ricardo forwarded the idea that economic growth is dependent on the capital accumulation, which in turn is motivated by rate of return. The well-known development economist Alfred Marshall focused on saving, and existence of free markets among other things for achieving a higher rate of economic growth. Furthermore, Lewis and Schumpeter postulated that human spirit is the main impetus and determinant for economic growth. The classical economic theory asserts that economic growth depends upon investment, which in turn is dependent on availability of capital (Solow, 1956). The neo-classical school of thought stressed that the policy focus should be on increasing rate of savings and investment. Availability of increased savings spurs additional investments, which fuels economic growth. Due to limited and precarious revenue streams of developing countries, external sources represented a susceptible opportunity to fuel their aspirations for greater investments and growth. The tendency towards the external sources of financing has also



been prevalent in the countries characterized by low levels of domestic savings. The main reason behind this line of thinking is that external sources should be used to increase the capacity of an economy to produce higher levels of output; to a level where the rate of return is higher than cost of borrowing of funds.

Although the external sources were monumental in financing the investments, these countries were not able to generate the internal capacity and revenues to pay back these accumulated liabilities. Resultantly, these countries entered a vicious cycle, which increased the already stockpiled debt to such levels unsustainable by these countries both in short-term and long-term. Colaco (1985) describes the debt service vulnerability in developing countries using three contexts. Firstly, the size of external loans has reached a level much higher than equity finance. Secondly, the use of floating interest rates for servicing debts, thus constraining borrowers to service debts when interest rates rise. Thirdly, shorter maturities due to declining share of official flows have exacerbated debt servicing.



(Proposed theoretical model after reviewing literature)

In view of the conflicting and divergent views on the effects of the external debt on the economy of a country, the study incorporates following research hypotheses regarding the effects of the external debt on the economy of Pakistan in combination with a number of other variables that have been shown in theory to have significance influence on economic growth.

This study intends to test the following hypothesis:

H1: External debt Stock (EDS) has positive impact on GDP of Pakistan

H2: Gross Domestic Savings (GDS) has positive impact on GDP of Pakistan

H3: Gross Fixed Capital Formation (GFCF) has positive impact on GDP of Pakistan

4.0 Research Methodology

4.1 Unit of Analysis

The unit of analysis for this study is the economy of Pakistan. As the capital structure of the Pakistan economy is largely financed by external donors/institutions in the shape of debt.

4.2 Data Collection and Analysis

Secondary data was obtained from the site of World Bank. The data incorporated in the study, is time-series data of the last thirty-nine (39) years ranging from 1972-2010.

4.3 Econometrics Techniques

The relationship among variables incorporated in the study was estimated through Ordinary Least Square regression and statistics analysis has been performed through descriptive statics table.

4.4 Model Specification

The following OLS model for relationship between external debt and economic growth has been used.

GDP = $\beta_0 + \beta_1$ EDS + β_2 GCF + β_3 GDS + μ

Where

EDS= External Debt Stock

GCF= Gross Capital Formation

GDS= Gross Domestic Product

5.0 Results & Discussion

5.1 Descriptive Statistics

Table 1 shows the summary statistics of the variables incorporated in the study. Descriptive statistics present simple summaries about the sample and observations that have been incorporated in the study. The observation in said table depicts the number of years for which variables has been used i.e 39 years.. Moreover table 1 shows different statistical facts about data such as mean, medians, standers deviation of all explanatory, dependent and control variables. The average GDP of Pakistan from 1972-2010 is 57712 Million USD followed by external debt stock (EDS) 23202 million USD which represent that the larger portion of GDP is backed by external debt stock. Where as gross domestic saving (GDS) are only 7562 million USD. The descriptive statistics shows the maximum and minimum values about the properties of the data



Table 12
Descriptive Statistics of Variables in Study

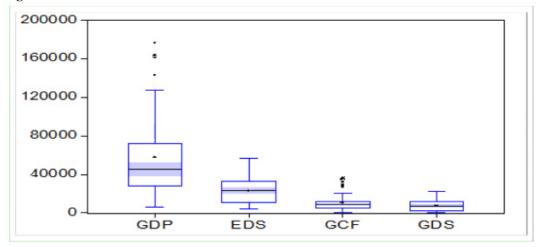
	GDP	EDS	GCF	GDS
Mean	57713.03	23202.46	10768.76	7562.711
Median	45451.96	23292.15	8647.873	7559.014
Maximum	176869.6	56772.87	36139.57	22059.67
Minimum	6324.884	4054.894	817.8379	531.7022
Std. Dev.	45355.18	14206.75	8953.212	6348.005
Skewness	1.218716	0.508357	1.383114	0.629871
Kurtosis	3.662188	2.495713	4.131142	2.163171
Jarque-Bera	10.36680	2.093022	14.51369	3.716755
Probability	0.005609	0.351161	0.000705	0.155925
Sum	2250808.	904896.0	419981.5	294945.7
Sum Sq. Dev.	7.82E+10	7.67E+09	3.05E+09	1.53E+09
Observations	39	39	39	39

^{*} Values are Million USD

5.2 Graphical Illustration

The Figure 2 stated below represents the data graphed in box plot. In statistical analysis, a box plot is a graph that can be a valuable source of easy-to-interpret information about a sample of study. It can provide information about a sample's range, median, normality of the distribution, and skew of the distribution. It can also identify and plot extreme cases within the sample. As shown in the Figure 2 almost all the data is normally distributed, with some outliers in the GDP above the range of 13000 million USD and quite a few outside the normal distribution in the GCF above the 2000 million USD. The same is evident from the above table 1 wherein the skewness values for EDS and GDS are nearer to zero while that of GDP and GCF are above '1'.

Figure 2: Box Plot of the Variables



5.3 OLS Regression Results for GDP (DV)

Table 2 shows the OLS regression model estimation. The statistical estimation shows that entire explanatory variables that include external debt stock (EDS) and gross capital formation (GCF) has significant positively related to the dependent variable that is gross domestic product except gross domestic saving (GDS) which has no relation with the dependent variables. Moreover Table 2 also shows that the probability (p-value) that is the measure of confidence in the value of the estimated coefficient is very low i.e. less than 1%. This shows that the two variables in the model i.e. EDS and GCF are significant at 1% of probability. The t-statistics values for these variables are over and above 2, which show that we can safely reject the null hypotheses because the probability of accepting the null hypothesis is very low. Thus we accept our first two alternative hypotheses that EDS and GCF have positive effect on the GDP of Pakistan. The only variable that shows opposite results is GDS; p-value of 0.5223, representing that gross domestic savings is not a significant variable in the equation that explains the variability in the GDP. As the p-value is very high than 0.05 or 5%, we can safely accept our null hypothesis that GDS have no effect on increase in GDP of Pakistan. In our earlier discussion in literature review, we discussed



that countries resort to external debt because of precarious levels of domestic savings; so, this point is again proved through our findings that GDS does not have significant effect in explaining the change in the GDP.

The *C* coefficient shows that in absence of EDS and GCF, Pakistan will lose to the tune of 5.2 billion USD from its GDP, which is very alarming. Furthermore, for every 1% increase in the GDP of Pakistan, the external debt will have to increase by 1.25% and similarly for 1% increase in GDP the GCF will have to increase by 3.41%. The effect of EDS on the economy of Pakistan is therefore more robust than GCF. This may be due to the lag in the effect of gross capital formation on the economic growth.

The R-square of the model is very high i.e. 98%, which means that the model explains 98% change in the dependent variable. There is word of caution as well and that is value of Durbin-Watson standing at 0.60, which shows the auto-correlation between the residuals from the regression analysis. The value of 0.60 shows that there is positive serial correlation in which a positive error for one observation increases the chances of a positive error for another observation. However, due to the simplistic nature of the study, we will not dwell into the discussion of reducing the durbin-watson value and is therefore beyond the scope of the study. The probability of F-statistic is almost perfectly zero, which shows the goodness of fit of the model. The model explains the 98% of variability in the dependent variable with higher precision because this is not due to chance.

Table 13

OLS Result of Goss Domestic Product

Dependent Variable: GDP Method: Least Squares Sample: 1972 2010 Included observations: 39

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	-5219.571	2259.909	-2.309638	0.0269
EDS	1.251997	0.221997	5.639711***	0
GCF	3.413316	0.327438	10.42432***	0
GDS	-0.380019	0.588008	-0.646282	0.5223
R-squared	0.981456	Mean dependent var		57713.03
Adjusted R-squared	0.979867	S.D. dependent var		45355.18
S.E. of regression	6435.529	Akaike info criterion		20.47397
Sum squared resid	1.45E+09	Schwarz criterion		20.64459
Log likelihood	-395.2424	F-statistic		617.4739
Durbin-Watson stat	0.60456	Prob(F-statistic)		0

Shows significance **** at 1%, ** at 5%, and * at 10% level of significance

6.0 Discussion & Policy Implications

The study aimed to uncover the existent relationship between external debt and economic growth for the period 1972 to 2010 (39 years) in Pakistan. To achieve this end, the time series econometric technique of ordinary least squares (OLS) has been employed. Although in the introduction and literature review part, the various studies done on this subject area have been thoroughly mentioned, however, this study is in no way an exhaustive one in terms of sample size or statistical rigor. Rather it is a simplistic cause and effect study wherein the three variables namely external debt stock, gross capital formation and gross domestic savings have been employed to measure their effect on economic growth of Pakistan.

The estimation result reveals with that external debt (EDS) has a positive relationship with GDP of country i.e. throughout the 39 years it has contributed positively to the economic growth of Pakistan.

Given that external debts do have positive effects on economic growth, but the problem occurs when countries have to repay these in future. Because these debts are denominated in hard currencies mainly in US dollars, therefore, arranging these dollars becomes a systemic problem for countries. Exports are one of the main sources of these much-needed dollars and country has to build the capacity to earn these dollars by exporting goods and services to the outside world. The problem with Pakistan is that the relative size of exports with respect to imports has always been lower, and this trade deficit further deteriorates the already worsening situation. With our external debt already hovering around 230% of our exports as of 2010, it is an alarming situation where the current levels of debt ultimately increase and we have to resort again to multilateral and private lenders to payback the approaching maturities or also to reschedule the debt on more stringent terms. Thus the debt



overhang effect ultimately prevails and the current level of debts act as a tax on future growth and investment as professed by Krugman, (1988).

This study like previous studies has taken the external debt as a stock value in a given point in time (year end). What is required for a more holistic study is to analyze each and every debt agreement and measure the effect of its tranches / flows disbursed to a sovereign. Not all the debts to a sovereign are meant for increasing capacity through investments in capital. Rather different organizations have different goals/objectives and support associated projects like education, health etc. which may have very long lag times.

In recent years Pakistan remained vulnerable to external shocks like world oil prices and drastic changes in the currency exchange rates, which can have serious impacts on his debt strategy. Any debt management strategy should monitor the effects of currency revaluation and imports in hostility. Pakistan twin deficit i.e. fiscal and trade deficit has been the prime factors in increasing its debt. Therefore, although in the short-run external debt may be a sigh of relief, but it should not be depended upon as a long-term solution. The focus should be on improving the capacity of the country to produce goods and services that can be exported to support the future servicing and capital repayments.

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