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THE DEBT CRISES OF PAKISTAN AND AN OPTIMAL FISCAL POLICY

HAFIZ M. YASIN*

Abstract. The federation of Pakistan has been in practice of running deficits on the revenue account of the budget for quite a longer past. The persistence of fiscal and trade deficits have manifested in the form of large stacks of internal and external debt. This situation is now posing severe problems for the nation like debt servicing and credit worthiness. The basic problem is that of an imbalance between the growing expenditure and the available revenues, which needs immediate attention. The only solution is to reconsider the prevailing taxation structure and to curtail the volume of spending as far as possible.

The present study looks into the matter and attempts to explore an optimal set of fiscal measures that ought to be efficient and feasible. A computable general equilibrium model is specified for the economy. The data for the fiscal year 1989-90 has to serve as the benchmark. Special emphasis is laid down on the unique objective of eliminating the fiscal deficit at the margin. A proper mix of the tax and expenditure measures that passes the efficiency criteria, besides meeting the basic objective, is pinpointed and recommended as an operational package.

I. INTRODUCTION

A persistent deficit on the revenue account of the federal budget over the past three decades has posed serious problems for the economy. Before 1969-70, there used to be some surplus on the revenue account, however small, available as the first source of financing of the capital budget. The resource gap could then be filled through extra taxation and/or borrowing. The situation went on worsening thereafter and the governments had to resort to deficit financing and excessive borrowing both from domestic and foreign sources. This behaviour resulted into the present situation of large stacks of debt, the excessive burden on the exchequer to honour debt servicing, and

*The author is Assistant Professor of Economics at Government Postgraduate College, Charsaddah, NWFP (Pakistan). The contents of this paper, for model formulation and data considerations, draw upon his doctoral dissertation submitted to the International Islamic University, Islamabad (October 1999).

the unbearable hardships for the poor masses in the form of high inflation. In addition, the sovereignty of the country is at the verge of threat and the future of the economy is exclusively at the mercy of donor agencies. The remarks by the Federal Finance Minister in his budget speech (2001-2002) are worthwhile in this regard:

> "Our basic problem emanates from the fact that government's revenues from tax and non-tax sources are significantly less than its expenditure. To meet excess expenditure, government resorts to borrowing. In the beginning, this was a simple process, as borrowing was limited only to meet part of development expenditure. However, gradually, as our investments failed to give good returns and our efforts to mobilize additional revenues remained dormant, this process was extended to meeting the non-development expenditure from borrowings. Today debt servicing and salaries of government servants are paid out of borrowed funds. It is common sense that such a process cannot last for long. Sooner or later, it would become unsustainable leading to adverse consequences, unless of course it is reversed. A similar story can be narrated on the side of country's balance of payments. Since our exports of goods and services are significantly less than our imports, we need funds to finance excess imports. Here, because funds are required in foreign exchange, borrowing has to be done from overseas institutions. Initially, such borrowings were restricted to investment projects but gradually here too neither our investments yielded good returns nor our exports rose to the desired level, and consequently we ended up borrowing to make payments for debt servicing. Unlike the case of domestic borrowing, here the debt burden impinges on our sovereignty also as lenders limit our policy options."

In a nutshell, the country faces two crucial problems that demand immediate attention:

1. The persistent deficit on revenue account of the federal budget.
2. The large stakes of internal and external debt accumulated over time.

Both the problems are interrelated and reinforcing each other. The tax evasion practices on pat of the elite, the inefficiency of the tax collection machinery, and leakage in the public expenditure appropriation system can be identified as the important factors that compelled the governments in the

past to rely on excessive borrowing and money creation. The stack of outstanding national debt has grown over time to an alarming volume; it surpasses whole of our GDP and its servicing absorbs more than half of the federal revenues at the moment.

The present study is devoted to a detailed exploration of the first problem within the general equilibrium context. The rationale is obvious, since the root cause of the prevailing odd situation is nothing but an imbalance between public revenues and expenditures. The layout is as under. Section II deals with the severity of the problem in terms of facts and figures. In Section III, we discuss some of the conventional fiscal packages that seem to be appropriate in handling the issue. This section also contains a brief review of the relevant literature. A static version of a CGE (computable) model is presented in brief along with consideration of the data and parameters in Section IV. Section V discusses the simulation strategies. Various scenarios are then compared and contrasted in terms of the key micro and macro indicators in Section VI. The final section is devoted to conclusions as usual.

II. THE SEVERITY OF THE PROBLEM

A bird eye view of the situation is shown to grasp the intensity of the problem. The relevant figures are reproduced from official sources as under:

(*a*) Consolidated Fiscal Deficit – Historical Trend (Rs. million)

Year	Current Exp.	Dev. Exp.	Total Exp.	Revenues	R. A. Deficit	Overall Deficit
1980-81	40318	23321	63639	47002	6684	14618
1985-86	94686	39777	134463	89877	5809	41644
1989-90	165595	56050	221645	158805	6790	56060
1990-91	195676	65293	260970	163857	31819	89193
1991-92	230120	91354	321474	216570	13550	104904
1992-93	272457	76196	348653	239528	32929	109125
1993-94	293460	71453	364913	270734	22726	94179
1994-95	345941	82343	428284	317932	28009	110342
1995-96	423866	94235	518101	368260	55606	149841
1996-97	455411	85508	540919	384331	71080	156588
1997-98	529919	104095	634014	429454	100465	204560
1998-99	547279	98286	647777	468601	78678	179176
1999-00	642935	95589	738524	536832	106103	201692

(*b*) Internal Debt Outstanding by the End of Period – (Rs. million at Current Prices)

Year	Permanent	Floating	Unfunded	Total Debt	As % of GDP
1980-81	13758	31688	12641	58087	20.9
1985-86	58229	87265	57625	203119	39.5
1989-90	98703	144978	137630	381311	44.5
1990-91	157012	150929	140220	448162	44.1
1991-92	186580	197215	147707	531502	44.1
1992-93	245501	215819	153999	615319	46.2
1993-94	264211	257637	189216	711064	45.5
1994-95	290139	294233	223315	807687	43.3
1995-96	291361	361298	267606	920265	43.4
1996-97	289307	433834	332947	1056089	43.5
1997-98	286637	473850	439187	1199674	44.8
1998-99	317402	561590	573945	1452937	49.4
1999-00	324553	647428	669389	1641370	51.6

(*c*) External Debt Disturbed and Outstanding by the End of Period – ($ million)

Year	Outstanding	Debt Servicing	Debt Servicing % of GNP
1980-81	8765	603	2.1
1985-86	11108	906	2.8
1989-90	15094	1232	3.1
1990-91	15471	1316	2.9
1991-92	17361	1513	3.1
1992-93	19044	1648	3.5
1993-94	20322	1820	3.6
1994-95	22117	2042	3.4
1995-96	22292	2136	3.4
1996-97	22509	2265	3.6
1997-98	22844	2353	3.8
1998-99	25423	1530	2.6
1999-00	25359	1512	2.5

III. FISCAL REFORMS

In the context of the circumstances prevailing in Pakistan, the prime objective of stabilization policies should be to fill up the budgetary gap in the short-run and to deal with the trade deficit at least in the long-run. Obviously, a monetary solution seems to be ineffective when high rates of inflation and unemployment coexist. It is only a bold and cautiously famed fiscal policy, backed by strong political support and efficient administration that may solve the problem.

Keeping in view the serious efforts of the present government in this direction, it seems appropriate to evaluate some of the conventional fiscal packages in terms of their impacts on micro and macro variables. Each package is presumably targeted, of course, to elimination of fiscal deficit on Revenue Account at the margin in the short-run. This line of analysis seems rational, since the major source of raising and accumulating debts has been the persistent gap between current expenditure and revenues. The end objective of this exercise is to search for an appropriate policy that should not only fulfill the primary objective (deficit elimination) but should be the least harmful to the general public as well. The following policy options can be considered as the genuine candidates for the purpose:[1]

1. An increase in the personal income tax rate.
2. An increase in the corporate tax rate.
3. A proportionate increase in the rates of direct taxes.
4. A proportionate increase in the rates of commodity taxes.
5. An increase in both direct and indirect taxes.
6. A cut in the public consumption expenditure.
7. A proper mix of the above options.

The first two options are not only feasible and desirable but have in fact been administered by different governments from time to time in the past, albeit with negligible success. The PPP Government (1993-96) introduced a generalized sales tax on commodities and tried to reduce the budget deficit. The past PML Government (1997-99) followed a restrictive policy towards

[1] Another option may be to ask the general public to join hands and help the situation. The previous PML(N) government appealed the nation in Mach 1997 for donations to retire the debts. The citizens, particularly the poor and middle-income groups, surely responded with enthusiasm. However, such a policy option is out of the scope of our analysis.

the size of public sector via privatization and down-sizing. The present Military-led Government is striving hard to improve the taxation structure and to get rid of the persistent deficits. In addition to reformation of the taxation structure, serious efforts are needed to control corruption and inefficiency in the administrative machinery.

The impact of various fiscal reforms can be studied objectively in the context of a general equilibrium framework. The CGE modeling practice for the economy of Pakistan is very rare. We find only two examples in the literature dealing with fiscal policies. A brief review of these models is presented as under before we proceed further.

AERC (1994) Model[2]

The model is constructed to evaluate the impacts of budgetary reforms advised by the IMF on economic growth, environmental quality, industrial structure and land improvement. These reforms are often referred to as the Structural Adjustment Programme (SAP). Foreign assistance from international agencies to Pakistan is now tied to the implementation of the programme in letter and spirit.

AERC (1994) is in fact a three-piece model. The first is a highly aggregated macro growth model to predict the long-run effects of the reforms on economic growth and environmental quality. The second piece consists of a short-run CGE model that is of some relevance to this study. The third part is an extended from of the Indus Basin Plan (revised) model originally developed by the World Bank in 1963. This linear programming model has been used to study the impacts of the reforms on cropping pattern, ground water balance, salinity and agricultural produce in the irrigated areas of Punjab and Sind. The results of all the three models are then integrated and conclusions derived.

The CGE sub-model of AERC (1994) is based on 1984-85 SAM (prepared by the Federal Bureau of Statistics, Islamabad) to incorporate 8 production sectors, 2 factors and 4 institutions. The model is used to examine the impacts of changes in tariffs, direct taxes, budget deficits, exchange rates and different policy mix plans as required by SAP. The model is claimed to

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[2]Developed in 1994 at the AERC, Karachi University, in collaboration with the Harvard Institute for International Development, Cambridge, MA, under the title: Economic Reforms and the Environment in Pakistan, AERC Research Report No. 102, dated October 21, 1994.

be internally consistent. However, it lacks dynamic qualities and shows no response to population growth or capital accumulation over time.

Shafiq Dhanani (1988)

This is a SAM based CGE model and uses the PIDE 1975-76 input-output tables and CMI (Census of Manufacturing Industries) for 1983-84 to compile a SAM for use in the analysis. It consists of 9 production sectors, 4 household groups and 9 consumer goods incorporated in the institutional accounts. The production and consumption behaviours are specified with CES and LES functions, respectively. There is no explicit role for the government. The model is built for static analysis to see the multiplier effects of various fiscal policies.

The issues addressed by the above models and their methodologies as well as the very objectives are quite different from those pursued in the present study. Further, the data used are too old by now. We intend to evaluate the policy options pointed out above within the CGE framework to find an optimum set of fiscal measures that is the least corrosive and best suited for the prime goal. It is important to note that a policy change leads to distortion at various points of the prevailing equilibrium. As the economy settles to a new equilibrium state, most of the variables undergo a change in magnitude. In particular, there may occur shortage and/or excess in demand and supply of the factors of production within the single period static framework.

IV. THE MODEL

A static version of computable general equilibrium model is specified, with all the neoclassical assumptions in tact. The parameters of the model are selected such that the model replicates the observed data on the relevant variables for the base year. We mainly draw upon Serra-Puche (1979), Hassan Imam (1983) and BSFW (1985) models. However, we may not follow their formulation so strictly; of course, we may deviate where found necessary, both in specification and methodology, but with due rationalization.[3]

PRODUCTION RELATIONS

The supply side of the economy consists of '*n*' commodity producing sectors. The production function, for a typical firm in sector *j*, may be given by:

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[3]The detailed version of the model may be provided to the interested readers on request.

$$Q_j = \min (A_j, VA_j), \text{ where } j = 1, 2, \ldots, n \quad (1)$$

It states that the output Q_j by the sector concerned bears a fixed relationship with the inputs, raw material and factor services, needed in the transformation process. As such the requirements of inputs per unit output may be written in the condensed form:

$$q_j = \min (X_{ij}/Q_j, VA_j/Q_j) = \min [\, a_{ij}, v_j (I_j, k_j) \,] \quad (2)$$

The first argument A_j, denotes a column vector of intermediate inputs X's, required in fixed proportions for the total output. The minimum quantity of an input from the '*i*th' industry required per unit output of the '*j*th' industry is denoted by $a_{ij} = X_{ij}/Q_j$. It occupies a unique position in the Technical Coefficient Matrix [A], which is a square matrix of order $(n \times n)$, with rows depicting the transactions from the sector of origin '*i*' and the columns indicating the demand by the sector of destination '*j*'. The Activity Analysis Matrix, given by [I – A], is derived from the technical coefficient matrix. The elements along the principal diagonal indicate the net output of the sector concerned and the off-diagonal elements, with negative signs, indicate the inputs. The inverse of this matrix, often called the Leontief inverse, is useful in deriving the activity levels by considering the final demand for output of the sectors concerned:

$$Q_j = [I - A]^{-1} FX_j \quad (3)$$

The second argument in the production function represents the value-added relationships of the primary inputs, capital and labour services, with output. The proportion of value-added in the total output remains constant, although the factor services are variable on account of substitution possibilities and variable prices of factors. Thus the coefficient $v_j = VA/Q_j$ remains constant like a_{ij}.

The value-added in a particular firm/sector may be represented by various technologies depending on the availability of data on elasticity parameters. In most cases either a CES or a Cobb-Douglas function is used for their desirable properties. The sector concerned hires the services of capital and labour factors, owned by the households, from the market. A typical firm within the sector concerned may be assumed to be price taker and cost minimizer subject to a given level of output so as to meet the market demands. Constrained optimization problem may be stated as:

$$\text{Minimize} \quad C_j = P_k K_j + P_l L_j \text{ ; subject to } VA_j = (K_j, L_j) \quad (4)$$

where $j = 1, 2, \ldots, n$; and P_k, P_l, stand for rental prices of capital and labour.

This behaviour leads to factor demands per unit of value-added. The derived factor demands depend on the market prices and the solution algorithm finds these values under competitive conditions.

$$l_j = L_j / Q_j = f(P_l) \quad (5a)$$

and $$k_j = K_j / Q_j = f(P_k) \quad (5b)$$

CONSUMPTION BEHAVIOURS

The households derive their income by selling the services of labour and capital factors to ultimate users against remuneration determined by market forces. A fraction of the income may be saved for future needs and the rest may be allocated to current consumption. This behaviour leads to demand for commodities meant for consumption and/or investment. The optimization problem of a typical household (h) may be stated as under:

$$\text{Max. } U_h = U [C_0, S_0]_h \qquad \text{s.t. } P_0 C_0 + P_s S_0 = Y^d \quad (6)$$

where 'Y^d' is the disposable income and C_0, S_0 denote composite commodities for consumption and saving, respectively. The inter-temporal preferences of the households may be specified in terms of CES/LES functions in which the elasticities of substitution between current and future consumption play important role. The resultant demand functions are obtained with incomes and prices of composite commodities as arguments:

$$C_0 = f(Y^d, P_0, P_s)_h \qquad S_0 = f(Y^d, P_0, P_s)_h \quad (7)$$

The nominal expenditure incurred on consumption and saving goods may be expressed in terms of $P_0 C_0$, $P_s S_0$. The society may include a sizeable proportion of households whose incomes might not be sufficient enough to finance their present consumption needs even. The behaviour of a typical poor household can be specified accordingly:

$$\text{Max. } U_h = [(C_0 - B_0), S_0] \qquad \text{s.t. } P_0 C_0 + P_s S_0 = Y^d$$

where B_0 is a subset of C_0, denoting the value of consumption goods necessary for sustenance.

The said behaviour leads to the demand functions in the usual way, which may also be expressed in terms of $P_0 Z_0 = P_0 C_0 - P_0 B_0$. The term $P_0 Z_0$ denotes the consumption level of the household over and above the basic needs. $Y^d - P_0 B_0$ then shows the income available after fulfilling such needs. It is just possible that $Y^d - P_0 B_0$ is zero or negative for some poor sections of the society; and in case of strict inequality, the concerned household may be compelled to borrow so as to finance its present consumption needs.

In the second stage of the two-nested structure, the household concerned is required to allocate the faction of income meant for current consumption among the commodities available to him at the market prices. The optimization problem may be written in the condensed form as:

$$\text{Max. } U_c = U(X_1, X_2, \ldots, X_m)_h \quad \text{s.t. } \Sigma P_j X_j = M = P_0 C_0 \tag{8}$$

where $P_0 C_0 = Y^d - P_s S_0$

The sub-utility function U_c, may assume specific forms, the Cobb-Douglas (CRS) being the most familiar. The resultant demand functions depend on household's income and market prices.

$$X_j = f(P_i, P_j, M_h) \tag{9}$$

The composite price index P_0 for the households can be obtained by considering the expenditure function. The formal technique is to substitute the ordinary demand functions in the contemporaneous utility function. This gives the indirect utility function (V_h) with income and prices as arguments. The expenditure function (E_h) and the composite price index (P_0) can be derived from this relation. Likewise, the composite price index for the saving/investment commodity can be derived easily, which is a weighted function of the market prices of various items acquired for the purpose. These commodities add to the stock of fixed capital by the end of the accounting period.

It may be noted that the government provides "public goods" to the society free of direct user charge. As such these can be treated as exogenous arguments, and although the consumers derive utility from these goods, they have not been explicitly included in the utility functions described above.

INCOME GENERATION AND DISTRIBUTION

Income is generated in the economy via the contribution of factors to the process of production. In nominal terms, it corresponds to the cost of production. The accrual of income to households, or more correctly, the personal distribution depends on the ownership rights enjoyed by the entities concerned as well as on the financial set up which plays an important role.

The households are assumed to own capital and labour endowments. The labour endowments include all human efforts offered against wage, either fixed or imputed. The labour force may be assumed to grow over time at a constant exponential rate '*n*'. The capital endowments include all kinds of non-human assets. The endowments of land and other natural resources are assumed to be given exogenously. The services of these factors are hired

by the production sector and the governments at the market rates. This mechanism gives rise to the gross income of the households:

$$Y = C = P_k K + P_L L \tag{10}$$

The savings are assumed to be transformed into investment goods valuing $P_i I_0$ through intermediation of banking system and stock markets. Part of the current investment is consumed to replace the worn-out capital goods while the remaining is used to purchase new goods, which add to the stock of the fixed capital by the end of accounting period. Each unit of capital good is expected to yield 'λ' units of capital services and each unit of these services bears a rental price P_k on selling the same to the ultimate user.[4] Thus, the value of services generated per unit of capital good is given by λP_k and the total return on current saving/investment is given by $\lambda P_k I_0$. The income so generated may be utilized to finance part of future consumption. There may not be any severe problem in distribution of the wage income among the households. However, the distribution of profits or net return to capital may not be proportional strictly to the household's share in the capital stock and investment. This is because the existing financial system discriminates between the return on bonds and equities, as well as within the equities, in terms of ordinary and preferred shares. Thus, we have two strands of the outcome in terms of distribution.

The households investing their savings through proprietorship, partnership or by purchase of equities/stocks of business firms are entitled to the (*ex post*) rate of return 'r', which is variable and determined by market forces. Alternatively, the households investing in bonds and depositing their savings in banks are entitled to an exogenously given (*ex ante*) or fixed rate of return given by 'r*':

$$r^* = (\lambda P_k) / P_i^* \quad \text{or} \quad P_i^* r^* = \lambda P_k \tag{11}$$

In the above relation, P_i^* is the acquisition price of the investment good from the purchasers point of view. Put differently, the number of units of services per unit of capital stock in the fixed return system, given by 'λ*', may be different from the services generated actually in the market 'λ'. Therefore,

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[4]The share of capital in nominal GDP is $\pi = \lambda P_k K/VA$ which reflects the distribution aspects. The economy-wide capital-output ratio reflecting the production side is given by $v = K/Q$, where Q denotes the total output net of taxes. Then the relation $(\pi/v) * (VA/Q)$ indicates the number of units of services (λ) produced by each unit of capital stock during the accounting period. P_k is assumed to be unity in the benchmark equilibrium.

$$r^* = (\lambda^* P_k) / P_i \quad (11a)$$

All savings translated into investment during the current period should add to stock of capital and simultaneously to the index of wealth by the end of the accounting period, taking care for depreciation allowance. Thus both the capital stock and wealth grow over time at the rate determined by the market forces that determine the flow of savings.

The gross income of the household concerned then comprises wages and returns from capital assets (rents, rentals, royalties, interests and dividends). If the income tax ate is t_y, the basic tax rebate is B, and the transfer payment/ receipt is R, then the disposable income of a typical household is given by:

$$Y^d = (1 - t_y)(Y - B) \pm R \quad (12)$$

PUBLIC REVENUES

The government receives its share in the form of tax and non-tax revenues. Tax revenues include taxes on personal incomes and wealth/property, corporate profits and taxes on commodities. The non-tax revenues include the share in income from property and capital stock held by the government. Besides, the government run deficits and create additional purchasing power to finance its expenditure.

Total tax revenue is given by $TR = IT + PT + ST \quad (13a)$

Income tax (personal) $IT = t_y \Sigma_h \Sigma_{pop} (Y_h - B) \quad (13b)$

Corporate income tax $PT = t_k \Sigma_i \lambda P_k K \quad (13c)$

Commodity tax $ST = t_c \Sigma_j P_j FX_j \quad j = 1, 2, \ldots, n \quad (13d)$

where 't_y' is the tax rate, 'Y_h' is the household income falling within group 'h' and having a given population represented by 'pop', and 'B' is the basic exemption limit. Likewise 't_k' is the profit tax, '$\lambda P_k K$' is the operating surplus in the '*i*th' incorporated industry, whereas 't_c' is commodity tax (sales, excise, customs) rate and '$P_j FX_j$' is the value of final demand for the output of the industry concerned.

INDICES OF WELFARE

The welfare gain/loss due to policy change can be studied in terms of Hicksian Equivalent Variations (HEV), which estimate the rate of change of utility due to policy change, given the original level of income of the households. However, in the context of the data at our disposal, the case of poor households needs somewhat different treatment. The disposable income of a household falling in the low income bracket falls short of the minimum

consumption needs and, therefore, the household concerned has to resort to borrowing; indicated as negative saving. A reduction in the debt burden of the household concerned following a policy change, if any, may be treated as an increase in welfare of the household, although his consumption level remains the same. With this innovation, the welfare effects the policy concerned for the poor households may also be measured as under:

$$HEV = \frac{U^1 - U^0}{U^0} Y^0 \qquad \text{(for ordinary households)} \qquad (14a)$$

$$HEV = (-)\left(\frac{D^1 - D^0}{D^0}\right) Y^0 \qquad \text{(for low income households)} \qquad (14b)$$

where Y^0 is the original disposable income of the household concerned, U^1 refers to the post-policy-change utility level and U^0 is the original level, both estimated as the indirect utility, D^0 and D^1 refer to the pre- and post-policy-change debt levels.

DATA AND PARAMETERS

General Equilibrium Models require comprehensive information on all aspects of the economy. The data should be dis-aggregated and consistent. Likewise, the researcher should know the values of all parameters of the model a priori. We discuss the important points and ignore the details for want of space and time.[5]

Data Considerations

We have selected the fiscal year 1989-90 as the base due to the fact that the latest input-output tables are available for this year (in manuscript form). All the relevant information has been derived from published sources. The data has been modified and adjusted, where necessary, to ensue micro consistency.

The supply side of the economy is moderately aggregated into 18 commodity-producing sectors, out of which 17 sectors are domestic and the last sector is devoted to transactions across the borders. The data on inter-industry transactions is taken from I/O tables and the value-added information is derived from the National Accounts.

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[5]The information regarding data and parameters used in this study can be provided to the interested readers on request.

The household's information is derived from the HIES 1990-91, showing the allocation, distribution and sources of income. The households are aggregated into four groups according to their income and expenditure levels, namely the low-income, the lower-middle income, the higher-middle income and the high-income groups. The demand side comprises 10 composite commodities meant for consumption and a single composite good meant for investment. All these final products originate from the agricultural, industrial and services sectors of the supply side. The industrial and household commodities are abridged through a transformation matrix.

Parameter Estimates

As stated above, the CGE models need full information on the parameters of the behavioural equations. In this context, the elasticity of substitution parameters, both in consumption and production are crucial. Unfortunately, the information on this aspect is very scarce, particularly in the underdeveloped countries. We have assumed CES specifications for the value-added functions for sectors where the elasticity parameters were somehow available in the literature. In other cases, like agriculture and services, the Cobb-Douglas specifications have been used. The importance of the substitution parameter in the household's decision making, about present and future consumption, increases considerably when the rate of return to savings becomes variable. Therefore, we have considered the CES specifications to be appropriate for the inter-temporal utility functions of the households. However, this parameter depends further on the interest elasticity of savings as well as on the propensity to consume. We have derived the parameters concerned, following the approach of Hasan Imam (1984) and BSFW model (1985). The contemporaneous utility functions of the households are represented by Cobb-Douglas specification. The remaining parameters could be easily derived from the available information.

V. SIMULATION STRATEGIES

We have fitted the observed data for the base year 1989-90 to the model specified above. Given the parameters of the model discussed above and starting from the initial endowments, the computer programme replicates the base year configuration such that it compares very closely to the observed data. This constitutes the benchmark equilibrium that is used for further analysis. It is now possible to allow pre-determined changes in the fiscal parameters so that these conform to the fiscal reforms discussed above.

It seems appropriate at this stage to reproduce the relevant information on budget deficit and outstanding debt for the base year (1989-90) for ready reference. All figures are in Rs. million.

(*a*)	*Public Revenues*		*Public Expenditure*	
	Total revenue	144875	Current expenditure	165595
	Tax revenue	109221	Debt servicing	36033
	Personal income tax	3495	Govt. consumption	129562
	Corporate income tax	10842	Deficit on Revenue Accnt.	20720
	Property tax	1404	Deficit as % of revenues	(14.302)
	Commodity tax	93480	Development expenditure	54880
	Non-tax revenue	35654	Overall deficit	75600
(*b*)	*Internal Debt*		*External Debt*	
	Permanent	98703	Disbursed and	
	Floating	144978	outstanding	323700 ($ 15094)
	Unfunded	137630	Interest paid	10530 ($ 491)
	Total	381311	Principal repaid	15890 ($ 741)
	Debt servicing	11523	Debt servicing	26420 ($ 1232)
	Increase in debt	48101	Increase in debt	19387 ($ 904)
	As % of GDP	44.5%	As % of GNP	36.2%

(*c*)	Total increase in debt during the fiscal year 1989-90	Rs. 57488 million
	Volume of monetary expansion during the year	Rs. 8112 million
	Overall deficit for the year 1989-90	Rs. 75600 million
	Total servicing on internal and external debt	Rs. 37943 million
	Total servicing (on internal and external debt)	3.1% of GDP
	Rate of interest on internal debt	11.675% approx.
	Rate of interest on external debt (in real terms)	3.250% approx.

The rate of debt retirement is nearly 5%. However, it is interesting to note that the new debt raised during the accounting period is much higher than the amount returned; we may imagine this phenomenon from the trade deficit valuing Rs. 71327 million.

It may be recalled that the prime objective of the reforms is elimination of the fiscal deficit at the margin. The resulting simulations then represent the counterfactual equilibria or the 'would be scenarios of the economy'. The results so obtained can be compared and contrasted with the benchmark in terms of various micro and macro indicators. The following strategies have been adopted in this regard:

Increase in the Personal Income Tax Rate (Fiscal Model 1)

The effective income tax rate in our basic model is 0.012687 (or about 1.27%) of the household taxable income with Rs. 30,000 as the basic rebate (RB). Each household group 'm' is supposed to pay tax at a uniform rate (t_y) according to the relation:

$$Tax_m = t_y (GY_m - RB)\, pop_m \quad \text{and} \quad \text{Gross Tax} = \Sigma\, Tax_m$$

where pop_m is the population of the group concerned with m = 1, …, 4.

To achieve the objective, we proceed as under:

Gross revenue from personal income tax at prevailing rate	Rs. 3495 m
Target revenue to accommodate the deficit of Rs. 20720 m	Rs. 24215 m
The ratio of target revenue to the existing revenue (24215/3495)	6.928469
Proposed tax rate (0.012687 × 6.928469) or roughly 8.8% of the taxable income.	*0.0879

*In effect the computer uses a multiple of 6.77 (instead of 6.93) implying a rate of 0.085891.

This implies an abrupt increase in the effective tax rate from 1.2687% to 8.5891% of taxable income (nearly 577% enhancement) which doesn't seem feasible. However, efficiency in tax administration and eradication of corruption may lead to target achievement. Naturally, the disposable incomes will fall drastically thereby pulling the budget line of the households downwards in parallel. This will lead to a fall in consumption demand, utility levels and household saving and eventually to a welfare loss, although the general price level will remain unchanged. The resulting deficit/surplus may not be exactly zero. The surplus, if any, may be diverted to development budget or used for retiring the debt.

Increase in the Corporate Income Tax Rate (Fiscal Model 2)

The effective tax rate applicable to corporate income in our basic model is 0.085093 (or about 8.51%). To achieve the objective, we proceed as under:

Gross revenue from corporate income tax at prevailing rate	Rs. 10842 m
Target revenue to accommodate the deficit of Rs. 20720 m	Rs. 31562 m

The ratio of target revenue to the existing revenue (31562/10842)	2.911086
Proposed tax rate (0.085093 × 2.911086)	*0.247713

*The computer uses a ratio/multiple 3.31 instead of 2.91 implying a tax rate of 0.28150.

This means a 230% increase in the prevailing effective tax rate, enhancing it from 8.51% to 8.15%. Apparently this rate is difficult to implement. However, as noted earlier, administrative forms in tax collection may solve the problem even at the existing tax rates.

Proportionate Increase in Direct Taxes (Fiscal Model 3)

The effective tax rates applicable to personal, corporate and property income in our basic model are 0.012687, 0.085093 and 0.025867 respectively. To achieve the objective of bringing down the budget deficit, we proceed as under:

Revenue from personal income tax at prevailing rate	Rs. 3495 m
Revenue from corporate income tax at prevailing rate	Rs. 10842 m
Revenue from property tax at prevailing rate	Rs. 1404 m
Total revenue from direct taxes	Rs. 15471 m
Target revenue (20720 + 15471)	Rs. 36191 m
Ratio of target revenue to the existing revenue (36191/15471)	*2.33915

*The computer uses a ratio/multiple of 2.51 instead of 2.34 so as to eliminate the deficit at the margin. Accordingly, the new tax rates are 0.031844, 0.213583 and 0.064926 for personal income tax, corporate tax and property tax respectively. This means an increase of 151% in the prevailing/base year tax rates.

Therefore, all the existing tax rates should be raised by this multiple. As a result, the disposable incomes of the households will fall, however, disproportionately depending upon their shares in business. This will lead to a fall of consumption demand, utility levels and household saving and eventually to a welfare loss, although the general price level may remain unchanged. The minute surplus, if any, may be diverted to development budget or used for debt retirement.

Proportionate Increase in Commodity Taxes (Fiscal Model 4)

The effective tax rates applicable to various commodities in our basic model are given in the appendix on parameter estimates. An increase in commodity tax rates, although administratively convenient, however, leads to inflation. The tax burden falls on the poor sections of the society more than proportionately as compared to the well-to-do households. Such a policy cannot be recommended for its adverse social effects. However, we analyze its results as well since it is the most frequently exercised option in this country. To achieve the objective, we proceed as under:

Gross revenue from commodity taxation at prevailing rate	Rs. 93480 m
Target revenue to accommodate the deficit of Rs. 20720 m	Rs. 114200 m
The ratio of target revenue to the existing revenue (114200/93480)	*1.221651

*The computer uses a ratio/multiple 1.2745 implying 27.45% increase in tax rates of all the commodities.

Therefore, all existing tax rates should be raised by this multiple. The possible consequences of this policy may be visualized in the form of reduced consumption and utility levels of the households. The revenue collection may not reach the target on account of a fall in the sales/demand. The relative prices remain unchanged, so only income effects can be guessed. As such, the policy doesn't seem to be practicable. However, widening of the tax base or bringing more and more items under the generalized sales tax nest may prove a viable alternative. Anyhow the results will remain more or less the same.

Tax Policy Mix (Fiscal Model 5)

Under this option, we arbitrarily propose a 10% increase in commodity taxation (that seems to be practically feasible) and sufficient enough proportionate increase in direct taxes so as to achieve the objective. In this regard, we have the following information:

Revenue from direct taxes at prevailing rates	Rs. 15741 m
Revenue from indirect taxes at prevailing rates	Rs. 93480 m
Total available revenues/resources	Rs. 109221 m
Deficit on revenue account	Rs. 20720 m
Target revenue to accommodate the deficit	Rs. 129941 m

Next we proceed as under after allowing a 10% increase in commodity taxes:

Expected additional revenues from indirect taxes	Rs.	9348 m
Remainder/deficit (20720 – 9348)	Rs.	11372 m
Target revenue from direct taxes (15741 + 11372)	Rs.	27113 m
Ratio of target to prevailing revenue (27113/15741)		*1.722445

*The computer uses a multiple 1.9458 which implies personal income tax rate of 0.024686, corporation income tax rate of 0.165574 and property tax rate of 0.050332 at the new scale so as to eliminate the deficit at the margin. This means a uniform increase of 94.5% in the existing (base year) rates of direct taxes.

Therefore, all direct taxes should be raised by this ratio.

Expenditure Cut Policy (Fiscal Model 6)

Under this option, we try to apply a cut in government consumption expenditure (excluding debt servicing) sufficient enough to eliminate the deficit on revenue account at the margin. The said option has also been advised by the international donor agencies and it is being implemented under the notion of downsizing. The methodology we follow is simple and straightforward.

In this regard, we have the following information:

Government consumption expenditure (base year)	Rs.	129562 m
Revenue account deficit	Rs.	20720 m
Target net expenditure to exclude the deficit	Rs.	108842 m
Percent expenditure cut (20720/129562) or 16% approx.		*15.9923

*The computer uses a multiple of 0.827, which implies 17.3% cut in the existing volume of expenditure.

Therefore, the proposed expenditure ought to be about 84% of the existing volume. This is too much and cannot be considered a viable option keeping in view the strategic political situation of the country. Further it will generate unemployment of resources and hardships for the general masses particularly in the social sector. Anyhow, we examine this option for the sake of completion.

Tax cum Expenditure Policy Mix (Fiscal Model 7)

Under this option, we propose a 5% cut in public consumption, 10% increase in commodity taxation, 50% increase in personal income tax and sufficient enough proportionate increase in other direct taxes so as to achieve the target. These proposals are not only feasible from a social point of view but also convenient to administer. We have the following information:

Government consumption (excluding debt servicing)	Rs. 129562 m
Revenue from personal income taxation	Rs. 3495 m
Revenue from indirect taxes at prevailing rates	Rs. 93480 m
Revenue from other direct taxes	Rs. 12246 m
Total available revenues	Rs. 109221 m
Deficit on revenue account	Rs. 20720 m
Next we proceed as under:	
Expected saving due to expenditure cut of 5%	Rs. 6478.1 m
Expected additional revenue from indirect taxes	Rs. 9348.0 m
Expected additional revenue from income tax (p)	Rs. 1747.5 m
Total additional revenues	Rs. 17573.6 m
Gap/difference (20720 – 17573.6)	Rs. 3146.4 m
Target revenue from other direct taxes	Rs. 15392.4 m
Ratio of target to prevailing revenue (15392/12246)	*1.26 approx.

*The computer uses a multiple of 1.52 which implies a revised rate of corporation income tax equal to 0.129341.

Therefore, other direct taxes should be raised by this ratio.

VI. AN APPRAISAL OF THE FISCAL REFORMS

We have tested a few conventional fiscal models discussed above in the context of a general equilibrium framework with reference to Pakistan economy, selecting the fiscal year 1989-90 as the benchmark. The unique objective for the entire exercise is to eliminate the deficit on the revenue account of the federation at the margin. The 'would be scenarios' obtained from simulation results can now be evaluated and compared in terms of the impacts of the fiscal policies under consideration on micro and macro

indicators. Since all the policies succeed in attaining 'the basic objective, there is need to set criteria for value judgement on the basis of which we may choose the best one. A policy may be regarded as the best that is the least pinching; in other words, which has the minimum welfare costs and at the same time it is feasible to implement. In this connection, we may compare the models concerned with the benchmark configuration of 1989-90 as the departure point and proceed as under:

Fiscal Indicators

The behaviour of the key budgetary variables under different plans/fiscal models is presented as under to facilitate comparison at a glance. The relevant values are expressed in Rs. million while their percent deviations from the benchmark are shown in parentheses.

TABLE 1

Fiscal Indicators — Comparative Position

Variable	Bench	Fiscal I	Fiscal 2	Fiscal 3	Fiscal 4	Fiscal 5	Fiscal 6	Fiscal 7
Gross Revenues	144872	166609 (15.00)	166639 (15.02)	166616 (15.01)	167584 (15.67)	166935 (15.23)	147032 (4.49)	161394 (11.40)
Tax Revenues	109217	131071 (20.01)	134652 (23.29)	133393 (22.13)	131816 (20.69)	132762 (21.56)	111088 (1.71)	126452 (15.78)
Total Expenditure	165593	166554 (0.58)	166587 (0.60)	166571 (0.59)	167554 (1.18)	166934 (0.81)	147028 (–11.21)	161378 (–2.54)
Public Consumption	129560	129621 (0.05)	129654 (0.07)	129638 (0.06)	130621 (0.82)	130001 (0.34)	110095 (–15.02)	124445 (–3.95)

From the above statement, and as also depicted in Figure 1, we get an indication that Fiscal Model 4 (that proposes a proportionate increase in commodity taxation) seems to fetch the highest revenues, although it may not be efficient and/or feasible as noted earlier. It is, therefore, advisable to look into other socio-economic indicators as well in order to evaluate the desirability of the policies concerned.

Macro Economic Indicators

Next we compare the alternative policy options in terms of their effects on key macro indicators. As before, all the figures are expressed in Rs. million whereas those in parentheses represent the percent deviations of the variable from the reference/benchmark values. The comparative position of the alternative schemes is shown in Figure 2.

FIGURE 1

Behaviour of Fiscal Indicators

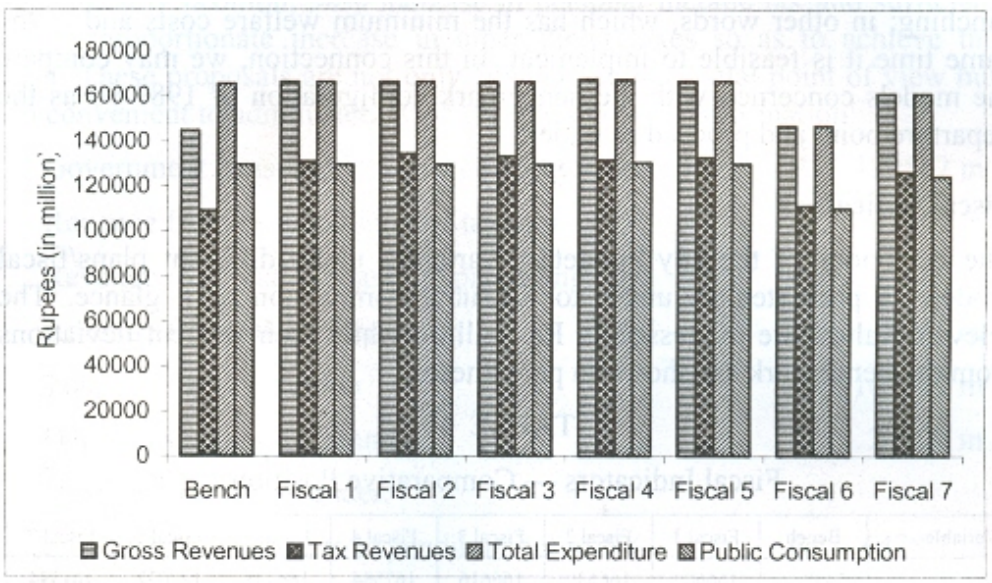


FIGURE 2

Macro Economic Indicators

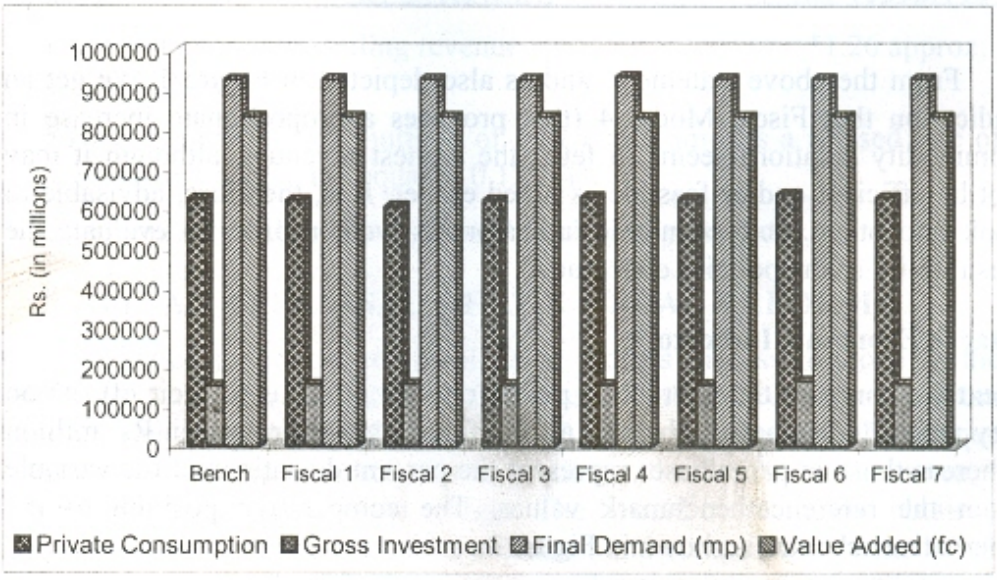


TABLE 2

Macro Economic Indicators — Comparative Position

Variable	Bench	Fiscal 1	Fiscal 2	Fiscal 3	Fiscal 4	Fiscal 5	Fiscal 6	Fiscal 7
Private Consumption	625713	623069 (–0.42)	606499 (–3.07)	622504 (–0.51)	629808 (0.65)	625211 (–0.08)	636550 (1.73)	629211 (0.56)
Gross Investment	155048	158066 (1.95)	159432 (2.83)	158736 (2.38)	157486 (1.57)	158266 (2.07)	166167 (7.17)	160384 (3.44)
Final Demand (mp)	927257	927692 (0.05)	927927 (0.07)	927814 (0.06)	934851 (0.82)	930415 (0.34)	929749 (0.27)	930976 (0.40)
Value Added (fc)	833778	834052 (0.03)	834208 (0.05)	834134 (0.04)	831907 (–0.22)	833298 (–0.06)	834908 (0.13)	833516 (–0.03)

As evident from Table 2 and the figure concerned, Model 6 (which proposes a drastic reduction in the public consumption expenditure) guaranties better performance. However, only about 15% reduction in public expenditure could be effective as against 17.3% implemented. This is accompanied by nearly 14.5% increase in gross revenues, the major part of which is contributed by an increase in personal income tax. This auxiliary increase in revenues is due to the fact that a fraction of the scarce resources previously hired by the public sector are released and efficiently utilized towards alternative ends in the private sector. This result highlights the significance of privatization and denationalization policies. However, an abrupt and massive reduction in public expenditure may not be socially advisable. This may become clear from the next section.

Micro Economic Indicators

In this section, we compare the disposable income, consumption expenditure, saving and utility levels of the households under various policy options to assess the efficiency and feasibility of the policies. The comparative statement, in summary form, is shown in Table 3.

An increase in the tax revenues (referring to the first four models) leads to some increase in public spending on account of social security benefits. This item compensates the low-income group absolutely and the lower-middle income group more than proportionately for reduction in their income due to increased taxation. The high-income group suffers most from the policy change. The increase in the disposable incomes of all household groups is primarily due to increase in factor prices (via Stolper-Samuelson effect) and partially due to social security transfer payments or compensatory allowance. The expenditure level of all groups has gone up due to enhanced taxation and cost of living albeit accompanied by a fall in their utility levels.

An indirect benefit to the poor group can be seen in terms of about 14% reduction in their debt liabilities made possible due to increased social security transfers.

TABLE 3

Micro Economic Indicators — Comparative Position

Variable	Bench	Fiscal 1	Fiscal 2	Fiscal 3	Fiscal 4	Fiscal 5	Fiscal 6	Fiscal 7
Disposable Income	Rs. (p.a.)	% change	% change	% change	% change	% change	% change	% change
Group 1	16996	3.75	3.44	3.28	0.99	2.42	3.09	2.37
Group 2	36719	0.97	–0.60	–0.17	0.62	0.12	1.93	0.72
Group 3	66463	–0.64	0.19	0.05	0.98	0.39	3.06	1.25
Group 4	172787	–3.98	–2.68	2.89	0.62	–1.59	1.91	–0.21
Consumption Demand	Rs. (p.a.) 21068							
Group 1	36489	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Group 2	55500	0.97	–0.60	–0.17	0.63	0.12	1.93	0.72
Group 3	102675	–0.64	0.19	0.05	1.11	0.44	3.06	1.30
Group 4		–3.98	–2.68	–2.89	1.03	–1.44	1.91	–0.06
Household Saving	Rs. (p.a.) –4072							
Group 1	230	15.65	14.35	13.65	14.16	10.12	12.92	9.90
Group 2	10963	0.97	–0.60	–0.17	-0.01	–0.11	1.93	0.48
Group 3	70112	–0.64	0.19	0.05	0.36	0.17	3.06	1.02
Group 4		–3.98	–2.68	–2.89	0.00	–1.81	1.91	–0.44
Utility Levels	Index (HEV)							
Group 1	4063.5	0.00	0.00	0.00	–207.64	–76.29	0.00	–76.29
Group 2	6582.2	354.87	–221.92	–61.63	–227.20	–120.85	709.50	96.16
Group 3	10994	–423.66	126.91	31.71	–188.57	–43.94	2032.5	524.09
Group 4	24979	–6877.4	–4632.5	–4996.5	–1093.1	–3426.8	3306.9	–1161.3
Agg. Welfare Effects		–5525.7	–5591.0	–5026.4	–4466.1	–4849.8	13042.8	313.84

A superficial inspection of the table reveals that Fiscal Model 6 provides better results since all the entries are positive for all groups. However, as noted before, a drastic expenditure cut to a degree of nearly 17% in the public sector may not be socially feasible and economically viable. On the other hand, all the preceding plans (from 1 to 5) are inefficient so far as their welfare effects are concerned.

A careful examination of the statement, however, shows that tax-expenditure mix policy (Model 7), with 5% cut in public consumption, a 10% increase in commodity taxation and nearly 50% increase in direct taxes, is the second best. It not only succeeds in achieving the target of eliminating the budget deficit but is the least costly and more likely to be feasible. It promises a respectable increase in the revenues, private consumption, gross

investment and final demand/GDP. There is a tolerable reduction in public expenditure and a negligible shortfall in the value added. Further it leaves a pleasant impact on the income and consumption levels of the low-income groups, although the high-income group is hurt a bit little. It bears a moderate but positive welfare effect on the society as a whole. Figure 3 further clarifies the position.

A comparative statement of different fiscal scenarios discussed above is summarized in the Appendix.

VII. CONCLUDING REMARKS

Any government, whether secular in traditions or oriented to some ideology, cannot cope for long with persistent budget and trade deficits. In particular, the deficit on the revenue account of the annual budget cannot be tolerated. In developing countries, foreign assistance may be advisable to finance the development projects and to build up the infrastructure. In other words, borrowing from domestic and international sources for short or medium terms may be essential to fill the saving-investment gap/to finance the capital budget. Even this exercise cannot be carried out forever. Eventually the debt burden will reach a level that may not be sustainable any further. Sooner or later, the government will be compelled to take bold steps and to devise appropriate policies so as to mend the situation and to save the nation from bankruptcy.

The foreign indebtedness of Pakistan has reached the level of high danger by now and the situation is posing severe problems for the nation. The present generation is reaping the bearings of the past blunders. As such, there is urgent need for very bold and strict measures to mend the situation. The previous governments started to tackle the issue somehow in 1995 onwards, however, the emphasis was on privatization, downsizing and enhancement of commodity taxation. This policy resulted into widespread unemployment along with high inflation leading to unrest in the society. The previous PML(N) government introduced taxation on agricultural income, however, the outcome is not yet encouraging. No effective measures could be taken in the past to extract sizeable revenues from personal and corporate incomes, properties and capital assets. The business community enjoys social and political power and often involved in money laundering and tax evasion practices.

The present military-led regime started thinking in the right direction and to tackle the issue seriously soon after it assumed office in October 1999. It has succeeded in its mission to some extent despite a strong resistance

FIGURE 3(a)

Income and Consumption Patterns (Rs. per annum)

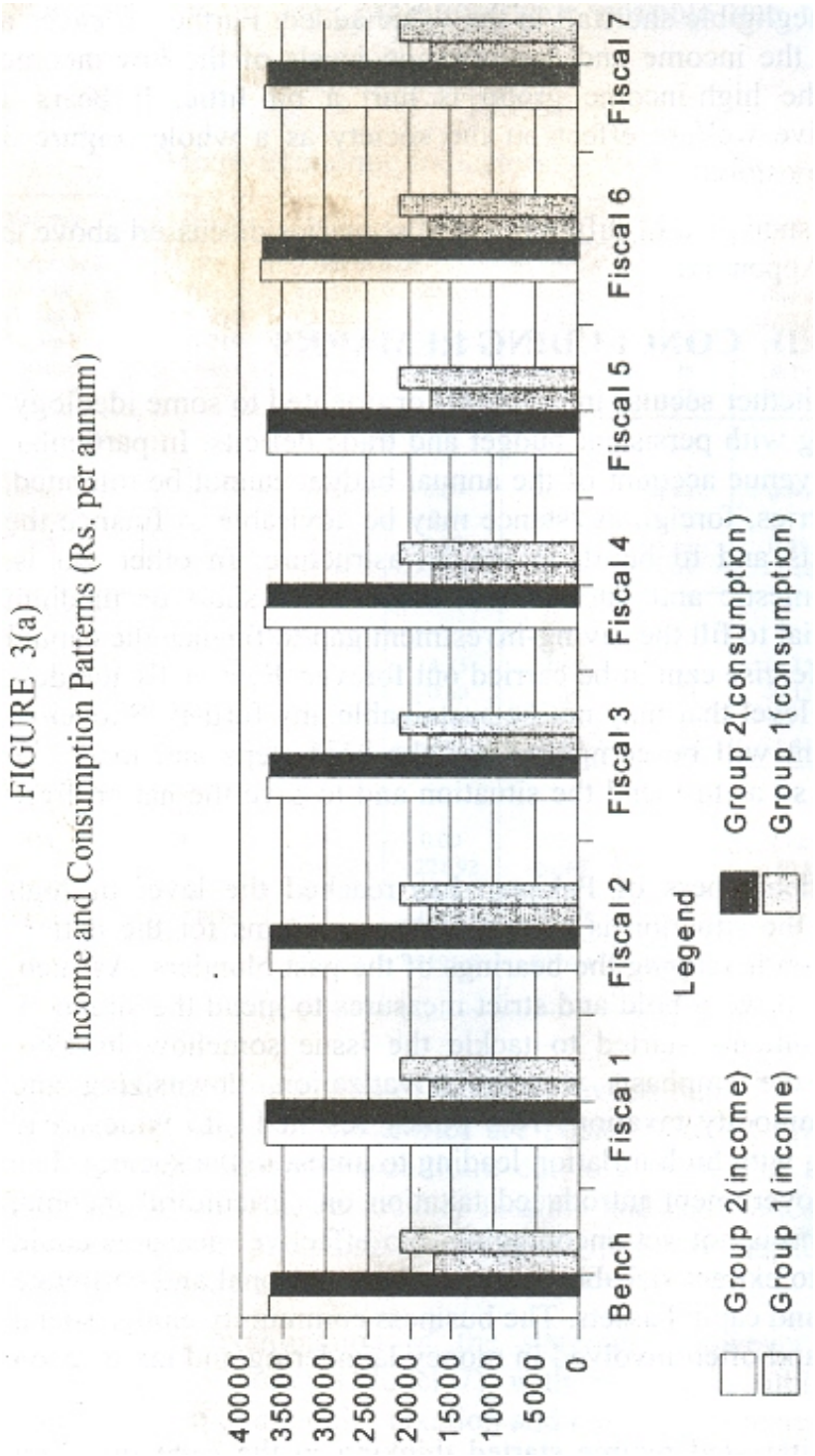
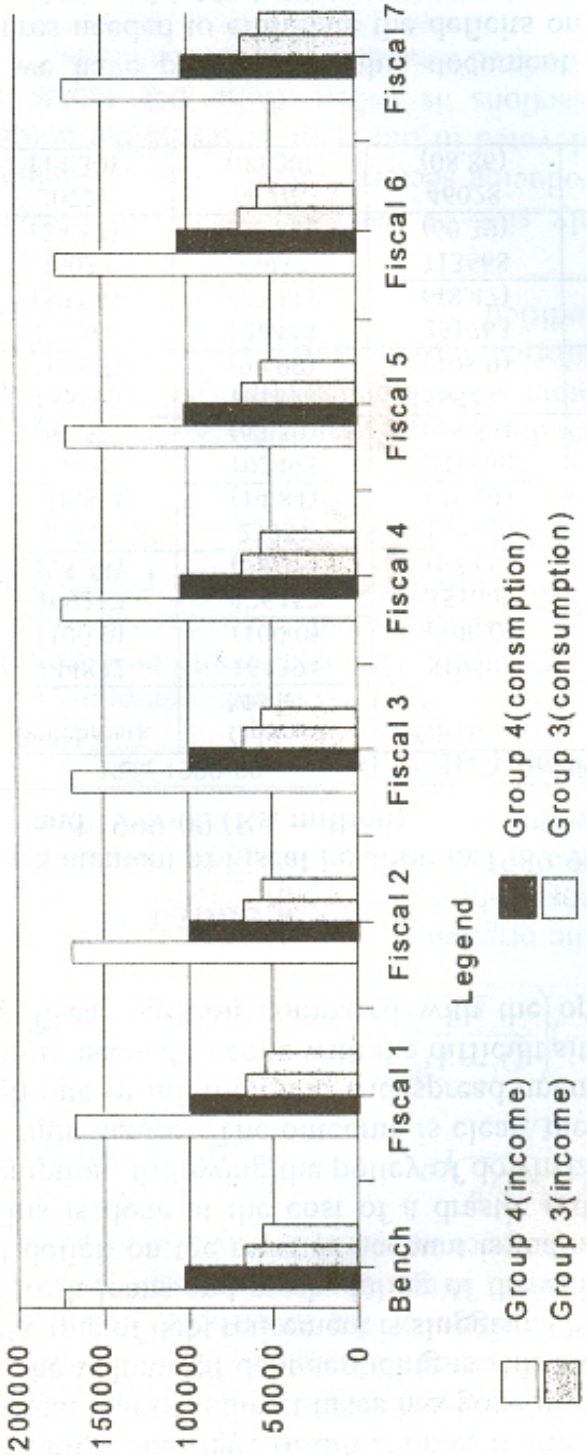


FIGURE 3(b)

Income and Consumption Patterns (Rs. per annum)



from the business community. The share of direct taxes in the total revenues has grown considerably and that of indirect taxes has gone down, which is a healthy sign. However, the volume of debt servicing is still increasing at an alarming rate whereas the rate of debt retirement is sluggish. On the contrary, the practice of signing fresh loans and rescheduling of the existing debts is continued. The level of deficit on the revenue account is maintained at 8 to 9% of the revenues. This is done at the cost of a drastic reduction in the volume of public consumption, following the policy of downsizing (which is often misinterpreted as right sizing). The outcome is clear; the poor masses are badly hit by the high rate of inflation and widespread unemployment. A balanced policy is therefore needed to cope with the difficult situation. Table 4 shows the prevailing fiscal position compared with the optimal values based on our model.

TABLE 4

Comparative Statement of Fiscal Position in 1989-90 and 1999-00 (Rs. million)

Item	Year 1989-90		Year 1999-00	
	Benchmark	Optimal Model 7	Observed	Optimal Structure
Total Revenues	144872 (100.0)	161394 (100.0)	519403 (100.0)	578638 (100.0)
Tax Revenues	109217 (75.38)	126452 (78.35)	351600 (67.69)	453363 (78.35)
Direct Taxes	15741 (10.86)	23957 (14.84)	109800 (21.14)	85870 (14.84)
Commodity Taxes	93476 (64.52)	102495 (63.50)	241800 (46.55)	367493 (63.50)
Current Expenditure	165593 (114.3)	161378 (99.99)	565431 (108.9)	769219 (132.9)
Govt. Consumption	129560 (89.94)	124445 (77.11)	251763 (48.47)	455551 (77.00)
Debt Servicing	36033 (24.87)	36933 (22.88)	313668 (60.39)	313668 (54.20)
Deficit (Rev. Acct.)	20721 (14.30)	+ 16 (00.00)	46028 (08.86)	190581 (33.00)

The fiscal models we have proposed in this document indicate the possible short-run measures needed to eliminate the deficits on the revenue account at least. The simulations highlight the common economic wisdom, which is true both for individuals as well as the society … that expenditure should stay within the means and resources and that a balanced budget is the best economic policy. However, adopting of a balanced budget policy may

not be always feasible due to the extraordinary circumstances in which this indebted nation is presently trapped. So far as the matter of outstanding foreign debt is concerned, it needs passionate and effective measures in the long-run like self-reliance and mobilization of domestic savings, curtailment of luxurious imports and encouragement of value-added exports. However, the picture of the economy in the long-run may be different under different perspectives and socio-political states.

REFERENCES

Akhtar, Sajjad *et al.* (1994), *Economic Reforms and the Environment in Pakistan*. Research Report No. 102. AERC, Karachi University, in collaboration with the Harvard Institute for International Development, Cambridge, Massachusetts, USA.

Ali, S. Aftab (1985), Analysis of inter-industry relations in Pakistan for 1975-76. *The Pakistan Development Review*, Volume 24, No. 3&4, pp. 513-27.

Ali, S. Aftab (1986), Analysis of inter-industry relations in Pakistan for 1975-76. *The Pakistan Development Review*, Volume 25, No. 3&4, pp. 619-67.

Ali, Shaukat (1985), Household consumption and saving behaviour in Pakistan: An application of the ELES. *The Pakistan Development Review*, Volume 24, No. 1, pp. 23-27.

Aziz, Shaukat (2001), *Budget Speech 2001-02 of the Minister for Finance and Economic Affairs*. Islamabad: Finance Division, Government of Pakistan.

Ballard, Fullerton, Shoven and Whalley (1985), *A General Equilibrium Model for US Tax Policy Evaluation*. Chicago: University Press.

Battese, G. and S. Malik (1987), Estimation of elasticities of substitution for CES production functions for selected manufacturing industries in Pakistan. *The Pakistan Development Review*, Volume 26, No. 2, pp. 161-77.

Cohen, Havinga and Saleem (1985), *A Social Accounting Matrix of Pakistan for 1979-80*. Two volumes. Islamabad: PIDE.

Dhanani, Shafique (1988), A SAM based general equilibrium model of Pakistan economy (1983-84 data). *The Pakistan Development Review*, Volume 27, No. 4, pp. 737-48.

Imam, Hassan (1985), The welfare costs of interest rate ceilings in developing countries — A general equilibrium approach: A Case Study of India. In Piggot and Whalley (eds.), *New Developments in Applied General Equilibrium Analysis*. USA: Cambridge University Press, pp. 371-85.

Imam, Hassan and Whalley, J. (1982), General equilibrium with price intervention policies. *JPE*, Volume 18, No. 1, pp. 105-119.

Kazi *et al.* (1976), Production relationships in Pakistan manufacturing industries. *The Pakistan Development Review*, Volume 15, No. 4, pp. 406-23.

Kazmi, N. *et al.* (1981), Substitution elasticities in the small scale and household manufacturing industries of Pakistan. PIDE Research Report Series No. 109, Islamabad.

Kemal, A. R. (1981), Substitution elasticities in the large-scale manufacturing industries of Pakistan. *The Pakistan Development Review*, Volume 20, No. 1, pp. 1-36.

Kemal, A. R. (1982), Substitution elasticities in the large-scale manufacturing industries of Pakistan. *The Pakistan Development Review*, Volume 21, No. 2, pp. 159-68.

Khan and Khan (1985), *National Standards of Growth for Infants and Young Children and Recommended Dietary Allowances for Pakistani Population*. Mimeographed. Islamabad: Planning Division, Government of Pakistan.

Khan, A. H. (1989), The two level CES production function for the manufacturing sector of Pakistan. *The Pakistan Development Review*, Volume 28, No. 1, pp. 1-12.

Khan, A. H. and Rafique, M. (1993), Substitution among labour, capital, raw material and bank credit in Pakistan manufacturing sector. *The Pakistan Development Review*, Volume 32, No. 4(II), pp. 1259-66.

Liviatan, Nissan (1966), Multi-period future consumption as an aggregate. *AER*, Volume LVI, No. 4, pp. 828-40.

Mahmood, Zafar (1989), Derived demand for factors in large-scale manufacturing sector in Pakistan. *The Pakistan Development Review*, Volume 28, No. 4(II), pp. 731-38.

Malik, S. J. and Sultana, Nargis (1989), An analysis of production relations in large-scale textile manufacturing sector. *The Pakistan Development Review*, Volume 28, No. 1, pp. 13-25.

Malik, S. J., Battese, J. and Sultana, Nargis (1993), Capital and labour substitution in the large-scale food processing industry in Pakistan: Some recent evidences. *The Pakistan Development Review*, Volume 32, No. 4(II), pp. 847-57.

Saleem, Mohammad *et al.* (1985), Final PIDE input-output tables of Pakistan's economy 1975-76. PIDE Research Report Series No. 144, Islamabad.

Serra-Puche, James J. (1979), A computational general equilibrium Model for the Mexican economy. Ph.D. dissertation, Yale University, New Haven.

Shoven, J. and Whalley, J. (1992), *Applying General Equilibrium*. Cambridge University Press.

Zahid *et al.* (1992), Technical change, efficiency and capital-labour substitution in large-scale manufacturing. *The Pakistan Development Review*, Volume 31, No. 2, pp. 165-88.

Data References

Government Finance Statistics Yearbook (relevant issues). IMF, Washington D.C.

Government of Pakistan, *Annual Reports* (1987-88 to 1999-2000). Karachi: State Bank of Pakistan.

Government of Pakistan, *CBR Yearbook* (relevant issues). Islamabad: Central Board of Revenue.

Government of Pakistan, *Economic Survey* (relevant issues). Islamabad: Economic Adviser's Wing, Finance Division.

Government of Pakistan, *Household Integrated (Income) Expenditure Survey 1990-91* and other editions. Islamabad: Federal Bureau of Statistics.

Government of Pakistan, *Input-Output Tables for 1989-90 and 1990-91* (published in 1995 and 2001 respectively). Islamabad: Federal Bureau of Statistics.

Government of Pakistan, *National Accounts* (relevant issues). Islamabad: Federal Bureau of Statistics.

International Financial Statistics (monthly, relevant issues). IMF, Washington D.C.

APPENDIX

Evaluation of Fiscal Policies that Eliminate Deficit on Revenue Budget (Summary)

Indicators	Fiscal 1	Fiscal 2	Fiscal 3	Fiscal 4	Fiscal 5	Fiscal 6	Fiscal 7
Policy statement	Total increase in personal income tax	Total increase in corporate income tax	Proportionate increase in all direct taxes	Total increase in commodity taxes	Tax policy mix, increase in all taxes, direct and indirect	Total cut in public consumption expenditure	Tax expenditure policy mix @
Household Incomes							
Group 1	+ 3.751	+ 3.438	+ 3.278	+ 0.996	+ 2.425	+ 3.096	+ 2.372
Group 2	+ 0.966	– 0.604	– 0.168	+ 0.622	+ 0.125	+ 1.932	+ 0.718
Group 3	– 0.637	+ 0.191	+ 0.048	+ 0.984	+ 0.397	+ 3.058	+ 1.256
Group 4	– 3.980	– 2.681	– 2.891	+ 0.616	– 1.590	+ 1.914	– 0.216
Welfare effects (HEV)							
Group 1	00	00	00	– 207.642	– 76.295	00	– 76.295
Group 2	+ 354.874	– 221.924	– 61.627	– 227.201	– 120.850	+ 709.502	+ 96.164
Group 3	– 423.658	+ 128.908	+ 31.713	– 188.570	– 43.937	+ 2032.477	+ 524.088
Group 4	– 6877.376	– 4632.556	– 4996.545	– 1093.136	– 3524.105	+ 3306.947	– 1161.229
Aggr. welfare	– 5525.714	– 2028.918	– 5026.459	– 4466.149	– 4849.829	+ 13042.825	+ 313.838

Indicators	Fiscal 1	Fiscal 2	Fiscal 3	Fiscal 4	Fiscal 5	Fiscal 6	Fiscal 7
Total Revenue	+ 15.004	+ 15.025	+ 15.009	+ 15.677	+ 15.229	+ 14.491	+ 11.405
Total Budget	+ 0.580	+ 0.600	+ 0.590	+ 1.184	+ 0.810	– 11.211	– 2.545
Gross Investment	+ 1.947	+ 2.828	+ 2.378	+ 1.572	+ 2.076	+ 7.171	+ 3.441
Value added (fc)	+ 0.033	+ 0.051	+ 0.043	– 0.224	– 0.057	+ 0.135	– 0.031
Remarks	Difficult to implement	Difficult to implement	Difficult to implement	Inflationary and costly	Feasible but more costly	Best policy, not feasible	Feasible, least costly

Note: All the figures are shown in terms of percent deviations from the benchmark configuration of 1989-90.

@ Indicates an increase of about 50% in all direct taxes and 10% in commodity taxes along with an expenditure cut of 5%.