



EFFECTS OF EXTERNAL DEBT, INTEREST PAYMENTS AND EXPORT EARNINGS FOR ECONOMIC GROWTH OF PAKISTAN

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Abstract

In this study, the relationship between external debt, interest payment, exports earnings and economic growth had been analysed for the Pakistan over the 1970-2017 with the help of cointegration analysis. Relationship between ratios of variables combined in our study was restrained through econometrics techniques consist of unit root, Johansen co-integration and error correction model (ECM) to acquire the unbiased consequences. It had been determined that in short-run period, external debt (ED) to GDP having significant and negative relationship, external debt (ED) to export earnings (EE) ratio shows insignificant and negative relation with GDP. While, interest payments on external debt (IP) to GDP ratio presenting insignificant but positive relationship with GDP. For long-run period, the outcomes shows that, ED to GDP, ED to EE and IP to GDP ratios reveals negative and insignificant relationship with GDP of Pakistan economy for the described period. We conclude that the GDP get effected about 56% due to independent variable ratios in Pakistani economy for the years 1970-2017.

KEYWORDS - External Debt, Economic Growth, Interest Payment, Export Earnings

1. INTRODUCTION

The external debts was an imperative activator of economic growth and an approach to steadiness budget of any economy. Furthermore, public debts, particularly foreign debts, has a sovereign or independent presence outside the budget and public finances. Therefore the financial debts are a widespread portent found in all nations. Resultantly, the certainty of

public financial debts are renowned accordingly. The credit is one of the crucial elements of modern public finance. It is assumed a provisional but intricate means. Actually, this variable is strictly interconnected to budget deficit of any economy. Economies that are at the preliminary phase of their expansion or growth have an inadequate stock of capital and repeatedly offer more gainful investment prospects than established or developed economies. What intends or intimidates by debts these nations? Nevertheless, the growth of debts assisted to finance various insolvent, impractical and low productivity ventures that caused negative influence on development and growth. Certainly, the decline in the global economy of the eighty centuries regarded as by varying forex rates, the weakening in product prices and increasing interest rates, the loans of Africa convert a hurdle to its progress and full repayment nearly imaginary.

Pakistan belongs to developing economies and located in South Asia having population about 197 million (2017). According to official State bank of Pakistan database (SBP) that external debt went up to US \$91.761 billion till 31st March, 2018 relative to US \$83.481 billion in June 2017. This indicate that external debt burden increasing rapidly in last nine months up to US \$8.5 billion. According to World Development Indicators (WDI-2107), the GDP of Pakistan is US \$ 304,952 million with external debt burden on the economy US\$ 84,523 million.

In this perspective that our analysis works whose main purpose is to study and analyze the effect of external debts on economic growth and development in some developing nations. Hence, our issue or problem appearances as follows: What is the influence of the capital by external debts on economic growth? The technique to retort this problem has directed us to develop our work in two segments. The primary and foremost is dedicated to the empirical literary works on the connection between external debts and economic growth, whereas the second will emphasis on definitions' variables factors, their resources and the understanding or interpretation of the outcomes of the econometric analysis. The econometric research performed as part of these studies provides an energetic or dynamic assortment of Pakistani economy over the period 1976-2016.

2. LITERATURE REVIEW

The literature review can be divide into two classes comprises theoretical and empirical. The organizations, governments or families that has usual heavy debts and not in a position to afford more, even however fresh lending indeed a well-intentioned investment that would extra pay for itself called debt-overhang situation. Originally this problem

conferred by Myers (1977). The first follower of this theory was Krugman (1988) who debated that nation's trap into vicious circle of poverty thru heavy debt.

Zouhaier & Fatma (2014) analyze the consequence of debts on economic growth of 19 developing nations over the period 1990-2011, thru dynamic panel data model. The researcher implicates an empirical research study of the consequence that debts have on the involvement or influence of investment to economic growth. The outcome of empirical estimation specify negative effect of the total external debt-to-gdp and external debt as percentage of GNI on economic growth. Similarly it shows negative relationship between these two debts ration and investment variable.

Azam & Emirullah (2013) argued that external debts situation is one of abundant concerns mostly for developing nations. This research examines the impression of external debts on economic growth of Indonesia through OLS for dynamics estimation. The key determining of the research reveals negative impact of external debt on economic growth during the period under the research. Therefore, external debt is not a benediction but somewhat a problem or liability for Indonesia. The outcomes proposes the significance of controlling external debts both, public and private, and improving debt managing efficiency.

Ramzan & Ahmad (2014) studies the effect of external debts on economic growth in Pakistan over 1970–2009. The empirical assessment of the effect of external debts on economic growth is studied consenting external debts to relate with macroeconomic strategy index and as the ratio of multilateral external debts to total external debts as a surplus aspect in the growth regression. The study based on the ARDL approach to cointegration. The outcomes indicate that external debts has a negative effect on growth, however this opposing effect can be compact or even inverted in the existence of rigorous macroeconomic strategy. Furthermore, it is the bilateral element of the total external debts that speed up economic growth of Pakistan.

Bakar & Hassan (2011) analyzed the consequences of external debt on economic growth in Malaysia. The analysis is led mutually at aggregate and disaggregate levels. The empirical outcomes are established on VAR estimates using GDP, external debt, capital accumulation, labor and human capital. Outcomes at the aggregate level indicate that total external debts affect economic growth positively. In precise, 1% point increase in total external debts generates 1.29% in economic growth the long term. Temporarily, the positive impact of project loan has been noticed at the disaggregate level. Conversely, market loan has not revealed any noteworthy effect on growth level. In the short-run, total external debt and project loan has positive impact on economic growth level.

Zaman & Arslan (2014) explained that external debts shows an immense part in shaping the economic accomplishments of any country. The purpose of the research is to direct the function of external debts on economic growth in economy of Pakistan. The research comprise GDP as dependent variable while gross domestic saving (GDS), gross capital formation (GCF), and external debt stock (ED) as independent variables. OLS regression technique has been engaged along with descriptive statistics over the time series data for 39 years. The statistical conclusions of the research expose that GCF and ED stock has significant positive effect on Pakistan's GDP. Whereas GDS does not have significant impression on GDP of Pakistan.

Rehman & Ahmad (2016) strains to include all foreign capital inflow factors to evaluate their effect on economic growth of 21 developing nations over 1990 to 2013. Contemporary econometric methods are used for data investigation such as panel unit root test and pooled mean group (PMG) evaluation for short and long-run study. The consequences direct that inflows such as net external debt (ED) and net official development assistance (ODA) have significantly adverse effect on growth of developing nations, whereas net foreign direct investment (FDI) and net remittances have positive and significant effect on growth in the long-run period. The research emphasized the prerequisite of allowance of foreign sources excellently and proficiently.

Siddique, Selvanathan, & Selvanathan (2015) discussed that throughout the 1970s and 1980's, the external debts levels of poor economies augmented to a level making up a 'debt problems.' The core source of the supply of external debts was the excess income generated by the OPEC through significant improves in the price of oil throughout the 1970s. Unluckily, several of the countries unsuccessful to use the external debts smartly and elegantly. When the income from oil sales ongoing to decrease due to low oil prices during the 1980's, intensely stressed with debt countries practiced exertion servicing the debt. This analysis the magnitude to which the external debts stress effects on a country's GDP using data from HIPC over the period 1970-2007. The results suggest that, in the short and in the long-run, a decrease in debts stock would have significantly improved the growth concert of the indebted countries.

The inclusive empirical literature review in relation to external debt-growth can be concise in to four types' significant outcomes involved, negative and significant, positive and significant, un-directional causality and two-way causal relationship.

3. METHODOLOGY

3.1. Unit of Analysis or Study

The unit of study in our research analysis is the economy of Pakistan.

3.2. Data Collection and Analysis

Our research study is based on secondary time series data over the period of 1970 to 2017 which is collecting from world development indicators (WDI) World Bank site.

3.3. Econometric Technique

Connection between ratios of variables incorporated in our research study was measured through econometrics methods includes unit root test, Johansen co-integration test and error correction model.

3.4. Model Specification

The following econometric model is used to confirm the influence of external debt to economic growth beside with other explanatory variables ratios such as external debt to export earnings, interest payment on external debt to gdp ratio. The assessing equation for this research study is in simple linear form and independent variables are involving in ratios for robust justification of the entire circumstances. It can be symbolically engraved as follows:

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \varepsilon$$

Here,

Y = Gross Domestic Product (GDP) as proxy of economic growth.

X₁ = ED/GDP ratio

X₂ = ED/EE ratio

X₃ = IP/GDP ratio

ε = Error term

3.5. Variable Choice and their Justifications

3.5.1. Gross Domestic Product (GDP)

Typically gross domestic product (GDP) specified as nominal GDP which refer to the amount of market prices of all finished or final good and services produced in a country throughout a year. GDP represent the total economic activities of a nations. More precisely, it represent the monetary value of all goods and services manufactured within a country's geographical borders over a stated time period. GDP is one of the utmost extensively used measures of an economy's output.

3.5.2. External Debt (ED) to GDP Ratio

External debt (ED) is the share of a nation's total debt that was loaned out from foreign creditors comprising commercial banks, international financial organizations and governments etc. These debts containing interest, need typically be paid in the currency in which the loan was made. In financial aspects, the external debt to gross domestic product ratio is the proportion between a nation's external debt and its GDP (estimated in years). A low debt-to-gdp fraction demonstrates an economy that produces and sells goods and services appetizing to pay back debt without procuring supplementary debt. This proportion compares the aggregate external debt unsettled with GDP. It also assesses the nation's capacity to experience its upcoming debt obligations on one hand and the burden of the debt on the opposite side. In lieu of threshold debt level, M. Reinhart & Rogoff (2010) clarified that the proportion of 90% or more stimuli negative effect on economic growth for any economy.

3.5.3. External Debt (ED) to Exports Earnings (EE) Ratio

Exports earnings describe the worth or value of all goods and services provided to the rest of entire world. It consist of the value of merchandise, freight, transport, travel, insurance, license fees, royalties etc. and services, such as construction, financial information, communication, personal, business and governmental services etc. they omit benefits or compensation of workers and investment income and transfer payments. T.L. Chancellor (2017) describe the ratio ED to EE explain the competency for repayment or settlement of external debt through amassed the revenue from abroad earnings (exports revenue). If the ratio result exposed less than unity (1), it leads to conclusion that country can pay-off their debts very quickly or may be less than a year. Inversely, the upper ratio revealed the lesser the competence of economy to assist the re-payment of debt thru exports revenue collections.

3.5.4. Interest Payments on External Debt to GDP Ratio

Interest payments are real measures of interest paid by the debtor in cash, products, or services in the year indicated. This thing incorporates interest paid on long term debt, international monetary fund (IMF) charges, and interest paid on short term debt. Long term debt is characterized as loan that has a unique or comprehensive maturity of over one year and that is payable to non-residents by residents of an economy and re-payable in money, and good and services. Short term external debt is characterized as loan that has a unique development of one year or less. Accessible data information allow no similarity among public and private non-guaranteed short term loan. This ratio leads to payment of interest on long-run as well as short-run debt and charges of IMF.

4. ESTIMATION RESULTS AND INTERPRETATION

4.1. Unit Root Tests Results

Table: 1 – Unit Root Result of GDP

Null Hypothesis: D(GDP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.894346	0.0043
Test critical values:		
1% level	-3.581152	
5% level	-2.926622	
10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(GDP,2)

Method: Least Squares

Sample (adjusted): 1972 2017

Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	-0.567804	0.145802	-3.894346	0.0003
C	3.87E+09	1.47E+09	2.643366	0.0113
R-squared	0.256329	Mean dependent var		5.59E+08
Adjusted R-squared	0.239427	S.D. dependent var		9.28E+09
S.E. of regression	8.09E+09	Akaike info criterion		48.50903
Sum squared resid	2.88E+21	Schwarz criterion		48.58853
Log likelihood	-1113.708	Hannan-Quinn criter.		48.53881
F-statistic	15.16593	Durbin-Watson stat		2.043963
Prob(F-statistic)	0.000331			

Table: 2 – Unit Root Result of External Debt to GDP Ratio

Null Hypothesis: D(ED_GDP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.520713	0.0000
Test critical values:		
1% level	-3.581152	
5% level	-2.926622	
10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(ED_GDP,2)

Method: Least Squares

Sample (adjusted): 1972 2017

Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ED_GDP(-1))	-0.982884	0.150733	-6.520713	0.0000
C	-0.001728	0.009040	-0.191134	0.8493
R-squared	0.491445	Mean dependent var		-1.21E-06
Adjusted R-squared	0.479887	S.D. dependent var		0.084976
S.E. of regression	0.061284	Akaike info criterion		-2.704098
Sum squared resid	0.165251	Schwarz criterion		-2.624592
Log likelihood	64.19426	Hannan-Quinn criter.		-2.674315
F-statistic	42.51969	Durbin-Watson stat		1.969918
Prob(F-statistic)	0.000000			

Table: 3 – Unit Root Result of Interest Payment on External Debt to GDP Ratio

Null Hypothesis: D(IP_GDP) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=9)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-8.436285	0.0000
Test critical values:		
1% level	-3.581152	
5% level	-2.926622	
10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(IP_GDP,2)

Method: Least Squares

Sample (adjusted): 1972 2017

Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(IP_GDP(-1))	-1.224123	0.145102	-8.436285	0.0000
C	-1.12E-05	0.000284	-0.039301	0.9688
R-squared	0.617959	Mean dependent var		7.44E-05
Adjusted R-squared	0.609276	S.D. dependent var		0.003082
S.E. of regression	0.001926	Akaike info criterion		-9.623898
Sum squared resid	0.000163	Schwarz criterion		-9.544392
Log likelihood	223.3497	Hannan-Quinn criter.		-9.594115
F-statistic	71.17090	Durbin-Watson stat		1.954120
Prob(F-statistic)	0.000000			

Table: 5 – Unit Root Result of External Debt to Export Earnings Ratio

Null Hypothesis: D(ED_EE) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=0)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-9.474670	0.0000
Test critical values:		
1% level	-3.581152	
5% level	-2.926622	
10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(ED_EE,2)

Method: Least Squares

Sample (adjusted): 1972 2017

Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ED_EE(-1))	-1.336420	0.141052	-9.474670	0.0000
C	-0.047086	0.070572	-0.667215	0.5081
R-squared	0.671076	Mean dependent var		-0.002288
Adjusted R-squared	0.663600	S.D. dependent var		0.823387
S.E. of regression	0.477564	Akaike info criterion		1.402268
Sum squared resid	10.03497	Schwarz criterion		1.481774
Log likelihood	-30.25217	Hannan-Quinn criter.		1.432052
F-statistic	89.76937	Durbin-Watson stat		1.614066
Prob(F-statistic)	0.000000			

4.2. Cointegration Tests Results

When all variables are stationary at I(1), then usually economist use co-integration test for estimations of long-run relationship existence. For this purpose, we are using Johansen co-integration test which provide the following estimations:

Sample (adjusted): 1972 2017

Included observations: 46 after adjustments

Trend assumption: Linear deterministic trend

Series: ED_EE ED_GDP GDP IP_GDP

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.518933	69.98189	47.85613	0.0001
At most 1 *	0.486580	36.32149	29.79707	0.0077
At most 2	0.113215	5.655115	15.49471	0.7358
At most 3	0.002780	0.128080	3.841466	0.7204

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.518933	33.66040	27.58434	0.0073
At most 1 *	0.486580	30.66638	21.13162	0.0017
At most 2	0.113215	5.527035	14.26460	0.6743
At most 3	0.002780	0.128080	3.841466	0.7204

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by $b^*S11*b=I$):

ED_EE	ED_GDP	GDP	IP_GDP
0.447911	7.831016	5.57E-13	85.43603
1.208845	-15.99733	-9.26E-12	93.16088
0.786332	7.779179	7.77E-12	-183.2436
-1.797666	3.570785	-3.08E-11	-278.9500

Unrestricted Adjustment Coefficients (alpha):

D(ED_EE)	-0.103051	-0.046884	-0.060239	-0.020915
D(ED_GDP)	-0.019575	0.025711	-0.008732	-0.001130
D(GDP)	-3.84E+09	-2.98E+09	1.10E+09	1.05E+08
D(IP_GDP)	-0.000331	0.000911	0.000282	-4.62E-05

1 Cointegrating Equation(s): Log likelihood -815.2347

Normalized cointegrating coefficients (standard error in parentheses)

ED_EE	ED_GDP	GDP	IP_GDP
1.000000	17.48342	1.24E-12	190.7433
	(6.29729)	(8.5E-12)	(96.4344)

Adjustment coefficients (standard error in parentheses)

D(ED_EE)	-0.046158
	(0.03197)
D(ED_GDP)	-0.008768
	(0.00378)
D(GDP)	-1.72E+09
	(4.8E+08)
D(IP_GDP)	-0.000148
	(0.00013)

2 Cointegrating Equation(s): Log likelihood -799.9015

Normalized cointegrating coefficients (standard error in parentheses)

ED_EE	ED_GDP	GDP	IP_GDP
1.000000	0.000000	-3.82E-12	126.0407

		(3.5E-12)	(44.1810)
0.000000	1.000000	2.90E-13	3.700795
		(2.5E-13)	(3.18212)

Adjustment coefficients (standard error in parentheses)

D(ED_EE)	-0.102833	-0.056985
	(0.09151)	(1.26429)
D(ED_GDP)	0.022312	-0.564597
	(0.00953)	(0.13166)
D(GDP)	-5.33E+09	1.76E+10
	(1.3E+09)	(1.7E+10)
D(IP_GDP)	0.000953	-0.017165
	(0.00032)	(0.00441)

3 Cointegrating Equation(s): Log likelihood -797.1380

Normalized cointegrating coefficients (standard error in parentheses)

ED_EE	ED_GDP	GDP	IP_GDP
1.000000	0.000000	0.000000	-13.52197
			(49.2021)
0.000000	1.000000	0.000000	14.27787
			(5.38054)
0.000000	0.000000	1.000000	-3.65E+13
			(1.3E+13)

Adjustment coefficients (standard error in parentheses)

D(ED_EE)	-0.150201	-0.525598	-9.15E-14
	(0.10622)	(1.36714)	(8.5E-13)
D(ED_GDP)	0.015446	-0.632522	-3.17E-13
	(0.01097)	(0.14114)	(8.8E-14)
D(GDP)	-4.46E+09	2.62E+10	0.034014
	(1.4E+09)	(1.9E+10)	(0.01156)
D(IP_GDP)	0.001174	-0.014973	-6.43E-15
	(0.00037)	(0.00473)	(2.9E-15)

4.3. Error Correction Model (ECM)

Dependent Variable: D(GDP)

Method: Least Squares

Sample (adjusted): 1971 2017

Included observations: 47 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.98E+10	1.00E+10	1.979972	0.0548
D(ED_GDP)	-5.41E+10	2.41E+10	-2.243877	0.0306
D(ED_EE)	-3.73E+08	2.37E+09	-0.157630	0.8756
D(IP_GDP)	2.19E+11	5.91E+11	0.371116	0.7126
GDP(-1)	0.023534	0.025944	0.907089	0.3699
ED_GDP(-1)	-2.62E+09	1.81E+10	-0.144659	0.8857
ED_EE(-1)	-2.65E+09	1.80E+09	-1.469387	0.1497
IP_GDP(-1)	-4.63E+11	2.94E+11	-1.573179	0.1238
R-squared	0.565780	Mean dependent var		6.27E+09
Adjusted R-squared	0.487843	S.D. dependent var		8.71E+09
S.E. of regression	6.23E+09	Akaike info criterion		48.09841
Sum squared resid	1.52E+21	Schwarz criterion		48.41333
Log likelihood	-1122.313	Hannan-Quinn criter.		48.21692
F-statistic	7.259464	Durbin-Watson stat		2.345013
Prob(F-statistic)	0.000014			

5. CONCLUSIONS AND POLICY IMPLICATIONS

The study drives to explore the starring role of various ratios involves eternal debt to gross domestic product (ED/GDP), external debt to exports earnings (ED/EE) and interest payments on external debt to gross domestic product (IP/GDP) ratios on economic growth in Pakistan over 1970-2017. Through Johansen cointegration and error correction model (ECM), ED to GDP ratio outcomes confirms negative and significant relationship whereas ED to EE leads to insignificant and negative and IP to GDP reveals insignificant and positive relationship with economic growth of Pakistan for the short-run period. Conversely, for the

long-run period, the consequences indicates insignificant and positive relationship with economic growth of Pakistan. Hence, we conclude that the GDP get effected about 56% due to specified independent variable ratios in Pakistani economy for the years 1970-2017. The Durbin Watson (D/W) value indicate that there is no autocorrelation among the variable and F-Statistics results also indicate the good fit model existence. The low ratio of ED to GDP indicate negative influence on economic growth of Pakistan. There is significant role of ED in economy of Pakistan and government needs to decrease the ED burden as well as need to enhance the GDP of Pakistan. ED to EE ratio of Pakistan directs the lesser competency towards the repayments of external debt. In this regards, the government of Pakistan need to increase the export earnings (EE) which will make the cause of deficiency in repayments of external debt. Further, interest payment on external debt (IP) to GDP ratio indicates considerable external debt burden, huge payments of interest causing big hurdle on the way of economic growth in Pakistan.

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