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Sustainability and Determinants of
Domestic Public Debt of Pakistan

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Abstract

In the past decades, the external debt burden and its sustainability have been extensively debated in the economic literature. However, at least until recently, less attention has been given to domestic public debt and its sustainability. This paper is designed to analyze the growth of domestic public debt of Pakistan and to pay attention to its sustainability and determinants. The analysis shows that not only Pakistan's domestic public debt is becoming unsustainable but also the changing terms, composition and classification are going to make it much harder for the country to keep domestic debt at sustainable limits. The results also confirm the relevance of primary budget deficit and interest payments to the accumulation of domestic public debt in Pakistan.

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1. Introduction

A budget deficit can be financed either by drawing down assets or incurring new liabilities of domestic and/or foreign. Since use of assets is constrained by the stock and attractiveness of the assets, government, therefore, normally resort to domestic borrowing (form the central bank, banking system, or private sector) and/or foreign borrowing (bilateral or multilateral). However, any government borrowing entails a cost, regardless of its nature. The aim is to minimize the cost and risk associated with the borrowing, for the overall economy.[1]

The direct cost can be minimal or even nil for the budget deficit financed by the borrowing form the central bank, but macroeconomic risks are substantial. Excessive monetary financing results in, excess overall demand, which in turn translates into inflation or, under fixed exchange rate system, puts pressure on the balance of payments. The borrowing from the banking system (excluding the central bank) and private sector is very limited in developing countries, because of the small size of domestic financial intermediaries.

Foreign borrowing often appears more attractive for the government, because of lesser crowding out effects on private investment, and reduced risks of inflationary pressure. However, a rising foreign debt tends to weaken the economy. Furthermore, when external debt in contracted on commercial terms, a higher foreign interest rate leads to an increase in debt service payments, that may lead to a debt crises.[2]

Domestic debt accumulation can also have serious repercussions on the economy. Domestic debt service can consume a significant part of government revenues. In developing countries, given shallow financial markets, the expansion in domestic debt may lead to increase in domestic interest rate. Thus, when government taps into domestic private savings, it may results crowding out of private investment. However, diverse investor base prevents excessive reliance on commercial banks funds and thereby reduces the risk of crowding out of private investment in the economy.

The persistence of large twin deficits for an extended period covering two consecutive decades (1980s and 1990s) has resulted in the unprecedented rise in public debt (domestic and foreign) in Pakistan. Public debt grew at an average rate of 18 percent and 15 percent per annum during the 1980s and 1990s, respectively. This has resulted in a rise in public debt from 56 percent of GDP in 1979/80 to 101.1 percent of GDP by the end of the 1990s. Moreover, public debt that was 317 percent of total revenue in 1979/80 increased to 505 percent of total revenue by the end of 1980s and further increased to 627 percent by the end of 1990s.[3]

By the end of June 2003, public debt was US$ 62 billion distributed between 47.9:52.1 domestic and foreign debt, amounting to 90.7 percent of GDP. This debt burden has been an impediment to increasing outlays for social and public infrastructure expenditures. The social development indicators are poor in the country reflecting long-standing problems in providing basic health and education services. Public expenditure on health remained stagnant at 0.7 percent of GNP throughout the 1990s, while expenditure on education fell from 2.5 percent (of GNP) in 1996/97 to 1.7 percent in

2002/03.

The unemployment rate is also very high in the country, standing at 8.27 percent in 2003/04 according to the official statistics. Of equally great concern is the fact that on four occasions during the decade of the 1990s, the growth of per-capita income was negative. Not surprisingly given the weak performance during the 1990s, the official statistics indicate an increase in the incidence of poverty in the country, and the number of people living below poverty line has increased from 26.1 percent in 1987/88 to 32.1 percent in 2000/01.[4]

Thus, the high and growing public debt is the major source of deceleration of economic and social development in the country. The high domestic and foreign debt and debt service payments (both domestic and foreign) is leading to stagnation in investment and growth in the country. The economic growth that averaged 6.69 percent in the 1960s, 5.59 percent in the 1970s and 6.18 percent in the 1980s, slowed down to an average of 3.96 percent in the 1990s and further deteriorated to 3.56 percent during 2001-03. This has limited the capacity to service debt and reduce the burden of both domestic and external debt.

This paper uses the eclectic[5] and econometric approach to analyze the domestic public debt of Pakistan.[6] A number of straight forward indicators shall be used to draw some inference on sustainability of domestic debt. A simple econometric model shall also be used to determine various factors responsible for growth of domestic public debt in Pakistan.

The organization of the paper is as follows. Following introduction, Section 2

performs domestic debt sustainability analysis using debt burden and debt service indicators. Section 3 uses a simple econometric model to determine factors responsible for growth of domestic debt. The last section assesses the future implications of the past trend and summarizes the results.

2. Sustainability of Domestic Debt

2.1. Growth

Persistence of large fiscal deficit in the 1980s and 1990 has caused domestic debt to grow at an astronomical rate. Domestic debt grew at an average rate of 17.09 percent during the second half of the 1980s and 16.21 percent during the first half of the 1990s. Its growth remained high (15.28 percent) during the second half of the 1990s. The domestic debt to GDP ratio that averaged 43.55 percent during second half of the 1980s increased to 44.35 percent in the first half of the 1990s and further increased to 46.47 percent in the second half of the 1990s. The domestic debt to GDP ratio averaged to 49.25 percent during 2000-03. Domestic debt as a ratio of tax revenue is also very high in the country. It increased form average of 307.82 percent during 1986-89 to 371.56 during 2000-03. Table-2.1 represents the trend in the domestic debt burden indicator over the last eighteen years.

Table 2.1: Domestic Public Debt Burden Indicators (Percent)

Period	Growth of Domestic Debt	Domestic Debt as a % of Tax Revenue	Domestic Debt as a % of GDP	Real Interest Rate	Growth of Real GDP
1986-89	17.09	307.82	43.55	1.28	5.87
1990-94	16.21	333.70	44.35	-1.84	4.84
1995-99	15.28	348.19	46.47	4.49	3.07
2000-03	4.74	371.56	49.25	6.47	3.74

Note: Real interest rate is the percentage of average interest payment on domestic debt after adjusted for inflation.
Data source: Government of Pakistan, Economic Survey, various issues.

In the economic literature, debt-GDP ratio is basically used to assess the sustainability of debt. The rationale behind this is that, if the real rate of interest is low, compared to GDP growth, and the primary budget deficit is less than or equal to one percentage point of GDP, the debt-GDP ratio will remain constant or even decline over time. On the other hand, if real interest rates are high, growth is sluggish and primary budget is in deficit, debt-GDP ratio starts rising. Thus, in a period of slow growth and high real interest rates, deficit translates into a rapidly rising debt-GDP ratio. The difference between the real GDP growth and the real rate of interest has been positive till 1996/97 in the country. The primary budget deficit has also shown a declining trend over time. However, from 1997/98, the difference between the real GDP growth and the real rate of interest is negative through out the period. This indicates a worsening situation with regard to the sustainability of domestic debt in the country.

2.2. Composition

Pakistan's domestic debt comprises of permanent debt (medium and long-term), floating debt (short-term) and unfunded debt[7] (mostly national saving scheme related). The composition of domestic debt has under gone considerable changes in the last two decades. There is a rapid increase in unfunded debt in the country as its share in total domestic debt has increased form 28.36 percent in 1985/86 to 48.4 percent in 2002/03. The relative share of floating debt remained more or less unchanged at around 40 percent during 1985-1999. But in recent years its share declined to 31.7 percent during 2000-03. The share of permanent debt on the other hand, has declined drastically form 35.03 percent in 1990/91 to 19.78 percent in 1999/2000. It has now slightly increased to 24.03 percent during 2000-03. Table 2.2 shows the share of permanent, floating and unfunded debt in total domestic debt during different periods.

Table 2.2: Composition of Domestic Public Debt   (Percent)

Period	Permanent Debt	Floating Debt	Unfunded Debt
1985-89	25.57	41.55	32.89
1990-94	36.62	35.70	27.67
1995-99	24.91	39.59	35.50
2000-03	24.03	31.70	44.28

Data source: Government of Pakistan, Economic Survey, various issues.

The short and long-term debt should adequately be part of government's portfolio. There are many risk and cost associated with it, if government's debt portfolio in mostly short-term. The administrative cost tends to be higher with short-term debt and with frequent roll-overs the debt will be highly vulnerable to a sudden increase in interest

rates. The maturing structure is also important for investors, as it will diversify their assets portfolio. The provision of long-term debt by the government will help them to balance their long-term liabilities with long-term assets.[8]

The attractive rate of returns on the national saving schemes was mainly responsible for the astronomical increase in unfunded debt (national saving schemes). Successive government in the past relied heavily on unfunded debt to finance budget deficits. In order to attract investment in national saving schemes, higher and tax free returns were offered to investors. Despite sharp reduction in nominal terms over time, the tax free real rates of returns on some national saving schemes are still high.

The changes in the composition of domestic debt could result in improvement in the domestic debt sustainability. A shift from unfunded debt to permanent debt could significantly reduce the cost of debt. Similarly, a shift from floating debt to permanent debt would help in lengthening the maturity profile of domestic debt.

The scope for expansion of domestic permanent debt depends on the depth of the domestic financial sector. A useful indicator of financial sector depth is the ratio of broad money (M3) to GDP.[9] It is clear form Table 2.3 that financial sector's depth has increased in Pakistan over time. It is also evident that there is enough scope for the expansion of domestic permanent debt in Pakistan's financial market. A low share of permanent debt in total domestic debt is an indication that market may not be willing to hold long-term debt due to fear of high inflation or default risk. There is need for restoration of investors' confidence in the country.

Table 2.3: Financial Sector Depth and Domestic Permanent Debt

	1985-89	1990-94	1995-99	1995-99
M3 % of GDP	56.98	57.20	62.52	71.14
Permanent Debt % of M3	19.16	28.41	18.45	15.33
Total Debt % of M3	74.98	77.55	74.25	69.45

Data source: Government of Pakistan, Economic Survey, various issues.

2.3. Classification

Domestic debt in Pakistan is broadly classified in to bank and non-bank debt according to the ownership. Table 2.4 shows the classification of domestic public debt by owner (as a percent of total domestic debt). It is clear form the Table 2.4 that scheduled banks are the second major holder of government domestic debt in Pakistan, holding one-third of all outstanding domestic debt in 2003/04. The share of central bank in government domestic debt, however, significantly declined form 26.1 percent in 1996/97 to 6.7 percent in 2003/04. The share of non-bank debt (national saving schemes specially) increased form 29.7 percent in 1996/97 to 49.7 percent in 2003/04.

The reduction in borrowing form the central bank by the government is an attempt to control inflation in the country. However, the increase in the share of scheduled banks in government domestic debt may reflect some fundamental short comings in their banking operations such as institutional weakness that undermine lending to private sector, improper information on borrowers, and weak legal system to settle disputes. A better measure of these shortcomings is the amount of non-performing loans (NPLs) of scheduled banks.[10] The ratio of non-performing loans to total loans of scheduled banks averaged to 23.9 percent during 1997-2001. This figure is quite high compared to 5.11 percent for the foreign banks in the country during the same period.

The years of state ownership, over-regulation of financial activities, and under regulation of financial soundness have resulted in inefficiencies in the financial market. The existence of a high spread is also a reflection of these inefficiencies in the financial market.[11] There is need to boost up the financial reform measures in order to improve the managerial efficiency of the financial institutions.

Table 2.4: Classification of Domestic Debt by Owner (%)

	Bank Debt		Non-Bank Debt	
Period	Scheduled Bank	State Bank	National Savings Schemes	Others
1996-97	29.1	26.1	29.7	15.1
1997-98	30.1	20.1	35.9	14.0
2002-03	32.8	5.9	53.0	8.3
2003-04	33.0	6.7	49.7	10.6

Data source: Annual Report, State Bank of Pakistan, Various Issues.

The changes in composition of domestic debt have important affects on the sustainability of domestic debt. An increase in ownership share of bank debt may results in an increase in the risk of crowding out of private investment in the country. A diverse investor base is, therefore, crucial for sustainability of domestic debt.

2.4. Interest Payments

From the above analysis it is clear that Pakistan is experiencing a high growth in domestic public debt with its composition changing towards high cost debt. Due to accumulation of such high cost debt, the debt servicing has increased sharply with a great pressure on budgetary resources. There are various measures of debt servicing

burden, some of them are reported in Table 2.5.[12]

Table 2.5: Domestic Debt Service Indicators   (Percent)

		Interest Payments as a percentage of:		
Period	Growth of Interest Payment	Total Tax Revenue	Total Expenditure	GDP
1985-89	30.01	22.91	12.31	3.23
1990-94	17.79	32.15	17.35	4.28
1995-99	22.45	43.41	25.06	5.79
2000-03	-6.28	37.0	22.82	5.00

Data source: Government of Pakistan, Economic Survey, Various Issues.

The interest payments on domestic debt grew at an average rate of 30.01 percent and 22.45 percent during the second half of the 1980s and 1990s. As a percent of GDP, interest payments on domestic debt have increased form an average of 3.23 percent during 1985-89 to 4.28 percent during 1990-94 and finally reached to 5.00 percent during 2000-03. Interest payments on domestic debt consumed 43.41 percent of total tax revenue and 25.06 percent of total expenditure during the second half of the 1990s. The favorable changes in recent years in interest service indicators are largely attributed to increase repayment capacity of the country due to economic recovery and retirement of some high cost debt.

The significant domestic interest service burden is largely attributed to high domestic interest rates. In order to measure the cost of domestic and foreign borrowing, the average implicit interest rates for both debts were calculated and are shown in Table 2.6.[13]

Table 2.6: Cost of Domestic and Foreign Borrowing   (Percent)

Implicit Interest Rate				
Period	Perman-ant Debt	Floating Debt	Unfunded Debt	Foreign Debt	Domestic Inflation Rate
1990-94	7.39	5.82	11.35	3.39	11.47
1995-99	13.16	7.84	9.89	2.86	7.95
2000-03	12.39	8.33	10.39	2.18	3.66

Data source: Government of Pakistan, Economic Survey, various issues.

As is evident form Table 2.6, the domestic debts are much more expensive than foreign debt, on the basis of implicit interest rate. This raises the concern what makes the government to borrow domestically rather than foreign, when the later is cheaper than the former. There are several explanations for it. The roll over of domestic debt is easier than foreign debt. Amortization on foreign borrowing requires foreign exchange. There is also a limit to concessional foreign borrowing. If the government is unable to find foreign assistance to finance their budget deficit, they have no choice but to borrow domestically at higher interest rates.

3. Determinants of Domestic Debt

The domestic public debt dynamics are summarized in the government budget constraint and can be expressed as follows:[14]

3.1. $DD_t = (1+i_t) DD_{t-1} + (G_t - T_t)$

Where DD_t is the stock of domestic debt at the end of period t, i_t the average

interest rate on domestic debt, G_t non-interest government expenditure, T_t total government revenue (such that, G-T is the primary budget deficit).

Thus, from the above equation, we take out those factors that contribute towards domestic debt accumulation. Adding domestic price level as third factor, we can form our simple econometric model of determinants of domestic public debt as follows:

3.2. $\quad DD_t = \beta_0 + \beta_1 *PD_t + \beta_2 * IP_t + \beta_3 *DP_t + \beta_4 *DD_{t-1} + \varepsilon_t$

Where PD_t is the primary budget deficit, IP_t the interest payment on domestic debt, DP_t the domestic price level, and ε_t the error term. The primary budget deficit is identified as a key determinant of public debt. We over here regard primary budget deficit, as the main factor that has contributed towards the accumulation of domestic public debt of Pakistan. The second main determinant is the interest burden on domestic debt that made the matter worse off. Higher domestic prices *ceteris paribus* may worsen the domestic debt dynamics because it necessitates higher nominal interest rate to provide investor a given real return. Thus, it is hypothesized that all β coefficients will have significant positive effect on domestic debt stock.

The sample period for the estimation of the above equation is from 1991 to 2002. The ordinary least square method is used to estimate the parameters of the equation. A very simple approach to econometric estimation is justifiable due to shorter length of data.[15] The regression results of the above model are presented as follows:

3.3　　$DD = 184.79 + 3.02*PD + 1.98*IP + 0.67*DP + 0.39*DD_{t-1}$
t-stat.　1.43　　2.17　　2.19　　0.92　　2.37
Prob.　0.19　　0.06　　0.06　　0.38　　0.04
Adj-R^2 = 0.99　DW-Stat. = 2.72　　F-Stat. = 356.76
Serial Correlation LM test: F-Stat = 3.15 (Prob. 0.13)

The results confirm the relevance of primary budget deficit and interest payments to the accumulation of domestic public debt in Pakistan during the period under study. All coefficients have *a prior* expected positive sign and are significant little above than 5 percent level, except domestic price level. The estimated equation also does not suffer from standard econometric problem, which usually arises when time series data are used. The estimation results reveal that the model is good fit (indicated by adjusted R^2) and have no serial correlation problem. In the presence of lagged endogenous variable the Durbin-Watson test is not valid for the test of serial correlation. Therefore, Serial Correlation Lagrange Multiplier test[16] was used to test the serial correlation in the partial adjustment model. The test confirmed no serial correlation in the model.

The above results suggest that the only way to stop the process of debt accumulation is to reduce the primary deficit by continued fiscal adjustment. This adjustment should not be achieved on the cost of cut in development expenditure rather there is need for serious efforts to increase domestic tax revenue.[17]

Despite concerted efforts, the tax structure in the country is narrowly based, and tax to GDP ratio has been stagnant at around 13 percent though out the 1990s. The current tax rate is too low to meet the needs for the high priority expenditure and fiscal adjustment. Steps must be taken to improve tax collection efforts in the country. The

broadening of the tax base and widening of the tax net through documentation of the economy, removal of exemptions, simplicity of tax system, and administrative reforms will help to increase the tax revenue in the country.

During the 1980s, the interest paid on some instruments was as high as 14 percent per annum, while inflation rate in some years was around 5 percent, thus, giving a safe, after tax return of 9 percent annually. The high guaranteed real interest rate on domestic debt added greatly to the real burden of domestic debt. A reduction in the interest rate on various debt instruments can contribute to a slower growth in domestic debt.

There is also a need to keep domestic price level at appropriate level and prevent vide fluctuations. As stated earlier, a higher inflation rate necessitates keeping nominal interest rate on domestic debt at a higher level in order to provide a positive return to the investors. This has serious effects on debt servicing cost and ultimately is responsible for accumulation of domestic debt.

4. Conclusion and Policy Implications

The purpose of this paper has been to examine various aspects of growth and burden of domestic debt and to determine factor responsible for it. The review of domestic debt profile shows that the country has accumulated a large amount of debt over a short period of time. Interest servicing is also assuming serious proportions in relation to government revenue and expenditure. The composition of domestic debt also changed markedly over time and the share of long-term debt has significantly declined. The classification of domestic debt by owner is also changing towards scheduled bank

debt, which is likely to be harmful for domestic private investment.

Poorly structured debt in terms of maturity, currency and interest rate structure has been important factors in resulting economic crisis in many countries. Crises have often arisen because of an excessive focus by government on large volumes of short-term debt. This has left government budget seriously exposed to changing financial market condition, when that debt has to be rolled over. Thus, not only Pakistan's domestic debt is becoming unsustainable but also the changing terms, composition, and classification are going to make it much harder for the county to keep it at sustainable limits.

Faced with the prospects of painful adjustments sometime voices are raised in the country advocating for outright default on domestic debt. However, the domestic debt default imposes a heavy financial burden on government as it results a loss of reputation, impedes domestic government finance and stimulates capital flight. Another difficulty is that, domestic banks are very important lenders to the government and domestic default could severely deplete their capital and would drive them into bankruptcy. This would bring economic chaos and negatively affect domestic output.

 The debt burden is also greatly aggravated due to declining effective use of resources and if the entire increase shares of interest payments come at the cost of development. There is no doubt that domestic debt burden could be lower, if the entire borrowing is used to finance public investment. It is very striking that until recently no serious effort has been devoted to address the problem of domestic debt accumulation and its sustainability. This strategy is obviously not the appropriate one and the policy makers can no longer afford to by-pass the issue of domestic debt sustainability in

designing future economic policies.

Notes

(1) For more details on choice between external and domestic debt in financing deficit, see Beaugrand et al. 2002.

(2) The literature on the foreign borrowing as a source of development finance has been comprehensively reviewed by White (1992) and Waheed (2004a)

(3) See Government of Pakistan (2000/01, 2003/04).

(4) This is the last official estimate of poverty available in the country. See Government of Pakistan (2003/04), p. 42.

(5) This is an applied research methodology where one tries to get ideas from the data. For more details, see Mukherjee, et al. (1998).

(6) For the analysis on external debt of Pakistan, see Waheed (2003).

(7) The term 'unfunded debt' seems superfluous, but used traditionally.

(8) For more details. See Gelbard and Leite, (1999).

(9) See Chritensen (2004), p.9.

(10) By definition NPLs mean the whole outstanding amount of loans and advances the payment of which (interest or principal) is over due by 90 days. See State Bank of Pakistan (2001/02), p.106-107.

(11) See Waheed (2005), p. 214.

(12) We focused on interest payments only as government have been net borrowers, rolling over existing debt.

(13) The implicit interest rate is calculated by dividing the interest payments in the budget with the actual stock of debt.

(14) The total public debt consists of domestic and foreign debt. However, here we are focusing only on domestic debt.

(15) The cointegration and error correction modeling requires a larger time series or monthly/quarterly data, see Waheed (2004b).

(16) In this test residual is regressed on explanatory variables of the function and lag value of the residual.

(17) The share of development expenditure in total government spending in the country declined form 28.42 percent in 1991/92 to 11.9 percent in 2002/03, see Government of Pakistan (2003/04), p.46.

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