An Empirical Investigation of Debt Overhang and Liquidity Constraints Hypothesis in South Asian Countries

Muhammad Reehan Hameed, Assistant Professor of Economics, Department of Economics, Government College of Science, Wahdat Road, Lahore, Punjab, Pakistan
Shahzada M. Neem Nawaz, Research Fellow**,** Punjab Economic Research Institute, Punjab, Pakistan
Hafsah Batool, Lecturer, Department of Economics, Lahore College for Women University (LCWU)
Bashir Ahmad Khan, PMAS-Arid Agriculture University, Rawalpindi, Punjab, Pakistan

Abstract- The existence of the phenomenon of twin's deficits in South Asian countries has now become a common characteristic from the last few decades. Their reliance on debt both external and domestic to bridge thesedeficits has been increasing continuously which results in mounting public debt burden. The positive effect of public debt burden in resource-scarce countries occurs if the debt is utilized optimally and properly in income-generating activities that enhance the productive capacity of the borrower country to repay the debt obligations and its servicing charges. The negative effect of debt works through two main channels, namely "debt overhang" and "crowding out". The present study aims to investigate the implication of debt overhang and liquidity constraints hypothesis in South Asian countries i.e.Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. For this purpose, a hybrid model has been developed and panel data of these countries from 1990 to 2020 has been used. The study uses standard panel data estimation techniques for the estimation of the results. The results obtained confirm the existence of debt overhang and liquidity constraints hypothesis in South Asian economies. Similarly, domestic debt also offsets economic growth and investment. The study suggests that bridging the twin's deficits through public borrowings is not a safe option and efforts will be made to minimize the expenditures and increase the revenues by adopting better strategies.

Keywords: South Asian, Debt Overhang, Liquidity Constraints, Hybrid Model,Twins' Deficits, External Debt and Domestic debt

I. Introduction

"What makes some countries rich and others poor? Economists have asked this question since the days of Adam Smith. Yet after more than twohundredyears,themysteryofeconomicgrowthhasnotbeensolved." (Elhanan Helpman,2004).

Since the inception of the 21st century, the growing debt burden of developing economies has been the core development policy issue for the planners, economists, and policymakers in these countries. The traditional neoclassical models postulate that in the early stages of development, countries have a low level of capital and limited investment opportunities. Therefore, inflow of foreign capital in the form of debt stimulates economic growth (Chowdhury,2001). As far as these borrowed funds are invested in productive activities, debt does not create a threat to macroeconomic stability and promotes economic growth (Burnside and Dollar, 2000). In the same way, external debt also promotes economic growth through stimulating domestic saving and investment (Eaton, 1993).

On the other hand, a high level of debt stock has a deleterious effect on investment and economic growth that is well explained by the "debt overhang" theory. "The theory affirms that when the debt level of a country exceeds its repayment ability, expected debt servicing increases, and some of the returns of investing in the domestic economy are taken away by the existing foreign creditors which discourage investment and growth (Krugman, 1988)". To what extent the phenomenon of debt overhang depresses economic growth depends on what way the government engenders resources to pay back debt servicing obligations (Karagol, 2002).

Another channel through which debt affects growth is the "crowding out effect" which postulates that when a major share of foreign exchange earnings goes to pay the debt, very little resources are left to finance development projects which depress investment and growth (Diaz-Alejandro,1981). It is pertinent to point out that various researchers i.e. (Pattillo,Poirson, andRicci,2002;2004) are unable to investigate the importance of the liquidity constraints hypothesis. Though Chowdhury(2004),Clements,Bhattacharya, and Nguyen (2003), and Elbadawi, Ndulu, and Ndungu (1997) investigated that both debt servicing and debt obligations have negatively associated with growth and investment. Cohen (1993) and Hansen (2002) found that only debt servicing adversely affects investment and growth. In developing economies most of the focus has been made on foreign borrowings and domestic debt has got less consideration.

However, along with the passage of time in several countries, internal financing has got much importance because of the reduced availability of external loans and strict conditionalities of the donors. Domestic loans protect the economy from adverse external shocks and promote the growth of the domestic financial market. Domestic banks are keener to advance loans to the private sector and domestic borrowing stimulates private investment (Aizenmann, Pinto, and Radziwill,2004). However, domestic debt has a dark side also. Deficit financing done through printing new notes creates inflation in the economy which sabotages the process of economic growth and enhances financial suppression. Bridging the deficits through domestic financial institutions creates many distortions in the economy. Domestic debt is more costly than foreign borrowings (Beugrand, Loko, and Mlachila,2002). Public borrowings carrying more attraction to the banks and internal debt crowds out private sector investment (Hauner,2006).

II. LITERATURE REVIEW

In the recent past, many studies have been carried out to empirically assess the debt and growth nexus. Some of the literature is recapitulated below. Neoclassical model postulated that enhancement of taxes for paying debt and debt servicing obligations reduce household's disposable incomes and savings of the peoples. Taxes decrease the contents of capital in the economy and dampers economic growth (Diamond, 1965). Sachs (1990) found that debt servicing payments financed through higher taxes created distortions in the economy and might depressed economic growth. These distortions could be witnessed in the form of tax avoidance, reduction in work efforts and capital flight.

Levy and Chowdhury (1993) found that the expected increase in future taxes to repay the debt obligations sabotaged the process of capital accumulation and capital flight led to reduce economic growth. Patillo,Poirson, andRicci(2004)andFosu(1996 and 1999) empirically investigated that the countries having high debt levels faced a one percent average decline in growth. They further argued that the adverse effect of debt on growth had arisen through a decline in TFP and investment. Cunningham (1993), Iqbal and Zahid (1998), Chowdhury (2001), and Hameed et al., (2020) got similar kinds of results that debt distressed economic growth. Lin and Sosin (2001) investigated that debt had a significant and adverse effect in African economies while it had an insignificant effect in Latin American countries. The study further explained that in Asian and other developing economies debt had a positive but insignificant impact on growth. The study suggested that productive and optimal use of debt was imperative for economic growth. As discussed earlier that an important aspect of the debt problem is the "debt overhang" phenomenon.

According to Bauerfreund(1989) and Sachs and Williamson (1986) when the debtor countries pay back debt, the real resources were moved from the private sector to the public sector. Feldstein (1986) argued that the government had to impose taxes on the private sector to repay the debt obligations, which caused economic growth to decline. Sawada (1994) and Sen, Kasibhatla, and Stewart (2007) concluded that debt overhang discouraged economic growth.ElmeskovandSutherland(2012) postulated that debt overhang depressed growth via the augmented cost of capital.AfxentiouandSerletis(1996) examined the bidirectional causal linkage between debt and GDP growth. They argued that the debt overhang phenomenon was embellished and if the debt was used to enhance the productive capacity of the economy then foreign borrowings stimulated economic growth. As explained earlier the crowding-out effect also deters economic growth. SerieuxandSamy(2001),Warner(1992), andTaghavi(2000) concluded that the debt crowed out investment and growth. Deshpande(1990),Mahdavi(2004),

andFosu(2007) concluded that debt servicing payments reduced public expenditures on health and education. Cohen (1993) investigated that in highly indebted poor countries debt was not the prime cause of depressing investment. Smyth andHsing (1995)found that in developing economies the optimal level of debt was 38.4 percent of GDP. Clements,Bhattacharya,andNguyen(2003) investigated that beyond 50 percent of debt to GDP ratio, external debt depressed growth while Patillo,Poirson,andRicce(2002) found up to 160 percent of debt to exports ratio, foreign borrowings stimulated growth and after that it retarded economic growth.

Maghyereh,Omet,andKalaji(2002) examined that the threshold level of overseas debt was 53 percent of GDP in Jordan's economy. Most of the literature presented above discussed the effect of external debt on growth ignoring the role of domestic debt or partially incorporate it. Now we review some past literature which through light regarding the connection between domestic debt and economic growth. Abbas (2005) and Hameed et al., (2020) found that domestic debt discouraged growth. Afterward, Abbas (2007) postulated that when the internal debt to bank deposit ratio increased above 35 percent, it proved harmful for economic growth.

Balvy (2006) found that beyond 21 percent of domestic debt to GDP ratio, domestic debt reduced economic growth. Cecchetti, Mohanty, andZampolli(2011) found that in OECD countries the threshold level of public debt was 85 percent of GDP. Beyond that level, debt asserted a deleterious impact on economic growth. Hameed et.al, (2020) found that a one percent increase in public debt/ GDP ratio depresses economic growth by 0.52 percentage points.Kumar and Woo (2010) investigated that on percent enhancement in debt to GDP ratio curtailed economic growth by 0.2 percent. PanizzaandPrebistero(2012) found that the impact of public debt on growth in developing countries was more harmful as compared to developed countries. The debt overhang phenomenon was more prominent if the fraction of external debt in public debt was more than domestic debt.ReinhartandRogoff(2010) concluded that a debt/ GDP ratio beyond 90 percent slowed down economic growth in developed and emerging countries. However, the external debt to GDP ratio of around 60 percent discouraged economic growth only in emerging countries.

From the review of the literature discussed above, we can conclude that divergent views are found regarding the debt and growth relationship. South Asian economies are facing financial constraints for the last few decades. Continuous increase in government expenditure followed with low revenues they are persistently facing budget deficits. In the same way, their BOP positions are also getting worse and they are bound to the face current account deficits. The large external and domestic debt is the resultant factor of this twin's deficit phenomenon which put resource constraints on these countries for making development and welfare related expenditures. It is therefore pertinent that a thorough investigation will be made regarding debt and growth relationships in South Asian countries. From the literature, it has been found that the prevalence of debt overhang and liquidity constraints hypothesis phenomenon in debtor countries make debt and growth relationship more debatable. Therefore, the present study empirically investigates the implication of debt overhang and liquidity constraints hypothesis in South Asian Countries.

Model Specification

Classical economists believed that the prime function of the government is to maintain law and order in the country and it should not interfere in the economic activities and all the economic affairs should be in the hands of the people. So they belied in a free enterprise economy

The "Ricardian Equivalence Theorem" postulated that taxes and debt are like substitutes of each other and do not have any impact on real variables i.e. consumption, government expenditures, and economic growth. On the other hand,"Keynesian and neo-Keynesian modelsof growth" stressed upon the role of the government in economic affairs. They recommended that if there existed a saving-investment gap in the economy, it would be fulfilled through foreign borrowings. After World War II, foreign aid had played a vital role in rehabilitating the war affected economies in Europe through the formulation of the "Marshal Plan". After the success of this plan almost all the growth models public debt had been given prime significance. The current study has used a hybridmodelofCunningham(1993), Romer (1994), and Yakita (2008). The growth equation of the model can be specified as

$$y_{it} = \alpha + \sum_{j=1}^{k} \delta x_{itj} + \sum_{m=1}^{p} \text{Debt}_{itm} + \varepsilon_{it} \qquad (1)$$

Where

y_{it}
$= real\ GDP\ growth\ of\ i^{th}$ country and x_{itj} isavectorofcontrolvariables, $Debt_{itm}$ is the vector of various public debt indicators, and ε_{it} is the classical error term.

$$Inv_{it} = \alpha + \sum_{j=1}^{k} \delta x_{itj} + \sum_{m=1}^{p} \pi\text{Debt}_{itm} + \varepsilon_{it} (2)$$

Where

Inv_{it}
$= investment\ of\ i^{th}$ country and x_{itj} isavectorofcontrolvariables, $Debt_{itm}$ is the vector of various public debt indicators, and ε_{it} is the classical error term.

III.   DATA SOURCE AND METHODOLOGY

To empirically investigate the "Debt Overhang" and "Liquidity Constraints" hypothesis in South Asian countries 31 years of panel data from 1990 to 2020 have been used. The detail of variables used in the study has been given below in Table 1.

To deal with endogeneity in panel data following econometric techniques have been used

1.   FixedEffectModel

2.   TheRandomEffectModel

3.   PooledOrdinary Least Square

4.   The DynamicPanelDataModel/DynamicGMM

5.   TheSystemGMM

Table 1 Description of variables

Sr. No.	Name of the variable	Data Source
1.	Real GDP growth (Y_{it})	WDI
2.	Investment (I_{it})	WDI
3.	External debt (ED_{it})	IDS
4.	Domestic debt (DD_{it})	IFS
5.	Debt servicing (DS_{it})	IDS
6.	Openness (OP_{it})	WDI
7.	Labour force (LF_{it})	WDI
8.	Human capital Secondary School Enrollment (SSE_{it})	WDI

9.	Urbanization (URB$_{it}$)	WDI
10.	Inflation (INF$_{it}$)	WDI

IV. ESTIMATION OF RESULTS

 The results obtained in table 2 indicate that all the debt variables have a negative association with economic growth. It is evident from table 2 that external debt as a % of GDP and debt servicing as a % of exports both are negatively related to economic growth. When external debt in relation to GDP increases most of the domestic resources are utilized to pay the debt servicing obligations squeezing the resources available for investment. Moreover, many studies pointed out that debt overhang tends to reinforce the crowding-out effect. Similar kind of results are obtained by Chowdhury (2004), Clements, Bhattacharya, and Nguyen (2003), and Elbadawi, Ndulu, and Ndungu(1997).

Domestic debt also has a significant negative relationship with economic growth. Increase domestic debt crowds out private sector investment which discourages growth, capital formation, and welfare (Diamond, 1965). Domestic debt is also considered more expensive relative to external debt (Beaugrand,Loko, andMlachila, 2002). Investment has a significant effect on growth. Investment increases the level of income and employment in the country and stimulates economic growth. The positive relationship between investment and growth is supported by Pattillo, Poirson and Ricce (2002), Mankiw, Romer, and Weil (1992), and Abbas and Christensen(2007). Openness has a positive association with economic growth in all the specifications. It means the economies more open to trade enjoys higher growth rate. The results obtained are supported by Pattillo, Poirson and Ricci (2002), Coe and Helpman(1995), andLucas(1988). Population growth discourages economic growth. Human capital proxies by secondary school enrollment positively stimulate economic growth.

Table 2 Dependent variable:Yit

Variables	Pooled OLS	FEM	REM	Dynamic GMM	System GMM
Constant	0.386 (0.605)	0.228 (0.591)	0.472 (0.958)	-	0.201 (3.050)
I$_{it}$	0.001* (2.007)	0.102* (2.900)	0.057* (4.676)	0.038* (2.090)	0.006* (2.458)
SSE$_{it}$	0.488* (3.440)	0.533* (6.484)	0.537* (7.388)	0.102* (3.626)	0.029* (3.226)
ED$_{it}$	-0.316* (-2.819)	-0.109* (-2.276)	-0.115* (-3.445)	-0.032** (-1.920)	-0.009* (-2.075)
DS$_{it}$	-0.551* (-4.834)	-0.241* (-3.336)	-0.215* (-4.220)	-0.012* (-2.241)	-0.038** (-1.862)
DD$_{it}$	-0.015* (-3.348)	-0.093** (-1.910)	-0.114 (-0.384)	-0.009** (-1.745)	-0.045** (-1.898)
LF$_{it}$	-0.128** (-1.971)	-0.207* (-3.145)	-0.158** (-1.714)	-0.051* (-6.183)	-0.014* (-3.893)

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URB$_{it}$	0.158** (1.715)	0.045* (2.086)	0.020** (1.676)	0.011* (3.004)	0.005* (2.356)
OP$_{it}$	0.933* (11.845)	0.705* (9.864)	0.709* (2.502)	0.074* (2.257)	0.036* (6.722)
Y$_{it}$(-1)	-	-	-	0.851* (11.637)	-

*Significant at 5% and ** at 10%

The results also indicate that urbanization assists economic growth. The findings are inconsistent with the findings of Harris and Todaro (1970) and Naqvi (2010). As industrialization process starts the people move towards big cities for better job opportunities, improved health and education facilities. The Hausman test results indicate that the fixed effect model is appropriate for the estimation of the model. It is quite interesting that the effect of debt indicators on economic growth has been analyzed separately by applying system GMM. Therefore, three different specifications have been examined separately. The results are presented in Table 3. The results exhibit that external and domestic debt as % of GDP has an inverse relation with economic growth. Debt servicing has insignificant relation with economic growth.

Table 3 Dependent variable:Yit

Name of Variables	Specification 1		Specification 2		Specification 3	
	Linear	**Non-linear**	**Linear**	**Non-linear**	**Linear**	**Non-linear**
Constant	0.188* (3.056)	0.232 (1.155)	0.162* (2.179)	0.416 (1.510)	0.140* (2.090)	0.148* (2.140)
I$_{it}$	0.012* (2.050)	0.012* (3.040)	0.017 (1.215)	0.002* (2.127)	0.012* (3.686)	0.013* (3.804)
SSE$_{it}$	0.030* (3.096)	0.034* (2.933)	0.027* (2.436)	0.018 (1.390)	0.024* (2.490)	0.023 (1.365)
ED$_{it}$	-0.010* (-2.092)	0.038* (2.351)	-	-	-	-
Squared ED$_{it}$	-	-0.004* (-3.257)	-	-	-	-
DS$_{it}$	-	-	-0.004 (-0.679)	-0.201 (-1.112)	-	-
Squared DS$_{it}$	-	-	-	-0.037 (-1.097)	-	-
DD$_{it}$	-	-	-	-	-0.004** (-1.909)	0.007

Variables						
						(1.469)
Squared DD$_{it}$	-	-	-	-	-	-0.018 (-1.248)
LF$_{it}$	-0.033* (-4.223)	-0.041* (-3.453)	-0.039 (-1.517)	-0.037* (-3.077)	-0.043* (-3.513)	-0.051* (-3.372)
URB$_{it}$	0.019 (2.753)	0.012** (1.811)	0.011* (2.876)	0.009** (1.894)	0.007 (0.483)	0.006 (0.439)
OP$_{it}$	0.005** (1.877)	0.004* (2.797)	0.002* (2.514)	0.003 (0.686)	0.001* (2.366)	0.002** (1.838)

*Significantat5%and ** at 10%

Regarding the non-linear relationship, the results indicate that both coefficients of Squared and non-squared terms for external debt are significant. It is quite interesting that debt as % of GDP has a positive sign which contradicts the main findings of the study that external debt has a negative association with economic growth. It might be because debt stimulates growth up to a specific level of debt but beyond a certain level, its effect of debt on growth becomes negative. These kinds of results are obtained byPattillo,Poirson, andRicci(2002). The coefficients of squared terms of debt servicing as % of exports and domestic debt as % of GDP are statistically insignificant.

Analysis of Impact of Public Debt on Investment

To further confirm the existence of the debt overhang hypothesis the association between public debt and investment has been examined. The results have presented below in Table 4. The results indicate that external debt as % GDP and debt servicing as % exports discourage investment. The negative relationship strengthens the point of view that debt overhang tends to reinforce the crowding-out effect.

Table 4 Dependent variable:Iit

Variables	Pooled OLS	FEM	REM	Dynamic GMM	System GMM
Constant	3.109 (7.165)	1.146 (3.549)	2.065 (9.228)	-	0.678 (2.777)
OP$_{it}$	0.177* (2.255)	0.283* (4.010)	0.081* (3.007)	0.391** (1.902)	0.011* (2.369)
INF$_{it}$	0.002 (0.117)	0.067* (4.593)	0.063* (2.281)	0.006** (2.899)	0.059** (1.870)
ED$_{it}$	-0.225* (-3.390)	-0.042* (-2.285)	-0.030** (-1.765)	-0.046* (-2.378)	-0.046* (-4.063)
DS$_{it}$	-0.025* (-2.132)	-0.021** (-1.740)	-0.073** (-1.908)	-0.046** (-1.913)	-0.009* (-2.213)

DD$_{it}$	-0.100** (-1.900)	-0.067** (-1.785)	-0.023 (-1.307)	-0.125** (-1.641)	-0.008* (-2.347)
SSE$_{it}$	0.163** (1.812)	0.363* (4.175)	0.337* (10.004)	0.134* (2.189)	0.093* (2.186)
I$_{it}$ (-1)	-	-	-	0.335** (1.824)	-

*Significant at 5% and ** at 10%

Domestic debt also has a significant relationship with investment while inflation, openness, and secondary school enrollment stimulate investment.

V. Conclusions and Policy Implications

The present study aims to investigate the existence of the debt overhang and liquidity constraints hypothesis in South Asian countries. Moreover, the impact of some other macroeconomic and policy variables on economic growth and investment has also been examined. Based on the findings following policy implications have been emerged from the study. The dependence on the foreign debt would be minimized. External debt usually discourages growth because it adversely affects investment. The results obtained confirm that the negative relation between debt and growth is due to the existence of debt overhang and liquidity constraints phenomenon in South Asian countries. Therefore, the economic policies in South Asian countries aim to minimize the debt burden and make sure that the debt level should not increase to an unprecedented level.

The meet the development expenditures prerequisite for economic development requires that efforts would be made to generate additional resources through tax and non-tax revenues. The tax base should be extended. There is a dire need to implement tax reforms and un-taxed and under-tax, sectors should be brought in tax brackets. Moreover, efforts would be made to check smuggling, corruption, and tax theft. The results indicate that domestic debt also has a negative association with economic growth. Therefore, domestic debt should not be considered as a risk-free option. Moreover, the privatization proceeds would be utilized to repay public debt instead of making current expenditures.

The results also indicate that the rising population is hurtful to economic growth. Therefore, to accelerate economic growth, these countries must take on an extensive population control program. In the same way, secondary school enrollment, trade openness, urbanization, and investment are growth-oriented. Therefore, efforts would be made to encourage education, trade, and investment.

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