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Why Is It So Hard to Finance Budget Deficits? Problems of a Developing Country

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and
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Abstract

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This paper examines possible ways for a developing country to finance budget deficits from domestic resources. It does so by analyzing Pakistan's National Savings Scheme (NSS). The NSS has a number of unusual attributes, and its impact upon the economy of Pakistan is not clear, but given Pakistan's chronic fiscal difficulties, the NSS is of great importance in financing the public sector deficit. We use an econometric model to analyze the relationship between the demands for NSS deposits and various other financial instruments, in particular, bank deposits, and foreign-currency deposits. We conclude that NSS and bank deposits are net substitutes, as are NSS and foreign-currency deposits. Bank deposits and foreign-currency deposits, however, seem to be neither substitutes nor complements. Also, the estimated income elasticity of the demand for bank deposits is negative, while that of foreign-currency deposits is positive, and that of NSS is not significantly different from zero. Finally, there is evidence that foreign-currency deposits are a net substitute for NSS deposits. Thus, there is some empirical evidence that foreign currency deposits have absorbed part of the demand for NSS deposits. Accordingly, the availability of foreign-currency deposits may have reduced the ability of the government to finance itself.

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I. INTRODUCTION

Many problems confront the typical developing economy. A country may fail to achieve a sustained high rate of growth, causing the standard of living to stagnate. Such slow growth is typical of many countries in Africa and Latin America. High rates of inflation and corresponding financial instability have impeded investment in countries such as Argentina, and Brazil. In Asia, we see a variety of countries, such as Korea and Indonesia, which have run large budget deficits with correspondingly large current account deficits. These current account deficits have, in turn, been financed by foreign capital inflows from both the public and private sector.[2] We would not claim that there is necessarily a direct relationship between the availability of foreign financing and economic development. Rather, foreign financing allows the government to carry out expansionary domestic policies without drawing upon domestic savings, and thereby putting pressure on domestic interest rates.

Today, however, many countries may wish to reduce their foreign borrowing in order to avoid problems of dealing with increased foreign debt.[3] Accordingly, many countries are forced to either reduce their budget deficits, to see a decline in domestic investment, or to somehow increase private savings. The typical policy advice, whether from the IMF, the World Bank, or many neo-classical economists, is to reduce the budget deficit. This has, however, proven to be very difficult, given most countries' problems with stagnant tax collection, as well as unyielding public spending. We thus see that countries, unable to reduce current expenditure due to fear of unemployment or protests against wage reduction, often reduce public capital expenditure. This reduction has, in turn, the effect of reducing the productivity of the private sector and hence national income.[4]

The alternative policy, namely, to increase private savings, seems not to really be a policy, since saving is a behavioral variable. That is, savings is the endogenous outcome of optimizing behavior by individual agents and hence is an endogenous outcome for the macro-economy. Nonetheless, to increase private saving would be most attractive to many developing countries. We will examine the case of Pakistan, a developing country that suffers from a large budget deficit, a lack of foreign capital inflows, and a low domestic savings rate. Pakistan has instituted a rather unique financial institution, the National Savings Scheme (NSS), with the aim of increasing private savings by broadening the pool of savers.

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[2] Thus, for example, Korea received both large World Bank loans, as well as large inflows of private financing during much of its years of rapid growth.

[3] Between 1987 and 1997 Pakistan's foreign debt of the public sector, in US dollars, rose by 112 percent. The corresponding figure for Thailand is 70 percent, for Indonesia is 302 percent, and for Korea is 69 percent (source: International Financial Statistics), just to give examples. Hence the problems of expanding foreign debt are common to a number of developing countries and are not just an issue for Pakistan.

[4] Mexico is an example of such a connection. The connection between the provision of public capital and private output and investment there is analyzed in Feltenstein and Ha (1995). Here it is shown that a reduction in public investment decreases the productivity of private capital. Similar results have been shown for other countries in, for example, Nadiri and Mamuneas (1991).

In particular, a key goal of the NSS has been to bring the rural populace into the country's financial system. Hence it might well be the case that the NSS does not increase the volume of savings. Rather, it brings existing savings from the informal, nonfinancial sector into the financial sector. There is no reliable data on either savings in the informal sector, for example in goods, or on the share of savings in the urban and rural sectors. Hence we are not able to determine the success of the NSS in generating truly new savings.

The NSS has a number of unusual attributes. Given Pakistan's chronic difficulties with the public sector deficit, the NSS, which is a key instrument in financing that deficit, is of considerable importance for the budget. Little is known, however, about the impact of the NSS upon the macro economy. In addition, the determinants of flows into the NSS are essentially unknown. Is there a positive interest elasticity of savings into the NSS? Do flows into the NSS reduce flows into other financial instruments? Is the NSS, which pays subsidized interest rates to depositors, an effective means of financing the public sector?

The analysis of the NSS has significance beyond the case of Pakistan. Is it possible for a government to improve its ability to finance its budget deficit simply by introducing a new financial instrument? Given that financial markets in many developing countries are incomplete, is it possible that, as often claimed, there is potential private savings waiting to be tapped? If so, then an institution such as the NSS may offer an attractive way for cash-strapped governments to finance themselves without having to face painful fiscal adjustments.[5]

In the next section we will carry out brief overview of the background and characteristics of the NSS. Section III will analyze the model we develop to estimate a variety of behavioral parameters. This section will also discuss data sources and inputs. Section IV will describe our empirical results, while the final section will be a summary and conclusion. Our parameter estimates and relevant statistics will be included in an appendix.

II. National Savings Scheme of Pakistan: Background and Characteristics

The NSS, which has been in existence in various forms since before the independence of Pakistan, has had its current structure since 1972. Its primary function is to finance the budget deficit of the Central Government. It has the secondary function of mobilizing private savings. Let us first describe certain characteristics of the NSS.

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[5] We are not claiming to be investigating the broad issue of the link between financial development and economic development. Nor are we analyzing the Ricardian Equivalence theorem. Rather, we are simply looking at the general issue of whether a country with a low savings rate can increase that rate by introducing a new financial instrument. This topic is of importance for any developing country with a low savings rate, as it offers new opportunities for government financing.

A. Characteristics

The NSS offers a variety of non-tradable financial instruments covering a range of maturities, from 3 to 10 years, with varying interest rates and principal repayment methods. A savings account is also offered. This account takes the form of a bank deposit, with interest credited once a year. There is no secondary market for NSS instruments (with the exception of an informal secondary market for National Prize Bonds). The principal mode of redemption is by receiving payment at National Saving Centers (NSCs) or at the outlets of other approved selling institutions. NSS instruments are redeemable immediately upon maturity, up to a ceiling of Rs 25,000. For amounts greater than that, a 3-day or 7-day notice period (depending on location) needs to be given to the payment agency before the matured instrument is redeemed. This is simply to prevent liquidity shortages at local agencies.

The nominal interest rate on NSS instruments is changed only infrequently. In fact, only two changes have been made since 1990 for each of the various schemes. The sole exception to this is the four increases that have been made for the registered Special Savings Certificates. The last change to the interest rate structure of the NSS was made in fiscal year 1997, whereby the rates were increased on all schemes. Available data indicates that at least since 1980, the stated profit rates for the NSS have been *increased* each time a change has been made in the features of a scheme.[6] The Government of Pakistan has periodically introduced new schemes and phased out others.

The aim of these changes has generally been to increase gross mobilization of private savings when inflows are below-target, or conversely, to slow down investments in the NSS when targets have been exceeded, that is, when there is a too rapid increase in deposits. None-price mechanisms are used more frequently than changes in nominal interest rates to achieve these goals. For example, to decelerate the pace of gross mobilization through the Regular Income Certificates during the fiscal year 1998, the "lock-in" period was increased from six months to a minimum period of one year, for new investors.[7] The primary rationale given for not adjusting interest rates downwards when financing targets have been exceeded is that the NSS represents borrowing by the Government of Pakistan. Thus the interest rate signals the ability of the government to make payments. According to this line of reasoning, a downward revision in interest rates on all NSS instruments would indicate to investors that there had been an erosion in the ability of the Government of Pakistan to make profit payments. Accordingly, confidence in the NSS would be undermined.[8]

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[6] As an exception, in order to lower the stated profit rate on *Khaas* Deposits, the scheme was phased-out and re-started in February 1990 (with similar features), as Special Savings Certificates. However, rollover was allowed to existing investors, subject to a 10 percent withholding tax.

[7] We should emphasize that there is no secondary market for NSS securities, and hence these instruments are redeemable only at maturity.

[8] Of course a simpler argument is that governments always fear to implement unpopular measures.

It is quite difficult to estimate the composition of NSS deposits, as divided between individual savers, financial institutions and corporations. However, it appears that the NSS depositor base is predominantly comprised of small, individual savers.[9] Nonetheless, the number of individual depositors might be overstated, since the purchases of NSS instruments by the Gratuity and Provident Funds of companies is accounted for as purchases by individual contributing employees.

B. Targets of the NSS

The Ministry of Finance (MOF) sets annual targets for gross and net mobilization of savings through the NSS. These are done as part of the Federal Budget-making exercise. These are "soft" targets, and are subject to upward revision during the course of the fiscal year, depending on the success of the Government in meeting its tax collection goals. The target for incremental mobilization each year, is two-tiered, and is formulated after taking into account two related, but inherently separate, needs:

(i) Gross mobilization - this is an internal target, meant to generate enough resources on a *gross* basis, to cover the ongoing repayment obligations of the Central Directorate of National Savings (CDNS) during the year. These obligations arise principally due to the following reasons :

1) normal redemption of schemes (payment of principal to holder/investor at maturity).
2) redemption by investors at any time before the specified maturity.
3) payment of profit (interest).[10]

(ii) Net mobilization – this target is set by the MOF as part of the Federal Budget-making exercise. It is intended to reflect the amount of deficit-financing available to the government from non-bank sources during the year.

There are three general sources of financing available to the Government to finance the fiscal deficit. These are:

1) borrowing from the domestic banking system.
2) domestic non-bank borrowing (chiefly through the NSS).
3) external borrowing.

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[9] As of June 30, 1996, the net outstanding investment in the NSS was Rs 312.74 billion. The total number of investors in NSS was recorded at 3.21 million, indicating an *average* investment of slightly over Rs 97,400 per investor.

[10] We should note that Pakistan, as a Moslem country, has had periods when there were formal prohibitions on interest charges on loans. Interest payments are now permitted, however, and even when there were prohibitions there were loan charges that were very similar to interest.

The target for *net* mobilization through the NSS is arrived at as a residual. In general, there is a budgeted fiscal deficit (in nominal terms) for any given year, and a hard ceiling imposed on Government borrowing from the banking system, the result of an autonomous central bank. This suggests that the government must look for flexibility in the other two avenues of financing the fiscal deficit.

Given its limited access to foreign borrowing, the only latitude the Government may be expected to have is in non-bank borrowing. The limited leeway to finance the fiscal deficit, using bank borrowing and external sources, implies that the targets for borrowing from these sources are a given factor in the budget. After accounting for the amount of financing that can be expected from these two sources, the residual represents the funds to be generated through non-bank borrowing, mainly the NSS.[11,12]

We thus see that it is critical for the Government of Pakistan to be able to, at least some extent, understand the determinants of flows into the NSS. An investigation of these determinants will be the subject of the next section. Let us also briefly note that this sequential structure of financing is typical of many developing countries. Namely, domestic credit targets are set either by an autonomous central bank or, possibly more typically, in programs supported by the International Monetary Fund. Foreign sources of financing are essentially lender determined. Thus the non-bank financing of the deficit is determined as a residual. The ability of government to find sources for this financing will depend upon the development of creative financial assets. The NSS is a potential example of such an asset.

III. AN EMPIRICAL ANALYSIS

A. Background and Justification for the Approach

Between 1981 and 1991, the government of Pakistan controlled virtually all of the country's banking system. In 1991, liberalization of financial markets was initiated and, in addition, foreign currency deposits were allowed. A rough overview of changes in the aggregate portfolio allocation in Pakistan may be described as follows (see also Figure 1 (a)).

The average nominal growth rate of savings deposits, fixed term deposits, and National Savings Scheme (NSS) deposits are, respectively, 16.96%, 20.05%, and 29.16% during the 1981-91 period, and 18.74%, 20.86%, and 13.79% during 1991-96 period. A rapid growth of NSS deposits in the 1980s was replaced by slower growth in the 1990s. Bank deposits (savings and fixed term), on the other hand, have grown at a somewhat faster rate since 1991 than in the 1980s. As a result, the share of NSS deposits in the aggregate public

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[11] Non-bank borrowing refers to any borrowing by the GOP, from sources other than SBP and commercial banks. For the large part, it comprises the net outstanding stock of deposits in NSS.

[12] The aggregate target for mobilization through NSS is then channeled into specific targets for individual schemes. The mobilization effort during the course of the fiscal year is monitored by CDNS and MOF, on the basis of these individual scheme-wise targets, and not by region or by individual NSC. Each of the 12 Regional Directorates is responsible for collating data pertaining to gross and net mobilization for each scheme, on a monthly basis from the NSCs under its operational control, and forwarding it to CDNS.

portfolio peaked in 1989 at 38.8% and has declined since then to 28.5% in 1995 and 1996 (see Figure 1(a)).

To understand the structural change in the aggregate portfolio allocation in Pakistan that occurred around 1991, it is important to look closely at the foreign currency deposits that have been legally allowed since the 1991 financial reform. Figure 1(b) presents the aggregate portfolio allocation of bank deposits and NSS deposits, in Rupees, and foreign currency deposits. The volume of bank deposits in Rupees is calculated by summing savings and fixed term deposits and subtracting foreign currency deposits from the sum. It is now clear that although bank deposits have increased in all currencies since 1991, those in Rupees have been declining throughout the entire 1981-96 period.

A most important question is why the portfolio share of the NSS was increasing until 1991 and then started to decline.[13] The rapid growth of the share of the NSS in the 1980s has an obvious reason. Competing with the banks for funds, the government provided nominal interest rates 5-6% higher than bank deposits. These higher rates reflect liquidity difference between NSS deposits and normal bank deposits.[14] Moreover, several of the NSS accounts were exempted from withholding taxes and Zakat.[15] A question then is why NSS deposits have fallen since 1991? One possible scenario is that foreign currency deposits have captured some of the demand for the NSS. If foreign currency deposits had not been allowed in 1991, the share of the NSS would have been continuously increasing (but at a somewhat slower pace than in the1980s) according to this scenario. This interpretation is quite natural, since, as with the NSS, investors are able to avoid taxes (withholding tax and Zakat) by depositing in foreign currency accounts. In addition, the continuous depreciation of the Rupee against US dollars and other major currencies during this period resulted in very high yields on foreign currency deposits in terms of Rupees.

Nonetheless, we need a more structural analysis to accurately interpret the evolution of the aggregate portfolio allocation in Pakistan. To this end, we estimate a simple portfolio allocation model in the following sections. In the next section, we develop an econometric model for our problem. In section 3.3, we report the empirical findings.

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[13] Figures 1(a) and (b) show that the ratio of NSS deposits to the nominal GDP has peaked in 1990. The share of NSS within all the financial assets, however, was increasing until 1991.

[14] We should note that Pakistani authorities have realized that these interest rates have become too expensive for the budget and are in the process of reducing incentives to hold NSS in favor of cheaper and more market-based instruments, such as Pakistan Investment Bonds, which target domestic non-banks. Foreign currency accounts were frozen in 1998 while Pakistan was facing a serious balance of payments crisis. It is possible that this action may have reduced the attractiveness of these accounts and shifted savers back to the NSS.

[15] Zakat is a 2 percent wealth tax that is levied upon bank accounts. The aim of the tax is purely redistributive: that is, its aim is to transfer wealth from the rich to the poor. The collection and redistribution takes place at the local level.

B. Model and Data

Our basic econometric model is a classical stock adjustment model due to Brainard and Tobin (1968) (see Taylor and Clements (1983) and Hess (1991) for more recent developments of this approach). Let s_i be the portfolio share of the i-th asset, and assume the demand for asset i at time t takes the form of

$$s_{it} = \alpha_i + \beta_i \log W_t + \sum_{j=1}^{J} \gamma_{ij} r_{jt} + u_{it} \tag{1}$$

for $i = 1, \cdots, J$, and $t = 1, \ldots, T$, where r_{jt} stands for the real after-tax interest rate on the j-th asset at time t, W_t is total real financial wealth at time t, u_{it} is a disturbance term, and α_i, β_i and γ_{ij} are unknown parameters. The parameter β_i measures the effect on allocation s_i of asset i of one percent change in wealth, while the parameter γ_{ij} represents the effect on s_i of one percentage change in the real interest rate on asset j. This system is derived from a maximization problem of real interest earnings subject to a transaction technology as shown in Taylor and Clements (1983). It is easy to show that the elasticity of demand of asset i with respect to wealth is given by $\eta_{iw} = 1 + \beta_i / s_i$ and the own and cross elasticity of asset i with respect to asset j is given by $\eta_{ij} = (r_i / s_i)\gamma_{ij}$ for $i, j = 1,2,\ldots,J$.

As suggested by Taylor and Clements, we may impose "symmetry" and "adding up" restrictions. The "symmetry" restrictions are given by

$$\gamma_{ij} = \gamma_{ji} \tag{2}$$

for $i, j = 1,2,\ldots,J$, while the "adding up" restrictions are given by

$$\sum_{i=1}^{J} \alpha_i = 1 \tag{3}$$

$$\sum_{i=1}^{J} \beta_i = 1 \tag{4}$$

$$\sum_{i=1}^{J} \gamma_{ij} = 0, \tag{5}$$

for $j = 1,2,\ldots,J$. In the case of $J = 3$, there are three restrictions by (2), one restriction each by (3) and (4), and another three restrictions by (5). They impose in total eight restrictions on 15 parameters. In our estimation we impose all of the above restrictions. Incidentally, all restrictions together also imply the homogeneity condition: $\sum_{j=1}^{J} \gamma_{ij} = 0 \;\; i = 1,2,\ldots,J$.

Based on the above model, we analyze the demand for four assets: NSS deposits, savings deposits, fixed term deposits, and foreign currency deposits, as well as their

interrelation over time. The data on deposits available to us are, however, the 1981-96 annual volumes of savings and fixed term deposits. These include foreign currency deposits. Although the data on Resident Foreign Currency Deposit (RFCD) are available, we do not have its breakdown into savings and fixed term parts. This situation forces us to specify two econometric models, each of which describes a three-asset portfolio allocation framework, rather than one four-asset model.

The first model (Model 1 hereafter) analyzes the demand for savings deposits, fixed term deposits and NSS deposits, in domestic and foreign currencies combined. For this model, savings and fixed term deposits are mixtures of Rupee deposits and foreign currency deposits after 1991. We construct the corresponding interest rates by calculating a weighted average of savings or fixed term rates in Rupees, and the Eurodollar rate. All interest rates are adjusted with respect to the expected inflation as well as taxes to get the net (after tax) ex ante real rates. Foreign currency interest rates are converted to expected returns in terms of the home currency. To compute the expected inflation and currency depreciation rates in year t, the second order autoregressive models are fitted using data on prices and exchange rate changes from the past years. Based on the estimated model, the predicted inflation and depreciation rates in year $t+1$ are calculated.

The second model (Model 2 hereafter) analyzes the demand for bank deposits, NSS deposits, and foreign currency deposits. The volume of Rupee deposits is calculated by summing those of savings and fixed term deposits and subtracting the volume of RFCD from the sum. The interest rates for the combined bank deposits are calculated by averaging the rates of savings and fixed term deposits with their volumes used as weights. The Appendix provides the sources of the data on the variables mentioned above.

C. Empirical Results

Figure 2 displays the net (after-tax) real rates of return on four types of deposits from 1981 to 1996. Although there are only small occasional changes in nominal rates because of interest rate smoothing by the government, there are significant variations in net real rates as seen in Figure 2. The performance of saving deposits is worst among four assets with negative net real rates for all years except 1983, 84, 86 and 87. The rates of the fixed term deposits also becomes negative after 1991. The NSS enjoys the highest net real return until 1990, which ends when the foreign currency deposits emerge in 1991.

Given that we have only short time series data at our disposal, it is probably too optimistic to expect that unrestricted model estimation would provide any useful results. In fact, a separate OLS regression of each equation in model (1) (not reported here) does not yield usefully accurate estimates. We instead estimate the system of all equations jointly by maximizing the likelihood function subject to the constraints given by (2) – (5).

Table 1 reports the estimation results of Model 1.[16] Several points are noteworthy. First, the estimated own price derivatives of demand for the three assets (γ_{11}, γ_{22} and γ_{33}) are all positive and significant, which is consistent with our expectation. The higher the real return, the larger is its share. In terms of elasticity, the effect of the NSS appears to be the largest. Second, each of three assets is a net substitute for the other two, but none of the coefficients are significantly different from zero. Third, the effects of wealth (i.e. real financial wealth) on the demand for assets are all insignificant.

Although most of the signs of the coefficient estimates are reasonable, the results fail to provide a clear picture of the dynamics of asset allocation over 1980s and 90s. A most serious problem with this model appears to exist in its failure to separate foreign currency deposits from savings and fixed term deposits. In fact, foreign currency deposits are more dissimilar in their character to either of savings or fixed term deposits than the latter twos are to each other after 1991. Because savings and fixed term deposits include foreign currency accounts after 1991, their real rates look artificially inflated, which prevents accurate estimation of the interaction between the NSS and those two assets.

To fix this problem, we try an alternative approach and analyze Model 2. With this model we find much more reasonable results than with the previous model. Table 2 reports the estimated parameters for Model 2. First, not only all "own" effects (γ_{11}, γ_{22} and γ_{33}) are positive and significant, but the four out of six "cross" effects ($\gamma_{12}, \gamma_{21}, \gamma_{23}$, and γ_{32}) are significantly negative. In particular, there is significant evidence that the NSS is a net substitute for Bank deposits. There is even stronger evidence that foreign currency deposits are a net substitute for the NSS. More specifically, one percentage point increase in the NSS rate would reduce the asset share of Bank deposits by 8.8%, while one percentage point increase in foreign currency deposits would reduce the asset share of NSS by 7.7%.

Second, the effect of wealth on the demand for the Bank deposits is negative and significant, while that on the foreign currency deposits are positive and significant. These estimates imply that one percent increase in wealth would lead to 9.5% increase in the share of foreign currency deposits and 16.7% decrease in the share of the Bank deposits.[17] This point is more clear when we look at estimated elasticities: Bank deposits are wealth inelastic ($\eta_{bw} = 0.755$), while foreign currency deposits are strongly wealth elastic ($\eta_{fw} = 1.875$).

The above results are straightforward to interpret and are consistent with our expectations. In particular, there is strong evidence that foreign currency deposits are a net

[16] Standard errors in Tables 1 and 2 are Heteroskedasticity and autocorrelation consistent (HAC) estimates (Newey and West, 1987).

[17] The wealth effect on the NSS is not significantly different from zero.

substitute for the NSS. A glance at Figure 2 reveals that the net real interest differential between foreign currency deposits and the NSS continuously widens over time after 1992. Thus, there is fairly strong empirical support for the belief that foreign currency deposits have absorbed a part of the demand for the NSS.

IV. Policy Implications

Can we use our parameter estimates to draw conclusions about possible implications for policy? In particular, we would like to be able to say whether the use of the NSS to finance the budget deficit of the Central Government has implications for the rest of the economy of Pakistan. In order to carry out such an analysis in a truly correct fashion we should develop a full general equilibrium model. Our framework is, of course, partial equilibrium and thus cannot incorporate income effects or endogenous price and interest rate changes, to name only a few considerations. Nonetheless, our results do point in certain general directions.

Let us consider Table 2, which reports the estimated parameters for model 2. Suppose that the Government attempts to increase domestic financing of the budget deficit by offering higher nominal interest rates on NSS deposits. In the absence of any other changes, let us impose a 1 percentage point increase in the interest rate on NSS deposits. Table 2 would then lead us to conclude that that this increase would cause an 8.7 percent decline in the portfolio share of bank deposits, and a 4.9 percent decline in the portfolio share of foreign currency deposits. At the same time NSS deposits would increase by 30.2 percent as an increase in the aggregate consumer portfolio.

The decline in bank deposits might have serious implications in several directions.[18] First, it could put upward pressure on market interest rates, thereby depressing already stagnant investment. Second, it could cause an outflow of deposits from dollar accounts, thereby putting pressure on the country's already depleted foreign reserves. Third, and possibly most important, the withdrawal of deposits from the banking system may increase the solvency problems of the banking system. Many banks are currently suffering from large quantities of non-performing loans. Deposit withdrawals, leading to interest rate increases, may cause the number of non-performing loans held by the bank to rise yet further.

We should note that there is a key element missing from our analysis that may cause the above calculations to be inaccurate. Namely, it is quite possible that an increase in the NSS rate might bring about an overall increase in national savings. Thus, although there might be a decline in the portfolio shares of bank deposits and foreign currency deposits, the absolute volumes of these accounts might rise. At the same time, an increase in interest rates might generate a decline in national income, as real investment falls. If this did, indeed, occur then our results indicate that the income decrease would cause bank deposits to rise, while NSS and foreign currency deposits would decline.

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[18] We should note that none of these conclusions come from actual model calculations. Rather, they are reasonable inferences that might be drawn from our previous results.

In general, our results indicate that it may be difficult to rationalize interest rates between bank deposits and NSS deposits. If, for example, the bank deposit rate is increased by one percentage point, to bring it more closely in line with the NSS rate, then there will be an 8.7 percent decline in NSS deposits, as a share in the aggregate portfolio. If there is no increase in the aggregate volume of savings, this NSS decline may reduce the ability of the Government to finance the budget deficit. Conversely, if the NSS rate is reduced, as is now being requested by the private sector, there will be significant declines in NSS deposits, as shares in the asset portfolio, and corresponding increases in foreign currency deposits and bank deposits.

We thus conclude that the empirical evidence seems to indicate that there are significant degrees of substitution between the three types of financial assets we consider. Accordingly, the government's ability to finance itself through the NSS is constrained by the effect that changing NSS rates will have upon deposits in the other assets. In particular, increased NSS rates will cause significant declines in bank deposits, thereby putting pressure on an already shaky banking system. The increased NSS rates will also cause a decline in foreign currency deposits, putting pressure on the country's foreign reserves. Therefore, the country must find sources other than the NSS for increased deficit financing. Alternatively, it should reduce the size of the budget deficit.

V. Summary and Conclusion

We have attempted to examine alternative ways of financing a budget deficit. In particular, we look at certain instruments that are typical of developing countries that are attempting to draw on domestic resources to finance their budgetary imbalances. We have analyzed the case of Pakistan as an example, since Pakistan has used some rather unusual instruments to finance itself. We have used an econometric model to analyze the relationship between the demands for various financial instruments in Pakistan. In particular, we look at the relationship between deposits in the National Savings Scheme, bank deposits, and foreign currency deposits. Since the NSS is a key source of finance for the Government of Pakistan, it is important to understand the determinants of flows into it. Also, since the NSS is essentially comprised of nonliquid interest bearing assets, it is rather different from normal government borrowing. Hence if, in fact, it seems to offer a reasonable financing alternative, then it, or something similar might be useful in other developing countries.

Among our key conclusions are that bank deposits and NSS deposits appear to be net substitutes, as do NSS and foreign-currency deposits. Bank deposits and foreign-currency deposits, however, seem to be neither substitutes nor complements. Also, the estimated income derivative of the demand for bank deposits is negative, while that of foreign-currency deposits is positive. For the NSS it is not significantly different from zero.

Finally, there is evidence that foreign-currency deposits are a net substitute for the NSS. The average rate of nominal depreciation of the rupee during 1991-96 period was 8.90% and the average nominal Eurodollar rate during the same period was 5.29%. Therefore, the average nominal yield of the dollar deposit in terms of rupee is about 14.19%, which is 2.5% higher than the average nominal yield of the NSS (11.69%). Thus, there is

some empirical support for the belief that foreign-currency deposits have absorbed a part of the demand for NSS deposits. Accordingly, the availability of these foreign-currency deposits may have reduced the ability of the government to finance itself.

TABLE 1. ESTIMATES OF PORTFOLIO MODEL 1

	Savings deposit (s_s)	Fixed Term deposit (s_t)	NSS deposit (s_n)
Constant	0.255* (0.106)	0.186 (0.151)	0.559* (0.211)
Wealth (W)	-0.033 (0.023)	0.009 (0.010)	0.024 (0.022)
Savings rate (r_s)	0.477* (0.236)	-0.227 (0.215)	-0.250 (0.244)
Fixed Term rate (r_t)	-0.227 (0.215)	0.306* (0.151)	-0.079 (0.063)
NSS rate (r_n)	-0.250 (0.244)	-0.079 (0.063)	0.329* (0.098)
Elasticity w.r.t. Savings rate: η_{is}	0.185* (0.092)	-1.153 (1.092)	-1.444 (1.409)
Elasticity w.r.t. F-T rate: η_{it}	-0.186 (0.176)	0.334* (0.165)	-0.098 (0.078)
Elasticity w.r.t. NSS rate: η_{in}	-0.196 (0.191)	-0.828 (0.660)	3.920* (1.168)
Elasticity w.r.t. wealth: η_{iw}	0.920 (0.055)	1.029 (0.091)	1.088 (0.080)

Notes:
1. Savings and Fixed term deposits include foreign currency account.
2. The numbers in parentheses are HAC (heteroskedasticity and autocorrelation consistent) standard errors (Newey and West, 1987).
3. * and ** indicate 5% and 1% level of significance, respectively.
4. The elasticities are evaluated at the sample means.

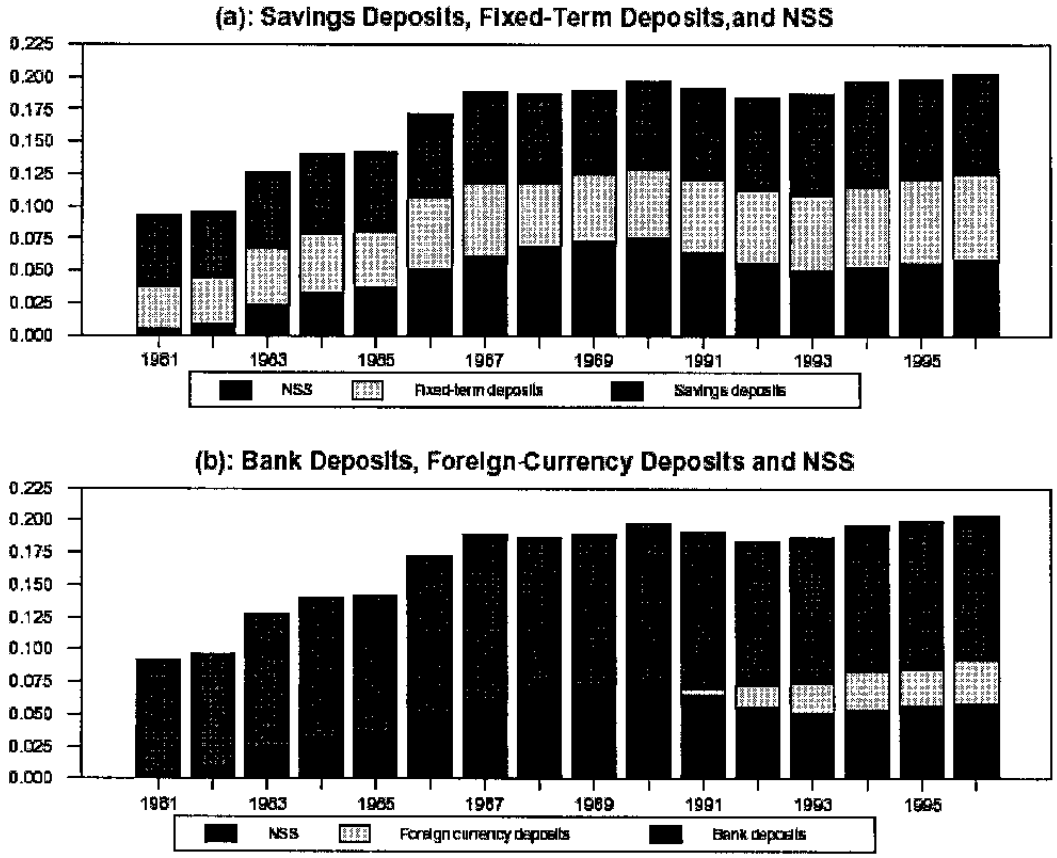
TABLE 2. ESTIMATES OF PORTFOLIO MODEL 2

	Bank deposit (s_b)	NSS deposit (s_n)	Foreign Currency deposit (s_f)
Constant	0.184* (0.071)	0.419* (0.106)	0.397* (0.112)
Wealth (W)	-0.167** (0.022)	0.072 (0.086)	0.095* (0.022)
Bank rate (r_b)	0.112* (0.054)	-0.088* (0.034)	-0.024 (0.030)
NSS rate (r_n)	-0.088* (0.034)	0.165* (0.053)	-0.077** (0.016)
Dollar rate (r_f)	-0.024 (0.030)	-0.077** (0.016)	0.101* (0.483)
Elasticity w.r.t. Bank rate: η_{ib}	0.124* (0.060)	-0.244* (0.093)	-0.154 (0.196)
Elasticity w.r.t. NSS rate: η_{in}	-0.421* (0.160)	1.971* (0.630)	-2.159** (0.443)
Elasticity w.r.t. dollar rate: η_{if}	-0.138 (0.176)	-1.127** (0.231)	3.450* (1.652)
Elasticity w.r.t. wealth: η_{iw}	0.755** (0.032)	1.262 (0.313)	1.875* (0.187)

Notes:

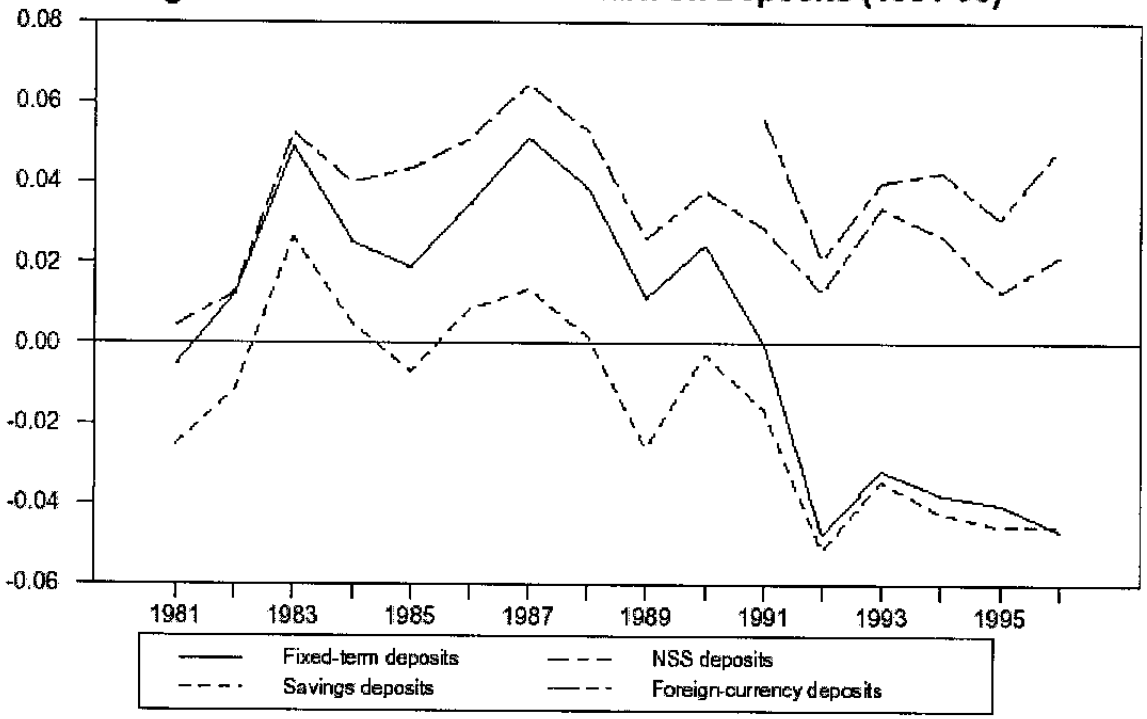
1. Bank deposit is the sum of Savings and Fixed term deposits excluding foreign currency account.
2. The numbers in parentheses are HAC (heteroskedasticity and autocorrelation consistent) standard errors (Newey and West, 1987).
3. * and ** indicate 5% and 1% level of significance, respectively.
4. The elasticities are evaluated at the sample means.

Figure 1:Portfolio Allocation



Notes: The vertical axis of each figure measures the volume of each deposit divided by the nominal GDP.

Figure 2. Net Real Rates of Return on Deposits (1981-96)



Notes: All rates are adjusted for taxes as well as the expected inflation rate. The foreign-currency rate (1991-96) is adjusted also for the expected foreign exchange depreciation.

DATA SOURCE

1. The volume (outstanding amount) of NSS is taken from "Economic Survey" (various years). The volume of savings deposits, fixed term deposits and foreign currency deposits are from "State Bank of Pakistan Annual Report"(various years).

2. The interest rates for savings and fixed term deposits are from "Pakistan Finance Sector Review" (World Bank, 1987) as well as "State Bank of Pakistan Annual Report". The interest rates for NSS are from "Statistical Bulletin" (State Bank of Pakistan, 1997). All interest rates used for estimation are the after tax rates.

3. The Eurodollar rates, inflation rates, exchange rates and per capita income are from "IMF International Financial Statistics".

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