IMPACT OF DEBT SERVICING AND FISCAL DEFICIT ON ECONOMIC GROWTH; A CASE STUDY OF PAKISTAN

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ABSTRACT: *In Pakistan, debt and its servicing is the most discussed topic among the economists and policy makers. Pakistan has been taking chunks of money in the form of internal and external debt since 1970's. One of the common features of Pakistan's economic profile is a persistent fiscal deficit. To fulfill this resource gap of fiscal deficit, internal and external borrowing has become a permanent feature of every year's budget. High level of debt servicing left no room for governments to carry out macro-economic reforms in order to increase economic growth rates. The present study has been designed to check the impact of debt servicing on economic growth. Auto Regressive Distributed Lag (ARDL) approach has been used in the study for the data set from 1971-2014. The result of the study suggested that debt servicing are negatively affecting the economic growth of Pakistan both in the short run and long run with almost same intensity. Further, the coefficient of fiscal deficit has been found negative and very high. In the light of the present paper, it is suggested that Pakistan should not rely on debt to fulfill its fiscal deficit. Governments should use the policy of maximum revenue generation through local resource mobilization. The industry value added has shown a significant impact on economic growth both in short run and long run. So the policy to promote industry in Pakistan is very much needed to reduce dependence on debt*.

Keywords: Debt Servicing, Economic Growth, Fiscal Deficit, ARDL

INTRODUCTION

Diverse nature of socio-economic issues are being faced by Pakistan in recent years that affecting the desired goal of economic growth. Debt quantum, debt servicing and fiscal deficit are most prominent like scenario of other developing or third world countries. Normally at the initial stage of development and infrastructural requirements in developing countries, internal or external debt is source of capital stock [1]. Nevertheless, quantum of debt (local or foreign) stimulates economic growth, but its accumulation ultimately hinders economic growth. In the long run, debt quantum and debt serving have a devastating impact on economic growth whenever it is measured by Gross Domestic Product (GDP) or GDP per capita in developing countries [2].

In developing countries like Pakistan, reliance on debts for survival or fulfillment of budget deficit creates donors' dependence. The issue of donors' dependence hinders the country to launch effective economic policies that affects the masses badly. More debts for sake of payment of previous debs further distort the economic scenario of the country. These debts are neither used for infrastructural development nor used for mega projects or Human Capital Formation (HCF) which also adversely affects economic gains. Exports are very crucial for uplifting economic growth for any country in present global settings, but exports of Pakistan being used for debt serving instead of research and development. Now a day, resources are being used for debt and debt servicing dwell most chunk of Pakistani resources. In such situation, the government may hardly formulate effective economic policies or macro-economic reforms for thewell-being of public.

Debt trap is not anomalous phenomena in Pakistan; as Pakistan is facing this issue since 1960's. At the time of independence Pakistan had limited resources as an independent country. This issue was pioneer which compelled Pakistan for debt trap. Debt trap terminology extensively used in economic and remained a pressing issue of developing countries, it refers to amount taken as loans and to pay interest on it, and this interest further forces the economy to take loans because of unavailability or limited resources. Foreign quantum of debts has been increasing, especially from 2000 to 2014. In 2006 its figure was 37.3 billion dollars while in 2010 it reached to 57.2 billion dollars. Government of Pakistan paid 3.1 billion dollars in fiscal year 2010 in which 25% amount was spent in debt servicing. Secretory of finance division, Dr. Waqar Masood, has claimed the debt face a gigantic upward trend and reached more than 130.0 billion dollars in 2012 [19].

Pakistan has to depend on debts owing to many factors, i.e. budget deficit, wrong economic policies , short term thinking of different governments, political misappropriation, current account deficit, non-development expenditures, pressure of interest charges, etc. These are prominent reasons why Pakistan relies heavily on debt intakes which ultimately impact economic growth and social image of Pakistan. Now everyone in Pakistan is indebted to foreign governments or institutes like IMF. If we divide the population on debt intakes, each individual in Pakistan owes Rs. 57057[i].

The fiscal deficit is the second most prominent issue of Pakistan after inflation; it is almost half of total monetary value of budgeting and arises because of non-development expenditures. This is admitted by former President of SBP in 2010. It is shocking until now this situation is approximately similar, though the intensity is different. These non-development expenditures include defense expenditures, law and order, federal department expenditures, subsidies and debt servicing. In these expenses, debt serving and defense expenditures has an increasing trend in every budget that sucks a larger income portion of the country.

To cover fiscal deficit, Pakistan relies on foreign debt that consist of approximately 5% of GDP. The fiscal deficit is not only exists in Pakistan but it has been witness in many countries especially developing or third world countries. Other countries deal the amount of fiscal deficit with internal

resources like Foreign Direct Investment (FDI) at individual or institutional level. But the picture of Pakistan is different, we relies on foreign debts to cope the debt trap situation. Whenever we look both policies like other countries' or Pakistan, there is a lot of differences because adopted policy of Pakistan has a scarcity of rationalism. This irrational policy intensifies the situation and the accumulation of debts takes a higher level of foreign currency reserves to lender countries or lender institutes which impacts the country's ability to groom in the context of socio-economic perspectives. This policy eventually creates a status quo of self-dependence on others which hinders to get better long run economic results.

We may witness the debt trap situation in every time at annual budget. In every year's budget debt servicing has permanent share and it is increasing with the passage of time. The severity of debt and debt serving has been problem of Pakistan since 1980's and this study has been conducted to check the impact on economic growth.

Literature review

Patenio and Tan-Cruz [3] examined the relationship between debt servicing and GNP for the Philippine. Twenty five years quarterly data was taken ranging from 1981 to 2005 and Vector Auto Regressive (VAR) model was employed. Debt servicing was considered a primary determinant of growth while capital stock, the labor force and Human capital were among secondary variables. Empirical results depicted that external debt servicing were not having very much impact on economic growth and capital stock was positively affecting economic growth. Labor force and human capital were found to be insignificant for the growth. External debt was not significantly affecting economic growth because debt repayments were not soaring enough to result in the debt overhang condition.

Boopen et al [4] empirically investigated the relation between external debt and economic growth of a small island, developing state of Mauritius. Annual data for the period 1960-2004 taken from the study, VAR model was used to obtain the results. Vector Error Correction Model (VECM) was used to check the long-run and the short-run variation in the output Level of the economy. Debt to GDP ratio, private and public capital stock, total of export and imports divided by the GDP (openness indicator), secondary enrolment ratio (Human Capital) were taken as regreassors for the economic growth. Results explored that the public debt negatively and significantly affecting the economic growth and all other variables public and private capital stock, openness indicator and human capital was significantly and positively affecting the economic growth. Results of VECM showed that in short-run 1 percent point rise in the growth rate of external debt led to 0.103 percent point fall in growth rate of output after one year which was lower than long-run parameter. All other variables were also significant and having expected signs.

Hameed et al., [5] analyzed the impact of debt servicing on economic growth of Pakistan both in short- run and long-run. Time series data was taken for the period 1970-2003. Production Function Model was employed to check the dynamic effect of debt servicing, capital and labor force on the economic growth of Pakistan. ADF was used to check the stationarity of the variables and then co integration test was employed to test the long run relationship among the variables. All variables were found to have a unit root in their levels and were found stationary at first difference which allowed them to apply co integration technique. Results of the co integrated vector equation showed that debt servicing was negatively affecting the economic growth and Labor force and capital were effecting economic growth positively. Granger Causality was also checked through a VECM which showed the unidirectional causality runs from debt servicing to GDP. The debt overhang situation really negatively affected the economic growth of Pakistan.

Adesloa [6] undertook an empirical study about relation of debt servicing and economic growth in Nigeria. The author identified the major sources of external debt and took the debt payments made by Nigeria to Multilateral Financial Creditors as variables to determine whether they had inverse relation with GDP and gross fixed capital formation. OLS technique was used for data ranging from 1981 to 2004 to obtain the regression results and to show the cause and effect relationship between dependent and independent variables. Results suggested that there was a statistical significant relation between debt payments to lenders and gross fixed capital formation. Debt servicing showed statistically significant impact on economic growth.

Afzal et al., [7] undertaken an empirical study to test the export-led growth hypothesis in Pakistan; they included debt servicing in the model as an explanatory variable with exports. Trivariate causality analyses were performed for economic growth, debt servicing and export earnings. The data range was 1970-71 to 2007-08. VECM and Augmented Vector Autoregressive Technique were used to check the causality followed by co-integration test by Johansen. Results suggested that both variables (debt servicing and export earnings) were not impacting the economic growth of Pakistan in short-run. Important findings were that in case of Pakistan growth was Granger causing Exports, but not the export which was causing growth. Bivariate analysis between growth and debt servicing had shown that there exists a unidirectional causality from debt servicing to Growth of Pakistan.

Qureshi and Ali [8] investigated the effect of public debt on Pakistan's economic growth for the period 1981-2008. To check the effect of public debt on growth single equation models were developed, single independent variable debt burden was used for several independent variables i.e. real GDP growth rate, manufacturing production, total Investment as, total exports and employment rate. OLS estimation was used to obtain the results and in case of autocorrelation problem the equation was estimated again by auto regressors moving average. Results suggested that negative and significant relation exists between debt and real GDP growth further high debt and debt servicing reduce fiscal space for the expenditures on development. Negative and significant relation between debt and manufacturing production growth rate was found. Total investment was also hampered by the public debt and total exports were also being affected negatively by public debt. Public debt also created unemployment as it reduced economic growth and investment in the country. The high debt servicing has

devoured the fiscal space and most of the sectors in Pakistan are negatively affected.

Theoretical Framework

Economic pressure faced by Pakistan and economic policies was the main factor for repressing economic growth of Pakistan since 1970. As Pakistan is a developing country so its reliance on foreign debt is not an anomalous phenomenon. Foreign debt kept performing major role in covering budget deficit. In the early phase, debt was utilized in mega projects, which resulted in higher economic growth. After division of country in 1971, appropriateness of debt usage was on stake and situation got worsened in Pakistan. Devastating impact of debt on economic growth because of debt servicing was more than its inherent capacity. Debt Laffer curve and debt overhang theories provide hypothesis of the study and magnify debt situation in an economy. High quantum of debt intakes hinders the acquisition of further debt although additional debt would be used for profitable projects. This dilemma ultimately impact economic growth indirectly. This situation is supported by Debt Laffer curve concept, which states higher quantum of debt lessens the probability of repayment. These situations worsen the credit rating, which influences FDI in economic setup eventually influencing economic growth. As, the debt intakes show the increasing trends while the payment capacity indicates decreasing trend. Higher rate on Government bonds in 2013 in open markets are the only reasons for maintaining payment capacity. Recent oil shortage (Oil Shock 2014) was also because of the debt hangover and payment capacity issue in the economy. These recent situations have not only disturbed masses, but also have nexus with economic growth.

Modeling

This empirical model has been formulated in order to measure the magnitude of the impact of debt servicing on economic growth. Foreign debt servicing is a major variable of the model along with other potential variables, which impact economic growth.

$$1.1\ GDP = \beta_0 + \beta_1 DTS_t + \beta_2 FD_t + \beta_3 IVAT_t + \beta_4 DINV_t + Є_t$$

While GDP= GDP Per Capita, DTS= Debt Servicing, FD = Fiscal Deficit, IVAT = Industry Value Added, DINV= Domestic Investment Єt= Error Term

This empirical study uses Debt Serving (it includes payment of interest rate on long term and medium term loans) and it is expected to have a negative relation to economic growth. This negative relation has been proved in different studies [5, 9,10].

Data and Methodology

Secondary data of selected variables have been taken on annual basis from 1971-2014. The data sources are World Bank Indicator (2014). Some missing values have been taken from various issues of Economic Survives of Pakistan. Pre testing of variable in secondary data analysis is a crucial factor; this analysis paves the ways for appropriate research technique. The unit root test are crucial which measure the nature and type of stationary of data. Unit root can be measured by using different methods; however, Kwiatkowski Phillips Schmidt Shin (KPSS) Test and Augmented Dickey Fuller (ADF) Test (1992) have been applied to check stationarity of variables.

Economists are mostly concerned with co-integration (long run association) of variables. To achieve this purpose, different techniques are available in literature. We may infer the co-integration on the basis of non-existence of a unit root in errors by OLS methodology, Engel Granger (1987) Johanson co-integration methodology (1988, 1990) and VECM methodology for lung run relationship measurement. A relatively new approach in secondary data analysis, Auto Regressive Distributed Lag (ARDL) has been applied in this study because above mentioned methodologies have some shortcomings. This technique covers all the shortcomings of other research techniques and provides robust result for small sample size. ARDL approach is built on general to specific economic modeling [11,13]. . ARDL has another advantage; there is no restriction of stationarity of variable on same level (order of integration of variables) which is a crucial factor in VECM modeling. ARDL can be used if the data is stationary at level or first difference which is denoted as (I (0) and I (1)) respectively [12]. Firstly, level of integration is measured then the estimation is performed by OLS, this is beauty of ARDL and it provides consistent results in small sample. ARDL takes sufficient lag in general to specific modeling which increases the consistency and efficiency of empirical results. This approach also accommodate higher number of variables in contrast to Vector Autoregressive (VAR) or Vector Error correction Model (VECM) while Error Correction term can also be got by linear transformation[14].

We have used ARDL methodology in the study, which consists of different phases. In the first phase, we have checked the stationarity of the variables. After that, we have checked the relationship of variables by OLS methodology. The long run relationship among variables has been checked by applying Wald Test. Restriction of being equal to zero on coefficient has been applied to check long run relationship by Bound Testing. If the calculated value of Wald Test lies between upper and lower bound of F-bound test, the result will be inclusive and researcher should adopt Johanson co-integration (1988, 1990) and VECM methodology to find long run relationship while F bound testing only is applied in case of calculated value of Wald Test more than upper bound. We have found that calculated value of long run Wald Test is greater than upper bound. So, ARDL methodology is appropriate to find long run results of given empirical model.

The next phase is crucial one; ARDL approach is practically applied in this stage. A Schwartz Baysian criterion is more efficient for lag selection than others. So, lag selection in this study was based on Schwartz Baysian. Then residual diagnostic test and model specification test have been applied to increase validity, reliability, efficiency and robustness of the findings. Equation 1.2 has been tested by ARDL mechanism.

$$1.2\ \Delta GDP_t = a + \sum_{i=1}^{m} b_i \Delta (GDP)_{t-i} + \sum_{i=0}^{m} c_i \Delta (DTS)_{t-i} + \sum_{i=0}^{m} d_i \Delta (FD)_{t-i} + \sum_{i=0}^{m} e_i \Delta (IVAT)_{t-i} + \sum_{i=0}^{m} k_i \Delta (DINV)_{t-i} + \delta_1 (GDP)_{t-1} + \delta_2 (DTS)_{t-1} + \delta_3 (FD)_{t-1} + \delta_4 (IVAT)_{t-1} + = \delta_6 (DINV)_{t-1} + \mu_t$$

In the next phase, ECM model has been quantified, which captures the equilibrium point of long run results. It also provides a clear-cut picture of long run result. If ECM term does not have a negative sign, we may doubt the model. Moreover the value of ECM must be more than one. For an accurate depiction of model, ECM term should be negative and less than one. The speed of variables to return equilibrium point is captured by the value of ECM term. The methodology of the ECM modeling would be as 1.3

$$1.3\ \Delta GDP_t = a + \sum_{i=1}^{m} b_i \Delta (GDP)_{t-i} + \sum_{i=0}^{m} c_i \Delta (DTS)_{t-i} + \sum_{i=0}^{m} d_i \Delta (FD)_{t-i} + \sum_{i=0}^{m} e_i \Delta (IVAT)_{t-i} + \sum_{i=0}^{m} k_i \Delta (DINV)_{t-i} + \delta_1 (GDP)_{t-1} + \delta_2 (DTS)_{t-1} + \delta_3 (FD)_{t-1} + \delta_4 (IVAT)_{t-1} + \delta_6 (DINV)_{t-1} + \mu_t$$

Results

Unit root testing has been performed as pretesting of data for suitability of model estimation. ADF and KPSS test have been applied on raw data which reveal DINV is stationary at level while all other variables of the model are stationary at first difference. Unit root testing provides justification to precede ARDL because of differences of the integration level of data.

Table 01: Lag Selection Criteria

Lags	AIC[ii]	SBC[iii]
1	39.19*	41.26*
2	38.24	39.56

In next step, appropriate lag section has been applied. Schwarz Bayesian Criterion (SBC) is selected for ARDL modeling because its superiority over AIC [15], which showed the optimum lag length for the model, is two because it shows minimum values of SCB on it.

Table 02: Bound Testing

F-stat	On 95%		On 90%	
	Lower Bound	Upper Bound	Lower Bound	Upper Bound
8.59	2.89	3.83	3.34	4.63

H_0= No long run co-integration of variables

In the next step, bound testing has been performed, which clearly indicates that co-integration exist in the variables. On the basis of the F value of Wald Test, the null hypothesis of bound testing is rejected, which means a long run relationship of model exists. The F value of the model is more than upper bound at 5% and 10% level of significance respectively. Bound testing further paves the route for ARDL estimation.

All variables of the model have expected sign and aligned with the findings of other researches. Debt servicing has the negative relation with economic growth, which shows that one unit (one million US dollar) increase in debt servicing reduces 0.001% GDP per capita growth (proxy for economic growth). Pakistani government takes debt to finance its fiscal deficit and its inappropriate use is another reason for negative sign. Because of this bad management of debt, expected sign of debt servicing has been found be negative with growth. Pakistani government should wake up and avoid the above average use of debt and at the same time should try to utilize its indigenous resources for capital enhancement, revenue generation and economic growth. This finding has consensus with [10,16]

Table 03: AUTO-REGRESSIVE DISTRIBUTED LAG ESTIMATES

ARDL Estimation(1, 0, 0, 0, 0)

Regressor	Coefficient	Standard Error	T-Ratio	Probability
GDP(-1)	0.21	0.09	2.34	0.032
DTS	-0.00113	0.00420	-2.1702	0.050
DINV	0.00421	0.03412	0.092	0.910
FD	-0.42041	0.21031	-1.99	0.059
IVAT	0.26513	0.07661	2.87	0.009
Intercept	4.31	1.39	2.68	0.010
R-Squared	0.792		DW value	2.03
S.E. of Regr.	1.39		F - stat	11.89

The fiscal deficit is a major reason for further debt reliance for Pakistan; fiscal deficit has negative relation to economic growth. Approximately 42% decrease in GGP per capita happen in Pakistan with a one percent increase in fiscal deficit. Basically, mismanagement and corruption are primary sources of such fiscal deficit, which has left no choice to take foreign debt that increase its debt serving and limited grip on implementation of policy at macro level. These reasons are rationale behind the negative sign of fiscal deficit and economic growth in developing countries.

Industrial improvement and industrial advancement not only perform a major role in uplifting economy but also provide job opportunities, more technology, more business opportunities, etc. These positive aspects of industrial development automatically enhance economic growth. This empirical study finds a positive and significant relationship between economic growth and industry value addition. We find that 1% increase in industry value added in year enhances 26% economic growth by keeping all other factors constant. This finding is aligned with other research studies [16,17].

Domestic investment findings cannot be generalized because of statistical insignificance. Although there has been found a significant relation in other models adopted by researchers. However, in this study, the relationship of domestic saving and economic growth is not statistically significant. In this model, industry value addition and lag of economic growth have positive signs while fiscal deficit and debt servicing have negative relation. Nevertheless, domestic saving does not statistically contribute in growth.

Table 04: Residual Diagnostic Tests

Problems	Applicable tests	Chi-Square (X^2)/F-Statistics	Probabilities
Serial Correlation	LM Test	0.04	0.86
Functional Form	Ramsey's RESET TEST	0.84	0.37
Normality	JB test	0.08	0.95
Heteroscedasticity	White	1.20	0.29

Serial correlation has a disastrous impact of reliability of findings and empirical estimation. To present an unbiased and clear picture, this study has applied two tests for serial correlation. First, value of Durbon Watson (DW) measures the correlation of error term with its immediate pervious lag. Value of 2.02 clearly indicates that residuals have no serial correlation on lag two. LM test quantifies serial correlation at lag 2 and acceptance of null hypotheses provides us justification to claim the independence of errors. Acceptance of null hypothesis of JB test and white test clearly indicates that residuals are normally distributed and have equal variance. Remesy test validates the authenticity of functional form of selected empirical model. All residuals and model specification test increase robustness, concreteness, authenticity of the results.

Table 05: LONG RUN COEFFICIENTS
ARDL (1, 0, 0, 0) selected based on SBC[iv] GDP is Dependent Variable

Regressor	Coefficient	Standard Error	T-Ratio	Probability
DTS	-0.0016	0.0062	-2.23	0.032
DINV	0.0049	0.053	0.10	0.931
FD	-0.4821	0.2145	-1.94	0.064
IVAT	0.3537	0.1224	2.92	0.003
Intercept	6.2113	1.5916	2.93	0.002

ARDL methodology of long run estimation reveals that all variables are aligned with expected relationships. Debt servicing and fiscal deficit have long run negative relation with economic growth while the industrial value addition has positive long run relation. The debt servicing negative relationship has been also tested in Pakistan by Afzal et al. [7]. Fiscal deficit inverse relation to economic growth has been empirically quantified by [18]. The long run relationship between economic growth and industry value addition is aligned with the findings of [17] although domestic savings have positive relation with economic growth yet they are statistically insignificant. ARDL long run results tell that the fiscal deficit has more negative impact in comparison of debt servicing.

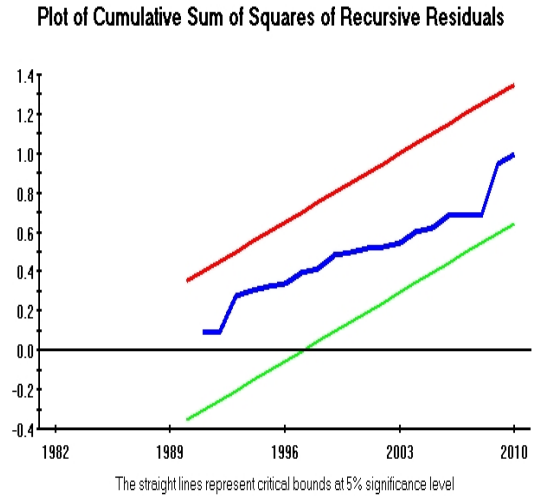
Figure 02: Cumulative Sum Of Square Recusive Residuals

Stability in ARDL is a crucial factor, the finding will not be 100% justified without the stability of dependent variable, model and parameters. To attain stability result, CUSUM test and CUSUM Square test have been applied on economic growth model. Blue lines in figure 1 and Figure 2 reveal that model is stable in context of variables and its parameters and stay within 5% level of significance up to 2013.

Table 06: ERROR CORRECTION REPRESENTATION FOR THE SELECTED ARDL MODEL
ARDL (1,0,0,0,0) selected based on SBC

Regressor	Coefficient	Standard Error	T-Ratio	Probability
dDTS	-0.00121	0.00430	-2.08	0.049
dDINV	0.00332	0.03941	0.08	0.941
dFD	-0.4326	0.23032	-1.99	0.053
dIVAT	0.3821	0.0961	2.87	0.008
Ecm(-1)	-0.7231	0.1322	-6.54	0.000
R-Squared	0.7232	R-Bar-Squared	0.6329	
S.E. of Regression	1.4247	F-Stat.	F(6,22) 9.9749 [.000]	
DW-statistic	2.0207			

Error Correction Term (ECT) value is negative and statistically significant. ECM (-1) value gives convergence of independent variables, in simple words it is long run adjustment towards equilibrium point. ECM (-1) value of 72% tell deviation from long run equilibrium will be adjusted in next period.



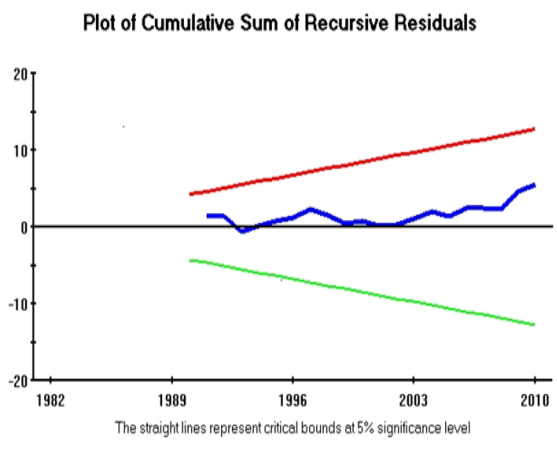


Figure 01: Cumulative Sum Of Recusive Residuals

CONCLUSION AND RECOMMENDATION

Impact of debt on economic growth has been tested for Pakistan many times, but effect of debt servicing has been rarely empirically tested. Debt servicing negatively impacts economic growth process in Pakistan. High quantum of international debt and its payment are hot topics of the financial press and a burning issue for Pakistani economy. This empirical study traces the impact of debt servicing on economic growth. ARDL procedure has been applied to get short run as well as the long run impact of debt servicing on growth. In short, run and long run debt serving negatively impacted growth and reduced economic growth by 0.001 % with an increase of one millions dollar in debt servicing. The findings of the present paper suggest that Pakistan should focus on domestic resources instead of foreign resources and should focus on its efficient mobilization. However, industry value added has significant short and long run relation with growth; it should be the focal point of any economic policy to get better long run results in context of economic growth. Fiscal deficit play a crucial role for the injection of foreign debts. The study finds statistically a negative relation with economic growth in the short as well as in the long run. In the short run fiscal deficit negatively impact growth and reduces it by 0. 43%, while in long run by 0.48 % with one millions dollar increase in fiscal deficit. Nondevelopment expenditures, interest on debts and military expenditures are sources of fiscal deficit, which force policy makers to get foreign debts that create extra pressure on local resources. This situation sustains year to year, which cause debt trap for the economy. Government has to finance its budget deficit either through foreign debt or printing of money. Foreign debt takes the country to debt trap while currency printing enhances money supply which causes high level of inflation. Government should avoid both method and relies on revenue generation through local resource mobilization i.e. reduces corruption, improvement in industrial sector, enhance the tax base and adoption of appropriate monetary policy.

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[ii] Akaike Information Criterion

[iii] Schwarz Bayesian Criterion

[iv] Schwarz Bayesian Criterion