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MACROECONOMICDETERMINANTS OF FOREIGNINDEBTEDNESS: EVIDENCE FROM PAKISTAN

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Abstract

The intention of conducting this research is to inspect the key macroeconomic determinants of foreign indebtedness in Pakistan. ARDL bound test is applied to annual dataranging from 1976-2018.This paper finds that debt service payment, military spending, and trade openness provoke furtherexternal borrowing, whereas growth in economic activity, depreciation of currency and capital inflow help in curtailing the overseas borrowing of our economy. The findings of this study also highlight the role of government revenue and inflation in reducing the debt burden liability. This study recommends that policy making departments should focus on relaxing the trade barriers, enhancing the overall productivity and competitiveness of the markets, stabilizing the exchange rate and designing an optimal level of military budget as all of them are contributing towards reducing the external financial liabilities.Appropriate use of foreign reserves, creating attractive environment for investment and utilization of funds in revenue-oriented projects are also necessary for combating with the issue of foreign indebtedness. Taken together, the assurance of these recommendations will help in meeting the government's financial needs and curtailing the demand for accumulation of external debt.

Key Words: Foreign debt, ARDL, Pakistan
JEL Classification: F34, C22, P24

Introduction

Foreign debt has remained the subject matter of numerous studiesheld globally. Researchers are not only interested in investigating its impact on the selected macroeconomic variables like investment and economic growth, but they are also of keen interest to investigate the key determinants of foreign indebtedness which push the economy into deep debt-trap (Minhaj-ud-din *et al*., 2021). Studies available on this topic has identified various economic indicators that decide about the reliance on external debt like persistent fiscal deficit, low economic growth, continuous depreciation of currency, higher inflation, defense spending, widespread corruption, political instability, huge debtservice payment and lack of domestic resource mobilization (Tiruneh, 2004; Awan*et al.*, 2015; Waheed, 2017). Availability of capital also affects the reliance on foreign debt. Capital abundant countries need less foreign assistant on the aforementioned ground as compared to capital scarce economies.Distortion in the prices of oil also creates deterioration in the balance of payments for most of the developing countries. Capital deficiency and inability to repay the previous debt are the other reasons which provoke further external borrowing (Tiruneh, 2004).Similarly distortion in export-imports gap also increases the dependency on external borrowing.

Today, almost every economy is engaged in borrowing funds, but the reasons for choosing foreign financing are different for developed countries as compared to developing economies. Developing countries utilize this channelfor meeting with their financial needs and completingthe development projects, while developed countries are engaged in foreign borrowingfor keeping the economy afloat and prosperous. That's why foreign loans are considered more beneficial for developed countries, as they are engaged in using these funds in revenue-oriented and self-liquidating projects (Atique& Malik, 2012).

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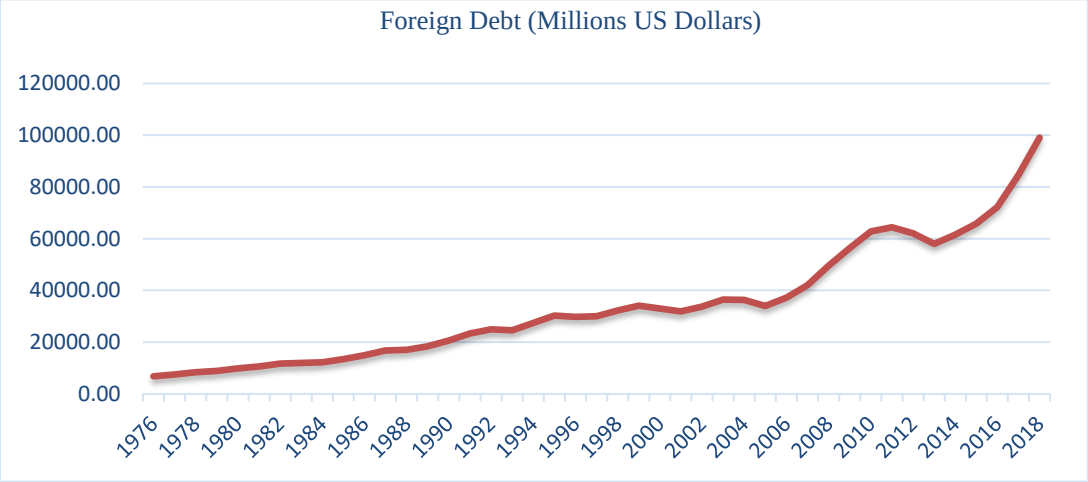
To meet with external financial obligations and finance the budget deficit, Pakistan is persistently using its foreign sources of financeslike IMF, World Bank, USA, UK and Japan.The current account of Pakistan's BOPindicates trade deficit, which has been repeatedly filled through international donor agencies (Zakaria, 2012).Statistical data indicates that the total volume of Pakistan's stock of external debt accumulation in 2018has almost reachedto US dollar 100 billion as compared to US dollar 65 billion in 2015.This rapid growth in external debt in the last few years have made this issue more critical for the policy makers who are repeatedly investigating the causing factors of this issue for the last few decades.Figure 1 folds43 years data of foreign debt for Pakistan.

Figure 1: Foreign Debt in Pakistan (1976-2018)



Source: World Development Indicators (2021)

Reasons of foreign indebtedness has remained the core objective of various researches, though they have ended with a mixture of results. Variation in outcomes is then connected with the unavailability of appropriateeconomic theory that has the potential to describe the exact causes of external financing.In the literature of debt-determinants nexus, we find that foreign indebtedness is linked with currency depreciation, trade openness, large non-development expenditures, higher inflation, consistent twin deficits, and misappropriation of funds inPakistan(Siddiqui & Malik, 2001;Luke & Joanna, 2008;Atique & Malik, 2012; Akram, 2014;Zafar *et al.*, 2015; Waheed, 2017). For Pakistan, this issue has been explicitly examined by Awan *et al.*(2011),Zakaria (2012) and Awan *et al.*(2015). We also find that this issue has been explored by Sheikh *et al.*(2013)and Azam and Feng (2017)for panel data carrying Pakistan. Collectively, their researches ended with indication that decrease in value of currency,unfavorableterms of trade, openness in trade, huge military spending, consistent twin deficits, worsening position of foreign reservesand sluggish economic growth arethereasons of foreign indebtedness in Pakistan. Disagreements in the outcomes of these studies intensify the need to explore this area yet further foreffective policy outcomes. Therefore, this studyintends to fill this vacuumbyanalyzing the macroeconomic factorsthat decideabout the foreign indebtedness in Pakistan.

This study contributes to the literature of debt-determinants synthesis in three aspects: *first*, it is different from the previous studies in terms of time period and specification of the model. *Second*, in country specific analysis, this study has incorporated the impact of GDP per capita, debt service payment and government revenue, which are ignored in country specific studiescarrying Pakistan. *Third*, along with the ARDL bound test and ECM, this study has also deployed appropriatedata diagnostic and stability tests, which have been overlooked by most of the previous studies.This article is compiled as under.Section 2 reviews the literature and explores the research gap.Section 3 describes the research methodology and research findings.Section 4 winds upthe discussion and presents policy recommendations.

Literature Review

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Different types of econometric techniques have been used for investigating the macroeconomic factors of foreign debt across the globe.Were (2001) found that expansionary fiscal policy, distortionsin terms of trade, deficit in BOP and huge debt servicing are the main reasons behind debt accumulation in Kenya.Similarly, Tiruneh (2004) concluded thatdebt service payment, growth in imports, and slackgrowth of the economyare the key determinants of foreign indebtedness.Presbitero (2008) found that deterioration in capital (fixed and human), openness in trade, slow growth process, worsening quality of institutions and hostileposition of trade prices are the reasons of foreign indebtedness. Smyth and Narayan (2009) noted that military expenditures and growth in real GDP are the key factors of foreign indebtedness in most of the Middle Eastern countries. Awan *et al.*(2011)also indicated that devaluation of currency and unfavorabletrade pricesare the root causes of high indebtedness in Pakistan.

Kizilgol and Evren (2012) depicted that trade openness, higher inflation, unfavorable TOT, foreign reserves, and inflows of FDI are the reasons that determine the stock of external debt in Turkey. Zakaria (2012) revealed that openness in trade, TOT, fiscal imbalances, and inflation are the key stimulating factors of external debt in Pakistan. Similarly, Sheikh*et al.* (2013) exploredthat military expenditure is the root cause ofexternal indebtednessin Pakistan and India.While investigating the same issue for Nigeria, Imimoli, Ehikioya and Asin(2014) found that growth rate of GDP, debt servicing, and exchange rate arethe factors that decide about the burden of debt. Awan*et al.*(2015) highlighted that budget deficit, devaluation of currency, and openness in trade are the causes of foreign indebtedness in Pakistan.For Al-Fawwaz (2016), thesefactors werethe sluggish economic growth and growth in external trade.For Bolukbas(2016),trade openness was found to be the sole cause of foreign indebtedness.Similarly, Waheed (2017) indicated eight factors that could be held responsible for foreign indebtedness inthose economies who areengaged in tradeof oil and gas. These factors were theeconomic growth, government revenue, domestic saving, trade deficit, FDI, domestic investment and price of oil. For exploring the linkbetween military expenditures and foreign indebtedness in ten Asian economies, Azam and Feng (2017) found that military expenditures, foreign reserves, and economic growth are the factors that significantly affect the volume of external financial liabilities in these countries.Butkus and Seputiene (2018) identified that sound institutional quality factorshas the ability to prevent the harmful impacts of public debt.

Conclusively, we find only Awan *et al.* (2011), Zakaria (2012), Sheikh *et al.* (2013) and Awan *et al.* (2015)who have tried to analyze the impact of fiscal deficit, TOT, exchange rate, trade openness, growth in economic productivity, foreign reserves, defense expenditures, and foreign aid on the stock of foreign debt in Pakistan. However, the impact of growth inGDP per capita, debt servicing and government revenueon the stock of foreign debt has been overlooked by these studies. Along with other variables, this study intends to extend the line of research byinspecting the impact ofthese variables on the accumulation of foreign debt in Pakistan. Table 1 presents the brief summary of empirical literatures on the determinants of foreign debt.

Table 1: Summary of the Empirical Literatures

Author (s)	Sample Period, Country (s)	Method (s)	Dependent Variable	Independent Variables	Finding (s)
Were (2001)	Kenya 1970-1995	ECM	Real GDP growth rate	ED, DSP, TOT, education, investment, inflation and ER	Expansionary fiscal policy, increase in DSP, and distortion in trade policy are the root causes of external debt accumulation.
Tiruneh (2004)	60 Developing countries 1980-1990	REM &FEM	ED	Exports, DSP, capital outflow, TOT, imports, growth rate of GDP and	Increase in DSP, imports, capital flight and decrease in GDP are the reasons of

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				population growth	high indebtness.
Presbitero (2008)	114 Developing countries 1980-2004	System GMM	Real GDP per capita	Investment, population growth, education, TO, inflation, TOT, institutional quality and ED	Investment in human capital, TO, growth in real GDP per capita, and institutional qualityare the key determinants of high indebtness.
Smyth &Narayan (2009)	6 Middle Eastern Countries 1988-2002	DFE, DOLS & FMOLS	ED	Real GDP and MS	Increase in MS causes the ED to grow, whereas increase in GDP is causingthe ED to fall.
Awan *et al.* (2011)	Pakistan 1974-2008	JCT & VECM	ED	TO, TOT, ER, BD and foreign trade	Depreciation of currency and deterioration in TOTaffect the foreign debt positively.
Kizilgol (2012)	Turkey 1990-2012	ARDL&GMM	ED	TO, TOT, BD, FDI, FRand inflation rate	TO, TOT and inflation affect theED positively, while foreign reserves and FDI affect it negatively.
Zakaria (2012)	Pakistan 1972-2010	GMM	ED	TO, TOT, BD, FDI, FR and inflation rate	TO, TOT, BD and inflation affect the debt burden positively, while FR and FDI affectit negatively.
Sheikh *et al.* (2013)	Pakistan & India 1972-2010	ARDL	ED	Real GDP, FR, ME and exports	MSis affecting theEDpositively, while theremaining variables are affecting it negatively.
Imimole*et al.* (2014)	Nigeria 1986-2010	ECM &JCT	ED	TOT, DSP, TO, BD, GDP, FDI and ER	BD and ERare affecting the ED positively, while GDP and FDI are affecting it negatively.
Awan *et al.* (2015)	Pakistan 1976-2010	ECM &ARDL	ED	BD, TO, TOT, ER and foreign aid	BD, ER and TOare affecting the foreign debt positively.
Al-Fawwaz (2016)	Jordan 1990-2014	ARDL	ED	TO, TOT, ER and GDP per capita	TO affects the ED positively, while GDP affects it negatively.
Bolukbas (2016)	Turkey 1998-2011	ECM &JCT	ED	TO and ER	TO affects the ED positively.
Waheed (2017)	24 OGEIC 2004-2013	Panel Least Square	ED	Real GDP growth, current account balance, GE, GR, FR, GFCFand inflation	GDP, GR, and domestic savings affect the ED negatively, while trade deficit, and

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					inflation rate are the reasons of public indebtness.
Azam& Feng (2017)	10 Asian Countries 1990-2011	REM & FEM	ED	MS, GDP, FR, tax revenue, inflation, and GDP per capita	MSaffects the ED positively, while FR affects it negatively.
Butkus &Seputiene (2018)	152 Developing Countries 1996-2016	System GMM	Growth rate of GDP per capita	Inflation rate, populace, size of government, human resources, foreign trade,investment,GE, government efficiency and government loan	Sound institutional framework and trade balance prevent the adverse effects of foreigdebt

Note: ED – external debt; TOT – terms of trade; DSP – debt service payment; TO – trade openness; BD – budget deficit; ER – exchange rate; FR – foreign reserves; GR – government revenue; GE – government expenditure; ME – military expenditure; FMOLS – fully modifies OLS; DOLS – dynamic OLS; DFE – dynamic fixed effect; FEM – fixed-effects model; REM – random-effects model; JCT – Johansen co-integration test; VCM – vector correction model.
Source: Author's compilation

Theoretical Framework

Developing countries need monetary supporteither due to deficiency ofsaving, or shortage of foreign reserves, or inefficiency of capital or due to external macroeconomic environment of the indebted countries. Policy makersare agreethat poverty is the sole cause of pushing the economy into deep debt-trap, as it consumes major portion of the public savings in meetingwith the external financial liabilities and leaves very little for public investment which is necessary for growth and prosperity of the economy. Resultantly, the gap between saving and investment is further widened and country is re-trapped in the vicious circle of debt and poverty (Taylor, 1994).

The second reason of foreign indebtedness is the shortfall in foreign exchange reserves.Researchers believe that even if emerging economies manage to cover the savings-investment gap, the shortfall in foreign exchange reserves may remain an obstacle to stimulate the economy (Tiruneh, 2004).The third factor, which influences the external debt burden, is the marginal efficiency of capital (MEC). The Neoclassical economists argue thatMEC in developing economies is higher than the developed economies, therefore, it is important to mobilize this Capital so that less developed economies may produce higher returns that will benefit both economies in the long run(Tiruneh, 2004).

Researchers alsobelieve that even if we cover these areas, there are so many external factors that have the strength to affect the magnitude of foreign indebtedness.Political instability, exploitation of government funds, hipper inflation, budget deficit, unfavorable balance of payment,lack of developmental projects, external financial liabilities, and devaluation of currency are the external reasons of overseas borrowing (Were, 2001; Presbitero, 2008: Bolukbas, 2016; Butkus & Seputiene, 2018).

Conceptual Framework

As discussed above, foreign indebtedness depends on too many factors. However, this study is centered to encounter the impact of economic productivity, stability in exchange rate, capital inflow (foreign aid and FDI), price stability, financial / budgetary position of the government (public revenue and expenditures), debt servicing liabilities, trade openness and military budget on the stock of foreign debt. Figure 2 is the conceptual model of this study.

Estimation Procedure

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ARDL bound test has been used for the achievement of research objectives. Rationale for choosing this tool is the ability of this test to provide impartial and proficient results as compared to other techniques[1].Table 2 presents the summary ofestimation procedure for this model.

Table 2: Estimation Procedure

Step	Test(s)	Purpose
1	ADF & PP Tests	Stationarity of data
2	F-Bound Test	Long run cointegration
3	ARDL	Long run analysis
4	ECM	Short run analysis
5	BPG	Serial correlation
	LM	Heteroscedasticity
	Jarque-Bera (JB)	Normalityof residual
	CUSUM & CUSUM SQ	Stability of the regression model

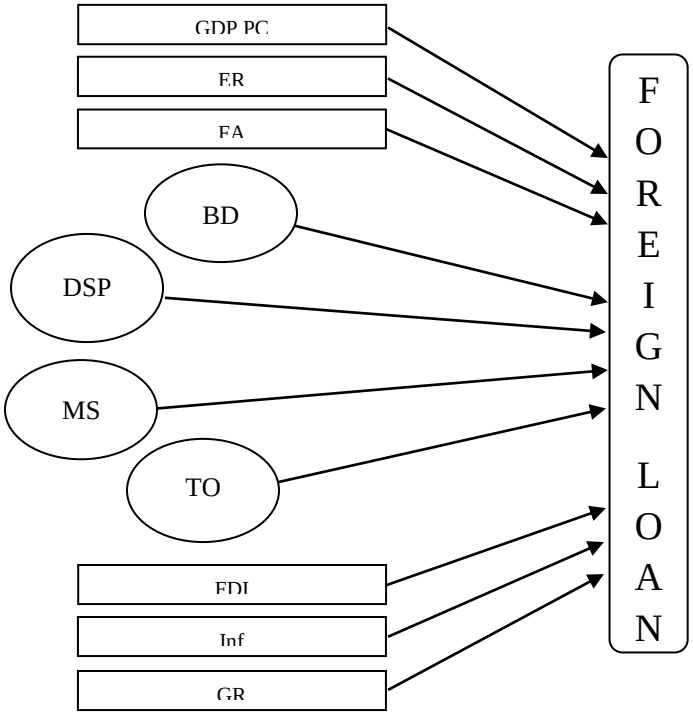

Figure 2: Conceptual Framework
Source: Author's Construction

Specification of the Model

The following specification of ARDL model has been used in this study.

$$\Delta ed_t = \lambda_0 + \sum_{i=1}^{n} \lambda_1 \Delta ed_{t-1} + \sum_{i=0}^{n} \lambda_2 \Delta to_{t-1} + \sum_{i=0}^{n} \lambda_3 \Delta bd_{t-1} + \sum_{i=0}^{n} \lambda_4 \Delta gd\, p_{t-1} + \sum_{i=0}^{n} \lambda_5 \Delta d\, sp_{t-1} + \sum_{i=0}^{n} \lambda_6 \Delta ms_{t-1} + \sum_{i=0}^{n} \lambda_7 \Delta g\, r_{t-1} + \sum_{i=0}^{n} \lambda_8 \Delta e\, r_{t-1} + \sum_{i=0}^{n} \lambda_9 \Delta i\, nf_{t-1} +$$

[1]*First*, it avoids the issues of endogeneity and autocorrelation,*second*, estimating dynamics of the model for both the periods, t*hird*, containing the capacity to sketch better results for small sample size, and f*ourth*, no requirementof pretesting the order of integration.

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$\sum_{i=0}^{n} \lambda_{10} \Delta f\ a_{t-1} + \sum_{i=0}^{n} \lambda_{11} \Delta f\ di_{t-1} + \mu_1 ed_{t-1} + \mu_2 to_{t-1} + \mu_3 bd_{t-1} + \mu_4 gdp_{t-1} + \mu_5 dsp_{t-1} + \mu_6 ms_{t-1} + \mu_7 gr_{t-1} + \mu_8 er_{t-1} + \mu_9 inf + \mu_{10} fa_{t-1} + \mu_{11} fdi_{t-1} + \epsilon_j \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$

Where λ_1 to λ_{11} are the short run and μ_1 to μ_{11} are the long run coefficients of the ARDL model.Descriptions of the remaining variables are enlisted in Table 3.In the presence of cointegration(when H_0 is rejected), the following long-run ARDL model will be used in this study.

$\Delta ed = \lambda_0 + \sum_{i=1}^{n} \lambda_1 \Delta ed_{t-1} + \sum_{i=0}^{n} \lambda_2 \Delta to_{t-1} + \sum_{i=0}^{n} \lambda_3 \Delta bd_{t-1} + \sum_{i=0}^{n} \lambda_4 \Delta gd\ p_{t-1} + \sum_{i=0}^{n} \lambda_5 \Delta d\ sp_{t-1} + \sum_{i=0}^{n} \lambda_6 \Delta ms_{t-1} + \sum_{i=0}^{n} \lambda_7 \Delta g\ r_{t-1} + \sum_{i=0}^{n} \lambda_8 \Delta e\ r_{t-1} + \sum_{i=0}^{n} \lambda_9 \Delta i\ nf_{t-1} + \sum_{i=0}^{n} \lambda_{10} \Delta f\ a_{t-1} + \sum_{i=0}^{n} \lambda_{11} \Delta f\ di_{t-1} + \omega_j \ldots\ldots\ldots\ldots\ldots\ldots\ldots$ *(2)*

The short-run coefficients for this model will be estimated through transformation of equation 1 intoError Correction Model in the following manner.

$\Delta ed_t = \delta_0 + \sum_{i=1}^{n} \delta_1 \Delta ed_{t-1} + \sum_{i=0}^{n} \delta_2 \Delta to_{t-1} + \sum_{i=0}^{n} \delta_3 \Delta bd_{t-1} + \sum_{i=0}^{n} \delta_4 \Delta gd\ p_{t-1} + \sum_{i=0}^{n} \delta_5 \Delta d\ sp_{t-1} + \sum_{i=0}^{n} \delta_6 \Delta ms_{t-1} + \sum_{i=0}^{n} \delta_7 \Delta g\ r_{t-1} + \sum_{i=0}^{n} \delta_8 \Delta e\ r_{t-1} + \sum_{i=0}^{n} \delta_9 \Delta i\ nf_{t-1} + \sum_{i=0}^{n} \delta_{10} \Delta f\ a_{t-1} + \sum_{i=0}^{n} \delta_{11} \Delta f\ di_{t-1} + \delta ecm_{t-1} + \omega_t \ldots\ldots\ldots$ *(3)*

Rational for the choice of variables

Foreign debt is the loanpayablein foreign currency to the money lenders in the future. The ratio of foreignloan to GDP is used as indicatorof foreign indebtedness. Approximately, all studies related to debt-determinantshave used this variable as dependent variable in their analysis.Trade opennessis theelimination or relaxation of/inbarriers on trade. Kizigol and Evren (2012), Zakaria (2012), Al-Fawwaz (2016) and Bolukbas (2016) found that ease in access to international market needs more foreign currency for availing maximum benefit fromthe prevailing trade opportunities. Similarly, demand for foreign debtalso increases with increase in budget deficit, ifgovernment is unableto finance this deficit through other means (Imimole*et al.*, 2014).

Countries with faster economic growth rate are expected to pay off debt and decrease their dependency on external debt in the future (Azam& Feng,2017).Similarly, Were (2001) and Tiruneh (2004) found that external debt accumulation is directly proportional to debt service payment.Therefore, increase in cost of debt will lead to increase the demand for foreign debt. Higher military spending is also an indicator ofincrease in demand for external debt. Azam and Feng (2017) indicated that increase in military expenditurescausestheburden of debt to grow.

Increase in government revenue also helps in meeting with the government's financial needs and, therefore, decreasing the demand for accumulation of external debt (Waheed, 2017). Similarly, increase in price of currency (exchange rate)and commodities (inflation) not only depreciate the national currency but also increase the nominal value of external debt (Kizilgol&Evren, 2012;Zakria, 2012;Awan *et al.*, 2015; Waheed, 2017).That's why this study assumes that higher inflation will decrease the demand for external debt in the long.

Foreign aid includes the flow of voluntary capital to developing countries.Higher flow of foreign aid to a country denotes the presence of high foreign reserves and, hence, lower demand for foreign debt.FDIindicates the level of investment made by a nation in the enterprises of other country. Growth in inflow of FDI is presumed tobring downfall in overseas borrowing(Kizilgol&Evren, 2012).

Table 3: Descriptions of variables (ED is the dependent variable)

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Variable	Symbol	Definitions / Unit	Source
Trade openness	To	(exports + imports)/GDP *100	WDI (2021)
Budget deficit	bd	'bd" as percent of GDP	Pakistan Economic Surveys
Gross domestic product	gdp	Growth rate of GDP per capita	WDI (2021)
Debt service payment	dsp	"dsp" as percent of exports[1]	WDI (2021)
Military spending	ms	"ms" as percent of GDP	WDI (2021)
Government revenue	gr	"gr" as percent of GDP	State Bank of Pakistan
Exchange rate	er	Exchange rate	Economic Research Division
Inflation	inf	Growth rate of CPI	WDI (2021)
Foreign aid	fa	"fa" as percent of GDP	WDI (2021)
Foreign direct investment	fdi	"fdi" as percent of GDP	WDI (2021)

Results and Discussion

Stationarity Tests

The estimatesof ADF and PPtests are summarized in Table 4, which indicate thatdata is stationary either at I(0) or at I(1), both with intercept and with intercept and trend.Therefore,$H_0$is rejected and we have to proceed with the ARDL model.

Table 4: Unite Root Tests **(**ADF and Phillips-Perron Tests)

Null Hypothesis: Unit Root

Variable	ADF-Test (With Intercept)		ADF-Test (With Intercept and Trend)		PP-Test (With Intercept)		PP-Test (With Intercept and Trend)	
	t-Stat	Remarks	t-Stat	Remarks	t-Stat	Remarks	t-Stat	Remarks
ed	-5.281*	F	-5.207*	F	-5.150*	F	-5.061*	F
to	-6.150*	F	-6.280*	F	-7.667*	F	-8.098*	F
bd	-5.522*	L	-6.107*	L	-5.520*	L	-6.511*	L
gdp	-4.533*	L	-4.566*	L	-4.572*	L	-4.523*	L
dsp	-6.546*	F	-6.477*	F	-6.546*	F	-6.477*	F
ms	-6.532*	F	-6.481*	F	-6.531*	F	-6.481*	F
gr	-8.910*	F	-8.855*	F	-8.910*	F	-8.855*	F
er	-3.646*	F	-4.445*	F	-3.696*	F	-3.910**	F
inf	-5.223*	L	-5.154*	L	-5.362*	L	-5.301*	L
fa	-7.379*	F	-7.376*	F	-8.751*	F	-8.779*	F
fdi	-4.320*	F	-4.294*	F	-6.839*	F	-6.955*	F

* & ** indicatethe stationarity of data at 1% or at 5% level of significance. L and F indicate the stationarity of data at I(0) or at I(1).

ARDL Bound Cointegration Test

The purpose of using this test is to investigate the presence of long-run cointegration among the variables. Before applying this test, we have to apply theF-Bound test for finding the long-run cointegration. Table 5depicts that the calculatedF-statistics value (i.e. 9.2310)is bigger than the upper bound tabulated values tall ritical levels. It means that$H_0$is rejected and we are in a position to deploy the ARDL model for estimating the long-run dynamics of the model.

[1]In literature, we find three indicators representing the liquidity obligations with respect to debt servicepayment. *First*, the ratio of "dsp" to GDP; *second*, the ratio of "dsp" to exports earning; and *third*, the ratio of "dsp" to government revenue. In this study, we are using the second indicator as representative of debt service payment as it has the privilege of analyzing the liquidity position and highlighting the impact of inter-temporal trade-offs occurred from previous borrowings of the indebted country (Clements, 2003; Cordella, 2005).

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Table 5: F-Bound Test

H_0: No Cointegration

Critical Values	F-statistics (calculated value)	
	9.2310	
	Lower Bound	Upper Bound
10 %	01.8	02.9
05 %	02.0	03.2
2.5 %	02.2	03.5
01 %	02.5	03.8

Long-Run Estimates

Table 6 presents the brief summary of these results. It tells that all parameters are statistically significant either at 1% or at 5% or at 10% level of significance.One percent increase in Budget deficit, debt servicing, military expenditures and trade opennessarecausing0.04%, 0.11%, 2.09% and 0.23% increase in stock of foreign debt in Pakistan.Similarly, one percent increase in GDP per capita, exchange rate, foreign aid, FDI, inflation rate and government revenue are causing the foreign indebtedness to drop by 1.03%, 0.31%, 0.66%, 2.86%, 0.26%, and 0.85%, respectively.

Table 6: Long-Run Estimates

Variables	Coefficients	t-Statistics	p-Value
$(bd)_t$	0.043	0.696	0.496
$(dsp)_t$	0.112^{**}	2.151	0.047
$(er)_t$	-0.310^{**}	-2.102	0.051
$(fa)_t$	-0.669^{***}	-1.920	0.072
$(gdp)_t$	-1.032^{*}	-5.749	0.000
$(gr)_t$	-0.851^{***}	-2.065	0.055
$(inf)_t$	-0.263^{*}	-3.808	0.001
$(ms)_t$	2.093^{*}	4.202	0.000
$(to)_t$	0.230^{***}	2.017	0.060
$(fdi)_t$	-2.867^{*}	-5.210	0.000
C	7.194	1.356	0.193

*, ** & *** indicate the stationarity of data at 1% or at 5% or at 10% level of significance. **Short-Run Estimates** :The negative sign and p-value of the ECM demonstrate that speed of convergencetowards the long-run equilibrium is 79%. Overall, thedisequilibrium will congregate back to the long run equilibrium in approximately 15 months. Table 7 presents the summary of these estimates.

Table 7: Short Run Estimates (ECM)

Variable	Coefficient	t-Statistics	p-Values
$\Delta(bd_t)$	0.531	1.551	0.159
$\Delta(dsp_t)$	-0.005	-0.064	0.949
$\Delta(er_t)$	-0.306	-1.790	0.111
$\Delta(fa_t)$	-2.443^{**}	-3.302	0.010
$\Delta(gdp_t)$	-0.784	-1.675	0.132
$\Delta(gr_t)$	1.048	1.444	0.186
$\Delta(inf_t)$	-0.070	-0.817	0.437
$\Delta(ms_t)$	1.974^{***}	1.061	0.073
$\Delta(to_t)$	0.167	0.844	0.423
$\Delta(fdi_t)$	-0.781	-0.581	0.576
$\Delta(ecm_t)$	-0.793	-2.979	0.007
C	-1.297	-1.529	0.1646

Diagnostic Tests

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Table 8and Table 9 presents the summary of diagnostic tests, whereas,Figure 3 and Figure 4demonstrate that coefficients of the variables are stable as the CUSUM and CUSUM SQstay inside the 5% critical boundaries.

Table 8: Summary of the Diagnostic Tests

Test	**Results**	**Inference**
BPG	The resulted value was insignificant	No issue of serial correlation
LM	The resulted value was insignificant	No issue of heteroscedasticity
JB	The resulted value was insignificant	Residuals were normally distributed
CUSUM & CUSUM Sq	All estimates stayinside the 5%critical boundaries	Modelis stable

Table 9: Diagnostic Tests

Test	Estimate	F-Statistic (P-value)
DW	2.0539	-----
BPG	-----	0.8142 (0.683)
LM	-----	0.7093 (0.412)
JB	1.2128 (0.545)	-----
R^2	0.95	-----
$\bar{R}^2$	0.93	-----

Figure 3: CUSUM Test

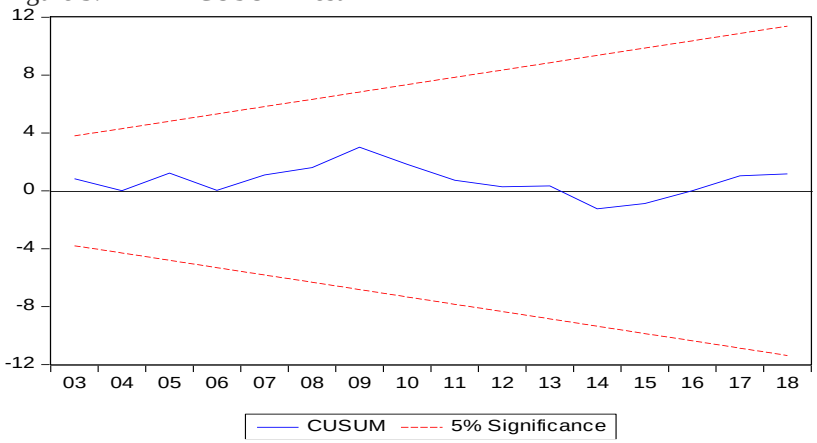
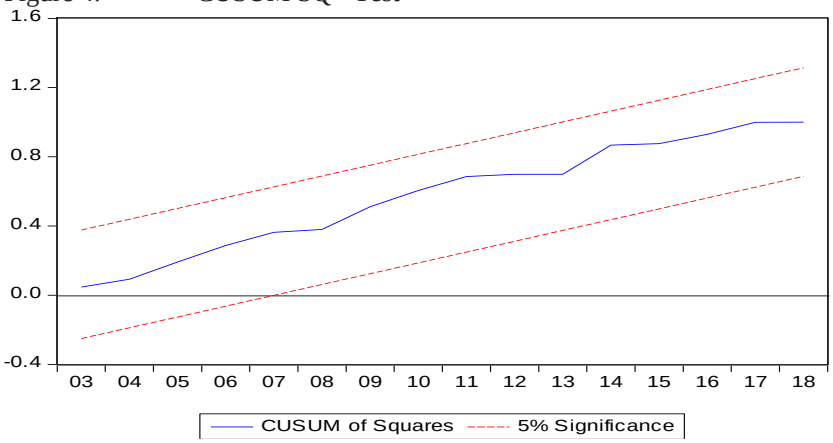


Figure 4: CUSUM SQ - Test



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Overall, research findings show that increase in fiscal deficit, cost of debt, military budget and openness in trade are the reasons of foreign indebtedness in Pakistan. In contrast, economic growth, currency devaluation, inflows foreign aid and FDI, increase in public revenue and higher inflation can play a preventive role by decreasing thestock of foreign debt. Figure 5 summarizes the objectives, methodology, and research findings of this study.

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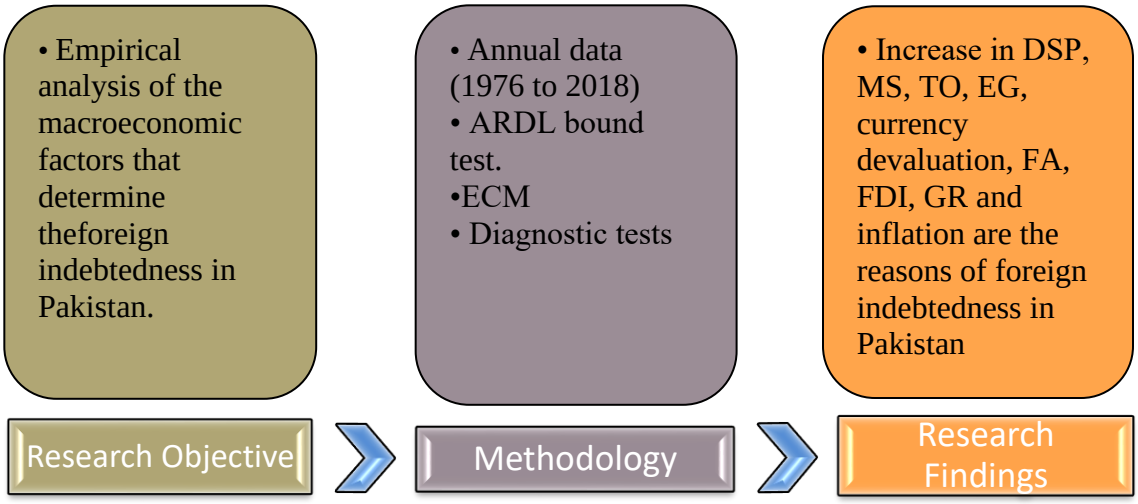

Figure 5: Graphical Abstract
Source: Author's Construction

currency appreciation, fall inforeign aid andFDI, lowerinflation, and sluggish economic growth are the reasons of foreign indebtednessin Pakistan.Cost of debt, military expenditures and openness in trade were found as key stimulating factors of external debt, as they were found to have positive and statistically significant correlation with the stock of foreign debt. 1% increase in these variables wasobserved to increase the demand for foreign debt by0.11%, 2.09%, and 0.23%, respectively.Similarly, one percent increase in economic growth, exchange rate, foreign aid,inflow of FDI, inflation rate and government revenue were found to bring a downfall in foreign indebtedness by 1.03%, 0.31%, 0.66%, 2.86%, 0.26%, and 0.85%, respectively. The ECM model was found convergent to the long run equilibrium and the speed of convergence was 79%.

Since debt service payment reinforces the stock of foreign debt to grow, therefore, enhancing the government revenue through increase in exports and inflow of FDI stand mandatory for restricting the government reliance on foreign debt. Appropriate use of foreign reserves, creating attractive environment for investment, utilization of funds in revenue-oriented projects, moderate level of inflation, stability of currency, and maintain an optimal level of military budget are also necessary for combating with the issue of foreign indebtedness. Combinely, the assurance of these recommendations will help in meeting the government's financial needs and, consequently, the demand for external debt will fall.

Suggestions for Future Research

This study is limited to the variables incorporated in the debt-determinants model. However, we find so many other factors that has the ability toaffect the foreign indebtedness. For instance, the institutional quality factors, such as good governance and control on corruption, have the ability to shape the foreign indebtedness accordingly. Therefore, these variables may be added to thedebt-determinants model for investigating their impact on the foreign indebtedness of Pakistan. The reason for exclusion of this variable from this study was the unavailability of data for these variables before 2002. Similarly, this study may also be extended to other countries of the region for the purpose of conducting cross country analysis.

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