Pakistan Journal of Applied Economics, Vol.15 Nos.1 & 2, (1 – 18), 1999

RETIRING PUBLIC DEBT THROUGH PRIVATIZATION

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Using a three-gap simulation model this paper shows that the privatization sale of public assets to domestic investors can ease the burden of domestic public borrowing and debt but it has no effect on foreign borrowing or debt. The sale of public assets to foreign investors, on the other hand, can reduce the size of external as well as internal borrowing and debt. Furthermore the benefits from privatization can be sustained in the long run if the share of public sector in the productive investment is reduced on a permanent basis. Thus a large-scale sale of public assets within a short period of time cannot solve Pakistan's debt problem.

I. Introduction

Large foreign and domestic debt on a country can pose serious economic problems. The resulting debt servicing obligations and deficits in the budget and current account balances result in poor economic performance by squeezing the development expenditure, contributing to inflation and eroding the exchange value of domestic currency. Further, by limiting the feasible range of policy options, these distortions can also deteriorate credit worthiness of the country.[1]

Foreign debt is usually created to sustain a growth rate of the economy that is otherwise not feasible within the given pool of domestic resources and in light of existing level of technology, consumption propensity and economic management practices. In other words, foreign debt can be interpreted as the price of economic growth. Likewise, domestic debt measures the cost of maintaining a large public sector. The trade-off relationship between foreign capital and economic growth can be studied in the framework of traditional neo-classical growth models [Ahmad and Paul (1997), Ahmad (1997a), and Crouch (1973)].[2] This relationship and the implications of domestic public debt can also be discussed in the framework of overlapping-generations models [e.g., Samuelson (1958), Diamond (1965), and Willis

[1] For more on the economic implications of such distortions, see Easterly and Schmidt-Hebbel (1993), Guidotti and Kumar (1991), Lee (1983), Tanzi et al. (1988), Vegh (1989) and Wijnbergen (1982).

[2] For an earlier account of these developments, see Hamada (1966), Kemp (1968), MacDougall (1960), Neher (1970) and Onitsuka (1974).

(1983)]. Yet another framework of analysis is given by the so-called gap-models which are based on standard national income equilibrium conditions. These models have a simple mathematical structure and are easier to apply in a real empirical situation.

A few earlier empirical studies on the debt problem in Pakistan have been conducted in the framework of two-gap models and thus they focus only on the foreign debt problem [e.g., Naqvi (1970), Chaudhary (1988), and Burney (1988)]. Since the domestic debt problem is equally serious and the time paths of the two forms of public debt are closely related to each other, the three-gap model which is a unified framework for the simultaneous analysis of foreign and domestic debt problems, provides a better framework of analysis. In two recent studies Ahmad [(1996), (1997b)] uses a three-gap model to consider the implications of various policy options for the expected time paths of foreign and domestic debt in future. The policy options include changes in the average tax rate, government consumption expenditure and the share of public sector in aggregate investment expenditure; a balanced budget reduction in the size of government; and the sale of public sector enterprises to foreign investors.

The present study is also conducted in the framework of a three-gap simulation model and focuses on the role of privatization in solving the debt problem. We shall analyze and compare the effects of six alternative privatization schemes on the expected future time paths of current account and budget deficits, the foreign and domestic borrowings and the foreign and domestic debts. Public assets can be sold to domestic or foreign investors and the paper studies both the alternatives. Since the timing of these sales is also important, especially in a growth context, three alternative scenarios are considered: gradual reduction in the public sector's share in investment expenditure, a once-for-all permanent reduction in this share and a one-off sale of public assets. Although the study is conducted in the manner of a simulation exercise, it provides useful insights into the way privatization could affect the debt situation in Pakistan. The study emphasizes that the popular perception of selling off public assets to foreign investors to solve the debt problem, requires stringent conditions.

The paper is structured in the following way. Section II presents the structure of the three-gap model and explains the methodology for studying effects of various privatization policies on resource deficits. The time paths of resource deficits over the period 1996-97 to 2019-20 are estimated in Section III. Section IV studies the effects of privatization on these time paths. Finally, Section V gives conclusions of the paper.

II. The Model

According to the two-gap model, primary foreign deficit is expressed in terms

of the primary domestic resource deficit. In the three-gap model the primary domestic deficit is further split into the primary fiscal and the private sector's deficits. This relationship is given by the national income equilibrium condition:

$$IM_i - X_i - Q_i = I_i^P - (Y_i + Q_i - C_i - T_i) + I_i^G - (T_i - G_i)$$

$$= (I_i^P - S_i^P) + (I_i^G - S_i^G) \quad (1)$$

where all the resource deficits are measured in domestic currency. IM_i, X_i and Q_i are respectively imports, exports and net unrequited transfers from abroad; C_i and G_i are private and government consumption expenditures; I_i^P and I_i^G are private and government investment expenditures; T_i is tax plus non-tax government revenues; Y_i is the gross domestic product; $S_i^P = Y_i^D - C_i$ and $S_i^G = T_i - G_i$ are private and government savings and $Y_i^D = Y_i + Q_i - T_i$ is the private sector's disposable income. Equation (1) means that primary foreign deficit is a mirror image of the primary domestic resource deficit, where the latter is split into private and public sectors' deficits.

The time paths of the primary resource deficits (derived in Appendix-A) are:

$$I_i^G - S_i^G = (1+\pi_i)(1+n_i)[\lambda_i k_i n_{i+1} - (t_i - g_i)]Y_{i-1} \quad (2)$$

$$I_i^P - S_i^P = (1+\pi_i)(1+n_i)[(1-\lambda_i) k_i n_{i+1} - s_i(1+q_i - t_i)]Y_{i-1} \quad (3)$$

$$IM_i - X_i - Q_i = (1+\pi_i)(1+n_i)[k_i n_{i+1} - (t_i - g_i) - s_i(1+q_i - t_i)]Y_{i-1} \quad (4)$$

where π_i, n_i, k_i and λ_i are respectively the inflation rate, the real GDP growth rate, the incremental capital-output ratio, and the share of public sector in investment expenditure; t_i, g_i and q_i are the ratios of tax, government consumption expenditure and unrequited transfers to the GDP; and s_i denotes the private savings rate out of disposable income.

The time paths of current account deficit, CAD_i, and budget deficit, BD_i, are given by:

$$CAD_i = (IM_i - X_i - Q_i) + E_i r_i^F (FD_{i-1} / E_{i-1}) + P_i \rho_i (FK_{i-1} / P_{i-1})$$

$$= (IM_i - X_i - Q_i) + (1+e_i) r_i^F FD_{i-1} + (1+\pi_i)\rho_i FK_{i-1} \quad (5)$$

$$BD_i = (I_i^G - S_i^G) + E_i r_i^F (FD_{i-1} / E_{i-1}) + r_i^D DD_{i-1}$$

$$= (I_i^G - S_i^G) + (1+e_i) r_i^F FD_{i-1} + r_i^D DD_{i-1} \quad (6)$$

where P_i is the price level, r_i^F is the nominal interest rate, fixed in nominal foreign

currency, on foreign debt; ρ_i is the real rental rate, fixed in domestic currency, on private foreign capital; r_i^D is the nominal interest rate on domestic debt; E_i is the nominal exchange rate; $e_i = (E_i - E_{i-1}) / E_{i-1}$ is the rate of exchange rate depreciation; and FD_{i-1}, DD_{i-1} and FK_{i-1} are the nominal stocks of foreign and domestic debts and foreign owned private capital at the end of period i–1, all measured in nominal domestic currency.[3]

Net foreign borrowing is required to finance the change in foreign reserves δFR_i and that part of current account deficit which is not covered by private capital inflow δFK_i, all measured in domestic currency [Cohen (1988)], therefore:

$$FB_i = CAD_i - \delta FK_i + \delta FR_i \tag{7}$$

The budget deficit is financed by three sources: domestic borrowing, foreign borrowing net of the increase in foreign reserves, and monetary borrowing or the change in high-powered money $\delta M_i = M_i - M_{i-1}$.

Therefore domestic borrowing can be written as:

$$DB_i = BD_i - (FB_i - \delta FR_i) - \delta M_i \tag{8}$$

Coming to the stock variables, we assume the growth rates of money supply, foreign reserves and foreign capital are pegged respectively in terms of nominal value in domestic currency, nominal value in foreign currency and real value. Thus, we can write the nominal values of the changes in money supply, foreign capital and foreign reserves in the current period as:

$$\delta M_i = M_i - M_{i-1} = G_i^M M_{i-1} \tag{9}$$

$$\begin{aligned} \delta FK_i &= P_i [(FK_i / P_i) - (FK_{i-1} / P_{i-1})] \\ &= P_i G_i^{FK} (FK_{i-1} / P_{i-1}) = (1 + \pi_i) G_i^{FK} FK_{i-1} \end{aligned} \tag{10}$$

$$\begin{aligned} \delta FR_i &= E_i [(FR_i / E_i) - (FR_{i-1} / E_{i-1})] \\ &= E_i G_i^{FR} (FR_{i-1} / E_{i-1}) = (1+e_i) G_i^{FR} FR_{i-1} \end{aligned} \tag{11}$$

where G_i^M, G_i^{FK} and G_i^{FR} are the growth rates of money supply, foreign capital and foreign reserves. Time paths of the three variables follow from the above:

$$M_i = M_{i-1} + \delta M_i = (1+G_i^M) M_{i-1} \tag{12}$$

[3] The time paths of all the stock variables will be determined later.

$$FK_i = P_i(FK_{i-1} / P_{i-1}) + \delta FK_i$$

$$= (1+\pi_i)\, FK_{i-1} + \delta FK_i = (1+\pi_i)\,(1+G_i^{FK})\, FK_{i-1} \quad (13)$$

$$FR_i = E_i(FR_{i-1} / E_{i-1}) + \delta FR_i$$

$$= (1+e_i)FR_{i-1} + \delta FR_i = (1+e_i)\,(1+G_i^{FR})\, FR_{i-1} \quad (14)$$

Finally, foreign debt, measured in domestic currency, would accumulate if the domestic currency value of the existing volume of foreign debt increases due to exchange rate depreciation; and/or if net foreign borrowing is positive during the current period. The domestic debt, on the other hand, accumulates only on account of net domestic borrowing. Therefore,

$$FD_i = E_i(FD_{i-1} / E_{i-1}) + FB_i = (1+e_i)FR_{i-1} + FB_i \quad (15)$$

$$DD_i = DD_{i-1} + DB_i \quad (16)$$

This completes the structure of our model, which can be used to simulate the time paths of resource deficits and trace the effects of privatization of public assets. The sale of public assets means a decrease in net investment in public sector. This in turn reduces the share of public sector in investment expenditure λ_i and increases the share of private sector $1-\lambda_i$. First disinvestment through domestic sale is considered. The only parameter that would change in this case is λ_i. Therefore the simulation effects of privatization are traced by projecting primary fiscal and private sector's deficits using the new values of λ_i for various periods and then simulating the other variables on the basis of the newly projected series of the primary deficits.

Secondly the sale of public assets to foreign investors is considered. In this case, the changes in λ_i would have a direct effect not only on the primary fiscal and private sector's deficits but also on the growth rate of foreign capital. Suppose in period i the share of public sector in investment expenditure increases from λ_i to λ'_i. If the real variables are measured at period zero (base year) prices then the nominal value of capital inflow in period i due to privatization, $\delta FK'_i$, would be:

$$\delta FK'_i = I_i(\lambda_i - \lambda'_i) = P_i(I_i / P_i)\,(\lambda_i - \lambda'_i)$$

$$= P_i k_i[(Y_{i+1} / P_{i+1}) - (Y_i / P_i)]\,(\lambda_i - \lambda'_i)$$

$$= P_i k_i n_{i+1}(1+n_i)\,(Y_{i-1} / P_{i-1})\,(\lambda_i - \lambda'_i)$$

$$= (1+\pi_i)k_i n_{i+1}(1+n_i)Y_{i-1}(\lambda_i - \lambda'_i) \quad (17)$$

The stock of foreign capital in period i accumulated through privatization is given by:

$$FK'_i = \delta FK'_i + P_i(FK'_{i-1} / P_{i-1}) = \delta FK'_i + (1+\pi_i) FK'_{i-1} \quad (18)$$

where the additional capital inflow $\delta FK'_i$ and the stock of capital acquired through privatization FK'_i are zero for the periods prior to privatization.

III. The Projected Resource Deficits

For the projections of future resource deficits, the values of the relevant parameters are estimated as averages and compound growth rates on the basis of data for the period 1989-90 to 1995-96. All the required data are taken from *Economic Surveys* (Finance Division) and *Annual Reports* (State Bank of Pakistan). The estimated parameter values are given in Table 1.

The expected resource deficits are projected for the period 1996-97 to 2019-20, assuming that the values of various parameters, given in Table 1, remain rel-

TABLE 1

The Parameter Estimates

Parameter	Estimate
Share of public sector in investment (λ)	0.48
Capital-output ratio (k)	3.80
Growth rate of the real GDP (n)	0.05
The tax rate (t)	0.18
The rate of government consumption expenditure (g)	0.13
The rate of private savings (s)	0.13
The rate of unrequited transfers (q)	0.05
Nominal rate of interest on foreign debt, in dollars (r^F)	0.04
Nominal rate of interest on domestic debt (r^D)	0.12
Real rental rate on foreign capital (ρ)	0.05
Growth rate of foreign capital, in real terms (G^{FK})	0.07
Growth rate of foreign reserves, in dollars (G^{FR})	0.12
Growth rate of high powered money (G^M)	0.13
Rate of exchange rate depreciation (e)	0.08
Inflation rate, estimated from the GDP deflator (π)	0.11

evant in future as well. The results of this exercise, presented in Table 2, show that the current account deficit is expected to grow at the rate of 17.7 per cent per annum, slightly faster than the growth in the budget deficit (16.7 per cent per annum). Since the current account deficit is the sum of the budget deficit and the private sector's deficit, this pattern indicates deterioration in the private sector's balance as well.

Assuming that the private foreign capital inflow continues to grow at the present rate, the net foreign borrowing will remain substantially below the current account deficit, so that the government will rely heavily on domestic borrowing to finance its budget deficit. Furthermore, the net foreign borrowing would grow at a slower rate (16.9 per cent per annum) than the net domestic borrowing (17.35 per cent per annum). Despite this pattern, however, foreign debt would grow faster than the

TABLE 2

Expected Resource Deficits (Billions of Rupees)

Year	Current account deficit	Budget deficit	Net foreign borrowing	Net domestic borrowing	Foreign debt	Domestic debt
1996-97	149	247	85	135	893	1054
1997-98	175	287	100	157	1064	1211
1998-99	207	333	117	183	1266	1394
1999-00	243	387	138	213	1505	1607
2000-01	287	450	161	248	1787	1855
2001-02	338	524	189	290	2119	2145
2002-03	398	610	221	339	2509	2484
2003-04	468	711	259	397	2969	2881
2004-05	551	829	303	465	3509	3346
2005-06	649	967	354	545	4144	3890
2006-07	764	1128	414	639	4889	4529
2007-08	899	1317	484	750	5765	5279
2008-09	1057	1538	566	881	6791	6160
2009-10	1244	1796	661	1036	7995	7196
2014-15	2800	3925	1433	2346	17920	15874
2019-20	6293	8630	3093	5365	39673	35664
Annual growth rate	17.69	16.71	16.90	17.35	17.94	16.55

domestic debt. This is so because foreign debt increases not only due to net borrowing but also on account of expected depreciation in the exchange value of the rupee, whereas no monetary correction is made on domestic debt and the inflationary factor is incorporated directly in interest payment (though only partially).

The above estimates of resource deficits include the effect of price inflation. To factor out the inflationary effects from the projected resource deficits we scale them by the nominal GDP. The results, summarized in Table 3, show that the resource deficits as percentages of the GDP are expected to remain fairly stable. The current account deficit is expected to grow by less than one per cent per annum from 5.87 in 1996-97 to 7.34 in 2019-20. Despite this moderate growth in

TABLE 3

Expected Resource Deficits as Percentages of the GDP

(Rs. in billion)

Year	Current account deficit	Budget deficit	Net foreign borrowing	Net domestic borrowing	Foreign debt	Domestic debt
1996-97	5.87	9.75	3.37	5.35	35.27	41.64
1997-98	5.94	9.71	3.39	5.33	36.07	41.06
1998-99	6.01	9.68	3.41	5.32	36.84	40.55
1999-00	6.08	9.66	3.43	5.32	37.57	40.11
2000-01	6.14	9.64	3.45	5.32	38.27	39.73
2001-02	6.21	9.63	3.47	5.33	38.93	39.42
2002-03	6.27	9.62	3.49	5.34	39.56	39.17
2003-04	6.33	9.62	3.50	5.37	40.16	38.97
2004-05	6.40	9.62	3.51	5.39	40.72	38.83
2005-06	6.46	9.63	3.53	5.42	41.26	38.74
2006-07	6.52	9.64	3.54	5.46	41.77	38.69
2007-08	6.59	9.65	3.55	5.50	42.26	38.70
2008-09	6.65	9.67	3.56	5.54	42.72	38.74
2009-10	6.71	9.69	3.57	5.59	43.15	38.83
2014-15	7.03	9,85	3.60	5.89	44.97	39.83
2019-20	7.34	10.07	3.61	6.26	46.29	41.61
Annual growth rate	0.98	0.14	0.30	0.69	1.19	–0.00

the current account deficit, the net foreign borrowing, as a percentage of the GDP, would grow only slightly from 3.37 per cent in 1996-97 to 3.61 per cent in 2019-20. The basis for this expectation is the assumption that private capital inflow will continue to contribute favourably to the capital account balance. The budget deficit and the net domestic borrowing would also remain stable. Since foreign debt rises with inflation through exchange rate depreciation, foreign debt as a percentage of GDP is expected to grow by more than one per cent per annum despite an almost constant net foreign borrowing to GDP ratio.

These results mean that one of the reasons for the expected fast growth in resource deficits is inflation, which is assumed to continue at the present rate in future. If the inflationary factor is applied symmetrically to all the variables, as is done in our analysis (or alternatively the inflationary factor is removed from everywhere), then the resource deficits and debt as proportions of GDP do not grow as fast as their absolute magnitudes.

It is also obvious that in the long run the exchange rate depreciation does not really increase the burden of debt in a real sense. It is true that with exchange rate depreciation the nominal value of foreign debt measured in rupees, rises. But if the purchasing power parity holds, depreciation would be accompanied by inflation.[4] It follows that the increase in the nominal value of foreign debt caused by the exchange rate depreciation is more or less offset by the declining value of the rupee. The end result is that the debt burden in real terms remains unchanged.[5]

IV. Privatization and Resource Deficits

Three alternative privatization schemes are considered: a gradual reduction in the share of public sector in investment expenditure, a once-for-all permanent reduction and a one-off sale of public assets. Under each scheme we consider alternatively the implications of selling public assets to domestic and foreign investors. Numerical assumptions that in each case the accumulated reduction in the public sector's share in investment expenditure is equal over the projection period are made. In the first scheme the share is reduced gradually from its present value of 48 per cent by one percentage point in each year during the period 1998-99 to 2002-03 and then maintained at 43 per cent. The second scheme assumes a once-for-all permanent decrease in the share of public sector in investment expenditure to 43

[4] A recent study by Ahmad and Ali (1999) provides consistent evidence to support that the purchasing power parity holds at least for the marginal changes in inflation rate and the rate of exchange rate depreciation.

[5] While the burden of debt is neutral with respect to inflation, the neutrality of net borrowing depends on whether or not the associated debt is indexed to inflation. For more on this subject, see Tanzi et al. (1988).

per cent in the year 2000-01, which falls in the middle of the transitionary period for the first scheme. In the third scheme the share of public sector in investment expenditure is reduced from 48 per cent to 52 per cent during 2000-01 and then returned to the original level at 48 per cent. This means that public assets worth 100 per cent of the current investment expenditure are privatized within one year.

First the results of privatization through domestic sale of public assets is considered. Since the decrease in public sector investment is exactly offset by an increase in the private sector investment, the overall resource deficiency in the country and, hence, the current account deficit, the net foreign borrowings and foreign debt remain unchanged. The resulting percentage changes in the budget deficit, the net domestic borrowing and domestic debt, over the projection period are shown in Table 4.

Under the first scheme, the public sector's share in investment expenditure is gradually reduced from 48 per cent to 43 per cent over the period 1998-99 to 2002-03. During the year 1998-99 the scale of privatization is small. As a result the improvement in the budget deficit is also relatively small, 1.96 per cent of the otherwise expected level. Since the net foreign borrowing remains unchanged as explained before, an improved budget deficit means that the government's need for domestic borrowing is reduced. The reduced domestic borrowing is also essential to make room for the private sector to replace the public sector investment. During the first year of privatization the net domestic borrowing decreases by 3.57 per cent, which in turn translates into a 0.47 per cent decrease in domestic debt.

As the scale of privatization increases during the transitionary period (that is 1998-99 to 2002-03), the improvement in budget deficit, the net domestic borrowing and domestic debt also become larger. For the subsequent years as the share of public sector in investment expenditure settles down permanently to 43 per cent, the rate of decrease in budget deficit, the net domestic borrowing and domestic debt, continues. This is so because, along with a reduction in government investment expenditure, the interest payment on domestic debt also declines. But compared to the initial years when the scale of privatization is rising, in the subsequent years the improvement in the resource deficit is relatively stable.

We now discuss the effects of a permanent reduction in the share of public sector in investment expenditure from 48 per cent to 43 per cent in the year 2000-01.[6] Since the present scheme is implemented at full scale from the beginning, it results in a larger reduction in the resource deficits at the beginning. From the year 2002-03 onwards, however, when the share of public sector in investment expenditure is reduced by 5 per cent under both the schemes, the effects of the two schemes become similar. The present scheme produces slightly better results because with a larger decrease in domestic debt in the initial years, the reduction in interest pay-

[6] This year falls in the middle of the transitionary period of the first scheme discussed above.

TABLE 4

Percentage changes in the Expected Resource Deficits due to Domestic Sale of Public Assets

Year	A gradual decrease in the share of public sector in investment expenditure			A permanent decrease in the share of public sector in investment expenditure			A one-off sale of public assets		
	Budget deficit	Net domestic borrowing	Domestic debt	Budget deficit	Net domestic borrowing	Domestic debt	Budget deficit	Net domestic borrowing	Domestic debt
1998-99	-1.96	-3.57	-0.47	0.00	0.00	0.00	0.00	0.00	0.00
1999-00	-4.14	-7.52	-1.40	0.00	0.00	0.00	0.00	0.00	0.00
2000-01	-6.51	-11.80	-2.80	-9.85	-17.86	-2.39	-197.05	-357.13	-47.82
2001-02	-9.08	-16.41	-4.64	-10.88	-19.66	-4.73	-20.32	-36.71	-46.32
2002-03	-11.83	-21.29	-6.91	-11.87	-21.36	-7.00	-19.54	-35.17	-44.80
2003-04	-12.77	-22.90	-9.11	-12.81	-22.96	-9.19	-18.78	-33.67	-43.26
2004-05	-13.67	-24.40	-11.23	-13.71	-24.46	-11.31	-18.04	-32.20	-41.73
2005-06	-14.53	-25.80	-13.27	-14.57	-25.86	-13.35	-17.33	-30.77	-40.19
2006-07	-15.35	-27.11	-15.22	-15.38	-27.16	-15.30	-16.63	-29.37	-38.67
2007-08	-16.13	-28.31	-17.08	-16.16	-28.37	-17.16	-15.96	-28.02	-37.15
2008-09	-16.86	-29.42	-18.85	-16.89	-29.48	-18.92	-15.31	-26.71	-35.66
2009-10	-17.56	-30.44	-20.52	-17.59	-30.49	-20.58	-14.68	-25.45	-34.19
2014-15	-20.50	-34.29	-27.42	-20.52	-34.33	-27.47	-11.84	-19.80	-27.31
2019-20	-22.62	-36.39	-32.07	-22.64	-36.42	-32.11	-9.49	-15.26	-21.43

ment in the subsequent years is also larger. This small advantage, however, diminishes over time in the light of the overall size of resource deficits.

Consider now a one-off sale of public assets to domestic investors in the year 2000-01. This scheme results in a large budget surplus during 2000-01, which is about 97 per cent of the budget deficit that would be realized in the absence of privatization. Since the net foreign borrowing remains unchanged, the public sector has surplus funds to lend. Thus the net domestic lending in the year of privatization is about 257 per cent of the net borrowing that would otherwise be realized. This surplus is enough to retire about 48 per cent of the domestic debt.

In the very next year (2001-02) the budget surplus turns into a deficit as the public sector resumes its pace of investment. The budget deficit is, however, about 20.3 per cent less than that realized in the absence of privatization. This improvement is realized solely on account of a substantial reduction in interest payment on the previous year's domestic debt. The improved budget position results in a reduction in the net domestic borrowing by 36.7 per cent of the potential level. Domestic debt in this year is also reduced substantially because a large portion of the debt is retired in the previous year. But the margin of improvement is smaller because in this year the net domestic borrowing is again positive.

In the subsequent years the rising primary fiscal deficit starts showing its adverse effect and the margins of improvement in the budget deficit, the net domestic borrowing and domestic debt decline steadily. By the year 2019-20 the net domestic borrowing would be reduced by only 15.3 per cent of the potential level realized in the absence of privatization. Likewise the domestic debt in that year would be 21.4 per cent less than the potential level.

Thus a large-scale one-off sale of public sector assets pays immediate dividend, but the benefits gradually diminish in the long run. Although the budget deficit, the net domestic borrowing and domestic debt show significant improvements at the end of the projection period, we can see that these gains are smaller than those achieved through the first two schemes discussed above. The reason is that in the first two schemes a permanent decrease in public sector investment expenditure provides a relief in the primary fiscal deficit, which not only results in a long lasting reduction in public sector's resource deficit, but the gains also continue to rise over time.

The case where privatization is done by selling public assets abroad is discussed here. The results are shown in Table 5. First consider the case wherein the share of public sector in investment expenditure is reduced gradually from 48 per cent to 43 per cent over the period 1998-99 to 2002-03. Since, during the first year the primary foreign deficit and the interest payments on last year's foreign debt are unchanged, the current account deficit does not change either. The budget deficit, however, decreases by 2 per cent of the potential level due to reduced expenditure in the public sector. The resulting increase in capital inflow also reduces the net

TABLE 5

Percentage Changes in the Expected Resource Deficits due to the Sale Abroad of Public Assets

	A gradual decrease in the share of public sector in investment expenditure						A permanent decrease in the share of public sector in investment expenditure						A one-off sale of public assets					
Year	CAD	BD	FB	DB	FD	DD	CAD	BD	FB	DB	FD	DD	CAD	BD	FB	DB	FD	DD
1998-99	0.0	-2.0	-5.6	0.0	-0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1999-00	0.0	-4.0	-11.0	-0.2	-1.5	-0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2000-01	0.1	-6.1	-16.3	-0.5	-2.8	-0.0	0.0	-9.9	-27.5	0.0	-2.5	0.0	0.0	-197.1	-550.5	0.0	-49.7	0.0
2001-02	0.2	-8.3	-21.5	-1.1	-4.5	-0.2	0.2	-10.2	-27.1	-0.8	-4.7	-0.1	3.2	-7.3	5.8	-17.0	-44.7	-2.3
2002-03	0.3	-10.6	-26.6	-1.8	-6.4	-0.4	0.3	-10.6	-26.7	-1.7	-6.6	-0.3	3.5	-7.7	6.2	-17.9	-40.2	-4.4
2003-04	0.5	-11.0	-26.2	-2.7	-8.2	-0.7	0.5	-11.0	-26.2	-2.7	-8.3	-0.7	3.6	-8.0	6.6	-18.6	-36.1	-6.4
2004-05	0.7	-11.4	-25.8	-3.6	q	-1.1	0.7	-11.4	-25.8	-3.6	-9.8	-1.1	3.8	-8.3	6.9	-19.2	-32.4	-8.2
2005-06	0.9	-11.9	-25.3	-4.6	-11.0	-1.6	0.9	-11.9	-25.3	-4.6	-11.2	-1.6	3.9	-8.5	7.2	-19.7	-29.0	-9.8
2006-07	1.1	-12.3	-24.8	-5.6	-12.2	-2.2	1.1	-12.3	-24.9	-5.6	-12.3	-2.1	4.1	-8.7	7.5	-20.1	-25.9	-11.2
2007-08	1.3	-12.7	-24.4	-6.6	-13.2	-2.8	1.3	-12.7	-24.4	-6.5	-13.3	-2.8	4.2	-8.8	7.7	-20.4	-23.1	-12.5
2008-09	1.5	-13.1	-23.9	-7.5	-14.1	-3.5	1.5	-13.1	-23.9	-7.5	-14.2	-3.4	4.2	-8.9	7.9	-20.6	-20.5	-13.7
2009-10	1.7	-13.5	-23.5	-8.5	-14.9	-4.2	1.7	-13.5	-23.5	-8.5	-15.0	-4.2	4.3	-9.0	8.1	-20.7	-18.2	-14.7
2014-15	2.7	-15.6	-21.2	-13.1	-17.3	-8.2	2.7	-15.6	-21.2	-13.1	-17.4	-8.2	4.3	-9.0	8.5	-20.2	-9.0	-17.9
2019-20	3.6	-17.4	-19.0	-17.0	-18.2	-12.4	3.6	-17.4	-19.0	-17.0	-18.2	-12.4	4.2	-8.5	8.5	-18.6	-3.1	-18.6

Note: CAD = current account deficit, BD = budget deficit, FB = net foreign borrowing, DB: net domestic borrowing, FD = foreign debt, DD = domestic debt.

foreign borrowing and foreign debt. Since the decrease in public sector investment expenditure is equal to the additional capital inflow, the resulting decrease in the net foreign borrowing is equal to the decrease in the budget deficit and, hence, the net domestic borrowing and domestic debt remain unchanged. In the next year, 1999-00 as the asset sale rises, the magnitude of the gains from privatization also rise. Furthermore, with a reduced interest payment on foreign debt, the net domestic borrowing and domestic debt also show a slight improvement.

During the five year transitionary period all the measures of resource deficits except the current account deficit continue to improve further, while the current account deficit deteriorates slightly as the increase in rental payment on the rising stock of foreign capital outweighs the reduced interest payment on foreign debt.[7] After 2002-03 when there is no further reduction in the public sector's share in investment expenditure, the worsening current account deficit starts showing its adverse effect on the net foreign borrowing. But the rate of decrease in the other measures of resource deficits continues to improve. By the end of the projection period foreign debt declines by 18.2 per cent of the level that would be realized in the absence of privatization, while the improvement in domestic debt is also significant at 12.4 per cent.

The effects of a permanent reduction in the share of public sector in investment expenditure are qualitatively similar to the effects discussed above. The only difference is that in the present scheme the privatization process starts at a larger scale and two years later than in the above scheme. Within a few years the effects of the two schemes almost coincide. This result is similar to the one discussed under the case of domestic sale of public assets.

Finally, the one-off sale of public assets to foreign investors results in a budget surplus during the year of privatization (2000-01) as in case of assets sale domestically. The additional capital inflow also reduces the need for foreign borrowing. The results show that the privatization receipts are enough to retire about half of the outstanding foreign debt, while the net domestic borrowing and domestic debt remain unchanged.

In the next period (2001-02), although no public assets are sold, the budget deficit still improves due to reduced interest payment on foreign debt. The current account deficit deteriorates since the additional rental payment on foreign capital exceeds the reduction in interest payment on foreign debt. This also results in an

[7] This is so because according to our estimates the real rental rate on foreign capital exceeds the real interest rate on foreign debt. The real rental rate on foreign capital is estimated at 5 per cent. The interest rate on foreign capital is 4 per cent in current dollars. Assuming that the purchasing power parity holds, a 12 per cent domestic inflation rate and an 8 per cent rate of exchange rate depreciation implies that the inflation rate in dollars is equal to $100[(1.12 / 1.08) - 1] = 3.7$ per cent. Thus the real interest rate on foreign debt comes out to be $100[(1.04 / 1.037) - 1] = 0.3$ per cent.

increased net foreign borrowing. Foreign debt remains less than the originally estimated level because the increase in the net foreign borrowing only partially offsets the decrease in foreign debt realized in the previous period. The net domestic borrowing and, hence, domestic debt decreases because not only has the budget deficit improved, but the need for domestic borrowing has also been curtailed by the additional resources made available from the increased net foreign borrowing.

In the subsequent years foreign debt remains below the level that would be realized in the absence of privatization; but the margin of improvement continues to diminish over the years. Thus, with a persistent saving-investment gap, the effect of a large scale debt retirement would be overcome by the rising net foreign borrowing to offset the current account imbalance that results from the large scale rental payments on private foreign capital. Since the pace of foreign capital inflow settles down to its original pattern, the rental payment on foreign capital stabilizes, though at a higher level. Thus the margin of deterioration in the current account deficit also stabilizes over the years. By the end of the projection period (the year 2019-20) foreign debt is reduced by only 3.1 per cent of the level expected in the absence of asset sale; while the domestic debt is reduced by 18.6 per cent.

The above results show that policy of large-scale privatization through a sale abroad of public assets produces only a temporary reduction in foreign debt. Within a few years the effects of inherent resource deficiency become apparent and foreign debt approaches towards its original time path. Although there is a sizable reduction in domestic debt, this is an uncapped side effect, which can as well be materialized by domestic sale of public assets.

V. Conclusions

Privatization of public assets through domestic sale results in an improved budget deficit and reduction in the net domestic borrowing and domestic debt. This privatization scheme has no effect on the current account deficit, the net external borrowing and external debt. The sale of public assets to foreign investors, on the other hand, can reduce the size of all the above resource deficits, except the current account deficit.

The benefits from privatization can be sustained in the long run if the role of public sector in productive investment is reduced on a permanent basis. Thus the perception that a large-scale sale of public assets within a short period of time can in itself rid Pakistan of the present debt crisis, is based on a short sighted view of the problem. Although this drastic measure results in an immediate relief of a large magnitude, it does not provide a permanent solution to resource deficiency.

The above conclusions are, however, based on a few parametric assumptions that may not hold once the privatization is carried out. In particular, two key assumptions that need to be examined further are static credit worthiness of the

country and equal productivity of capital across public and private sectors and across domestic and foreign operated segments of the private sector. The conclusions can possibly be reversed if these assumptions are relaxed.

Over the past few years the credit worthiness of Pakistan has been downgraded and as a result it had to resort to short term borrowing with higher interest rates and a shorter amortization period. The supply of private foreign capital has also shrunk due to volatile economic conditions. If foreign debt can be reduced through privatization, the risk of debt default would be reduced. The imposition of default costs would be avoided and the interest rates and rental rates on foreign capital would decrease, compared to the situation where no privatization is carried out and debt continues to remain high. Thus a debt simulation where the interest rate and rental rates are reduced by a few percentage points could possibly reverse the conclusion.

Furthermore if it is assumed that investment efficiency is greater in the private sector, particularly among the foreign owned production activities, then privatization can improve the overall productivity of capital. This would translate into a reduced capital-output ratio, thereby reducing the need for external borrowing to achieve a given growth rate of GDP.

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Appendix-A

In Appendix-A the time paths of the primary resource deficits in public, private and foreign sectors are derived. For this purpose, we first need to trace the time paths of investment and savings in the public and private sectors. The public and private investment at current prices in periods i and i-1 can be written as:

$$I_i = P_i(I_i/P_i) = P_i k_i [(Y_{i+1}/P_{i+1}) - (Y_i/P_i)]$$

$$= P_i k_i n_{i+1} (1+n_i) (Y_{i-1}/P_{i-1}) = (1+\pi_i) k_i n_{i+1} (1+n_i) Y_{i-1} \quad (A1)$$

$$I_i^G = (I_i^G/I_i) I_i = \lambda_i (1+\pi_i) k_i n_{i+1} (1+n_i) Y_{i-1} \quad (A2)$$

$$I_i^P = (I_i^P/I_i) I_i = (1-\lambda_i) (1+\pi_i) k_i n_{i+1} (1+n_i) Y_{i-1} \quad (A3)$$

where P_i is the price level, π_i, k_i, n_i and λ_i are respectively, the inflation rate, the real incremental capital-output ratio, real GDP growth rate and the share of public sector in investment expenditure.

The time paths of savings in the public and private sectors can be derived as follows:

$$S_i^G = P_i(S_i^G/P_i) = P_i(t_i-g_i) (Y_i/P_i)$$

$$= P_i(t_i-g_i) (1+n_i) (Y_{i-1}/P_{i-1}) = (1+\pi_i) (t_i-g_i) (1+n_i) Y_{i-1} \quad (A4)$$

$$S^P{}_i = P_i(S^P{}_i/P_i) = P_i s_i (Y^D{}_i/P_i) = P_i s_i (1+q_i-t_i) (Y_i/P_i)$$

$$= P_i s_i (1+q_i-t_i) (1+n_i) (Y_{i-1}/P_{i-1}) = (1+\pi_i) s_i (1+q_i-t_i) (1+n_i) Y_{i-1} \quad (A5)$$

where t_i, g_i and q_i are respectively the marginal rates of tax, government consumption expenditure and unrequited transfers out of GDP, all measured in real terms while s_i denotes the marginal rate of real private savings out of real disposable income.

The resource deficits in the private and public sectors in period i can now be written as:

$$I_i^G - S_i^G = (1+\pi_i) (1+n_i) [\lambda_i k_i n_{i+1} - (t_i-g_i)] Y_{i-1} \quad (A6)$$

$$I_i^P - S_i^P = (1+\pi_i) (1+n_i) [(1-\lambda_i) k_i n_{i+1} - s_i (1+q_i-t_i)] Y_{i-1} \quad (A7)$$

For the time path of primary foreign resource deficit, we take sum of the above two equations and use equation (1) to find:

$$IM_i - X_i - Q_i = (1+\pi_i) (1+n_i) [k_i n_{i+1} - (t_i-g_i) - s_i (1+q_i-t_i)] Y_{i-1} \quad (A8)$$