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An Economic Date Base in A Social Accounting Frame Work

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The purpose of this paper is two fold. First, to describe the design and management of a data base for the Egyptian economy. Second, to explain how the stored information is retrieved in a way to serve different modeling purposes. The proposed computer data system consists of a set of tables stored according to three levels of disaggregation. These tables are linked together through computer programs which are used to assamble different social accounting matrices (SAM,s). This modular design is justified from both technmical and economic point of view. It permits the creation of a flexible data system with better space utilization and provides the necessary base for building various policy-oriented SAM,s or any selected subset of them.

1. Introduction

A social accoundting matrix (SAM) provides a systematic and consistent way of identifying the intital conditions which exist in an economy. It allows also a better understanding of the major linkages in an economy for purposes of modeling and policy analysis.

Consequently, a computer data system based on a SAM framework must provide the policy-maker or the model builder with the appropriate informations needed, either to identify the initial structure of the economy or to run his particular model.

In this paper, a modular design is proposed. The idea behind this design is not to store the whole SAM on the computer but rather to create a file containing a number of smaller tables or input matrices. These input matrices and a set of computer programs are used to assemble different policy-oriented SAM,s. In that way any SAM can be identified by two files :

- A file containing the set of input matrices.
- A control matrix specifying the relative location of each input matrix in the SAM.

This modular design is justified from both technical and economic point of view. Technically four points support our choice.:

First, the SAM is a sparse matrix containing many blank areas. Then an efficient computer space utilization implies its partitioning into a number of smaller matrices.

Second, storing the whole SAM will reduce the degree of flexibility of the data system which is an impartant feature of the database design process.

Third, the proposed modular approach allows any updating, modification or addition of any account with minor changes in the data base structure.

Fourth, since it is not possible to manipulate the whole SAM in the Computer main storage(1), a data system storing the whole SAM will be inappropriate for modeling purposes as a partitioning scheme will be needed for each model structure.

From the economic view point it is a general practice to build a model focusing in a detailed way on some national accounts, while keeping an aggregate picture of the others. The propesed modular design provides this possibility by using some file management programs to create a new control matrix and to assemble the desired SAM. This possibility increases the degrees of freedom that the economist has when selecting his appropriate model.

The data base user may wish also to investigate a selected subset of the SAM. In that case the modular data system provides him with this subset in any desired form.

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(1) In particular the most disaggregated SAM.

Data collection and organization phase are based on three levels of disaggregation:.

- "An aggregate SAM", designated SAM1, that presents an overall and compact picture of the Egyptian economy.
- "A medium SAM", designated SAM2, that disaggregates along some selected accounts and provides basis for preliminary work on modeling.
- "A disaggregated SAM",designated SAM3, which contain the most detailed economic information.

Accordingly, the input data necessary for assembling these three SAM,s will be stored permanently on the computer files. While the data needed to build any particular policy oriented SAM will be created by a computer pregram.

In the following sections, the data base design and management will be explained in detail and a particular attention will be devoted to its linkage with the modeling precess.

2. DATA BASE STRUCTURE AND MANAGEMENT:

In any computer data system, the principal components are a set of files containing the input information and a set of programs designed to create, update, and manage these files. The system components interact in order to provide database user with the required information. We discuss in datail three program types:

- File creation programs
- File management programs
- Output printing programs.

2.1 File creation

For each level of disaggregation (SAM1,SAM2 and SAM3), two files are created.

- A file containing the set of input matrices used to assemble the SAM.
- A file containing the control matrix which determines the location of each input matrix in the SAM

In addition an aggregation scheme file is created. It provides the way by which any account is aggregated from the most detailed SAM to the least detailed one

The selection of the input matrices was governed by three criteria :

i- Each input matrix should have an economic identity or meaning, i.e, it can be used separatly in economic analysis.

ii- The input matrices can easly be manipulated to assemble the SAM or any subset of it.

iii- The partitioning scheme of the SAM should provide a good space utilization of the computer storage.

In table 1 the selected input matrices are classified by the type of notional accounts. Figure 1 shows the location of each

I) Factors of Production

VAP: Value added from production activities

VAG: Government Payment to labor

II) Institution Current Account

DFI: Distribution of income from factors to institutions.

ICT: Institutions intertransfers (current account)

III) Institution Capital Account

ISV: Institution savings

IKT: Institution intertransfers (capital account)

IV,V) Activities & Commodities Accounts

DCS:: Domestic commodity supply.

CGS: Consumption of goods and services.

IDG: Investment demand of goods and services.

ICD: Intermediate commodity demand.

VI) Taxes account

DTI : Direct taxes payment by institutions

ITTA: Indirect taxes & tariffs payment by activities

ITTC: Indirect taxes & tariffs payment by commodities

GRT : Government income from taxes

GTT : Government trade subsides, price differencial

Table 1 input matrices specification.

VII) Rest of the World

FIP: Factors income Paid abroad

FIR: Factors income Paid from abroad

ITP: Institution transfers abroad.

ITR: Institution transfers from abroad.

CIM: Commodity imports

CEX: Commodity exports.

Table 1 Input matrices specification (cont.)

SAM			Factors of Production	Institution Current				Institution capital account	Activites		Commodities						Taxes
				Household	ets priv. cons	Publicsec	Gonv. govern				Gov. trade			others			
									Public	Private	D.P	Imp	exp	D.P	Imp	Exp.	
Factors						VAG			VAP								
Institution current account			DFI	ICT							GTT						GRT
Institution capital				ISV				IKT									
Activites		Pub									DCS						
		Priv															
Commodities	Gov. Trade	DP		CGS				IDG	ICD								
		Imp															
		Exp															
	other	D.P															
		Imp															
		Exp															
Taxes				DTI					ITTA		ITTC						
Rest of World			FIP	ITP							CIM						

Input Matrices		SAM1				SAM2			
		Matrix Dimension		Location in SAM		Matrix Dimension		Location in SAM	
		No.of raws	No.of columns	First raw	First column	No.of raws	No.of columns	First raw	First column
1	VAP	3	1	1	11	3	18	1	19
2	VAG	3	2	1	8	3	5	1	9
3	DFI	6	3	4	1	10	3	4	1
4	ICT	6	6	4	4	10	10	4	4
5	ISV	1	6	10	4	5	10	14	4
6	IKT	1	1	10	10	5	5	14	14
7	DCS	1	1	11	12	18	54	19	37
8	CGS	1	6	12	4	54	10	37	4
9	IDG	1	1	12	10	54	5	37	14
10	ICD	1	1	12	11	54	18	37	19
11	DTI	-	-	-	-	5	10	91	4
12	ITTA	1	1	8	11	5	18	91	19
13	ITTC	1	1	8	12	5	54	91	37
14	GRT	-	-	-	-	1	5	12	91
15	GTT	-	-	-	-	1	27	9	37
16	FIP	2	3	13	1	2	3	96	1
17	FIR	3	2	1	13	3	2	1	96
18	ITP	2	6	13	4	2	10	96	4
19	ITR	7	2	4	13	15	2	4	96
20	CIM	2	1	13	12	2	54	96	37
21	CEX	1	2	12	13	54	2	37	96

Table 2 Control matrices for SAM1 and SAM2

of them in the general social accounting structure.

The control matrix file specifies the dimension and relative location of each input matrix. The control matrices for SAM1 and SAM2 are shown in table 2. Note that, the information stored in the database concern only the three specified SAM,s. For any special SAM the new control and input matrices files will be created by the management programs. This is achieved using the aggregation scheme file.

2.2 File Management

In a modular design, like the proposed one, an efficient and flexible file management programs are needed to assemble the desired informations. Three programs will be used to handle the data:

- SAM building program
- Sub-matrix building program
- New file creation program

2.2.1 SAM Building Program

This program uses input matrices file and the control matrix to assemble assemble a social accounting matrix. This program can build one of the specified SAM,s or any other issue oriented one (see fig 2).

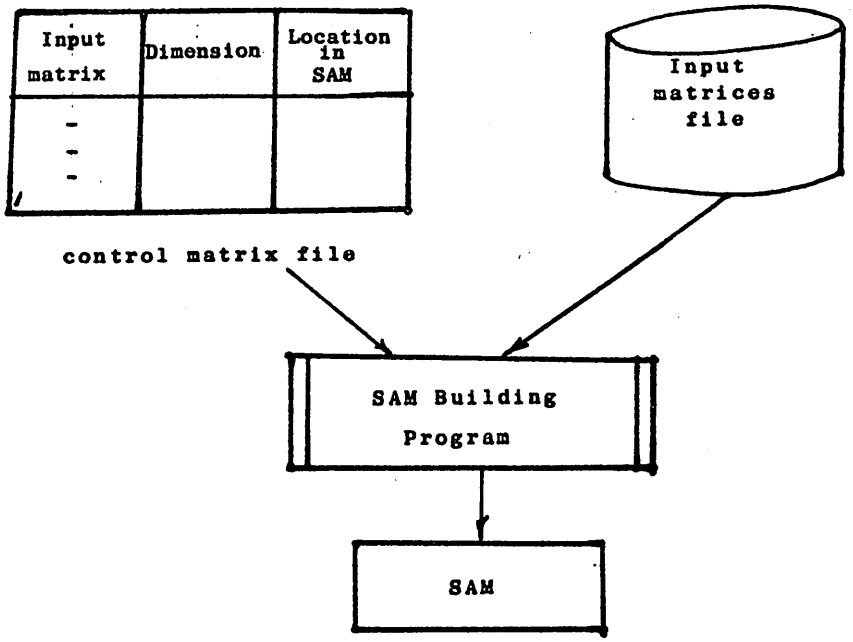

Fig. 2 SAM Building Program.

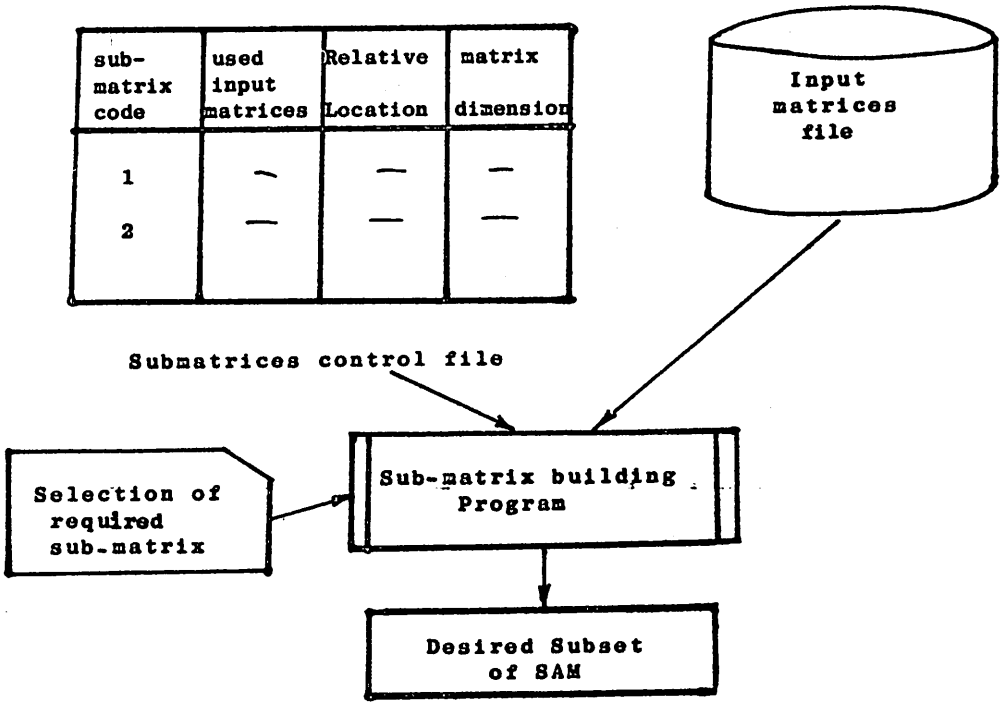

Fig. 3 Sub-matrix building Program