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Impact of Fiscal Adjustment on Income Distribution in Pakistan

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This study provides a quantitative assessment of selected fiscal adjustment policies on income distribution in Pakistan. Using a latest social accounting matrix for the year 1989-90 and the static fixed-price model, various simulation exercises have been performed. The results show that reduction in subsidies has more adverse impact on the incomes of the richest rural and urban households, implying that the richest people in the country are the greater beneficiaries of subsidies provided by the government. The evidence also suggests that a contraction in government current spending appears to have a negative impact on the incomes of all urban and rural household groups but the largest reduction appears in the income of the richest rural, followed by the poorest urban. The simulation results indicate that a decline in public expenditure on education and health affects the poorest urban and poorest rural more than the relatively better-off urban and rural income groups. Further, the estimates of Gini-coefficients show that reduction in consumption subsidies improves income distribution in both rural and urban areas of Pakistan. Conversely, reduction in subsidies on production worsens income distribution both in urban and rural areas, while reducing overall government current expenditure leads to deterioration of income distribution in urban areas but improves it in rural areas marginally. Similarly, reduction in government expenditure on education and health adversely affects income distribution in both urban and rural areas of Pakistan.

1. INTRODUCTION

Structural adjustment reforms advocated by the World Bank and the IMF began in Pakistan in 1988. The Bank-Fund adjustment programmes were intended primarily to overcome a variety of macroeconomic distortions as well as resolve a set

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of deep-rooted structural problems in the economy. After more than a decade of intensive adjustment reforms, there is no consensus on the effects they have had on Pakistan's economy. More recently, the important area of research has been the analyses of the social impact of adjustment reforms, particularly on income distribution and poverty, using an appropriate quantitative framework. This paper attempts to contribute to a better assessment of fiscal reforms under structural adjustment and their impact on income distribution in Pakistan.

In general, poverty and income distribution in developing countries are closely related to internal and external economic policies adopted by the government. Since 1988, under the rubric of structural adjustment programme (SAP), Pakistan has made use of fiscal, monetary and trade policies to correct her macroeconomic imbalances and to improve social indicators. Besides macroeconomic performance, it is hard to substantiate with proof that these programmes protect the poor. For example, Khan (1993) found that only 7 out of 55 developing countries opting for SAP had a favourable impact on the living standard of the poor of these countries. A number of studies including Anwar (1996); Khattak and Jaffery (1995) and Kemal (1994) have found that SAP was accompanied by rising income inequality and poverty in Pakistan.[1] This paper uses a simple static fixed-price SAM-based framework to analyse distributional impact on incomes of rural and urban households in Pakistan. This methodology is useful because social accounting matrix (SAM) represents the whole economy and it does not need a large data set. The SAM frameworks have been interpreted specifically valid for fiscal adjustment.

There are two main objectives of the paper. First, it develops a latest social accounting matrix for the year 1989-90 with possible disaggregation of the households sector based on income levels. The first social accounting matrix (SAM) for Pakistan was constructed by the PIDE (1985) for the year 1979-80. SAM-1979-80(1985) had been disaggregated into 8 products, 12 activities and 10 households groups. Cohen (1987) used, this SAM(1984-85) for estimating the impact multipliers and as a baseline data system for consistency model. The SAM for the year 1984-85 developed by the Federal Bureau of Statistics (1993), did not provide a disaggregation of the households sector. This omission drastically reduced the significance of data for analysis of the households sector, particularly if distributive and redistributive aspects are to be emphasised. This paper fills this gap. The second objective of the paper is to analyse the impact of fiscal reforms relating to subsidies (production and consumption subsidies), government current expenditure and expenditure on health and education on

[1]The results of these studies nevertheless require careful interpretation as they employ restrictive methodology to assess the impact of structural adjustment reforms on income distribution. Use of elaborate procedure has also been favoured by White (1995) and McGillivary *et al.* (1994) who argued that performing counter factual analysis using econometric or general equilibrium models is the most legitimate approach to examining the relationship between poverty and economic reforms.

incomes of various urban and rural households in Pakistan. Thus, it attempts to seek an appropriate answer of the main research question: *whether or not fiscal reforms under structural adjustment have had adverse effects on income distribution in Pakistan.* However, this study captures only some of the main fiscal policy variables involved in structural adjustment reforms, not all by any means.

The plan of the paper is as follows. Following introduction, Section 2 presents historical overview of fiscal adjustment reforms and income distribution in Pakistan. Section 3 describes methodology and data. Results are discussed in Section 4. Final section gives concluding remarks.

2. OVERVIEW OF FISCAL ADJUSTMENT POLICIES AND INCOME DISTRIBUTION

Fiscal performance of Pakistan had deteriorated significantly by 1987-88. Budget deficit had reached a staggering 8.5 percent of GDP in that year. A large portion of government expenditure was being utilised on subsidies: consumer subsidies were supposed to help the poor and production subsidies to provide assistance in production process and for exports. There were many tax exemptions. Pakistan badly needed tax reforms with efficiency and equity objectives as well as to reduce budget deficit by revenue generation alongside reduction in current expenditure to free resources for development expenditure. A number of recommendations on fiscal adjustment were made by the IMF and the World Bank under the adjustment programme started in 1988.[2] It was recommended that tax revenue should be increased from 13.0 percent of GDP in 1986-87 to 16.9 percent of GDP in 1992-93 with an increase in direct tax revenue from 1.9 percent of GDP to 3.3 percent of GDP and indirect tax revenue from 11.2 percent of GDP to 13.6 percent of GDP. At the same time, it was emphasised to bring a gradual reduction in government total expenditure from 26.7 percent of GDP in 1987-88 to 24.8 percent of GDP in 1990-91 by reducing current expenditure with main emphasis on lowering subsidies from 1.7 percent of GDP to 0.5 percent of GDP. Since 1988, therefore, the government has been trying to reverse the inherited trend in fiscal balance by broadening the tax base, abolishing tax exemptions and tax holidays and increasing the elasticity of tax system by shifting the emphasis from imports to domestic consumption. Initially, consumption subsidies were allowed to cushion the poor against rising prices of essentials, such as wheat and edible oils, while production subsidies were aimed at promoting economic activities in larger national interest. Key indicators of fiscal policy in Pakistan are reported in Table 1. Under the deregulation plan and to move towards more market oriented economy, subsidies have been substantially withdrawn from 1.7 percent of GDP in 1988-89 to 0.5 percent of GDP in 1997-98. Current and development expenditures have also declined,

[2]For more detail on structural adjustment reforms in Pakistan, see World Bank (1988, 1989, 1993).

Table 1

Key Indicators of Fiscal Policy in Pakistan (% of GDP)

Year	Tax Revenue	Government Expenditure					Budget Deficit
		Total	Subsidies	Health	Education	Others	
1987-88	13.8	26.7	1.5	1.0	2.4	21.8	8.5
1988-89	14.3	26.1	1.7	1.0	2.4	21.0	7.4
1989-90	14.0	25.7	1.5	1.0	2.2	21.0	6.5
1990-91	12.7	25.6	1.1	0.9	2.1	21.5	8.7
1991-92	13.6	26.5	0.9	0.7	2.2	22.7	7.4
1992-93	13.3	26.0	0.7	0.7	2.2	22.4	8.0
1993-94	13.2	23.2	0.6	0.7	2.2	19.7	5.9
1994-95	13.7	22.8	0.4	0.6	2.4	19.4	5.6
1995-96	14.1	23.9	0.6	0.8	2.4	20.1	6.3
1996-97	13.5	22.3	0.5	0.8	2.6	18.4	6.2
1997-98	12.9	21.1	0.5	0.7	2.3	17.6	5.4
1998-99	13.8	18.4	–	0.7	2.2	–	4.7

Source: Pakistan (Various Issues).

respectively, from 19.8 percent to 18.8 percent of GDP and from 6.9 percent to 3.1 percent of GDP. Fiscal deficit has declined from 8.5 percent of GDP in 1987-88 to 4.7 percent of GDP during 1998-99. Table 1 also shows that public expenditure on education and health have also declined, even though SAP was designed to increase expenditure on education and health. Similarly, though the fiscal adjustment programmes emphasise resource mobilisation and low income groups were supposed to be protected, recent studies show that income inequality has increased during the period of adjustment in Pakistan.

Historical trend in income distribution indicated by Gini-coefficients along with GDP growth rates are presented in Table 2. It shows that the economy has been growing satisfactorily, but income distribution has worsened over the period 1988 to 1999.[3] Gini-coefficients for Pakistan as a whole and for rural and urban areas, reported in Table 2, show an increase from 0.35, 0.31 and 0.35 in 1987-88 to 0.40, 0.35 and 0.40 in 1993-94, respectively. Most recent estimates of Gini-coefficients for the year 1998-99 also show that income inequality has worsened since 1993-94 [see Siddiqui and Iqbal (1999)]. Table 2 also shows that on the whole, income distribution during the period under consideration has worsened in urban areas as compared to rural areas except in 1990-91.[4]

[3]The Gini-coefficient is a concentration measure which can be derived from the Lorenz Curve derived by plotting the percentage of total income received by various population groups. The Gini-coefficient gives the area between the Lorenz Curve and the diagonal line of absolute equality as a proportion of the total area under the diagonal line.

[4]It is worthwhile mentioning that the values of Gini-coefficient in rural and urban areas reported in Table 2 have changed rank in 1990-91 and 1992-93. Such fluctuations in the Gini-coefficient may have been due to changing sampling bias, but this phenomenon needs further scrutiny.

Table 2

Trends of Gini-coefficients and Growth Rates of GDP

Years	Gini-coefficients			Growth rate of GDP (%)
	Pakistan	Rural	Urban	
1987-88	0.35	0.31	0.37	6.44
1990-91	0.41	0.41	0.39	5.57
1992-93	0.41	0.37	0.42	2.27
1993-94	0.40	0.35	0.40	4.54
1998-99*	0.41	0.37	0.41	3.11

Source: Pakistan (Various Issues).

* See Siddiqui and Iqbal (1999a).

3. METHODOLOGY AND DATA

This section briefly describes the salient features of the social accounting matrix used for analysis[5] and explains the simple static fixed-price SAM-based model used to analyse the impact of selected fiscal policies under structural adjustment on households incomes.

Structure of a Social Accounting Matrix

Interest in social accounting matrix has emerged in the last three decades, when it has been extensively used as a tool for policy analysis.[6] The SAM framework is also commonly used in computable general equilibrium (CGE) models for analysing structural adjustment reforms and their impact on income distribution and poverty in developing countries, for example, Robinson (1988) and Taylor (1990) provided a comprehensive survey on SAM-based CGE modelling. The classification and disaggregation of accounts in a social accounting matrix can take various forms, depending on how the constituent accounts are defined and depending on one's analytical interests and specific policy concerns.

As a pre-requisite, the compilation of a comprehensive input-output (I-O) table started in Pakistan in 1975-76 and the first detailed I-O table was produced in 1983. The social accounting matrix for the year 1979 was published in 1985 by the Pakistan Institute of Development Economics (1985). The Federal Bureau of Statistics (FBS) compiled a social accounting matrix for the year 1984-85, using I-O table and Institutional Sector Accounts for the same year. The FBS produced the second I-O table for the year 1989-90. The information presented in I-O table 1989-90 includes

[5]For further details on Social Accounting Matrix of Pakistan for 1989-90, see Siddiqui and Iqbal (1999).

[6]For example, Siddiqui and Iqbal (1999); Cohen (1997, 1993); Iqbal (1996); James and Khan (1993); Pyatt (1991, 1991a, 1988, 1985); Pyatt and Round (1985, 1979, 1977); King (1985) and Thorbecke (1985) all provide excellent introduction to SAMs and their uses.

supply and use tables and the industry by industry flow table. The I-O table provides an elaboration of production account of the system of national accounts in Pakistan for the year 1989-90. The Integrated Economic Accounts (IEA) have also been compiled in conjunction with the I-O table for 1989-90.[7] The IEA was developed using different data sources including National Accounts Statistics; Balance of Payment Statistics; Household Income and Expenditure Survey and Public Finance Statistics. The IEA provide a comprehensive overview of inter-relationships between economic agents involved in income generation, distribution, accumulation and finance in the economy. The full details of the methodology and data sources used in the preparation are described in the main documents of I-O table and IEA for 1989-90.[8]

Since the FBS did not produce the SAM for the year 1989-90, we attempt to compile the SAM for 1989-90, using I-O table and IEA for the same year. This effort yields a 28 × 28 social accounting matrix of Pakistan reported in Appendix Table 1.[9] The SAM-1989-90, presents a summarised but comprehensive picture of the whole economy by showing the interrelationship among different aspects of economic transactions in production, consumption, and investment. According to standard accounting principles of a SAM, incoming (income) in one account is balanced by an outgoing (expenditure) of another account. Since incoming and outgoing are recorded in a single entry system, the SAM is a square matrix by definition. For every row there is a corresponding column and sum along the row is equal to the sum along the corresponding column.

The SAM 1989-90 presents four types of accounts: factors accounts, institutions accounts, activities accounts, and the rest of the world (ROW) account. These accounts are disaggregated on the basis of requirements and availability of data. Factors of production account is disaggregated into labour and capital accounts. Institutions accounts consist of households, firms (non-financial and financial), government, and rest of the world. Households account is further disaggregated by four income categories of rural and urban households. These accounts elaborate the inter-institutional linkages. Production account is disaggregated into agriculture, industry, education, health and other sectors. Further disaggregation of production account is also made on the basis of goods for domestic market and for export market. Finally, it presents consolidated capital account. Since the analysis mainly focuses on the households sector, the following sub-section describes the disaggregation of the households by income groups and their sources and uses of income in more detail.

[7]Institutional Sector Accounts for 1984-85 and IEA for 1989-90 have almost similar characteristics.

[8]For IEA, see Rizvi (1996) and for I-O table see Pakistan (1996).

[9]Since the compilation of a SAM is quite flexible, it has been condensed according to the need of the study and specific policy objectives.

Sources and Uses of Incomes of Households

(a) Sources of Income of Households

Table 3 shows the sources of incomes of various urban and rural income groups during the year 1989-90. These estimates are derived from Appendix Table 1. Both urban and rural households are classified into four income groups namely lowest income group having monthly income up to Rs 2500, low income group, with monthly income ranging between Rs 2501 and Rs 4000, middle income group with monthly income range of Rs 4001–Rs 7000 and high income group earning above Rs 7001 per month. Table 3 indicates that wages and salaries contribute the highest share of 54.2 percent in the total income of the urban lowest income group while the remaining sources of income of this group are operating surplus (42.2 percent), dividends from firms (1.1 percent), transfers from the government (1.1 percent) and transfers from the rest of the world (1.3 percent). Similarly, for the low income group, wages and salaries contribute 46.7 percent, operating surplus 44.7 percent, dividends from firms 4.3 percent, transfers from the government 0.56 percent, and transfers from the rest of the world 3.7 percent in its total income. In contrast, the middle and the high income groups, respectively, receive largest share of income from operating surplus 46.7 percent and 40.1 percent. The remaining sources of incomes of both these income groups are, correspondingly, wages and salaries 38.8 percent and 28.5 percent, dividends from firms 5.8 percent and 11.6 percent, transfers from the government 1.0 percent and 2.1 percent, and transfers from the rest of the world 7.7 percent and 17.7 percent of their total incomes.

Among rural households, operating surplus contributes the largest share in incomes of all the four categories of rural income groups, i.e. 56.6 percent, 68.3 percent, 72.0 percent and 61.5 percent in incomes of the lowest, low, middle and high income groups, respectively. The other sources of incomes of all the four rural income groups are, correspondingly, wages and salaries 37.4 percent, 21.3 percent, 15.5 percent, and 7.6 percent; dividends from firms 2.6 percent, 5.2 percent, 7.4 percent, and 17.1 percent; transfers from the government 0.75 percent, 0.5 percent, 0.31 percent, and 4.3 percent; and transfers from the rest of the world are 2.7 percent, 4.7 percent, 4.8 percent and 9.6 percent.

(b) Uses of Income by Rural and Urban Households

The respective columns of the social accounting matrix reported in Appendix Table 1 give uses of income by the various rural and urban income groups, which are the same as defined earlier in the case of sources of incomes. The uses of incomes are summarised in Table 4. By definition total uses of income are equal to total income from all sources of the respective income groups. Starting with urban households, the largest share of total income is spent on manufactured products by all the four urban income

Table 3

Sources of Households Income by Income Groups, 1989–90 (Percentage Shares)

Sources of Income \ Income Groups	Urban Households				Rural Households			
	Lowest	Low	Middle	High	Lowest	Low	Middle	High
Wages and Salaries	54.24	46.73	38.80	28.49	37.35	21.30	15.50	7.58
Operating Surplus	42.21	44.69	46.65	40.11	56.59	68.30	72.03	61.45
Dividends from Firms	1.14	4.27	5.81	11.58	2.61	5.16	7.41	17.11
Transfers from Govt.	1.14	0.56	1.00	2.14	0.75	0.50	0.31	4.28
Transfers from ROW	1.28	3.74	7.74	17.68	2.70	4.73	4.75	9.59
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 4

Uses of Households Income by Income Groups, 1989–90 (Percentage Shares)

Income Groups / Sources of Income	Urban Households				Rural Households			
	Lowest	Low	Middle	High	Lowest	Low	Middle	High
Agriculture Product	43.19	34.90	28.20	15.73	45.94	34.14	26.21	12.78
Manufacturing Product	55.97	45.77	38.41	22.67	57.29	42.18	33.43	16.62
Education	0.68	0.93	0.96	1.33	0.39	0.44	0.40	0.25
Health	0.93	0.76	0.72	0.32	0.96	0.71	0.65	0.33
Others	29.79	27.23	25.03	23.88	23.73	19.51	17.41	11.03
Taxes Paid	0.21	0.41	0.72	0.63	0.24	0.15	0.24	1.30
Savings	–30.77	–10.02	5.96	35.43	–28.57	2.87	21.65	57.68
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

groups; the share being 56.0 percent, 45.8 percent, 38.4 percent, and 22.7 percent for the lowest to the highest income groups. The second largest expenditure component is on agricultural product where the lowest income group spends 43.2 percent, low income group 34.9 percent, middle income group 28.2 percent and high income group 15.7 percent of their total incomes. On other activities (including services), lowest income group spends 29.8 percent, low income group 27.2 percent, middle income group 25.0 percent and high income group 23.9 percent of their incomes. Table 4 also shows that all these groups spend a small fraction of their income i.e. less than 2 percent on education and health. It is interesting to note that all the urban income groups pay less than 1 percent of their incomes as direct taxes to the government. It is also evident from Table 4 that both the urban lowest and low income groups are net dissavers (i.e. –30.8 percent and –10.0 percent of their income, respectively) while the other two groups middle and high income groups save, respectively, 6.0 percent and 35.4 percent of their total incomes.

Among rural households, Table 4 shows different uses of incomes by the lowest, low, middle and high income groups in Pakistan. Very much like the urban households, all rural income groups spend the largest proportion of their incomes (i.e. 57.3 percent, 42.2 percent, 33.4 percent, and 16.6 percent, respectively) on manufactured goods. While the second largest consumption component is agricultural product on which they spend, correspondingly, 45.9 percent, 34.1 percent, 26.2 percent, and 12.8 percent of their total incomes. The expenditure on other commodities (including services) remains 23.7 percent, 19.5 percent, 17.4 percent, and 11.0 percent, respectively. Like the urban income groups, the rural income groups also spend a small proportion of their income on health and education which is even lesser than spending by the urban groups. The rural income groups also pay a small amount of their incomes (i.e. less than 1 percent except highest income group which pays 1.3 percent) as direct taxes to the government. Table 4 shows that the rural lowest income group is a net dissaver of 28.6 percent of its income while the other three groups are savers as the low income group saves 2.9 percent, middle income group 21.7 percent, and high income group 57.7 percent of their total incomes.

A Static Fixed-Price SAM-Based Model

A static fixed-price SAM-based model is used to calculate the impact multipliers of socioeconomic linkages using the social accounting matrix for the year 1989-90 reported in Appendix Table 1. This simple model provides multipliers in a general equilibrium framework. The multipliers can be further decomposed to derive the direct and indirect effects and the main causal linkages underlying the structure of the economy. The multiplier model used in this study resembles Pyatt and Round (1985) includes Leontief input-output multipliers and the impact of exogenous

shocks on income generation, distribution and consumption. The procedure of the multiplier analysis is as follows. In a SAM-based analysis, it is a common practice to take government accounts, capital accounts, and the rest of the world accounts are assumed to be exogenously determined. Thus, exogenous accounts are taken into vector x. All other accounts treated as endogenous accounts are denoted by vector y. The x and y vectors are connected by a matrix A, which is formed by dividing each cell in the SAM by its column total. The model can thus be written as Equation (1) where the inverse of matrix A is the matrix of aggregate multipliers M_a.

$$y = Ay + x = (I - A)^{-1}.\, x = M_a\,.\, x \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

The matrix of aggregate multipliers M_1, M_2, and M_3 derive direct, open and closed-loop effects. M_1 captures the effects of one group on itself through direct transfers. M_2 captures the open or cross-effects of the multiplier process whereby an injection into one part of the system has repercussions on other parts. M_3 shows the closed or full circular effects of an income injection going round the system and back to its point of origin in a series of repeated and dampening cycles. The expression for the decomposition is a multiplicative one, which is written as follows:

$$y = (M_3.M_2.M_1)\,.\, x \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Pyatt and Round (1977), following Stone, respecify the decomposition in Equation (2) in an additive form, giving Equation (3) as:

$$y = (I + T + O + C)\,.\, x \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

where

I = initial impulse or identity multiplier (unit increase)
T = $(M_1 - I)$ named as transfer multiplier
O = $(M_2 - I).\, M_1$ named as open-loop multiplier
C = $(M_3 - I)\,.\, M_2\,.\, M_1$ named as closed-loop multiplier.

In this study, we undertake the multiplier analysis using Equation (1) and simulate the effects of exogenous changes relating to fiscal policy in Pakistan. The simulation results are further decomposed using Equation (3), which provides transfer, open and closed loop effects of exogenous shocks on income distribution of aforementioned various urban and rural income groups. The results are reported in Appendix Table 2.

4. RESULTS AND DISCUSSION

The results of selected adjustment polices on households incomes and income distribution represented by Gini-coefficients are described in the following sub-sections.

Impact of Fiscal Adjustment Policies on Households Incomes

At the outset, it is important to mention that the multipliers need to be interpreted with caution because of several restrictive assumptions underlying the multiplier methodology. For example, first, the size of the multipliers depends on the choice of the exogenous variables, which in turn depends on the problem studied. Second, the SAM framework describes an endogenous economy with fixed relative prices. Third, cell entries of the SAM are amounts, i.e., products of prices times quantities which are not explicitly disentangled. Fourth, the coefficient matrix in the SAM framework is a matrix of fixed average proportions. Finally, the SAM framework considers the demand side only.[10]

The aggregate multipliers (M_a) and its decomposition into initial impulse (I), transfer multiplier (T), open-loop multiplier (O), and closed-loop multiplier (C) are reported in Appendix Table 2. The results show that values in column (M_a) give the 'backward' linkages of the endogenous accounts, which indicate the measure of the opportunities offered to suppliers arising from marginal changes in final demand (i.e. exogenous accounts). The multipliers for all endogenous accounts imply a high degree of integration. For the production sectors, backward linkages are strongest for the education, followed by agriculture, health, other sectors and industry. Among the households income groups, the largest backward linkage is for the urban poorest (HU1 having income less than Rs 2500 per month) and the smallest for the rural rich (HR4 having income more than Rs 7000 per month). Table 5 which summarises the simulation results of changes in various fiscal policy variables on all households income groups along with other endogenous accounts should be the prime focus of attention. Here, the simple simulation exercise assesses the nature of socio-economic linkages in Pakistan's economy. The simulation results are briefly explained as follows.[11]

(i) 50 Percent Reduction in Subsidies

In almost all the structural and sectoral adjustment programmes, much emphasis has been placed on reduction in subsidies. As indicated earlier in Table 1, since the start of SAP, subsidies have been significantly reduced from Rs 7.3 billion in 1988-89 (1.7 percent of GDP) to Rs 3.2 billion (0.5 percent of GDP) in 1997-98, showing one of the most significant compliance indicators of structural adjustment programmes in Pakistan. Using the simple model described above, the simulations are performed by reducing the overall subsidies as well as consumption and production subsidies separately by 50 percent. The results reported in Table 5 show that the most pronounced effect of reduction of overall subsidies is on the incomes of the richest rural (HR4 having income more than Rs 7000 per month) and the richest urban (HU4 having income more than Rs 7000 per month) as their respective incomes declined by

[10]For more detail on the limitations of SAM framework, see Cohen (1993, 1997).

[11]The results should be interpreted with caution because of the assumption of no supply constraints in the system.

Table 5

Simulation Results by Changes in Fiscal Policy Variables (Percentage Changes in Incomes)

Endogenous Accounts	50% Reduction in Consumption Subsidies (1)	50% Reduction in Production Subsidies (2)	50% Reduction in Overall Subsidies (3)	5% Reduction in Government Overall Current Expenditure (4)	10 % Reduction in Government Exp. on Education and Health (5)	Total Effect of All Three Policies (3+4+5) (6)
Labour (Wages)	–0.66	–0.88	–1.54	–1.87	–0.89	–4.18
Capital (Op. Surp.)	–0.72	–0.92	–1.64	–1.70	–0.43	–3.67
HU1 (Urban)	–1.23	–0.87	–2.11	–1.82	–0.67	–4.46
HU2 (Urban)	–0.93	–0.85	–1.78	–1.79	–0.62	–4.06
HU3 (Urban)	–1.12	–0.81	–1.92	–1.74	–0.56	–4.10
HU4 (Urban)	–1.60	–0.69	–2.29	–1.65	–0.46	–4.27
HR1 (Rural)	–1.04	–0.86	–1.91	–1.78	–0.58	–4.14
HR2 (Rural)	–0.90	–0.85	–1.75	–1.73	–0.50	–3.87
HR3 (Rural)	–0.81	–0.84	–1.65	–1.74	–0.47	–3.76
HR4 (Rural)	–2.71	–0.73	–3.45	–1.89	–0.38	–5.53
Firms	–0.47	–0.60	–1.07	–2.84	–0.28	–4.13
Pro. Agriculture	–0.94	–0.88	–1.82	–1.57	–0.47	–3.74
Pro. Industry	–0.62	–1.03	–1.64	–1.23	–0.32	–3.10
Pro. Education	–0.32	–0.21	–0.53	–4.16	–7.57	–11.85
Pro. Health	–0.60	–0.43	–1.03	–3.30	–5.06	–9.08
Pro. Other Sector	–0.60	–0.92	–1.52	–1.94	–0.30	–3.67
Dem. Agriculture	–0.95	–0.89	–1.84	–1.59	–0.47	–3.79
Dem. Industry	–0.73	–0.80	–1.54	–1.42	–0.38	–3.24
Dem. Education	–0.32	–0.20	–0.52	–4.16	–7.57	–11.85
Dem. Health	–0.60	–0.43	–1.03	–3.31	–5.06	–9.09
Dem. Other Sector	–0.62	–0.67	–1.29	–2.00	–0.31	–3.52

3.5 and 2.3 percent. This is followed by the poorest urban and poorest rural (HU1 and HR1 both having income less than Rs 2500 per month) as their incomes are reduced by 2.1 percent and 1.9 percent, respectively. By halving consumption and production subsidies separately the production subsidies alone seem to affect the poorest group the most followed by the poorest urban and poorest rural. These results imply that the richest people in the country are the greater beneficiary of government subsidies. Among the producing sectors, the reduction in overall subsidies has more adverse impact on the agriculture sector, followed by industry, other sectors, health, and education. Table 5 also shows that the operating surplus of capital declines more than wages of the labour from a reduction in overall subsidies.

(ii) 5 Percent Reduction in Government Overall Current Expenditure

One of the major concerns of the structural adjustment programmes is the reduction of public current expenditure in order to correct the persistent fiscal imbalances in Pakistan. On the basis of concerted efforts, public current expenditure has reduced from 19.8 percent of GDP in 1987-88 to 18.0 percent of GDP in 1997-98. The main results of a 5 percent reduction in government current expenditure on incomes of urban and rural households are presented in Table 5. To standardise simulations, the level of government overall current expenditure has been reduced by 5 percent below the level of base year 1989-90. The results indicate that a contraction in government spending has a negative impact on the incomes of all the urban and rural household groups. The largest reduction appears to be in the income of the richest rural (HR4), followed by poorest urban (HU1), whose incomes are reduced by 1.9 percent and 1.8 percent, respectively. Among factors of production, labour income is affected more (1.9 percent reduction) than capital income (1.7 percent decline). For the production sector, reduction in government current spending has more adverse impact on education followed by health, other sectors, agriculture and industry.

(iii) 10 Percent Reduction in Government Expenditure on Education and Health

In the recent adjustment reforms, it has been greatly emphasised to increase investment on education and health in order to enhance human capital in the country. The role of human capital in explaining variation in the rate of growth of output is one that has been given considerable attention in the current literature as human capital is perceived as a primary source of economic growth.[12] In spite of this positive relationship, the government expenditure on education and health in Pakistan

[12]Iqbal and Zahid (1998); Barro and Sala-i-Martin (1995); Barro and Lee (1994); Mankiw *et al.* (1992); Barro (1991, 1989); Romer (1990); Becker *et al.* (1990); Lucas (1988) and Psacharopoulos (1973) argued that promoting human capital is instrumental in enhancing economic growth.

has declined from 3.4 percent of GDP in 1987-88 to 3.0 percent of GDP in 1997-98. Table 5 reports the simulation results of a 10 percent decline in public expenditure on education and health. It is clear that this policy action reduces activities in the education sector by 7.6 percent and the health sector by 5.1 percent. It also shows that the poorest urban (HU1) and poorest rural (HR1) are more adversely affected than the other relatively better-off urban and rural income groups. Similarly, income of the labour declines relatively more than operating surplus of the capital.

(iv) Simulation Results of Simultaneous Shock of all Three Policies

Because of interlinkages, it is essential that rather than pursuing individual policies a complete package is implemented. Thus, all the aforementioned policy variables (i.e. 50 percent reduction in overall subsidies, 5 percent reduction in overall government current expenditure, and 10 percent reduction in government expenditure on education and health) are now taken together and policy simulations are performed collectively. The results of the combination of policy reforms are reported in Table 5, which show that all joint policies have considerable negative impact on incomes of rural and urban households groups. Among the urban households, the poorest income group absorbs the greatest heat than the other income groups as its income is reduced by 4.5 percent. Among rural households, the richest rural income group is affected more as its income is reduced by 5.5 percent, followed by the poorest rural income group whose income is declined by 4.1 percent. Among factors of production, the adverse impact is more serious on labour income than capital income. Among production sectors, combined adjustment policies have considerable negative impact on education, followed by the health sector as activities in these sectors decline by 11.9 percent and 9.1 percent, respectively.

Impact of Fiscal Adjustment Policies on Income Distribution

More recently, reduction in poverty and improvement in income distribution have been the main objectives of Structural Adjustment Programmes in Pakistan. As the main purpose of the study is to make some judgement about the impact of fiscal adjustment policies on income distribution in Pakistan, we focus on the widely used indicator of income distribution i.e. Gini-coefficients which are calculated from the original data on urban and rural households income reported in SAM, 1989-90 (Appendix Table 1). Table 6 shows the actual Gini-coefficient (Gini Actual) for urban households is 0.3878 and for rural households 0.3874. The Gini Actual is compared with the calculated Gini-coefficients based on incomes of urban and rural households generated through simulation exercises (reported in Table 5). If the calculated Gini-coefficient based on simulation is higher than the actual Gini-coefficient, it implies that the respective adjustment policy has adverse impact on income distribution in Pakistan and vişe versa.

Both the actual and calculated Gini-coefficients are reported in Table 6. Gini1 based on first policy simulation (50 percent reduction in consumption subsidies) shows that reduction in consumption subsidies improves income distribution in both rural and urban areas of Pakistan, but improvement in income distribution in rural areas is more than in urban areas as Gini 1 for urban areas falls from actual 0.3878 to calculated 0.3871. For rural areas, the Gini 1 falls from Gini Actual 0.3874 to calculated 0.3853. This result also supports the above findings that the richest people in urban and rural areas are the greater beneficiaries of government subsidies as simulation results in Table 5 show that reduction in consumption subsidies has more adverse effect on incomes of the urban and rural richest groups as compared to the poor income groups. Conversely, calculated Gini-coefficient (Gini 2) based on second simulation exercise (50 percent reduction in production subsidies) shows that reduction in subsidies on production worsens income distribution both in urban and rural areas, but income distribution is worst in urban areas as compared to rural areas of Pakistan as Gini 2 increases to 0.3881 and 0.3876 for urban and rural households, respectively. Simulation 3 represents that 50 percent subsidies on consumption and production are reduced simultaneously. The results show that the negative impact of reduction in production subsidies is cancelled out by the positive impact of reduction in consumer subsidies. However, the positive effect dominates and income distribution in both areas improves although more in rural areas of Pakistan. Fourth simulation exercise is undertaken by reducing 5 percent overall government current expenditure. This policy has worsened income distribution in urban areas but improved in rural areas marginally. Simulation 5 shows 10 percent reduction in government expenditure on human capital indicators represented by health and education. It shows that this policy adversely affects income distribution in both urban and rural areas as Gini 5 is raised from Gini Actual 0.3878 to 0.3882 for rural

Table 6

Comparison of Gini-coefficients With and Without Policy Shocks

	Urban	Rural
Gini Actual	0.3878	0.3874
Gini 1 (Simulation1)	0.3871	0.3853
Gini 2 (Simulation 2)	0.3881	0.3876
Gini 3 (Simulation 3)	0.3874	0.3855
Gini 4 (Simulation 4)	0.3881	0.3872
Gini 5 (Simulation 5)	0.3882	0.3877
Gini 6 (All Simulations)	0.3882	0.3858

areas and for urban areas from 0.3874 to 0.3877. Finally, when the model is simulated by giving all the above mentioned policy shocks collectively, it worsens income distribution in urban areas but improves in rural areas of Pakistan as the calculated Gini 6 for urban households increases from Gini Actual 0.3878 to 0.3882 and for rural areas it declines from Gini Actual 0.3874 to 0.3858. Though policy implications derived from these results are limited in nature a fair idea can be obtained about the impact of adjustment policies on income distribution in Pakistan.

5. CONCLUDING REMARKS

The first objective of this exercise is to understand Pakistan's economy, The starting point therefore is to design a social accounting matrix that, through appropriate choice of classifications, can capture its important characteristics and the problems it faces. Therefore, the latest social accounting matrix for the year 1989-90, using the Integrated Institutional Accounts and Input-Output Table for the same year, is compiled. The matrix framework provides useful information about the structure of Pakistan's economy. Within this framework, the preferred classifications of various accounts are undertaken according to policy objectives. Here, the matrix is used as a tool for structural analysis to provide a quantitative description of the process of production, consumption, distribution, and accumulation.

Using a static fixed-price SAM-based model, related simulation exercises are performed to describe the impact of three key fiscal adjustment policies namely 50 percent reduction in subsidies, 5 percent reduction in overall public current spending, and 10 percent reduction in public spending on education and health (referred to as human capital) on incomes of various urban and rural households groups in Pakistan. The main conclusions are as follows:

First, the results show that reduction in subsidies has the more adverse impact on the incomes of the richest rural and urban households, implying that the richest people in the country are the greater beneficiaries of government subsidies. The second most affected income groups of falling subsidies are the poorest urban and poorest rural. In particular, consumption subsidies are basically to provide assistance in consumption to the poor but the richest urban and rural groups are benefiting more. Second, the effects of a contraction in government spending appear to be negative on the incomes of all the urban and rural household groups. The largest reduction appears in the income of the richest rural, followed by poorest urban. Third, the simulation results show that reduced public expenditure on education and health slows down activities in the education and health sectors. It also shows that the poorest urban and poorest rural are affected more than the other relatively better-off urban and rural income groups. Finally, the results of the combinations of the policy reforms show that all joint policies have considerable negative impact on incomes of all the rural and urban households groups. Among the urban households,

the poorest income group are affected more than the other income groups. Among rural households, the richest rural income group is affected more, followed by the poorest rural income group.

Regarding the impact of adjustment reforms on income distribution, the estimates of Gini-coefficients show that reduction in consumption subsidies improves income distribution in both rural and urban areas of Pakistan. Conversely, reduction in subsidies on production worsens income distribution both in urban and rural areas. Reducing overall government current expenditure worsens income distribution in urban areas but improves it in rural areas marginally. Similarly, reduction in government expenditure on human capital indicators adversely affects income distribution in both urban and rural areas. Finally, all policy shocks collectively worsens income distribution in urban areas but improve that in rural areas of Pakistan. It is worth noting that because of several restrictive assumptions underlying the multiplier methodology, policy implications derived from the results obtained in the study are limited in nature though a fair idea can be obtained about the impact of changes in exogenous demand, that is, the results show that structural adjustment programmes have worse distributional impact on urban and rural households incomes in Pakistan.

This analysis does not claim to cover all policy variables involved in structural adjustment reforms. Only some of the main. There is thus a need to explore the potential influence of other variables in future research on this topic. However, the present analysis can be extended by developing a computable general equilibrium (CGE) model for Pakistan's economy in order to analyse all possible structural adjustment policies on poverty and income distribution in Pakistan.

Appendix Table 1

Social Accounting Matrix of Pakistan, 1989-90

		Factors of Production		Institutions										
		Labour (1)	Capital (2)	HUI (Urban) (3)	HU2 (Urban) (4)	HU3 (Urban) (5)	HU4 (Urban) (6)	HR1 (Rural) (7)	HR2 (Rural) (8)	HR3 (Rural) (9)	HR4 (Rural) (10)	Firms (11)	Govern-ment (12)	Capital (13)
Labour	(1)													
Capital	(2)													
HUI (Urban)	(3)	32446	25252									680	681	
HU2 (Urban)	(4)	37200	35573									3403	445	
HU3 (Urban)	(5)	34383	41347									5150	884	
HU4 (Urban)	(6)	29121	41005									11842	2191	
HR1 (Rural)	(7)	38959	59032									2719	786	
HR2 (Rural)	(8)	17847	57223									4325	419	
HR3 (Rural)	(9)	13040	60586									6231	263	
HR4 (Rural)	(10)	6293	51040									14209	3556	
Firms	(11)		86339										45308	
Government	(12)			126	329	640	649	255	127	204	1079	24588		
Capital	(13)			–18408	–7973	5281	36215	–29801	2408	18211	47912	37787	–40165	
Agriculture	(14)												0	
Industry	(15)												4742	
Education	(16)												2	
Health	(17)												0	
Other Sectors	(18)												3534	
Agriculture	(19)			25837	27784	24995	16085	47929	28600	22050	10618		0	1458
Industry	(20)			33485	36436	34039	23174	59768	35334	28120	13805		0	96225
Education	(21)			406	742	851	1363	404	366	337	204		14137	7
Health	(22)			556	606	637	327	1004	594	549	276		4231	14
Other Sectors	(23)			17820	21677	22181	24415	24758	16347	14642	9166		102438	65348
Agriculture	(24)													
Industry	(25)													
Health	(26)													
Other Sectors	(27)													
Rest of World	(28)											20713		
Total	(29)	209289	457397	59822	79601	88624	102228	104317	83776	84113	83060	131647	143452	163052

Continued—

Appendix Table 1—(*Continued*)

	Activities					Goods for Domestic Market					Goods for Exports Market				Rest of World	
	Agriculture (14)	Industry (15)	Education (16)	Health (17)	Other Sectors (18)	Agriculture (19)	Industry (20)	Education (21)	Health (22)	Other Sectors (23)	Agriculture (24)	Industry (25)	Health (26)	Other Sectors (27)	Rest of World (28)	Total (29)
Labour	45681	45415	13883	2839	101471											209289
Capital	157847	83837	2613	2815	210285											457397
HUI (Urban)															763	59822
HU2 (Urban)															2980	79601
HU3 (Urban)															6860	88624
HU4 (Urban)															18069	102228
HR1 (Rural)															2821	104317
HR2 (Rural)															3962	83776
HR3 (Rural)															3993	84113
HR4 (Rural)															7962	83060
Firms																131647
Government	1557	44845	2	4	13799	857	42844	0	0	3					11544	143452
Capital	9165	20785	836	309	49996										30494	163052
Agriculture						353501					3867					357368
Industry							568520					102210				675472
Education								19044								19046
Health									8914				9			8923
Other Sectors										608584				22386		634504
Agriculture	49893	103486	175	0	7826											366736
Industry	37381	227552	505	2110	149984											777918
Education	0	82	33	0	112											19044
Health	12	31	0	176	23											9036
Other Sectors	55832	149439	999	670	101008											626740
Agriculture															3867	3867
Industry															102210	102210
Health															9	9
Other Sectors															22386	22386
Rest of World						12378	166554	0	122	18153						217920
Total	357368	675472	19046	8923	634504	366736	777918	19044	9036	626740	3867	102210	9	22386	217920	

Appendix Table 2

Decomposition of Total Multiplier Effects (Backward Linkages)

	Aggregate Multiplier (M_a)	Initial Impulse (I)	Transfer Multiplier (T)	Open-Loop Multiplier (O)	Closed-loop Multiplier (C)
Labour	12.436	1.000	.000	2.022	9.414
Capital	10.095	1.000	.000	1.856	7.240
HU1 (Urban)	14.310	1.000	.000	2.436	10.874
HU2 (Urban)	12.199	1.000	.000	2.048	9.151
HU3 (Urban)	10.540	1.000	.000	1.745	7.794
HU4 (Urban)	7.607	1.000	.000	1.205	5.402
HR1 (Rural)	14.053	1.000	.000	2.389	10.664
HR2 (Rural)	10.890	1.000	.000	1.808	8.082
HR3 (Rural)	8.969	1.000	.000	1.458	6.511
HR4 (Rural)	5.199	1.000	.000	.768	3.431
Firms	4.119	1.000	.369	.503	2.248
Pro. Agriculture	11.297	1.000	.000	1.933	8.364
Pro. Industry	10.169	1.000	.000	1.712	7.457
Pro. Education	12.379	1.000	.000	1.913	9.466
Pro. Health	11.193	1.000	.000	1.886	8.307
Pro. Other Sectors	10.215	1.000	.000	1.753	7.462
Dem. Agriculture	11.889	1.000	.000	1.899	8.990
Dem. Industry	8.432	1.000	.000	1.391	6.041
Dem. Education	13.379	1.000	.000	1.956	10.423
Dem. Health	12.042	1.000	.000	1.938	9.103
Dem. Other Sectors	10.920	1.000	.000	1.844	8.075

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