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Salient features of social accounting matrix of Pakistan for 1989-90: Disaggregation of the households sector

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1. Introduction

Interest in the social accounting matrix (SAM) has mainly occurred in the last three decades, when it was extensively used as a tool for policy analysis. For example, Pyatt and Round (1977, 1979, 1985), Pyatt (1985, 1988, 1991a, 1991b), King (1985), Thorbecke (1985), James and Khan (1993), and Iqbal (1996) all provide excellent introduction to SAMs and their uses. 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) provide 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. 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. It is worth to note that earlier social accounting matrix for the year 1984-85 developed by the Federal Bureau of Statistics did not provide a disaggregation of the households sector. This limits the analysis of the households sector, particularly when distributive and redistributive aspects need to be given importance. Therefore, this paper fills this gap. The SAM developed here will later assist in operationalizing the CGE model to be developed for Pakistan in order to analyse the Micro Impact of Macroeconomic Adjustment Polices (MIMAP) on income distribution and poverty in Pakistan under MIMAP-Pakistan Project. Second, this paper intends to calculate the impact multipliers of socio-economic linkages using the static fixed-price SAM-based framework.

The compilation of a comprehensive input-output (I-O) table started in Pakistan in 1975-76 by the Pakistan Institute of Development Economics (PIDE) and the first detailed I-O table was produced in 1983 and the first social accounting matrix for the year 1979 was

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published in 1985 by the Pakistan Institute of Development Economics. While the Federal Bureau of Statistics (FBS) started compilation of the social accounting matrix in 1984-85 and the second consolidated SAM for the year 1984-85 was produced by the FBS in 1993 with the collaboration of the Dutch Government under Improvement of National Accounting System (INAS) project. The macroeconomic variables in the accounting matrix for 1984-85 were derived from the estimates of the Institutional Sector Accounts for 1984-85 and from the I-O table 1984-85 for Pakistan. The FBS continued its endeavours and produced the second I-O table for the year 1989-90 in 1996. The information presented in I-O table 1989-90 includes supply and use tables and the industry by industry flow table. The I-O table provides an elaboration of the production account of the system of national accounts in Pakistan for the year 1989-90. The Integrated Economic Accounts (IEA) for the same year 1989-90 have also been compiled in conjunction with the I-O table for 1989-90.[2] The IEA was developed using different data sources, for example, National Accounts Statistics; Balance of Payment Statistics; Household Income and Expenditure Survey; and Public Finance Statistics. The Integrated Economic Accounts 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.[3]

Since the FBS did not produce the social accounting matrix for the year 1989-90, using input-output table and integrated economic accounts for the year 1989-90, we attempt to compile a latest social accounting matrix for the same year 1989-90 with disaggregation of the households sector. In the present SAM, the input-output industry classifications have been condensed into five main production accounts namely agriculture, industry, health, education and other sectors. The SAM 1989-90 also includes two factors of production (labour and capital), four economic institutions (households, firms, government, and rest of

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[2] Institutional Sector Accounts for 1984-85 and Integrated Economic Accounts for 1989-90 have almost similar characteristics.

[3] For IEA, see Rizvi (1996) Integrated Economic Accounts for 1989-90, Federal Bureau of Statistics, Statistics Division, Government of Pakistan and for I-O table see Federal Bureau of Statistics (1996), Supply and Use Tables of Pakistan 1989-90, Statistics Division, Government of Pakistan.

the world) and one aggregate capital accumulation account. The households account is further disaggregated by four income categories of rural and urban households in Pakistan. These accounts relate to the circular flow of production, consumption, and accumulation. It also provides details about the key macroeconomic variables and institutional relationships of Pakistan's economy for the year 1989-90 in the framework of the integrated system of national accounts. In this format, it yields a 28 x 28 social accounting matrix of Pakistan.[4]

The paper is divided into six sections. Following the introduction, section II describes the schematic presentation of a SAM. Section III shows the compilation of aggregate SAM of Pakistan for the year 1989-90 and describes the production, income, expenditure, and accumulation accounts. Disaggregation of the households sector is described in section IV. The multipliers are calculated and explained in Section V. The final section gives concluding remarks and also indicates the extension of work for the modelling component of MIMAP - Pakistan.

2. The Structure of a Social Accounting Matrix.

A Social Accounting Matrix (SAM) for the year 1989-90 in Table 1 presents a summarized 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 social accounting matrix 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. A theoretical structure of a social accounting matrix (with the aggregate households sector) for the year 1989-90 is reported in Table 1. It is 21 x 21 matrix which includes 20 rows and columns for real sectors and one row and its respective column for aggregate capital account. This SAM presents four types of accounts: factors account, institutions account, production

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[4] Since the compilation of a SAM is quite flexible, it has been condensed according to our own choice and

Table 1: Structure of Aggregate Social Accounting Matrix of Pakistan, 1989-90.

		Factors of Production		Agents				Total Production			
		Labour	Capital	Households	Firms	Government	Rest of World	Agriculture	Industry	Education	Health
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Labour	(1)							W_A	W_I	W_E	W_H
Capital	(2)							RK_A	RK_I	RK_E	RK_H
Households	(3)	W	RK_H		DIV	T_{GH}	T_{RH}				
Firms	(4)		RK_F			T_{GF}					
Government	(5)		RK_G	ID_H	ID_F		T_{RG}	II_A	II_I	II_E	II_H
Rest of World	(6)				T_{FR}						
Agriculture	(7)					SUB_A					
Industry	(8)					SUB_I					
Education	(9)					SUB_E					
Health	(10)					SUB_H					
Other Sectors	(11)					SUB_O					
Agriculture	(12)			D_{HA}		DG_A		IC_{AA}	IC_{AI}	IC_{AE}	IC_{AH}
Industry	(13)			D_{HI}		DG_I		IC_{IA}	IC_{II}	IC_{IE}	IC_{IH}
Education	(14)			D_{HE}		DG_E		IC_{EA}	IC_{EI}	IC_{EE}	IC_{EH}
Health	(15)			D_{HH}		DG_H		IC_{HA}	IC_{HI}	IC_{HE}	IC_{HH}
Other Sectors	(16)			D_{HU1O}		DG_O		IC_{OA}	IC_{OI}	IC_{OE}	IC_{OH}
Agriculture	(17)						ET_A				
Industry	(18)						ET_I				
Health	(19)						ET_H				
Other Sectors	(20)						ET_O				
Accumulation	(21)			S_{HU1}	S_F	S_G	CAB	D_A	D_I	D_E	D_H
Total	(22)	W	RK	Y_{HU1}	Y_F	Y_G	R_R	VX_A^S	VX_I^S	VX_E^S	VX_H^S

Table 1: Aggregate Structure of Social Accounting Matrix of Pakistan, 1989-90.

Continued…

	Goods for Domestic Market					Goods for Exports Market					
Other Sectors	Agriculture	Industry	Education	Health	Other Sectors	Agriculture	Industry	Health	Other Sectors	Accumulation	Total
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
W_O											W
RK_O											RK
											Y_H
											Y_F
II_O	TM_A	TM_I	TM_E	TM_H	TM_O						Y_G
	M_A	M_I	M_E	M_H	M_O						R_R
	VD_A					ET_A					VX_A^S
		VD_I					ET_I				VX_I^S
			VD_E								VX_E^S
				VD_H				ET_H			VX_H^S
					VD_O				ET_O		VX_O^S
IC_{AO}										IV_A	VX_A^D
IC_{IO}										IV_I	VX_I^D
IC_{EO}										IV_E	VX_E^D
IC_{HO}										IV_H	VX_H^D
IC_{OO}										IV_O	VX_O^D
											ET_A
											ET_I
											ET_H
											ET_O
D_O											ST
VX_O^S	VX_A^D	VX_I^D	VX_E^D	VX_H^D	VX_O^D	ET_A	ET_I	ET_H	ET_O	IT	

Table 2 Notation and Definition

Notation	Definition
i = (A,I,E,H,O)	Branches of production (A=agriculture, I=industry, E=education, H=health, O = other sectors)
l = (HH,F,G,R,)	Agents (HH=households, F=firms, G=government, and R= rest of the world)
n	Number of households income groups (1,2,3,4)
HU1/HR1, HU2/HR2, HU3/HR3, HU4/HR4	Households groups (HU1/HR1= urban/rural households having income level upto Rs.2500, HU2/HR2= urban/rural households having income level Rs.2501-4000, HU3/HR3= urban/rural households having income level Rs.4001-7000, and HU4/HR4= urban/rural households having income level Rs.7001&above.
CAB	Current account balance (foreign savings)
DIV	Dividends paid to households
D_{HHi}	Households consumption of good i
DG_i	Government consumption of good I
ET_i	Exports of good I
HR	Rural households
HU	Urban households
IDl	Income tax paid by agent l
Ii_i	Indirect taxes on good I
Ic_{ij}	Intermediate consumption produced by branch I and consumed by branch j
IT	Total gross investment
Iv_i	Consumption of good i for investment uses
M_i	Imports of good i
RK_i	Capital income paid to agent l by i branches of production
RKl	Total capital income
RK	Agent l's total income
R_R	Total payments to and receipts from the rest of the world
S_l	Agent l's savings
SUB_i	Subsidies on production i
ST	Total gross savings
T_{GHH}	Government transfers to households
T_{GF}	Government transfers payments to firms
T_{RHH}	Foreign transfers to households (in local currency)
T_{RG}	Foreign transfers to government (in local currency)
T_{FR}	Firms transfers to the rest of the world
TM_i	Income from import duties from good i
VD_i	Local production of good I sold on domestic market
VX_i^S	Total supply of good i
VX_i^D	Total deman of good i
W_i	Wages paid by branch i
W	Total wage payments
Y_l	Income received by I institution

account, and capital account. These accounts are disaggregated on the basis of requirements and availability of data. Factors of production account are disaggregated into labour (L) and capital (K) accounts. Institutions accounts consist of aggregate households (HH), firms (F), government (G), and rest of the world (R). These accounts elaborate the inter-institutional linkages. Production account is disaggregated into agriculture (A), industry (I), education (E), health (H) and other sectors (O). Further disaggregation of production account of ith goods is also made on the basis of goods for domestic market and for export market. Finally, it presents consolidated capital account. A brief discussion on each account reported in Table 1 is given in the following sub sections.

2.1 Factors Account

This account is related to two factors of production namely labour and capital. It distinguishes between returns to labour(wages) and capital engaged in the production activities in i sectors of the economy. Ten cells at the cross of first two rows and 7 to 11 columns indicated in Table 1 together constitute value added module. Where W_A, W_I, W_E, W_H, and W_O in these cells present wages to labour from agriculture, industry, education, health, and other sectors, respectively. Similarly, RK_A, RK_I, RK_E, RK_H, and RK_O present, respectively, capital income from agriculture, industry, education, health, and others sectors. This income is distributed among l agents. All wage income (W) is received by households as remuneration for their services of supplied labour. On the other hand, capital income is distributed among all agents namely households (RK_{HH}), firms (RK_F), and the government (RK_G). Algebraically, equations for labour income and capital income can be written down. Left side of each equation represents income of an account and right side shows expenditure of that account.

Labour Account
$$W_A + W_I + W_E + W_H + W_O = W \tag{1}$$

Capital Account

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$$RK_A + RK_I + RK_E + RK_H + RK_O = RK_{HH} + RK_F + RK_{G.} = RK \qquad (2)$$

Gross domestic product at factor cost (GDP$_{FC}$)

$$W + RK = GDP_{FC} \qquad (3)$$

Gross domestic product at market price (GDP$_{MP}$)

$$W + RK + \Sigma II_i + \Sigma TM_i + \Sigma D_i = GDP_{MP} \qquad (4)$$

2.2. Agents Account

This account comprises aggregate households, firms, government, and rest of the world. Rows 3-6 present income of these agents and 3-6 columns present expenditure of the respective accounts in Table 1. Accounts of these agents are described in the following paragraphs.

2.2.1. Aggregate Households Account

The households receipts (Y_{HH}) are presented in the third row of the SAM 1989-90, which include labour income (W) and capital income (RK_{HH}) from five production activities (agriculture, industry, education, health, and other sectors). In addition to these incomes, households also receive income from other institutions such as dividends from firms (DIV), transfers from the government (T_{GHH}), and transfers from the rest of world (T_{RHH}). In accounting principle, income of households must be equal to households expenditure. Therefore, direct taxes paid to the government (ID_{HH}), households consumption of goods of agriculture, industry, education, health and other sectors (D_{HHA}, D_{HHI}, D_{HHE}, D_{HHH}, D_{HHO}), and households saving (S_{HH}) comprise households total expenditure. The mathematical expression for income and expenditure of the households can be written as follows:

Income: $\qquad W + RK_{HH} + DIV + T_{GHH} + T_{RHH} = Y_{HH}$ $\qquad$ (5)

Expenditure: $\quad ID_{HH} + \Sigma D_{HHi} + S_{HH} = Y_{HH}$ $\qquad$ (6)

2.2.2 Firms Account

Firms' income (Y_F) includes capital income (RK_F) and transfers from the government (T_{GF}). This income has to be balanced with firms' payment to households in terms of dividends (DIV), direct taxes paid to the government (ID_F), transfers to the rest of the world (T_{FR}) and their saving (S_F). Income and expenditure of firms can be mathematically written as:

Income: $RK_F + T_{GF} = Y_F$ (7)

Expenditure: $DIV + ID_F + T_{FR} + S_F = Y_F$ (8)

2.2.4 The Government Account

This account describes the balance between government receipts and expenditure. Government receipts (Y_G) include capital income from production process (RK_G), direct taxes paid by households (ID_{HH}) and by firms (ID_F), transfers from the rest of the world (TR_G), indirect taxes from agriculture, industry, education, health and other sectors (ΣII_i), and import duties from agriculture, industry, education, health and other imports (ΣTM_i). Corresponding column shows the composition of government expenditure in the form of transfers to households (T_{GHH}), transfers to firms (T_{GF}), production subsidies to agriculture, industry, education, health and other sectors (ΣSUB_i), final consumption of agriculture, industry, education, health and other sectors (ΣDG_i) and its saving/deficit (S_G). Equations for this account are as follows:

Income: $RK_G + ID_{HH} + ID_F + TR_G + \Sigma II_i + \Sigma TM_i = Y_G$

       (9)

Expenditure: $T_{GHH} + T_{GF} + \Sigma SUB_i + \Sigma DG_i + S_G = Y_G$ (10)

2.2.5 Rest of the World Account

This institution account shows demand for our exports to and supply of imports from the rest of the world. Along the 6th row of Table 1 are transfers by firms (T_{FR}) to the rest of the

world and demand for imports of agriculture, industry, education, health and others (ΣM_i), which together constitutes income of the rest of world. Along the corresponding column are expenditure of rest of the world which includes net transfers to households (TR_{HH}), transfers to the government (TR_G) from the rest of the world and demand for our exports for agriculture, industry, education, health and other sector (ΣET_i). Income and expenditure of the rest of the world are balanced by adding foreign savings (CAB) along the column in the capital accounts, that is current account balance of the balance of payments. The equations for this account are as follows:

Income: $T_{FR} + \Sigma M_i = R_R$ (11)

Expenditure: $TR_{HH} + TR_G + \Sigma ET_i + CAB = R_R$ (12)

2.3 Production Account

The classification of the production account includes agriculture, industry, education, health and other sectors. These accounts are condensed by aggregation of 86 sub-sectors in Input-Output Table for 1989-90 prepared by the FBS (1996). Agriculture sector includes major and minor crops plus fisheries. Industry includes large scale manufacturing, small scale manufacturing and mining and quarrying. Besides education and health, rest is included in other sectors. The rows 7 to 11 show the revenue received which includes production subsides (ΣSUB_i), sale of goods of agriculture (VD_A), industry (VD_I), education (VD_E), health (VD_H), and other sectors (VD_O) to domestic market and to export market (ET_A, ET_I, ET_E, ET_H, ET_O), which are balanced by the cost of production of these commodities mentioned in the corresponding columns 7 to 11 by value added paid to the factors of production ($W+RK$), indirect taxes paid to the government (ΣII_i), intermediate sectoral inputs transfers (ΣIC_{ij}), and consumption of fixed capital (depreciation) in these sectors (ΣD_i). We can write down these identities as follows:

Income: $\Sigma SUB_i + \Sigma VD_i + \Sigma ET_i = \Sigma VX_i^S$ (13)

Expenditure: $\Sigma W_i + \Sigma RK_i + \Sigma II_i + \Sigma IC_{ij} + \Sigma D_i = \Sigma VX_i^S$ (14)

The production account is further disaggregated on the basis of goods demanded on domestic market and goods for export market. These two accounts are discussed in the following sub-sections.

2.3.1 Goods for Domestic Market

Along the rows 12 to 16, this account shows domestic supply of ith goods while along the corresponding columns it is total demand of ith goods. The rows include households consumption of ith good (ΣD_{HHi}), government consumption of ith goods (ΣDG_i) intermediate demand by agriculture, industry, education, health and other sectors (ΣIC_{ij}) and consumption of goods i for investment uses (ΣIV_i). This should be equal to aggregate demand for domestic output (ΣVD_i), imports of goods (ΣM_i), and imports duties (ΣTM_i). The mathematical expressions are:

Income: $\quad \Sigma D_{HHi} + \Sigma DG_i + \Sigma IC_{ij} + \Sigma IV_i = \Sigma VX_i^D$ (15)

Expenditure: $\quad \Sigma TM_i + \Sigma M_i + \Sigma VD_i = \Sigma VX_i^D$ (16)

2.3.2 Goods for Export Market

Along the rows 17-20, this account shows supply of our exports of agriculture (ET_A), industry (ET_I), health (ET_H) and other exports (ET_O) to the rest of the world.[5] Respective columns shows demand of our exports (ET_A, ET_I, ET_H, ET_O) by the rest of the world. The equations are as follows:

Income: $\quad ET_A + ET_I + ET_H + ET_O = \Sigma ET_i$ (17)

Expenditure: $\quad ET_A + ET_I + ET_H + ET_O = \Sigma Et_i$

(18)

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[5] There is no export of education in the I-O Table 1989-90.

2.4 Consolidated Capital Account

This account is very important as it determines its link with the real sectors of Pakistan's economy. The aggregate capital account shows that total investment (IT) is financed by total gross savings (ST). Gross saving is calculated by adding consumption of fixed capital in producing i goods (ΣD_i) to the sum of households saving (S_{HH}), firms saving (S_F), government saving (S_G), and foreign saving (CAB). Along the column 21, it shows gross investment in agriculture (IV_A), industry (IV_I), education (IV_E), health (IV_H) and other sectors (IV_O). According to principle of national accounts, gross savings must be equal to gross investment. Following equations show mathematical expression for consolidated capital account.

Gross Savings: $\qquad S_{HH} + S_F + S_G + CAB + \Sigma D_i = ST$ $\qquad\qquad$ (19)

Gross Investment: $\qquad IV_A + IV_I + IV_E + IV_H + IV_O = IT$ $\qquad\qquad$ (20)

3. The Aggregate Social Accounting Matrix for 1989-90

The aggregate social accounting matrix of Pakistan for the year 1989-90 is presented in Table 3. The Table is, in essence, the matrix presentation of the standard production, income and outlay, and capital and finance accounts combined with the input-output table 1989-90. The present matrix focuses on inter-sectoral linkages. Its presentation allows each transaction in the accounts to be represented by a single cell in the matrix. It is compiled using simple accounting principle; each flow implies an income for the row account and an outlay for the corresponding column account. Table 3 provides a complete picture of the circular flow of Pakistan's economy for the year 1989-90. It recognises factors account, institutions account, production account and aggregate capital account. Further, the production account is distinguished into goods for domestic market and goods for export market. In the following sub-sections, we describe the main accounts of the aggregated SAM reported in Table 3.

Table 3: Aggregate Social Accounting Matrix of Pakistan, 1989-90.

		Factors of Production		Agents				Total Production			
		Labour	Capital	Households	Firms	Government	Rest of World	Agriculture	Industry	Education	Health
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Labour	(1)							45681	45415	13883	2839
Capital	(2)							157847	83837	2613	2815
Households	(3)	209289	371058		48559	9225	47410				
Firms	(4)		86339			45308					
Government	(5)			3409	24588		11544	1557	44845	2	4
Rest of World	(6)				20713						
Agriculture	(7)					0					
Industry	(8)					4742					
Education	(9)					2					
Health	(10)					0					
Other Sectors	(11)					3534					
Agriculture	(12)			203898		0		49893	103486	175	0
Industry	(13)			264161		0		37381	227552	505	2110
Education	(14)			4673		14137		0	82	33	0
Health	(15)			4549		4231		12	31	0	176
Other Sectors	(16)			151006		102438		55832	149439	999	670
Agriculture	(17)						3867				
Industry	(18)						102210				
Health	(19)						9				
Other Sectors	(20)						22386				
Accumulation	(21)			53845	37787	-40165	30494	9165	20785	836	309
Total	(22)	209289	457397	685541	131647	143452	217920	357368	675472	19046	8923

Continued….

Table 3: Aggregate Social Accounting Matrix of Pakistan, 1989-90.

Continued….

	Goods for Domestic Market					Goods for Exports Market				Accumulation	
Other Sectors	Agriculture	Industry	Education	Health	Other Sectors	Agriculture	Industry	Health	Other Sectors	Accumulation	Total
(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
101471											209289
210285											457397
											685541
											131647
13799	857	42844	0	0	3						143452
	12378	166554	0	122	18153						217920
	353501					3867					357368
		568520					102210				675472
			19044								19046
				8914				9			8923
					608584				22386		634504
7826										1458	366736
149984										96225	777918
112										7	19044
23										14	9036
101008										65348	626740
											3867
											102210
											9
											22386
49996											163052
634504	366736	777918	19044	9036	626740	3867	102210	9	22386	163052	

3.1 The Income and Expenditure Account

<u>Estimates of gross domestic product</u>

Table 4 shows the broad contours of production structure of Pakistan's economy. It reports breakdown of estimates of GDP under standard expenditure and income approaches, which are derived from the social accounting matrix for 1989-90 reported in Table 3. The notable feature of SAM 1989-90 is that there are no discrepancies between the three measures of GDP. Table 4 shows that GDP in the year 1989-90 was Rs.843.4 billion, which are close (with marginal difference) to the estimate of GDP given in Pakistan National Accounts (PNA) Rs.855.9 billion in the same year 1989-90. Under the expenditure approach, final household consumption contributes in GDP by 74.5 percent, final government consumption 14.3 percent, total gross fixed capital formation 19.3 percent, aggregate exports of goods and non-factor services 15.2 percent and aggregate imports of goods and non-factor services 23.3 percent in the year 1989-90. Similarly, under income approach, the share of wage payments to labour in GDP was 24.8 percent, capital income 54.2 percent, gross indirect tax 7.1 percent, import duties 5.2 percent, and consumption of fixed capital (normally known as depreciation) 9.6 percent in the year 1989-90. Government also provides 1% of GDP as production subsidies to various sectors of the economy. Regarding the sectoral shares in GDP, Table 4 shows that the agriculture sector contributes 25.5 percent, industry 27.6 percent, education 2.1 percent, health 0.7 percent and other sectors 44.1 percent in the year 1989-90.

Table 4 Expenditure and Income Approaches of GDP

	(Rs. million)	(% of GDP)
Expenditure approach of GDP		
Final households consumption (ΣD_{HHi})	628287	74.5
Final government consumption (ΣDG_i)	120806	14.3
Total gross fixed capital formation (ΣIV_i)	163052	19.3
Exports of goods and non-factor services (ΣET_i)	128472	15.2
Imports of goods and non-factor services (ΣM_i)	(197207)	(23.3)
Gross domestic product	**843410**	**100.0**
Income approach of GDP		
Wage payments (ΣW_i)	209289	24.8
Capital income (ΣRK_i)	457397	54.2
Gross domestic indirect tax (ΣII_i)	60207	7.1
Import duties (ΣTM_i)	43704	5.2
Consumption of fixed capital (ΣD_i)	81091	9.6
Production Subsidies (ΣSUB_i)	(8278)	(0.9)
Gross domestic product	**843410**	**100.0**
Sectoral Value Added		
Agriculture $(W_A + RK_A + II_A + TM_A + D_A - SUB_A)$	215107	25.5
Industry $(W_I + RK_I + II_I + TM_I + D_I - SUB_I)$	232984	27.6
Education $(W_E + RK_E + II_E + TM_E + D_E - SUB_E)$	17332	2.1
Health $(W_H + RK_H + II_H + TM_H + D_H - SUB_H)$	5967	0.7
Other sectors $(W_O + RK_O + II_O + TM_O + D_O - SUB_O)$	372020	44.1
Gross Domestic Product	**843410**	**100.0**

3.2 Factors Account

Table 5 delineates the sectoral shares in aggregate wage payments to labour and capital income. It reveals that the share of wages from agriculture sector in aggregate wage payments was 21.8 percent, industry 21.7 percent, education 6.6 percent, health 1.4 percent and other sectors 48.5 percent in the year 1989-90. Similarly, the agriculture sector contributes in aggregate capital income by 34.5 percent, industry 18.3 percent, education 0.6 percent, health 0.6 percent and other sectors 46.0 percent.

Table 5   Sectoral Shares in Wages of Employees and Capital Income

Sectors	Wages of employees (W)	% shares in total wages of employees	Capital income (RK)	Sectoral % shares in total capital income
Agriculture (A)	45681	21.8	157847	34.5
Industry (I)	45415	21.7	83837	18.3
Education (E)	13883	6.6	2613	0.6
Health (H)	2839	1.4	2815	0.6
Other sectors (O)	101471	48.5	210285	46.0
Total	**209289**	**100.0**	**457397**	**100.0**

3.3 Sources and Uses of Income of Agents

<u>Sources of income of agents</u>

Table 6 shows the sources of income of various institutions during the year 1989-90. These estimates are derived from Table 3 of aggregate social accounting matrix for 1989-90. Starting from households, Table 6 indicates that all wages are allocated to households, which are 30.5 percent of total households income. In addition, households receive 54.1 percent rent of their total income as capital income, which is the predominant share, while the remaining shares of households income are 7.1 percent as dividends from firms, 1.4 percent as transfers from the government, and 6.9 percent of

total income as net factor income from the rest of the world. Firms receive 65.6 percentage share of their total income as capital income and the remaining 34.4 percent are received as transfers from the government. Table 6 also shows that of the total

Table 6 Sources of incomes of Agents

	(Rs. million)	% share in total income
Sources of Income		
Households		
Wages of labour (W)	209289	30.5
Capital income (RK_{HH})	371058	54.1
Dividends from Firms *(DIV)*	48559	7.1
Transfers from government (T_{GHH})	9225	1.4
Net factor income from the rest of the world (T_{RHH})	47410	6.9
Total income (Y_{HH})	**685541**	**100**
Firms		
Capital income (RK_F)	86339	65.6
Transfers from the government *(T_{GF})*	45308	34.4
Total income *(Y_F)*	**131647**	**100**
Government		
Direct tax from households *(ID_{HH})*	3409	2.4
Corporate tax from firms *(ID_F)*	24588	17.1
Transfers from the rest of the world *(T_{RG})*	11544	8.0
Gross indirect tax (ΣII_i)	60207	42.0
Import duties (ΣTM_i)	43704	30.5
Total income *(Y_G)*	**143452**	**100**
Rest of the World		
Interest payments by firms *(T_{FR})*	20713	9.5
Imports of goods and non-factor services (ΣM_i)	197207	90.5
Total income *(R_R)*	**217920**	**100**

income, the government receives 2.4 percent as direct tax from households, 17.1 percent as corporate tax from firms, 8.0 percent as transfers from the rest of the world, 42.0 percent as indirect tax and 30.5 percent as import duties. Finally, the rest of the world receives 9.5 percent of its total income as interest payments from the firms and the remaining 90.5 percent are received from imports of goods and non-factor services by Pakistan in the year 1989-90.

The respective columns of the aggregate social accounting matrix reported in Table 3 give uses of income by the various institution, which are summarised in Table 7. It shows that of the total uses of income, the households spend 0.5 percent as direct tax paid to government, 91.6 percent as final consumption, and the remaining 7.9 percent are households saving. Of the total uses of income, firms pay 36.9 percent as dividends to households, 18.7 percent as corporate tax to the government, 15.7 percent as transfers to

Table 7 Uses of Income of Institutions

	(Rs. million)	% share in total income
Uses of Income		
Households		
Direct tax paid to government (ID_{HH})	3409	0.5
Final consumption (D_{HHi})	628287	91.6
Saving (S_{HH})	53845	7.9
Total expenditure (Y_{HH})	**685541**	**100**
Firms		
Dividends to household (DIV)	48559	36.9
Corporate tax paid to government (ID_F)	24588	18.7
Transfers to the rest of the world (T_{FR})	20713	15.7
Saving (S_F)	37787	28.7
Total expenditure (Y_F)	**131647**	**100**
Government		
Transfers to households (T_{GHH})	9225	6.4
Transfers to firms (T_{GF})	45308	31.6
Production subsidies (SUB_i)	8278	5.8
Final consumption (DG_i)	120806	84.2
Saving (S_G)	-40165	-28.0
Total expenditure (Y_G)	**143452**	**100**
Rest of the World		
Net factor transfers to households (T_{RHH}))	47410	21.8
Transfers to the government (T_{RG})	11544	5.3
Exports of goods and non-factor services (ET_i)	128472	58.9
Saving (CAB)	30494	14.0
Total expenditure (R_R)	**217920**	**100**

the rest of the world and the remaining 28.7 percent are treated as their saving. The government uses its total income as 6.4 percent on transfers to households, 31.6 percent on transfers to firms, 5.8 percent on production subsidies to production sectors, 84.2 percent on final consumption, while the government possesses negative savings (current deficit) of 28.0 percent of its income during the year 1989-90. Table 7 also shows that the rest of the world spends its income as 21.8 percent on net factor transfers to households, 5.3 percent on transfers to the government, 58.9 percent on exports of goods and non-factor services and the balancing 14.0 percent are foreign savings.

3.4 Goods for Domestic Market and Export Market

Table 8 shows separate estimates of goods for domestic market and goods for exports market. It shows that a lion's share of agricultural production 98.9 percent is consumed domestically, while the remaining 1.1 percent is exported to the rest of the world. Similarly, of the total industrial production, 84.8 percent is used for domestic consumption and 15.2 percent is exported. Regarding the production of other sectors of the economy, 96.5 percent is consumed domestically and 3.5 percent is exported to the international market. Table 8 also shows that agriculture contributes in total exports by 3 percent, industry 79.6 percent and other exports 17.4 percent.

Table 8 Goods for Domestic Market and Export Market for the Year 1989-90

Sectors	Total production (VX$_i^S$)	Domestic demand of total production (VX$_i^D$)	Domestic demand as % of total production	Exports of goods (ET$_i$)	Exports as % of total production	Sectoral shares in total exports (%)
Agriculture (A)	357368	353501	98.9	3867	1.1	3.0
Industry (I)	670730	568520	84.8	102210	15.2	79.6
Education (E)	19044	19044	100.0	0	0	0.0
Health (H)	8923	8914	99.9	9	0.1	0.01
Other sectors (O)	630970	608584	96.5	22386	3.5	17.4

3.5 The Capital Account

The aggregate capital account presents the consolidated balance between total savings and total investment in Pakistan for the year 1989-90. The accounts show that how total investment is financed through the savings of various economic agents namely households, firms, government, and rest of the world. Table 9 shows the estimates of savings of various economic agents and sources of financing of overall investment in

Table 9 Saving-Investment Balance in 1989-90

	(Rs. Million)	(% of total savings/investment)
Households savings (S_{HH})	53845	33.0
Firms savings (S_F)	37787	23.1
Government savings (S_G)	-40165	-24.6
Foreign savings (CAB)	30494	18.7
Consumption of fixed capital (D_i)	81091	49.7
Total Saving (ST)	**163052**	**100.0**
Investment in agriculture (IV_A)		
Investment in industry (IV_I)	1458	0.9
Education (IV_E)	96225	59.0
Health (IV_H)	7	0.004
Investment in other sectors (IV_O)	14	0.008
	65348	40.0
Total Investment (IT)	**163052**	**100.0**

Pakistan for the year 1989-90. It shows that total investment is financed by 33 percent of household saving, 23.1 percent of firms savings, and 18.7 percent of foreign savings. In addition to savings of economic agents, consumption of fixed capital (depreciation) accounts for 49.7 percent of total investment. It is also noted from Table 9 that in the year 1989-90, the government had negative saving of 24.6 percent of total savings. Regarding the sectoral breakdown of aggregate investment, Table 9 also shows that the

share of total investment in agriculture is less than 1 percent, in industry 59 percent, and the remaining 40.0 percent of total investment is allocated to the other sectors of the economy. It is worth to note that only 0.012 percent share of total investment is allocated to both education and health.

4.   Disaggregation of Households by Income Groups

In the following sub-sections, we describe the theoretical and numerical perspectives of the disaggregation of urban and rural households by income groups in Pakistan.

4.1 Disaggregation of Households by Income Groups: A Theoretical Perspective

Aggregate households account in SAM 1989-90 (developed in the earlier section in Table 1) is disaggregated by four income groups for rural and urban areas of Pakistan separately. Both urban and rural households are distinguished into four income groups namely lowest income group having monthly income upto Rs.2500, low income group Rs.2501-4000, middle income group Rs.4001-7000 and high income group Rs.7001 & above. The structure of disaggregated SAM for 1989-90 is presented in Table 10. The disaggregation of the households turns the aggregate SAM 1989-90 of 21x21 matrix reported in Table 1 into 28x28 matrix which is presented in Table 10. Thus, rows 3 to 10 in Table 10 present the disaggregation of row 3 in Table 1 (aggregate income account of households). These rows show the channeling of income from domestic production activities to various categories of factors of production and then to these households groups. Rows 3 to 10 also show other sources of income of the households i.e., income from capital, dividends from firms, transfers from the government and net transfers from the rest of the world. The respective columns 3 to 10 in Table 10 present the disaggregation of column 3 (aggregate expenditure of the households) in Table 1. These columns present the expenditure of above mentioned income groups on different commodities. In other words, columns 3 to 10 present demand of these households for

Table 10: Structure of Social Accounting Matrix of Pakistan for 1989-90: Disaggregation of Household Sector

		Factors of production		Agents										
		Labour	Capital	HU1 (urban)	HU2 (urban)	HU3 (urban)	HU4 (urban)	HR1 (rural)	HR2 (rural)	HR3 (rural)	HR4 (rural)	Firms	Government	Rest of World
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Labour	(1)													
Capital	(2)													
HU1 (urban)	(3)	W_{HU1}	RK_{HU1}									DIV_{HU1}	T_{GHU1}	T_{RHU1}
HU2 (urban)	(4)	W_{HU2}	RK_{HU2}									DIV_{HU2}	T_{GHU2}	T_{RHU2}
HU3 (urban)	(5)	W_{HU3}	RK_{HU3}									DIV_{HU3}	T_{GHU3}	T_{RHU3}
HU4 (urban)	(6)	W_{HU4}	RK_{HU4}									DIV_{HU4}	T_{GHU4}	T_{RHU4}
HR1 (rural)	(7)	W_{HR1}	RK_{HR1}									DIV_{HR1}	T_{GHR1}	T_{RHR1}
HR2 (rural)	(8)	W_{HR2}	RK_{HR2}									DIV_{HR2}	T_{GHR2}	T_{RHR2}
HR3 (rural)	(9)	W_{HR3}	RK_{HR3}									DIV_{HR3}	T_{GHR3}	T_{RHR3}
HR4 (rural)	(10)	W_{HR4}	RK_{HR4}									DIV_{HR4}	T_{GHR4}	T_{RHR4}
Firms	(11)		RK_F										T_{GF}	
Government	(12)		RK_G	ID_{HU1}	ID_{HU2}	ID_{HU3}	ID_{HU4}	ID_{HR1}	ID_{HR2}	ID_{HR3}	ID_{HR4}	ID_F		T_{RG}
Rest of World	(13)											T_{FR}		
Agriculture	(14)												SUB_A	
Industry	(15)												SUB_I	
Education	(16)												SUB_E	
Health	(17)												SUB_H	
Other Sectors	(18)												SUB_O	
Agriculture	(19)			D_{HU1A}	D_{HU2A}	D_{HU3A}	D_{HU4A}	D_{HR1A}	D_{HR2A}	D_{HR3A}	D_{HR4A}		DG_A	
Industry	(20)			D_{HU1I}	D_{HU2I}	D_{HU3I}	D_{HU4I}	D_{HR1I}	D_{HR2I}	D_{HR3I}	D_{HR4I}		DG_I	
Education	(21)			D_{HU1E}	D_{HU2E}	D_{HU3E}	D_{HU4E}	D_{HR1E}	D_{HR2E}	D_{HR3E}	D_{HR4E}		DG_E	
Health	(22)			D_{HU1H}	D_{HU2H}	D_{HU3H}	D_{HU4H}	D_{HR1H}	D_{HR2H}	D_{HR3H}	D_{HR4H}		DG_H	
Other Sectors	(23)			D_{HU1O}	D_{HU2O}	D_{HU3O}	D_{HU4O}	D_{HR1O}	D_{HR2O}	D_{HR3O}	D_{HR4O}		DG_O	
Agriculture	(24)													ET_A
Industry	(25)													ET_I
Health	(26)													ET_H
Other Sectors	(27)													ET_O
Accumulation	(28)			S_{HU1}	S_{HU2}	S_{HU3}	S_{HU4}	S_{HR1}	S_{HR2}	S_{HR3}	S_{HR4}	S_F	S_G	CAB
Total	(29)	W	RK	Y_{HU1}	Y_{HU2}	Y_{HU3}	Y_{HU4}	Y_{HR1}	Y_{HR2}	Y_{HR3}	Y_{HR4}	Y_F	Y_G	R_R

| Total Production | | | | | Goods for Domestic Market | | | | | Goods for Exports Market | | | | Accumulation | |
| Agriculture | Industry | Education | Health | Other Sectors | Agriculture | Industry | Education | Health | Other Sectors | Agriculture | Industry | Health | Other Sectors | Accumulation | Total |
(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
W_A	W_I	W_E	W_H	W_O											W
RK_A	RK_I	RK_E	RK_H	RK_O											RK
															Y_{HU1}
															Y_{HU2}
															Y_{HU3}
															Y_{HU4}
															Y_{HR1}
															Y_{HR2}
															Y_{HR3}
															Y_{HR4}
															Y_F
II_A	II_I	II_E	II_H	II_O	TM_A	TM_I	TM_E	TM_H	TM_O						Y_G
					M_A	M_I	M_E	M_H	M_O						R_R
					VD_A					ET_A					VX_A^S
						VD_I					ET_I				VX_I^S
							VD_E								VX_E^S
								VD_H				ET_H			VX_H^S
									VD_O				ET_O		VX_O^S
IC_{AA}	IC_{AI}	IC_{AE}	IC_{AH}	IC_{AO}										IV_A	VX_A^D
IC_{IA}	IC_{II}	IC_{IE}	IC_{IH}	IC_{IO}										IV_I	VX_I^D
IC_{EA}	IC_{EI}	IC_{EE}	IC_{EH}	IC_{EO}										IV_E	VX_E^D
IC_{HA}	IC_{HI}	IC_{HE}	IC_{HH}	IC_{HO}										IV_H	VX_H^D
IC_{OA}	IC_{OI}	IC_{OE}	IC_{OH}	IC_{OO}										IV_O	VX_O^D
															ET_A
															ET_I
															ET_H
															ET_O
D_A	D_I	D_E	D_H	D_O											ST
VX_A^S	VX_I^S	VX_E^S	VX_H^S	VX_O^S	VX_A^D	VX_I^D	VX_E^D	VX_H^D	VX_O^D	ET_A	ET_I	ET_H	ET_O	IT	

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agriculture, industry, education, health, and other commodities. First four columns (3-6 columns) in Table 10 show the demand of these commodities by urban households. While the later four columns (7-10 columns) present the expenditure by four rural income groups. Households' income and expenditure identities for rural and urban income groups can be written by balancing the rows with their respective columns as follows:

Urban Households

Income: $\qquad W_{HUn}+RK_{HUn}+DIV_{HUn}+T_{GHUn}+T_{RHUn}= Y_{HUn}$ (21)

Expenditure: $ID_{HUn}+D_{HUni}+S_{HUn}= Y_{HUn}$ (22)

Rural Households

Income: $\qquad W_{HRn}+RK_{HRn}+DIV_{HRn}+T_{GHRn}+T_{RHRn}= Y_{HRn}$ (23)

Expenditure: $ID_{HRn}+D_{HRni}+S_{HRn}=Y_{HRn}$ (24)

W_{HUn} and RK_{HUn} are labour income and capital income, respectively, received by nth income groups in urban areas of Pakistan. All these households also receive incomes from other institutions such as dividends from firms (DIV_{HUn}), transfers from the government (T_{GHUn}) and net transfers from the rest of the world (T_{RHUn}). Similalry, W_{HRn} and RK_{HRn} are labour income and capital income, respectively, received by nth income groups in rural areas of Pakistan and incomes from other institutions for rural households are dividends from firms (DIV_{HRn}), transfers from the government (T_{GHRn})and net transfers from the rest of the world (T_{RHRn}). The disaggregation shows the distribution of income from different sources among various households groups. In accounting principal, income of households must be equal to households expenditure as mentioned in identities (21-24). Therefore, taxes paid by households to the government (ID_{HUn}) and households consumption of goods and services

(D_{Huni}) represent the

total expenditure by the nth households groups in the urban areas on ith commodity and the rest is saved by the households as saving (S_{HUn}). Similarly, ID_{HRn}, D_{HRi}, and S_{HRn} show the expenditure of nth income groups on indirect taxes paid to the government, expenditure on ith commodities and savings, respectively, by rural income groups in Pakistan.

4.2 Disaggregation of Households by Income Groups: A Numerical Presentation

Receipts and expenditures of urban and rural income groups are presented in Table 11. Rows 3 to 10 in Table 11 show distribution of income from different sources among the rural and urban households of Pakistan by the nth income groups. Similarly, columns 3 to 10 provide structure of consumption of goods by sector of origin of these households. Detailed patterns of income and expenditure of these income groups are given in Tables 12 to 19, which are derived from Table 11. These Tables show percentage distribution of income and expenditure across income groups and within income groups for rural and urban areas of Pakistan. The patterns of income and expenditure of various income groups are briefly described as follows.

4.2.1 Income Distribution by Sources of Income

Table 12 presents percentage distribution of income from different sources across the income groups in urban areas of Pakistan. It shows that 43.1 percent households are in the lowest income group, who earns upto Rs.2500 per month. While the second and third income groups who earn between Rs.2501-4000 and Rs.4001-7000 per month, respectively, consist of 29.1 percent and 19.2 percent of total urban households. The high income group contains only 8.3 percent of total households. Table 12 also shows that highest income group receives highest percentage of total income i.e., 31 percent (although the minimum percentage of households lie in this group). On the other hand, maximum percentage of households lies in the lowest income group but they receive minimum percentage of total income i.e. only 18 percent of total income).

Pakistan is a labour abundant country and labour power is the main source of income specially for the poor people. Second row of Table 12 shows that 43.1 percent poorest

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Table 11: Social Accounting Matrix 0f Pakistan for 1989-90: Disaggregation of Household Sector

		Factors of roduction		Agents										
		Labour	Capital	HU1 (urban)	HU2 (urban)	HU3 (urban)	HU4 (urban)	HR1 (rural)	HR2 (rural)	HR3 (rural)	HR4 (rural)	Firms	Government	Rest of World
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Labour	(1)													
Capital	(2)													
HU1 (urban)	(3)	32446	25252									680	681	763
HU2 (urban)	(4)	37200	35573									3403	445	2980
HU3 (urban)	(5)	34383	41347									5150	884	6860
HU4 (urban)	(6)	29121	41005									11842	2191	18069
HR1 (rural)	(7)	38959	59032									2719	786	2821
HR2 (rural)	(8)	17847	57223									4325	419	3962
HR3 (rural)	(9)	13040	60586	457397								6231	263	3993
HR4 (rural)	(10)	6293	51040	371058								14209	3556	7962
Firms	(11)		86339										45308	
Government	(12)			126	329	640	649	255	127	204	1079	24588		11544
Rest of World	(13)											20713		
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	
Industry	(20)			33485	36436	34039	23174	59768	35334	28120	13805		0	
Education	(21)			406	742	851	1363	404	366	337	204		14137	
Health	(22)			556	606	637	327	1004	594	549	276		4231	
Other Sectors	(23)			17820	21677	22181	24415	24758	16347	14642	9166		102438	
Agriculture	(24)													3867
Industry	(25)													102210
Health	(26)													9
Other Sectors	(27)													22386
Accumulation	(28)			-18408	-7973	5281	36215	-29801	2408	18211	47912	37787	-40165	30494
Total	(29)	209289	457397	888277	79601	88624	102228	104317	83776	84113	83060	131647	143452	217920

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Continued…. **Table 11: Social Accounting Matrix 0f Pakistan for 1989-90: Disaggregation of Household Sector**

Total Production					Goods for Domestic Market					Goods for Exports Market				Accumulation	Total
Agriculture	Industry	Education	Health	Other Sectors	Agriculture	Industry	Education	Health	Other Sectors	Agriculture	Industry	Health	Other Sectors		
(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)
45681	45415	13883	2839	101471											209289
157847	83837	2613	2815	210285											457397
															59822
															79601
															88624
															102228
															104317
															83776
															541510
															454118
															131647
1557	44845	2	4	13799	857	42844	0	0	3						143452
					12378	166554	0	122	18153						217920
					353501					3867					357368
						568520					102210				675472
							19044								19046
								8914				9			8923
									608584				22386		634504
49893	103486	175	0	7826										1458	366736
37381	227552	505	2110	149984										96225	777918
0	82	33	0	112										7	19044
12	31	0	176	23										14	9036
55832	149439	999	670	101008										65348	626740
															3867
															102210
															9
															22386
9165	20785	836	309	49996											163052
357368	675472	19046	8923	634504	366736	777918	19044	9036	626740	3867	102210	9	22386	163052	

households receive 24.4 percent of total wages and salaries and 8.3 percent richest households receive 21.9 percent of total wages and salaries. While 48.4 percent of total households (both low and middle income groups) receive about 53.8 percent of total wages and salaries. Table 12 also shows that the high income group receives the highest share from all other sources, i.e., capital income (28.6 percent), dividends from firms (56.2 percent), transfers from the government (52.2 percent) and net transfers from the rest of the world (63 percent). On the other hand, the lowest income group (but the highest percentage of households) receives lowest share from the other sources of income, i.e. 17.6 percent as capital income, 3.2 percent as dividends from firms, 16.2 percent as transfers from the government, and only 2.7 percent as transfers from the rest of the world. Thus, it presents a clear picture of skewed income distribution in urban areas of Pakistan.

Table 12   Percentage Shares of Income of by Different Sources Across Urban Income Groups

Sources of income	Households by income groups				
	up to Rs.2500	Rs.2501-4000	Rs.4001-7000	Rs.7001 & above	Total
Percentage shares of households	43.08	29.12	19.23	8.25	100
Wage and salaries	24.37	27.94	25.82	21.87	100
Capital income	17.64	24.85	28.88	28.64	100
Dividends from firms	3.23	16.15	24.44	56.19	100
Transfers from the government	16.21	10.59	21.04	52.16	100
Transfers from the rest of the world	2.66	10.39	23.93	63.02	100
Total	18.11	24.10	26.83	30.95	100

Table 13 presents the percentage shares of total income within an income group from different sources. First column of Table 13 shows that the main source of income of the poorest household is from wages and salaries i.e. 54.2 percent of their total income comes from wages and salaries and 42.2 percent of their total income comes from capital. The remaining income of the lowest income group is received as dividends from firms (1.1 percent), transfers from the government (1.1 percent) and transfers from the rest of the world (1.3 percent). The richest group of households earns 28.5 percent from wages and salaries and 40.1 percent from the capital income. It is worth noting that as contrast to the lowest income group, high income group receives largest share from capital income. The incomes of this group from other sources are also higher than the income of the lowest income group. It receives 11.6 percent of their total income from firms as dividends, 2.1 percent as transfers from the government and 17.7 percent as transfers from the rest of the world.

Table 13 Percentage Shares of Income by Different Sources Within Urban Income Groups

Sources of income	Households by income groups			
	up to Rs.2500	Rs.2501-4000	Rs.4001-7000	Rs.7001& above
Percentage shares of households	43.08	29.12	19.23	8.25
Wage and salaries	54.24	46.73	38.80	28.49
Capital income	42.21	44.69	46.65	40.11
Dividends from firms	1.14	4.27	5.81	11.58
Transfers from the government	1.14	0.56	1.0	2.14
Transfers from the rest of the world	1.28	3.74	7.74	17.68
Total	100	100	100	100

Table 14 shows the percentage distribution of income across the rural income groups from different sources. It shows that 59.8 percent of aggregate households in rural areas are in the lowest income group and only 4.5 percent households are in the high income group.

Table 14 shows that 51.2 percent of total wages and salaries in rural areas is earned by poorest households. On the other hand, the high income group receives 8.3 percent of total wages and salaries. Table 14 also shows that 25.9 percent income from capital accrues to poorest income group and 22.4 percent to richest households. Similarly, largest shares from firms as dividends (51.7 percent), transfers from the government (70.8 percent) and transfers from the rest of the world (42.5 percent) go to the richest households group. The lowest income group receives 9.9 percent of total dividends as dividends from firms, 15.6 percent of total transfers as transfers from the government and 15.1 percent as transfers from the rest of the world. It is worth to note that 70.8 percent of total government transfers is going to the richest households while only 15.6 percent government transfers go to the poorest households.

Table 14 Percentage Shares of Income by Different Sources Across Rural Income Groups

Sources of income	Households by income groups				
	up to Rs.2500	Rs.2501-4000	Rs.4001-7000	Rs.7001& above	Total
Percentage shares of households	59.80	22.10	13.58	4.46	100
Wage and salaries	51.17	23.44	17.13	8.27	100
Capital income	25.90	25.11	26.59	22.40	100
Dividends from Firms	9.89	15.74	22.67	51.70	100
Transfers from the government	15.64	8.35	5.24	70.77	100
Transfers from the rest of the world	15.06	21.14	21.31	42.49	100
Total	29.36	23.58	23.68	23.38	100

Table 15 shows income received by rural income groups from different sources as percentage of their respective incomes. All income groups in rural areas earn highest income from capital. It contributes 56.6 percent, 68.3 percent, 72 percent, and 61.5 percent in incomes of the lowest, low, middle, and high rural income groups, respectively. Table 15 also shows that lowest income group receives 37.4 percent of their total income from wages

and salaries. While the highest group receives 7.6 percent of their total income from wages and salaries. It is worth to note from Table 15 that as rural households monthly income level increases, percentage shares in dividends from firms and percentage shares in transfers from the rest of the world also increase. These groups from the lowest to the highest income groups receive 2.6 percent, 5.2 percent, 7.4 percent and 17.1 percent of their respective

Table 15: Percentage Shares of Income by Different Sources within the Rural Income Groups

Sources of income	Households by income groups			
	up to Rs.2500	Rs.2501-4000	Rs.4001-7000	Rs.7001& above
Percentage shares of households	59.80	22.10	13.58	4.46
Wage and salaries	37.35	21.30	15.50	7.58
Capital income	56.59	68.30	72.03	61.45
Dividends from firms	2.61	5.16	7.41	17.11
Transfers from the government	0.75	0.50	0.31	4.28
Transfers from the rest of the world	2.70	4.73	4.75	9.59
Total	100	100	100	100

income as dividends from firms, respectively. Transfers from the government as percentage of the household income are 4.3 percent to the high income group, 0.3 percent to the middle income group, 0.5 percent to the low income and 0.8 percent to the lowest income group. It is worth noting that shares of wages and salaries in households total income fall as income rises and shares of income from all other sources increase as monthly incomes of rural households rise.

4.2.2 Expenditure by Different Income Groups

Tables 16 shows uses of households income by various urban income groups. It shows that expenditure on agriculture is 27.3 percent by the lowest income group and 17.0 percent by the highest income group in urban areas. Expenditures on manufacturing products are 18.2 percent and 26.3 percent of total expenditure by the high and lowest

income groups, respectively. Fourth row in Table 16 also shows expenditure on education by different urban income groups. It is worthwhile to note that the expenditure on education rises with the rise of income levels, i.e., 40.6 percent of total expenditure by the high income

Table 16   Uses of Incomes by Urban Income Groups

Uses of Incomes	Income Groups				
	up to Rs.2500	Rs.2501-4000	Rs.4001-7000	Rs.7001 & above	Total
Percentage of households	43.08	29.12	19.23	8.25	100
Agriculture	27.28	29.34	26.39	16.98	100
Manufacturing	26.34	28.66	26.77	18.23	100
Education	12.05	22.08	25.32	40.55	100
Health	26.15	28.50	29.96	15.38	100
Others	20.70	25.18	25.76	28.36	100
Taxes paid	7.25	18.84	36.71	37.20	100
Saving	-121.78	-52.75	34.94	239.59	100
Total	18.11	24.10	26.83	30.95	100

group and only 12.1 percent of total expenditure by the lowest income group. The order is reverse for expenditure on health as the lowest income group spends 26.2 percent and high income group 15.4 percent of total expenditure on health. Expenditure on commodities other than mentioned above is high by the highest income group and low by the lowest income group. In Pakistan tax system is progressive, so the highest share in total taxes (37.2 percent) is paid by the high income group (as the high income group receives highest share from total income 31 percent of total income). While the lowest income group pays 7.3 percent of total taxes in urban areas. Similarly, households with high income contribute lions' share to total households saving while lowest and low income groups have negative savings as reported in Table 16.

Table 17 presents the percentage expenditure by various urban income groups. It reveals that the largest share of incomes of all income groups is spent on manufactured

products such as 56 percent by the lowest income group, 45.8 percent by the low income group, 38.4 percent by the middle income group and 22.7 percent by the high income group.

Table 17   Uses of Income Within the Urban Income Groups

Uses of Income	Income Groups			
	up to Rs.2500	Rs.2501-4000	Rs.4001-7000	Rs.7001 & above
Percentage of households	43.08	29.12	19.23	8.25
Agriculture	43.19	34.90	28.20	15.73
Manufacturing	55.97	45.77	38.41	22.67
Education	0.68	0.93	0.96	1.33
Health	0.93	0.76	0.72	0.32
Others	29.79	27.23	25.63	23.88
Taxes paid	0.21	0.41	0.72	0.63
Saving	-30.77	-10.02	5.96	35.43
Total	100.0	100.0	100.0	100.0

The second highest expenditure is on agriculture products by all the income groups. Lowest, low, middle and high income groups, respectively, spend 43.2 percent, 34.9 percent, 28.2 percent and 15.7 percent of their total income on agriculture. Comparison of the percentage expenditure on education by these income groups shows that it increases with the rise of income levels but conversely percentage expenditure on health declines with the rise of income levels. The poorest group of households spends 0.7 percent of their total income on education and 0.9 percent of their income on health. While the richest income group spends 1.3 percent of their income on education and 0.3 percent of their income on health. Low and middle income groups spend 0.9 percent and 1.0 percent of their income on education and 0.8 percent and 0.7 percent on their health, respectively. Table 17 also shows that the lowest and low income groups are net dissaver as negative 30.8 percent and negative 10 percent of their expenditure are financed by consuming existing assets or through borrowing. While the highest income group saves 35.4 percent of their total income.

Table 18 presents expenditure pattern of rural households where 60 % of total population live. It shows almost the similar pattern in expenditure as is found in the case of urban income groups. It clearly shows that the highest shares of total expenditure on agriculture and manufactured commodities are spent by the poorest income group. It is worth noting that as income level increases, the expenditures on these two commodities decline. The same patterns are found in expenditures on education, health and others commodities. As is the case of urban income groups, the largest share in taxes paid to the government is by the high income group. The same is the case with households savings. The first two income groups are dissaver as their savings are negative 76.9 percent and 6.2 percent of total saving. But the later two income groups are net saver and largest contribution to the household saving is by the high income group.

Table 18: Uses of Income by Rural Income Groups

Uses of Income	Income Groups				
	up to Rs.2500	Rs.2501-4000	Rs.4001-7000	Rs.7001 & above	Total
Percentage of households	59.80	22.10	13.58	4.46	100
Agriculture	43.89	26.19	20.19	9.72	100
Manufacturing	43.62	25.79	20.52	10.07	100
Education	30.82	27.92	25.71	15.56	100
Health	41.44	24.52	22.66	11.39	100
Others	38.14	25.18	22.56	14.12	100
Taxes paid	15.31	7.654	12.24	64.80	100
Saving	-76.94	-6.22	47.02	123.70	100
Total	29.36	23.58	23.68	23.38	100

Table 19 shows the pattern of expenditure within the rural income groups. It reveals that the lowest income group spends 45.9 percent of total expenditure on agriculture and 57.3 percent on manufactured commodities. Table 19 also shows that as income rises percentage expenditure of total expenditure on these commodities declines. The

expenditures on agriculture commodities are 34.1 percent, 26.2 percent, and 12.8 percent of total expenditure by low, middle and high income groups of their total expenditure, respectively. Similarly, expenditures on manufactured commodities are 42.2 percent, 33.4 percent, and 16.6 percent of total expenditure by the low, middle, and high income groups. Expenditure on education by all these income groups is less than 0.5 percent of their income. It is also worth noting that the expenditure on health as percentage of their total income declines as income level rises. The high income group pays 1.3 percent of its income as taxes to the government. While low, middle and high income groups pay less than 0.5 percent of their incomes as taxes to the government. Lowest rural income group is a dissaver as last row of Table 19 shows 28.6 percent dissaving of this group, which means that it spends more than its income. The other three rural income groups save, respectively, 2.9 percent, 21.7 percent and 57.7 percent of their incomes. It is also worth noting that high income group in rural areas saves 57.7 percent of its income as compared to the urban high income group, who saves 35.4 percent of its income.

Table 19 Uses of Incomes Within Rural Income Groups.

Uses of Income	Income Groups			
	up to Rs.2500	Rs.2501-4000	Rs.4001-7000	Rs.7001 & above
Percentage of households	59.80	22.10	13.58	4.46
Agriculture	45.94	34.14	26.21	12.78
Manufacturing	57.29	42.18	33.43	16.62
Education	0.39	0.44	0.40	0.25
Health	0.96	0.71	0.65	0.33
Others	23.73	19.51	17.41	11.03
Taxes paid	0.24	0.15	0.24	1.30
Saving	-28.57	2.87	21.65	57.68
Total	100.0	100.0	100.0	100.0

5. Multiplier Analysis

A SAM-based model is used to calculate the impact multipliers of socio-economic linkages, using the social accounting matrix for the year 1989-90 reported in Table 11. This simple model provides multipliers in a general equilibrium framework. The multipliers can be further decomposed in order to derive the direct and indirect effects and the main causal linkages underlying the structure of the economy. Pyatt and Round (1985) provided a comprehensive measure of multiplier analysis, which is also used here. The multiplier model 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 as exogenous, on the assumption that they are externally determined. Thus, exogenous accounts are taken into vector x and total incomes of the endogenous accounts as vector y, while the transactions of the endogenous accounts relative to total income are taken as matrix A. All these lead to the following equation:

$$y = Ay + x = (I - A)^{-1}. x = M_a . x \tag{25}$$

The aggregate multiplier (M_a) in equation (25) can be further decomposed into three matrices M_1, M_2, and M_3 in order to derive direct and indirect effects. M_1 captures the effects of one group on itself through direct transfers. M_2 captures the cross-effects of the multipliers process whereby an injection into one part of the system has repercussions on other parts. Matrix M_3 shows the 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 mathematical expression is as follows:

$$y = (M_3.M_2.M_1) . x \tag{26}$$

Pyatt and Round respecify equation (26) as:

$$y = (I + T + O + C) . x \qquad (27)$$

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, using equation (27), we undertake the multiplier analysis. 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 calculated and are reported in Table 20. It shows 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 vector of the sum of rows gives the 'forward' linkages or the effect of changes in supply on output of using sectors. The multipliers for all endogenous accounts imply a high degree of integration of the accounts. For the production sectors, backward linkages are strongest for the education, followed by agriculture, health, other sectors and industry. The largest forward linkage multipliers, which give the total effect on each account of a unit change in all endogenous accounts, are found for industry, followed by other sectors, agriculture, health, and education. Regarding the households income groups, the largest backward linkage is for the urban poorest (HU1 having income less than Rs.2500 per month) and smallest for the rural rich (HR4 having income more than Rs.7000 per month). While the largest forward linkage is for the rural poorest (HR1 having income less than Rs.2500 per month) and smallest for the urban poorest (HU1 having income less than Rs.2500 per month).[6]

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[6] The multipliers need to be interpreted with caution because of several restrictive assumptions underlying the multiplier methodology.

Table 20 Decomposition of Total Multiplier Effects

	SUM COLUMNS OF MATRIX M_a (backward linkages)					SUM ROWS OF MATRIX M_a (forward linkages)				
	Aggregate Multiplier (M_a)	Initial Impulse (I)	Transfer Multiplier (T)	Open-Loop Multiplier (O)	Closed-loop Multiplier (C)	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	11.099	1.000	.000	2.772	7.326
Capital	10.095	1.000	.000	1.856	7.240	21.141	1.000	.000	2.637	17.505
HU1 (urban)	14.310	1.000	.000	2.436	10.874	3.914	1.000	.005	.504	2.404
HU2 (urban)	12.199	1.000	.000	2.048	9.151	4.746	1.000	.026	.621	3.099
HU3 (urban)	10.540	1.000	.000	1.745	7.794	4.930	1.000	.039	.624	3.266
HU4 (urban)	7.607	1.000	.000	1.205	5.402	4.889	1.000	.090	.585	3.214
HR1 (rural)	14.053	1.000	.000	2.389	10.664	5.898	1.000	.021	.760	4.117
HR2 (rural)	10.890	1.000	.000	1.808	8.082	4.755	1.000	.033	.513	3.209
HR3 (rural)	8.969	1.000	.000	1.458	6.511	4.728	1.000	.047	.482	3.199
HR4 (rural)	5.199	1.000	.000	.768	3.431	4.231	1.000	.108	.382	2.741
Firms	4.119	1.000	.369	.503	2.248	4.991	1.000	.000	.444	3.547
Pro. Agriculture	11.297	1.000	.000	1.933	8.364	19.726	1.000	.000	3.671	15.055
Pro. Industry	10.169	1.000	.000	1.712	7.457	24.537	1.000	.000	3.781	19.756
Pro. Education	12.379	1.000	.000	1.913	9.466	2.267	1.000	.000	1.058	.209
Pro. Health	11.193	1.000	.000	1.886	8.307	2.289	1.000	.000	1.061	.228
Pro. Oth. Sectors	10.215	1.000	.000	1.753	7.462	22.177	1.000	.000	3.410	17.767
Dem. Agriculture	11.889	1.000	.000	1.899	8.990	19.427	1.000	.000	3.666	14.761
Dem. Industry	8.432	1.000	.000	1.391	6.041	32.206	1.000	.000	5.773	25.433
Dem. Education	13.379	1.000	.000	1.956	10.423	1.267	1.000	.000	.073	.194
Dem. Health	12.042	1.000	.000	1.938	9.103	1.307	1.000	.000	.108	.198
Dem. Oth. Sectors	10.920	1.000	.000	1.844	8.075	21.809	1.000	.000	3.535	17.274

Table 21 derived from Table 20 provides a ranking of the various sectors according to the degree of backward and forward linkages with the rest of the economy. Table 21 shows that the highest backward linkages is for urban households (HU1, upto Rs.2500) followed by rural households (HR1, upto Rs.2500), labour, education, urban households (HU2, Rs.2501-4000), agriculture, health, rural households (HR2, Rs.2501-4000), other sectors, urban households (HU3, Rs.4001-7000), industry, capital, rural households (HR3, Rs.4001-7000), urban households (HU4, Rs.7001&above), rural households (HR4, Rs.7000&above), and firms (the lowest backward linkages). Similarly, the highest forward linkages are for the industry, followed by other sectors, capital, agriculture, labour, rural households (HR1, upto Rs.2500), firms, urban households (HU3, Rs.4001-7000), urban households (HU4, Rs.7001&above), rural households (HR2, Rs.2501-4000), urban households (HU2, Rs.2501-4000), rural households (HR3, Rs.4001-7000), rural households (HR4, Rs.7000&above), urban households (HU1, upto Rs.2500), health, and education (the lowest forward linkages).

Table 21   Ranking of Accounts by the Highest to the Lowest Multiplier Effect

Sum Columns of Matrix Ma (backward linkages)	Sum Rows of Matrix M_a (forward linkages)
1. Urban Households (HU1, upto Rs.2500)	1. Industry
2. Rural Households (HR1, upto Rs.2500)	2. Other Sectors
3. Education	3. Capital
4. Labour	4. Agriculture
5. Urban Households (HU2, Rs.2501-4000)	5. Labour
6. Agriculture	6. Rural Households (HR1, upto Rs.2500)
7. Health	7. Firms
8. Rural Households (HR2, Rs.2501-4000)	8. Urban Households (HU3, Rs.4001-7000)
9. Other Sectors	9. Urban Households (HU4, Rs.7001&above)
10. Urban Households (HU3, Rs.4001-7000)	10. Rural Households (HR2, Rs.2501-4000)
11. Industry	11. Urban Households (HU2, Rs.2501-4000)
12. Capital	12. Rural Households (HR3, Rs.4001-7000)
13. Rural Households (HR3, Rs.4001-7000)	13. Rural Households (HR4, Rs.7000&above)
14. Urban Households (HU4, Rs.7001&above)	14. Urban Households (HU1, upto Rs.2500)
15. Rural Households (HR4, Rs.7000&above)	15. Health
16. Firms	16. Education

6. Concluding Remarks and Extension of Work

Given that the objective is to understand Pakistan's economy, the starting point 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 main objective of this study has been to compile a latest social accounting matrix for the year 1989-90, using the Integrated Institutional Accounts, Input-Output Table and Households Integrated Economic Survey for the same year. 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 the policy objectives and later model building. In its present form, the matrix is not different in information contents from the national accounting system. A data base in a SAM format is relevant and useful for economic analysis of policy issues which concern various economic agents of the economy. The SAM presents four types of accounts: factors account, institutions account, production account, and capital 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 m goods for domestic market and for export market. Finally, it presents consolidated capital account. It is worth to note that earlier social accounting matrix for the year 1984-85 developed by the Federal Bureau of Statistics did not provide a disaggregation of the households sector. This limits the analysis of the households sector, particularly when distributive and redistributive aspects need to be given importance. Therefore, this paper fills this gap.

In addition, the matrix is also used as a tool for multiplier analysis to provide backward and forward linkages in production, consumption, distribution and accumulation accounts. The multipliers for all endogenous accounts imply a high degree

of integration of the accounts. For the production sectors, backward linkages are strongest for the education, followed by agriculture, health, other sectors and industry. The largest forward linkage multipliers are found for industry, followed by other sectors, agriculture, health, and education. Regarding the households income groups, the largest backward linkage is for the urban poorest and smallest for the rural rich. While the largest forward linkage is for the rural poorest and smallest for the urban poorest.

Furthermore, disaggregated SAM developed here will assist in operationalizing the CGE model to be developed for Pakistan's economy in order to analyse the Micro Impact of Macroeconomic Adjustment Polices in Pakistan. Related exercises will also be simulated under different economic scenarios relating to adjustment policies in Pakistan. For this purpose, both CGE model and SAM will be closely integrated.

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