



RESEARCH PAPER

Domestic Debt and Economic Growth Sustainability Nexus: An Empirical Analysis of Pakistan Economy

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ABSTRACT

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This study is an attempt to make an assessment for the domestic debt and sustainable economic growth nexus for the Pakistan economy. In the absence of the forthcoming sustenance of the domestic debt, internal financial mobilization may prove to be a profligate strategy. This research investigates that either domestic debt has been a catalyst to foster the economic growth sustainability or otherwise. The time series data is considered spanning from 1990 to 2021. To obtain the empirical evidence of the research, Johansen Conintegration, Auto Regressive Lag Model (ARDL) and Granger Causality techniques are applied. The findings of model 1, imply the long run association among the variables. Finding shows that historical pattern of the fiscal deficit and exchange rate positively influence the current level of domestic debt whereas interest rate leaves positive footprints on the domestic debt as well. Findings of the Model 2, explain that domestic debt is not contributing to achieve the sustainable economic growth and necessitate adequate handling while keeping in view the future generations.

Introduction

A major global issue in present time is off course economic growth sustainability. Sustainable economic growth enhances the immunity level of the economy to bear even a significant shock. The sustenance of a sustainable economic growth is a blend of multifarious factors like fiscal, monetary, trade and environmental. However, it is pertinent to mention that there seems to be incongruence between quick decision regarding fiscal policies and targeted future progress. One of the core hurdle in the sustainable growth is environmental challenges presently faced by the developing nations. Sustainable economic growth is an effort to meets the human requirements in a way that sustain and maintain natural resources and the environment for the future generation Grimsley (2020). To obtain the sustainable development, economies approach national, regional and international financial intuitions for the provision of loans. By convention, the idea of sustainable development stems from the management and adequate allocation of natural resources keeping in view the ecological system to sustain the future generations. Unfortunately, developing nations opting for the domestic loans for the subject purpose but on the other side leaving future generations highly indebted which contradicts with the

fundamental ideology of the sustainable economic growth. Omodero et.al (2020). Domestic or international borrowing is always a critical decision for a nation. Traditional theories postulate that debt must be utilized in different lucrative investments, therefore it could generate its principle amount and interest payment pay back. Otherwise, debt may lead to serious consequences. Adequate utilization of borrowing prove to be blessed otherwise may happen to be a curse for the nations. Pakistan economy is also witnessing the similar challenges. Pakistan economy has experienced a consistent and upsurge trend in the domestic debt. In past many decades, economy has passed through many issues and challenges particularly political instability complemented with communal violence and international shocks. Pakistan economy has accrued Rs. 25,555 Billion domestic debt in 2021 whereas the volume in 2022 was Rs.23283 Billion. In the end of the last decade it remained Rs. 4653 Billion, Rs. 1645 Billion in 2000, Rs. 381 Billion in 1990 Billion and volume of total domestic debt in 1980 was Rs. 60 Billion. The trend in the domestic debt consistently increased over the decades. It is worth important to discuss here that the volume of internal debt crossed the volume of external debt in 1986 when Pakistan economy was experiencing severe challenges regarding twin deficits and macroeconomic instability. However, volume of the internal debt does not matter, what matters is the appropriate deployment of the debt which set the avenues for sustainability of the economic growth of a country. The previous studies mainly focus on the public debt crises which originates from the external debt phenomenon. Generally speaking, policy makers, financial institution and academic institution have allocated less attention towards the domestic debt dilemma. This study is an attempt to establish the role of domestic debt in sustainable economic growth of the Pakistan economy. This research also consider other imperative macroeconomic indicators which may be beneficial to understand the domestic debt phenomenon.

Literature Review

Domestic Debt is considered to be a propelling force achieving the sustainability in the economic growth. It is apposite utilization assures the guarantee for economic growth sustainability. To secure the unborn generation in future, this phenomenon needs to be investigated which will further support the policy maker to design prudent macroeconomic policies.

Abbas and Christensen (2007) discovered that moderate levels of marketable domestic debt instruments as a percentage of GDP have significant, positive and non-linear impacts on economic growth, but debt levels exceeding the threshold of 35% of total bank deposits bearing negative impression on economic growth.

Adoufu and Abula (2009) revealed that there are several factors responsible for rising domestic debt. They include high budget deficit, low output level, increased government expenditures, high inflation rate and narrow revenue base. Their analysis unfold the fact that domestic debt led the Nigerian economic growth adversely and also recommended the policy makers to fix the responsible factors to resolve the mounting internal debt.

Didia and Ayokunle (2020) reflected the very interesting insight of the Nigerian economy that is domestic debt has been beneficial for the economic growth comparing with external debt. It implies that external debt adversely affected the economic growth of Nigeria.

Saungweme and Odhiambo (2020) inferred that both domestic and foreign borrowing left the adverse impacts on Zimbabwe economy. The Zimbabwe economy is exposed to the serious consequences as both sources of debt has been nosedived to sustain economic growth.

Ogunjimi (2019) examined the short and long term impact on the economic growth. He found that domestic borrowing pushed up the public and private investment in short term and long term as well. He unfolded the fact that domestic debt crowds in private as well as public and it did not attract the FDI while unlike the external debt in Nigeria.

García-Almada (2016) made an analysis that public debt has been positive and substantial to foster the public investment which further assisted to upsurge the economic growth. They pointed out that rising public debt result huge public investment and therefore it requires deliberate and translucent monitoring of the multiplier effect.

Joy and Panda (2020) investigated the government debt and economic growth association and concluded that increase in government debt in absence of financial and technical feasibility leave the economy to be exposed toward even higher accumulation of debt and it generates undeniable results.

Johnny and Johnnywalker, (2018) underscored that public debt may prove to be a catalyst but consistent rise in debt force further mount the government borrowing. Resultantly, government has to allocate substantial part of its income to repay the amount rather sometimes repayment of debt is even shifted to future generations.

Mhlaba et al. (2019) found that domestic debt has been halting force to foster the economic growth in South African economy. The country has to adopt adequately channelize the domestic as well as foreign debt to enjoy sustainability in economic growth (Ali et al, 2021).

Having been reviewed the literature, it deems explicit that this phenomenon of domestic debt needs to be investigated in a direction which indicate the factor achieving the sustainable economic growth in Pakistan.

Material and Methods

The core objective of this research is articulate the impact of external debt on sustainable economic growth of Pakistan economy. The model in functional form for this research is specified as follow:

$$SEG = f(DD)$$

SEG represents Sustainable Economic Growth and it is function of domestic debt, as described. Gross domestic growth is considered as proxy of the sustainable economic growth. This study incorporates two model to obtain empirical evidence.

The first model measure the determinants of domestic debt of economy.

The econometric expression of the model is given below:

$$DD_t = \gamma_0 + \gamma_1 FD_t + \gamma_2 ER_t + \gamma_3 IR_t + \epsilon_t \quad \dots \text{Eq. (1)}$$

In equation 1, DD imply domestic debt, FD as fiscal deficit whereas Td implies terms of trade. IR shows symbolizes interest rate while ϵ_t reflects error term. The theory explains that domestic debt, terms of trade, interest rate do impact the economic growth. γ_1 Denotes the share of Fiscal deficit in domestic debt, γ_2 as contribution of exchange rate and γ_3 signify interest rate participation in domestic debt respectively. All these coefficients are supposed to be positive integers and are in log forms.

The second model to be estimated is specified as follows:

$$GDP_t = \omega_0 + \omega_1 DD_t + \epsilon_t \quad \dots \quad \text{Eq. (2)}$$

Eq (2) describes the analogous tie between the sustainable economic growth and domestic debt. In this model that Gross domestic product growth is considered as proxy of the sustainable economic growth.

Results and Discussion

It is worth important to carry on primitive diagnostic test when dealing with the time series data. To obtain the rigor findings, establishing the assumption of stationary cannot be ruled out.

Univariate Analysis

To examine the connection among the policy variables, this study takes times series date into account to get empirical results. In the absence of the stationary, findings may lead to fallacy of the findings. Therefore, economists strongly recommends to test the stationary before any econometric treatment of the data particularly when the nature of data is time series. Therefore, to cope the issue of stationary Augment Dickey Fuller test is used.

Table 1
Results of Augmented Dickey Fuller Test

Variables	t-Stat	Prob	Outcome
LOG-GDP	4.6712	0.0008	(1)
LOG-DD	2.6251	0.0421	(1)
LOG-FD	8.2016	0.0000	(1)
LOG-ER	3.8803	0.0063	(1)
LOG-IR	4.3801	0.0018	(1)

Model 1: Determinants of Domestic Debt

All the variables are stationary at first difference. For the examination of long run connection amongst the variable, Johansen integration is applied. Table 2 findings of Johansen integration Rank Test (Trace) implies the existence of long relations amongst all the indicators for instance domestic debt, fiscal deficit, exchange rate and interest at 5 percent level of significance.

Table 2
Unrestricted Co-integration Rank Test (Trace)

Hypothesized	Trace		0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.703702	97.01161	69.81889	0.0001
At most 1 *	0.592216	62.95266	47.85613	0.0010

At most 2 *	0.537610	37.83618	29.79707	0.0048
At most 3 *	0.329296	16.23848	15.49471	0.0386
At most 4 *	0.165163	5.054512	3.841466	0.0246

Table 3, presents the results of the cointegration of Eigenvalue reveals that all the variables are cointegrated in long run perspective. These results are compatible with the results of the Table 2, mentioned above.

Table 3
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.703702	34.05895	33.87687	0.0476
At most 1	0.592216	25.11648	27.58434	0.1002
At most 2 *	0.537610	21.59770	21.13162	0.0430
At most 3	0.329296	11.18397	14.26460	0.1452
At most 4 *	0.165163	5.054512	3.841466	0.0246

This study also applies Autoregressive Distributed Lag Model, which offers long relation among the policy variables. Recent empirical studies have deployed both Johansen cointegration and ARDL model when all the variables are found stationary at first difference. By applying Bound test in ARDL estimation technique, it confirms the long run association among the variables. In the bound test, results reveals F Statistics value 4.76 which is crosses critical F value of 2.5 % which ratifies the long connectivity among the variables. The results are reported on Table 4 below:

Table 4
Results of the ARDL Bound Test

Test Statistic	Value	k
F-statistic	4.76	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.50%	3.69	4.89
1%	4.29	5.61

Having been found the long run relation amongst the policy variables, next stage deals to calculate long run coefficients. Table 4 depicts the long run coefficients. The findings indicate that fiscal deficit holds positive, significant and long run association with domestic debt. It mean 1 percent rise in FD result 1 percent increase in DD. ER is positively correlated and implies that 1 percent increase in ER (appreciation) causes 2.42 percent surge in DD whereas IR possesses significant and positive connection with DD which signifies 1 percent hike in IR cause 2.44 percent mount in DD.

Table 5
Long Run Coefficient of ARDL (3, 4, 3, 3)

Variable	Coefficient	Std. Error	t-Stats	Prob.
LOG_FD	1.684781	0.469737	2.487515	0.0321
LOG_ER	2.425126	0.282898	8.572438	0.0000

LOG_IR	2.443232	0.807026	3.027451	0.0127
C	-2.962132	0.808945	-3.661722	0.0044

Once the variables are cointegrated, conventional theory postulates the definite happening of error correction in the model. To estimate the short run influence of the policy variables, ARDL Vector Error Correction model approach is applied. The results are posted in Table 6, which demonstrates that two year back domestic debt adversely impact the current level of domestic debt whereas previous year accumulated FD also hit the domestic debt inversely. Concerning to the ER, it is correlated with domestic debt in short run while finding underscore that current level of IR jolts the domestic debt. Error correction term confirm the annual speed of adjustment when any disequilibrium takes place in the model. The result implies 16% speed of adjustment which means in case of any short term disturbance, the policy variables will be moving back to its equilibrium in the long run with 16 percent speed.

Table 6
Error Correction Representation of ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOG_DD(-1))	-0.082604	0.274568	-0.300849	0.7697
D(LOG_DD(-2))	-1.047354	0.340833	-3.072928	0.0118
D(LOG_FD)	0.019079	0.038072	0.501132	0.6271
D(LOG_FD(-1))	0.02157	0.035424	0.608905	0.5562
D(LOG_FD(-2))	-0.039859	0.034175	-1.166329	0.2705
D(LOG_FD(-3))	-0.076289	0.036184	-2.108329	0.0612
D(LOG_ER)	-0.144298	0.209603	-0.688433	0.5068
D(LOG_ER(-1))	-0.017334	0.327032	-0.053005	0.9588
D(LOG_ER(-2))	-0.424854	0.239413	-1.774567	0.1064
D(LOG_DIR)	0.201231	0.054379	3.700525	0.0041
D(LOG_DIR(-1))	-0.070244	0.047945	-1.465079	0.1736
D(LOG_DIR(-2))	-0.094016	0.053062	-1.771823	0.1068
CointEq(-1)	-0.16594	0.068929	-2.40739	0.0368

To examine the stability of the model in both short and long run, cumulative sum (CUSUM) and cumulative sum of square (CUSUMQ) test is carried out. Figure 1 depicts the representation of Cumulative Sum (CUSUM) and SUSUMQ test, we explored no substantiation of structural break in the model followed by 5 percent level of significance. On the bases of these results, this attempt strongly confirms the stability of the model and also validity and reliability of the estimated coefficients.

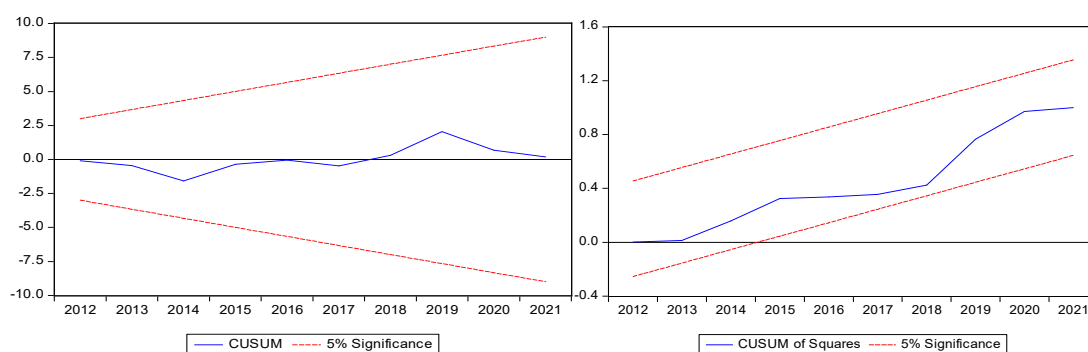


Figure I: CUSUM Test & CUSUMS

Model 2: Domestic Debt and Sustainable Economic Growth

To investigate the analogy between the domestic debt and sustainable economic growth, Granger Causality test is applied to commute the causality between policy variables. The results are presented in Table 7 mentioned below. The result indicates that domestic debt doesn't impact the sustainable economic growth and it further helps understanding the fact that domestic debt ignites sustainable economic growth. On the other side, results reveal that sustainable economic growth do cause the domestic debt which implies that during the sustainable economic growth economy requirement to be filled with domestic debt.

Table 7
Results of the Granger Causality

Null Hypothesis:	Obs	F-Statistic	Prob.
LOG_DD does not Granger Cause LOG_GDP	29	2.73830	0.0849
LOG_GDP does not Granger Cause LOG_DD		4.31829	0.0250

These findings unfolds very interesting fact that if domestic debt is not properly utilised for the sustainable economic growth it will add more local debt in system.

Conclusion

The core objective of the paper is examination of domestic debt and sustainable economic growth nexus of Pakistan economy. Findings of the model 1, explains that fiscal deficit, exchange rate appreciation and interest rate are the one of major factor accumulating the domestic debt. The historical trends fiscal deficit and exchange rate volatility holds positive and profound impact on relying more and more on domestic debt. It further indicate the potential impediment in the management of the domestic dent in the long run. As for as domestic debt and sustainable economic growth causality is concerned, results explain that domestic debt does not cause sustainable economic growth which means accumulation domestic debt by its determinants and its non-supportive role achieving the sustainable economic growth posit undesirable outcomes for the economy?

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