

# **Institutional Variations in Saving Behaviour in Pakistan**

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## **I. INTRODUCTION**

Savings and investment are two variables that play a significant role in accumulation. Variations in these key variables have a significant impact on economic growth, employment and inflation. A thorough understanding of their determinants provides an important insight into the development process and aids in policy formulation. Such knowledge is also necessary to trace the consequences on growth and employment which may work through savings and investment behaviour. A particularly useful approach to understanding the macro-behaviour of saving and investment is to conduct an empirical analysis in terms of institutional agents. In fact, most of the current work in Pakistan is restricted to estimating aggregate savings functions which are not sufficient for analysis of savings behaviour mainly because various institutional agents may respond differently to economic signals. For example, foreign interest rates may attract private savings to transfer abroad, while the public sector may generate its own savings in response to increasing foreign interest rates. It can also be argued that the inflow of foreign capital may encourage private savings through direct foreign investment and discourage public savings through the substitution effect. Many other examples can be quoted on theoretical background. Therefore, it may be useful to estimate disaggregated saving functions. The question, "are there institutional variations in the savings behaviour of household, corporate and public sectors in Pakistan?" will be the main focus of this paper.

The paper is organised as follows. A review of existing literature on savings behaviour for the household, corporate and public sectors in Pakistan is given in Section II. Model specification and empirical results are discussed in Sections III and IV, respectively. Concluding remarks and policy recommendations are contained in the final section.

## **II. REVIEW OF LITERATURE**

In Pakistan, the relevant literature has not devoted much attention to a rigorous empirical analysis of saving behaviour of institutional agents. Most of the

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*Author's Note:* I wish to thank Prof. Dr Jeffrey James, Dr Khwaja Sarmad and Dr Zafar Mahmood for their valuable comments and help on the earlier draft. Needless to say, I am alone responsible for any errors and omissions.

work has been restricted to estimation of domestic/national saving functions, for example Ali (1977); Naheed (1987); Burney (1988); Khan *et al.* (1992); Mahmood and Qasim (1992) and Shabbir and Mahmood (1992). Regarding the saving behaviour of the corporate sector, Haq and Baqai (1967) conclude on the basis of some descriptive analysis that during 1959–63, the corporate sector had retained roughly half of its gross profits for internal growth. Amjad (1973) shows that during 1964–69 gross savings as the sum of retained earnings and depreciation reserves increase faster as compared to the period 1959–63, as examined by Haq and Baqai. The first empirical work done to estimate the household saving function was Qureshi (1981) for the period 1951–77. The study found that the propensity to save out of transitory income was higher than that for permanent income. The study also found a strong positive impact of the real interest rate and a negative impact of the inflation rate on household savings. For the corporate sector, Qureshi (1983) found that profit is a primary determinant of retained earnings of the non-financial corporate sector using time-series data for 1961–75. The study also shows that availability of external financing exercises a negative and significant effect on the retained profits of the corporate sector. Bilgrami and Nishat (1990), investigating the savings behaviour of large firms in the corporate sector during 1985 and 1986, found that this can be explained by profits, dividends and reserves. More recently, Burney and Khan (1992) find, in estimating household saving functions using micro data from the Household Income and Expenditure Survey for the year 1984–85, that the average income and savings of an urban household are considerably higher than those of overall Pakistan or a rural household. The study also shows that the propensity to save of rural households is higher than that of their urban counterparts. The dependency ratio and the various categories of education are found to have a negative influence on household savings. It is also found that household savings increase with age but tend to decline when the age reaches a certain limit.

Although the above studies provide a valuable perspective on the determinants of household and corporate savings in Pakistan, they suffer from serious shortcomings: first, none of these studies have properly specified household and corporate saving functions because they omit important variables such as bank credits, foreign interest rates, export earnings, worker's remittances, capital flight, wage rates, terms of trade, profitability etc. Second, no efforts have been made to estimate a separate saving function for the public sector in Pakistan. Finally, these studies do not take care of the problem of multicollinearity among explanatory variables. Therefore, one of the main objectives of this paper is to specify the correct functional forms of corporate, household and public sector saving functions based on a sound theoretical framework. This paper uses the latest available time-series data for analysis and adopts proper remedial measures to take into account the problem of multicollinearity in order to get unbiased estimates.

### III. MODEL SPECIFICATION

Household, corporate and public sector savings functions are specified as follows:

#### Household Savings Function

$$S_{HH} = \alpha_0 + \alpha_1 Y_g + \alpha_2 IR_D + \alpha_3 BC_P + \alpha_4 P^* + \alpha_5 IR_{US} + \alpha_6 EX + \alpha_7 \Delta TOT + \alpha_8 KF_P + \alpha_9 RM + \alpha_{10} DR + u_i \quad \dots \quad (1)$$

#### Corporate Savings Function

$$S_{PC} = \beta_0 + \beta_1 Y_g + \beta_2 IR_D + \beta_3 BC_P + \beta_4 P^* + \beta_5 IR_{US} + \beta_6 EX + \beta_7 \Delta TOT + \beta_8 F_P + \beta_9 PR_{PC} + \beta_{10} WM + \beta_{11} D + e_i \quad \dots \quad (2)$$

#### Public Savings Function

$$S_{PU} = \delta_0 + \delta_1 PCI + \delta_2 FD_{PU} + \delta_3 IR_{us} + \delta_4 \Delta TOT + \delta_5 F_{PU} + \delta_6 DS + \delta_7 KF_P + Z_i \quad \dots \quad (3)$$

The definitions of the variables are as follows:  $S$  is household savings;  $Y_g$  is the annual growth rate in GDP;  $PCI$  is per capita income (in Rs thousands);  $IR_D$  is the real domestic interest rate;  $IR_{US}$  is the United States prime rate;  $BC_P$  is the bank credit to the private sector;  $EX$  is total export earnings;  $RM$  is worker's remittances;  $KF_P$  is private capital outflows from Pakistan;  $P^*$  is expected inflation rate taken as one year lagged;  $DR$  is dependency ratio;  $F_P$  is net foreign capital inflow to the private sector;  $S_{PC}$  is private corporate sector savings;  $WM$  is real annual wage rate (in Rs thousands);  $\Delta TOT$  is change in terms of trade;  $PR_{PC}$  is profitability of the private corporate sector;  $D$  is dummy variable for 1973-74 to 1986-87 for the nationalisation period;  $S_{PU}$  is public savings;  $F_{PU}$  is net foreign capital inflow to the public sector;  $FD_{PU}$  is domestic transfers to the public sector;  $DS$  is debt servicing; and  $u_i$ ,  $e_i$ , and  $z_i$  are stochastic error terms. The data regarding  $S_{HH}$ ,  $EX$ ,  $BC_P$ ,  $RM$ ,  $KF_P$ ,  $F_P$ ,  $S_{PC}$ ,  $S_{PU}$ ,  $DS$ , and  $FD_{PU}$  are taken as ratios to GDP in order to avoid the problem of multicollinearity, which is common in time-series analysis.

The time-series data for the period 1969-70 to 1989-90 are used for analysis. All the variables in the regressions are in real term, i.e. at the constant market prices of 1980-81. Although the appendix gives a brief description of the variables, here it is important to describe the estimation of the dependent variables—household, corporate and public savings. According to the prevailing methodology of national income accounting in Pakistan, estimates of national savings are obtained as a residual from investment estimates by subtracting from the foreign capital inflow. Public savings contain elements of both revenues and capital accounts of the budget. Total private savings are estimated as the difference between national savings and

public savings. The corporate sector savings are derived by simply obtaining the sum of depreciation and retained earnings. The difference between total private sector savings and corporate sector savings gives the household/unincorporate sector savings. In this sense, the estimates of national savings, in general, and household savings, in particular, are susceptible to all the errors that occur in the estimation of investment and savings. The following briefly describes the theoretical justification for inclusion of variables in saving functions.

#### **(i) Income Variable**

Following both the Keynesian approach and the permanent income hypothesis, it is hypothesised that the saving rate is positively related to the growth in national income because more surplus income means a higher saving rate in the economy. The GDP growth rate and per capita income are used alternatively as income variables in all the saving functions.

#### **(ii) Domestic Real Interest Rate**

The impact of the domestic real interest rate on domestic savings is a controversial issue among economists. On the one hand, it is argued that an increase in the real interest rate tends to encourage domestic savings through the substitution effect. On the other hand, current consumption is derived from current income through the income effect, resulting in less savings.<sup>1</sup> But the empirical evidence suggests that the real interest rate is positively related with the saving rate.<sup>2</sup> This study hypothesises that an increase in the real interest rate provides an incentive to the household sector to save more. With a relatively higher interest rate, the corporate sector also generates its own savings due to the higher cost of borrowing loans from domestic banking and non-banking institutions.

#### **(iii) Domestic Credits**

Bank credits to the private sector are expected to have a negative impact both on household and corporate savings. Instead of domestic bank credits to the public sector, total domestic transfers to the public sector from banking and non-banking institutions are used in the analysis, assuming a negative relationship between domestic transfers and public savings. In fact, the availability of bank credits discourages the efforts of institutional agents to enhance their own savings.

#### **(iv) Inflation Rate**

It is assumed that the expected inflation rate has a negative impact on household and corporate savings. Because of the anticipation of a higher inflation

<sup>1</sup> See Giovannini (1983, 1985).

<sup>2</sup> See Fry (1978, 1980, 1988); Fry and Mason (1982); Gupta (1987); Balassa (1989); Khan (1989, 1992).

rate in the future, people substitute their future consumption for present consumption, consequently saving less.

#### **(v) Foreign Interest Rate**

A higher foreign interest rate may encourage people to transfer their savings abroad, thereby reducing household and corporate savings. As regards public savings, a higher interest rate on foreign debt means that the burden of debt servicing increases. Thus foreign interest pushes the government to raise its domestic resources, resulting in increased public savings. The U.S. prime rate is considered to be an appropriate measure of the foreign interest rate.

#### **(vi) Export Earnings**

The export sector is presumed to have an independent impact on the propensity to save and is a critical source of both private savings and government revenues.<sup>3</sup> Export earnings allow the gross domestic product to rise by relieving the foreign exchange constraints, consequently increasing domestic savings. It is also argued that the export sector provides greater profits due to relatively higher prices in international markets. Therefore, the savings propensity for export earnings may be higher than in the other sectors of the economy.

#### **(vii) Terms of Trade**

Harberger (1950) and Laursen and Metzler (1950) postulate that savings out of any given income falls with deterioration in the terms of trade because a decline in export earnings means a fall of current income and consequently reduction in domestic savings. On the other hand, Obstfeld (1982) argues that savings may increase with deterioration in the terms of trade because the economy is forced to spend less on imported goods to maintain a target level of real wealth, thereby saving more. In this study, changes in the terms of trade are included in all the saving functions to facilitate empirical examination of these controversial arguments.

#### **(viii) Private Capital Outflows**

Private sector capital is like a migratory bird because when weather is not favourable, it simply moves on to safer pastures. In Pakistan, nationalisation measures and political unrest in the country during the 1970s and 1980s discouraged private sector economic activities, resulting in huge capital outflows from Pakistan. Moreover, capital flight resulted in a reduction of available resources

<sup>3</sup> On the importance of export earnings in explaining aggregate savings in developing economies, see Chenery and Eckstein (1970); Weisskopf (1972); Papanek (1973); Fry (1980); Morisset (1989) and Iqbal (1990).

to finance domestic investment, eventually leading to a decline in the rate of capital formation. This phenomenon has adversely affected the country's current and future growth and savings rates. Capital outflows hurt not only private savings but also public savings in Pakistan. Government revenue collections have declined as a result of private capital outflows, and so have, consequently, public savings.

### (ix) Worker's Remittances

Worker's remittances are expected to have a positive impact on household savings because a large part of remittances are saved by the families of emigrants in Pakistan. A survey done by Gillani (1981) and Amjad (1986) revealed that 35 to 40 percent of remittances were saved/invested by the families of emigrants in Pakistan.

### (x) Dependency Ratio

A well-known demographic variable, the dependency ratio, is also included in the household saving function. The influence of the dependency ratio on household savings in developing countries has remained a controversial issue in the literature. Leff (1969); Kelley (1973); Lahiri (1989); Fry (1991) and Khan *et al.* (1992) have found a strong negative relationship between the dependency ratio and the saving rate. Counter to this, Adams (1971); Gupta (1971); Goldberger (1973); Bilsborrow (1979); Ram (1982, 1984) and Rossi (1989) have found no significant influence of the dependency ratio on domestic savings. This paper reconsiders the question of the relationship between the dependency ratio and the saving rate.

### (xi) Net Foreign Capital Inflows

In the economic literature, the relationship between foreign capital inflows and domestic savings has received considerable attention during the last three decades. Initially the complementary approach was adopted.<sup>4</sup> More recently, the hypothesis has been put forward that an increase in the foreign capital inflow exercises a depressing effect on domestic savings.<sup>5</sup> This study focuses on how the net foreign capital inflow impacts the private sector with reference to corporate savings. The justification of not including the foreign capital inflow in the household saving function is that Pakistan is an official borrower<sup>6</sup> and most of its

<sup>4</sup>See Rosenstein-Rodan (1961); Chenery and Burno (1962); Chenery and McKinnon (1964); Chenery and Strout (1966); Adelman and Chenery (1966); Voivodas (1974).

<sup>5</sup>See Rahman (1968); Griffin (1970); Griffin and Enos (1970); Weisskopf (1972); Papanek (1973); Ali (1977); Fry (1980); Mosely (1980); Giovannini (1985); Bowles (1987); Naheed (1987); Park (1987); Vos (1988); Morisset (1989); Ahmed (1990); Mahmood and Qasim (1992); Khan *et al.* (1992).

<sup>6</sup>The classification of the official, private and diversified borrowers has been made by FitzGerald, Jansen and Vos (1989). Official borrowers are those countries with an external debt structure composed of two-thirds or more outstanding to official creditors, while private borrowers have more than two-thirds of debt outstanding to private creditors. The remaining capital-importing countries are referred to as diversified borrowers.

foreign loans come through official sources. The impact of net foreign capital to the public sector is also analysed in the public saving function.

### (xii) Profitability

Profit is considered as a primary determinant of private corporate savings.<sup>7</sup> Therefore, a positive impact of profitability on corporate savings is expected.

### (xiii) Real Wage Rate

It is hypothesised that a higher bias towards labour may be detrimental to corporate savings because an increase in real wages in the large-scale manufacturing sector raises the cost of production, consequently reducing profits. Thus, negative correlation is expected between the real wage rate and the corporate saving rate.

### (xiv) Debt Servicing

A negative relationship between public savings and debt servicing is expected, as every year 17 to 20 percent of total revenues are spent on debt servicing in Pakistan, which are expected to be saved by the public sector.

## IV. EMPIRICAL RESULTS AND DISCUSSIONS

Using time-series data for the period 1969-70 to 1989-90, household, corporate and public saving functions are estimated applying ordinary least squares estimation technique. The most preferred results are reported as follows:

### Household Savings Function<sup>8</sup>

$$S_{HH} = 1.177 + 0.002 IR_D - 0.204 BC_P - 0.067 P^* - 0.006 IR_{US} + 0.509 RM \\ (8.71)^* \quad (9.21)^* \quad (3.05)^* \quad (2.66)^{**} \quad (9.06)^* \quad (10.66)^* \\ - 0.456 KF_p + 0.879 EX - 1.516 DR \\ (1.95)^{***p} \quad (10.13)^* \quad (7.32)^* \\ R^2 = 0.98 \quad D.W. = 2.75 \quad F = 136.54$$

The results corresponding to the household saving function are, on the whole, quite satisfactory and the signs of the coefficients are mostly as expected. The highly statistically significant coefficients and the reasonable value of the

<sup>7</sup>For detailed discussion on this issue, see Haq and Baqai (1967); Qureshi (1981, 1983); Bilgrami and Nishat (1990).

<sup>8</sup>t-statistics are given in parentheses. \*, \*\*, and \*\*\* denote statistically significant at 1 percent, 5 percent, and 10 percent level respectively. Yg, WM and ΔTOT are dropped from the household saving function because all these variables are insignificant.

Durbin-Watson (*D.W.*), the adjusted coefficient of determination ( $R^2$ ), and *F*-statistics (*F*) suggest an extremely appropriate specification of the household saving function for Pakistan.

A positive relationship is found between the domestic real interest rate and household savings. The coefficient is statistically significant at the 99 percent level of confidence. It seems to confirm the predominance of the substitution effect over the income effect in Pakistan. Thus, this finding is in complete agreement with Fry (1978, 1980, 1988); Fry and Mason (1982); Gupta (1987); Balassa (1989) and Khan (1988, 1992), who all favour a positive relationship between the real domestic interest rate and the domestic saving rate in developing economies. The coefficient of bank credit to the private sector has a negative and statistically significant impact on household savings, which implies that easily available bank credits discourage the efforts of households to generate their own savings. It also seems that availability of bank credit increase household consumption particularly on luxurious goods, which consequently reduces savings. That the expected inflation rate is found negatively related with household savings suggests that anticipation of higher inflation in future means that the household sector substitutes future consumption for present consumption, resulting in a lower saving rate.

The private capital outflows and foreign interest rate have a strong negative effect on household savings which suggests that unfavourable circumstances, political unrest, and financial repression in Pakistan provoke people to transfer their resources abroad to a safer place. The indirect effect of these resource transfers may be the diminished availability of resources to finance domestic investment, which, in turn, adversely affects capital formation, economic growth and consequently savings. As far as the impact of remittances on household savings is concerned, it is found positive and highly significant. This finding is in complete agreement with the pioneering work of Gillani (1981) and Amjad (1986) who found that families of emigrants saved/invested between 35 to 40 percent out of remittances in Pakistan.

The coefficient of export earnings is found highly significant with a positive sign, which implies that increased export earnings lead to a high propensity to save as compared to the other sectors of the economy. It also implies that higher export earnings raise the level of domestic output by relieving the foreign exchange constraints, thus consequently increasing domestic savings. This finding is consistent with Chenery and Eckstein (1970); Weisskopf (1972); Papanek (1973); Fry (1980) and Morisset (1989) who found a positive relationship between export earnings and domestic savings in developing countries. The dependency ratio has a strong negative effect on household savings. It suggests that as the rapidly growing share of dependents in the total population tends to consume more than they produce, there is a consequent reduction in household savings. Therefore, the negative coefficient of the dependency ratio in the household saving function is in line with Leff (1969); Kelley (1973); Lahiri (1989); Fry (1991) and Khan *et al.* (1992).



Corporate Savings Function<sup>9</sup>

$$\begin{aligned}
 S_{PC} = & 0.012 + 0.005Y_g + 0.0002IR_D - 0.004P^e + 0.076F_p - 0.003\Delta TOT + \\
 & (7.41)^* (1.47) \quad (4.27)^* \quad (1.46) (4.58)^* \quad (3.45)^* \\
 & 0.059PR_{PC} - 0.0005WM + 0.014EX - 0.005D \\
 & (3.06)^* \quad (3.96)^* \quad (0.83) \quad (8.84)^* \\
 R^2 = & 0.89 \quad D.W. = 1.85 \quad F = 20.05
 \end{aligned}$$

The signs of the coefficients of the estimated private corporate saving function are mostly as expected. A positive relationship between the GDP growth rate and corporate savings supports the Keynesian hypothesis that saving is a function of income. Hence this finding also accords with Giovannini (1983, 1985); Mason (1988); Fry (1989, 1991) and Khan *et al.* (1992) who all found that the GDP growth rate had a positive and significant impact on the saving rate in developing countries. The domestic real interest rate comes in significantly with a positive sign, which suggests that a higher interest rate encourages the corporate sector to generate its own savings rather than getting loans from banking and non-banking institutions at higher cost. It can also be argued that the private corporate sector may suspend current and capital expenditures using own savings in favour of investing in high-yielding financial assets. The expected inflation has a significantly negative sign in the corporate saving function. It suggests that, just as with the household sector, the corporate sector also substitutes its future consumption for present consumption in anticipation of higher inflation in the future, resulting in a lower saving rate.

The coefficient of foreign capital inflows to the private sector is found positively related with corporate savings. The interpretation of the result follows from the fact that foreign capital inflow to the private sector consists largely of direct foreign investment and comes mainly in the form of equity participation, as a result, the private corporate sector has to generate its own savings to complement foreign savings. The change in the terms of trade possesses a negative sign and is statistically significant at the 99 percent level of confidence. It suggests that deterioration in the terms of trade reduces profits and income, consequently bringing down corporate sector savings. This finding supports the hypothesis formulated by Harberger (1950) and Laursen and Metzler (1950): savings out of any given income falls with deterioration in the terms of trade.

<sup>9</sup>t-statistics are given in parentheses. \*, \*\*, and \*\*\* denote statistically significant at 1 percent, 5 percent, and 10 percent level respectively.  $BC_p$ ,  $KF_p$  and  $IR_{US}$  are dropped from the corporate saving function because all these variables are insignificant.

The profitability of the corporate sector is found statistically significant with a positive sign, which seems to confirm that profit is a primary determinant of the corporate sector savings. This result is in complete agreement with the pioneering work of Haq and Baqai (1967); Qureshi (1981, 1983) and Bilgrami and Nishat (1990), who all found that the corporate sector retains a major share of its gross profits for internal growth. As far as the impact of the real wage rate on the saving rate is concerned, the coefficient is statistically significant with a negative sign. It seems to confirm that an increase in the real wage rate in the large-scale manufacturing sector raises the cost of production, which results in reduction of profits and, consequently, savings of the corporate sector. Thus, a higher bias towards labour is detrimental to corporate savings. The coefficient of export earnings fails to reach any significant level. Thus, it says nothing conclusive. Finally, the dummy variable is found highly significant with a negative sign, capturing the impact of nationalisation. In fact, the nationalisation of large private industrial units and commercial banks discourages the production activities of the corporate sector in Pakistan. Even after 17 years of nationalisation, the favourable economic weather could not fully revive private sector activities in Pakistan. But the liberal economic policies pursued by the present government have made for a perceptible movement towards a freer economy. Since 1988, many steps have been taken to liberate private enterprises from the shackles of oppressive public controls. The response has been highly encouraging and there has been an upsurge in private sector investment activities in Pakistan.

#### Public Savings Function<sup>10</sup>

$$S_{PU} = 0.018 + 0.008PCI - 0.034FD_{PU} + 0.001R_{ur} + 0.019\Delta TOT - 0.190F_{PU}$$

(1.35) (2.08)\*\*\* (0.26) (3.08)\* (2.24)\*\* (1.99)\*\*\*

$$0.515DS - 1.098KF_p$$

(1.37) (3.88)\*

$$R^2 = 0.89 \quad D.W. = 2.34 \quad F = 22.48$$

The empirical results of the estimated public saving function are mostly as expected. Per capita income is found significant with a positive sign, implying that public income rises with the increase in per capita income. The domestic transfers to the public sector possess a negative sign but fail to reach any significant level. Thus it is difficult to infer here that domestic transfers were responsible for public dissavings. The coefficient of the foreign interest rate is found positively related with public savings, which implies that the government of Pakistan hesitates to get foreign loans at relatively higher interest rates, thereby generating its own savings.

<sup>10</sup> *t*-statistics are given in parentheses. \*, \*\*, and \*\*\* denote statistically significant at 1 percent, 5 percent, and 10 percent level respectively. *P<sup>c</sup>*, *WM* and *EX* are dropped from the public saving function because all these variables are insignificant.

Moreover, the present government is launching a self-reliance policy instead of depending upon foreign loans.

The coefficient of change in the terms of trade possesses a positive sign and is statistically significant at the 95 percent level implying that with an increase in the price of imported goods, the volume of imports increases, resulting in higher import duty collections and consequently, higher public sector savings. In fact, custom duties are the largest source of public revenues in Pakistan. Annually, the federal government collects 40 to 45 percent of the total tax revenues under custom duties. It can also be argued that the public sector spends less on imported goods as a result of an increase in import prices. This finding follows Obstfeld (1982) that savings out of any given income rises with deterioration in the terms of trade. The coefficient of the foreign capital inflow to the public sector is negatively related with public savings. It seems to confirm the substitution between the foreign capital inflow and public savings in Pakistan. Thus the results are consistent with Rehman (1968); Griffin (1970); Griffin and Enos (1970); Weisskopf (1972); Papanek (1973); Ali (1977); Fry (1980); Mosely (1980); Giovannini (1985); Bowles (1987); Naheed (1987); Park (1987); Vos (1988); Morrist (1989); Ahmed (1990); Mahmood and Qasim (1992) and Khan *et al.* (1992) who all favour the substitution between domestic savings and foreign savings in developing economies. According to *a priori* expectations, a significant negative relationship between debt servicing and public savings is found. In fact, the government of Pakistan pays 15 to 18 percent of total revenues per annum to service debt on foreign loans. Private capital outflows are negatively related with public savings, implying that government revenue collections decline as a result of increasing private capital flight from Pakistan.

## V. SUMMARY

The main objective of this paper was to estimate saving functions for household, corporate and public sectors using time-series data for the period 1969-70 to 1989-90. Empirical analysis of household sector saving behaviour shows that the domestic real interest rate, bank credit, the U.S. prime rate, exports earnings, worker's remittances, private capital outflows, the expected inflation rate, and dependency ratio are important factors. The most important factors affecting corporate sector savings are the GNP growth rate, foreign capital inflows, the domestic real interest rate, the real wage rate, profitability, the changes in the terms of trade, the expected inflation rate, export earnings, and nationalisation measures. For the public sector, the important factors are per capita income, domestic transfers, net foreign capital inflows, the foreign interest rate, the changes in the terms of trade, debt servicing, and private capital outflows. The findings are quite consistent with *a priori* expectations.

The results of disaggregated saving functions show some mixed trends. The U.S. prime rate, taken as the foreign interest rate in the household, corporate and public saving functions, clearly shows that all of the three sectors behave differently. The institutional variations in the savings behaviour of household, corporate and

public sectors are also obvious with the change in terms of trade and foreign capital inflows. At the same time, household and corporate sectors behave in a similar way with respect to the real domestic interest rate and inflation rate. Capital flight has a negative impact both on household and public sector savings. The income variable possesses a positive sign in all the three functions. The other remaining variables also indicate variations in the corresponding functions that can not be seen in the aggregate saving functions. Therefore, these disaggregated saving functions provide a more precise picture on the institutional variations in savings behaviour in Pakistan.

## DATA SOURCES AND DEFINITIONS OF VARIABLES

The following sources were used: Economic Survey (PES) (Pakistan 1980-81, 1990-91); Annual Report (AR) (State Bank of Pakistan 1980, 1991); International Financial Statistics (IFC) (International Monetary Fund 1980, 1990); Balance of Payments Statistics (BOP) (International Monetary Fund 1980, 1990); Balance Sheet Analysis of Joint Stock Companies (BSA) (State Bank of Pakistan various issues); Statistical Year Book (SYB) (Pakistan, Federal Bureau of Statistics 1990).  $S_{HP}$ ,  $S_{PC}$  and  $S_{PU}$  are household, corporate and public sectors savings as a share of GDP respectively, which were taken from PES and AR.

$Y_g$  is the annual growth rate in real GDP and  $PCI$  is per capita income. The source was PES.

$P^e$  is the expected inflation rate. The inflation variable is the rate of rise in the consumer price index, were taken from PES. One year lag is considered as the expected inflation rate.

$IR_D$  is the domestic real interest rate estimated as the difference between the nominal interest rate and the inflation rate. The Nominal interest rate was taken from AR.

$IR_{US}$  is the United States prime rate. The source was IFC.

$BC_p$  is domestic bank credits to the private sector as a ratio to GDP. The data was taken from SYB.

$EX$  is export earnings as a ratio to GDP, were calculated by taking the relevant figure from the national accounts data in PES.

$RM$  is worker's remittances as a ratio to GDP. The data were from PES.

$KF_p$  is private capital outflows as a ratio to GDP, were taken from Sarmad and Mahmood (1992) who have calculated based on Cuddington (1986) methodology.

$DR$  is the dependency ratio. Following Khan *et al.* (1992) methodology, it is calculated as a difference between the total population ( $N$ ) and the employed labour force ( $E$ ) as a ratio to the total population ( $N$ ) such as  $DR = (N - E) / N$ . The source was PES.

$F_p$  and  $F_{pu}$  are net foreign capital inflows to the private and public sectors as a ratio to GDP respectively. The data were taken from AR.

$WM$  is the real wage rate in large-scale manufacturing sector. The data were obtained from PES.

$\Delta TOT$  is changes in the terms of trade, which is estimated as the unit value of index of imports as a ratio to the unit value index of exports. The data were obtained from PES.

$PR_{pc}$  is the profitability of the corporate sector. It is defined as a ratio of gross profits to sales. The data regarding sales and profits of the private corporate sector were taken from BSA.

$FD_{pu}$  is domestic transfers to the public sector as a ratio to GDP. It is estimated as  $(FD_{pu} = \text{public investment} - \text{public savings} - \text{foreign capital inflow to the public sector})$ . The source was PEC.

$DS$  is debt servicing (principal plus interest payments) as a ratio to GDP. The source was PES.

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## Comments on "Institutional Variations in Saving Behaviour in Pakistan"

The paper is an interesting exercise to estimate what the author calls "institutional variations in saving behaviour in Pakistan" by estimating saving functions at the household level for the corporate sector and the public sector. For this purpose, the author uses a twenty-year time-series data set from 1969-70 to 1989-90.

I have a series of questions that should be taken simply as clarification points so that the reader and the audience can better understand what the author is attempting to do.

The first set of clarifications deals with definitional issues. For example, how are savings defined for each agent. For example, how are household savings defined especially since the author does not use household level data and the aggregate data available in the Pakistan Economic Survey or the State Bank's annual report may be used to generate estimates of private saving which is different from household savings.

My second set of clarification questions deals with the rather cavalier way in which statements are made about previous studies in the review of literature. For example, the author states that none of these studies have properly specified household and corporate savings functions because of omission of some important variables (page 2 of the paper under review) and that the present paper's main objective is to specify the correct functional form of corporate, household and public sector savings functions based on sound theoretical framework (page 3). Previous studies, e.g., Khan *et al.* (1992), do include export earnings and terms of trade variables which the present author reports as having been omitted. Furthermore, there is no evidence in the paper to suggest that the other studies had used an incorrect functional form. What is the evidence to suggest that the linear form formulation used in the present paper is the correct one. I would like to add that the mere inclusion of extra variables does not imply a different functional form.

While on the issue of variables, it is interesting to note that with twenty observations and ten explanatory variables in the household savings function, the present study has a degrees of freedom problem. One other clarification regarding the public savings function is that it is not clear what is the transmission mechanism of the US prime interest rate on corporate and public savings in Pakistan. Moreover, the author states that a higher foreign interest rate may encourage people to transfer their savings abroad thereby reducing household and corporate savings. There is no evidence given for the extent or direction of such flows during the period under study.

It is interesting to note that the income variable is insignificant in the regressions reported in this paper. Does this mean that the Keynesian theory is invalid in the case of Pakistan or is this because the author in order to account for the multicollinearity problem has taken savings as a proportion of GDP as the dependent variable being explained by the changes in income amongst other variables? The author needs to define the insignificant impact of this new variable in greater detail.

It would be helpful if the author included a correlation matrix of the regressors to show that his results are free from the problem of multicollinearity. Otherwise, with 7 to 10 explanatory variables being thrown in together, the probability that some of these are strongly collinear is very high.

The author has done quite painstaking work as I am sure that with the clarifications that I seek the paper will make an interesting contribution to the existing literature on savings behaviour in Pakistan.

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