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The Formulation of a Gross Financial Stocks Interrelation Matrix of Egypt

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I- Introduction:

In any economy, one may differentiate between real and financial flows. The former represent the production of goods and services whereas the latter represent changes in the financial assets existent in the economy. In a monetized economy the two types of flows are so interrelated that one may describe them as two faces of the same coin. In Egypt, although the literature describing the real flows in the economy is relatively extensive, the significant aspects of the financial flows have been left unexplored. The existing literature on the subject covers the assets and flows of the financial sector, especially the banking system; but none of it, as far as we know, has dealt with the financial assets and flows of the real sectors. This might have been justified in the past on the basis that an important segment of the economy, the agriculture sector, was largely based on barter

^{*} This paper is part of the Ph.D. Thesis of the author: Karima A.M. Korayem, Sectoral Financial Structure and Financial Planning in Egypt, Ph. D. Thesis, McMaster Univ., Hamilton (Ontario) Canada, 1974.

the transactions. But this justification is no longer applicable since most of the economy, including the agricultural sector, is monetized.

The current lack of systematic knowledge about the sectoral and aggregate financial flows in the Egyptian economy discourages the undertaking of some important points of research. For example, it is clear that there is imbalance between the financial and the real flows in Egypt which results in the rise in prices¹. Any study analysing this "imbalance" and/or suggesting ways to restore financial stability² to the Egyptian economy requires a set of data showing the volume and the direction of the intersectoral financial flows in the economy. The same kind of data are required if one wants to build an econometric model which could be used as an aid to financial planning. The current lack of data and systematic knowledge about the aggregate financial assets and flows in Egypt forms a gap in the pertinent literature in the country. The

¹ See the cost of living index in Table 7 in the Appendix.

² By financial stability is meant the equality between the financial flows and the real flows in the economy at desired prices.

first step to be taken to bridge this gap is to organize the financial data of Egypt in one of the financial accounts' form.

One may distinguish two well known forms of financial accounts, the financial flow of funds matrix¹ and the lending/borrowing matrix. The financial flow of funds matrix includes information about gross domestic savings, non-financial capital acquisition and net lending or borrowing of the different sectors. Each vertical column in the matrix represents a sector and each row represents an economic activity². This presentation gives the users an opportunity to examine the total of any one transaction type as well as its allocation to the various sectors. The lending/borrowing matrix is a less comprehensive form of financial account. It is a framework for outlining an economy's lending and borrowing structure. A simple lending/borrowing matrix is one whose rows represent lending by financial institutions through finan-

¹ The financial flow of funds matrix is called, also, the financial flow of funds table.

² See the financial flows matrix formulated for Canada in Financial Flow Accounts(any year), Dominion Bureau of Canada Statistics.

cial markets and whose columns represent the sectors. Summing horizontally gives total lending of each financial institution; summing vertically gives total borrowing by each sector. One disadvantage of the simple lending/borrowing matrix is that it provides information on only one side of the balance sheet of each group: the liability side for the sectors, the asset side for the financial institutions. This limitation can be overcome by the extension of the matrix so that all sectors, financial and real, appear once as a lender and once as a borrower. Thus, the asset and the liability sides of the balance sheets of the economic units can be observed. However, one disadvantage of both the simple and the extended versions of the lending/borrowing matrix is that no breakdown into types of financial claims is given. For such information flow of funds or sectoral balance sheets are necessary.

In this study, we shall try to formulate the equivalent of the extended version of the lending/borrowing matrix in terms of stocks. The matrix will be called the Gross Financial Stocks Interrelation Matrix. It should be mentioned that financial flow of funds tables

have been formulated for Egypt for the years 1957, 1958, and 1959. In these tables, however, most of the entries that represent financial flows taking place between nonfinancial economic units were empty¹. This was due to the absence of the balance sheets for the household and the private business sectors². Unfortunately, we have not been able to obtain any of these tables to find out how they were formulated. They would have been useful as a benchmark for the data used here. The Gross Financial Stocks Interrelation Matrix will be formulated for Egypt at several points of time between 1952 and 1970. One cannot claim, however, that all the components of the Matrix can be estimated correctly without the missing balance sheets of the households and the private business sector. However, we face two alternatives, either to build an imperfect Financial Stocks Interrelation Matrix or to give up the whole idea and leave the area of the aggregate sectoral financial flow unexplored. We have chosen the former alternative.

¹ A L. Aziz, The Problems of Formulating the Financial Flow of Funds Table (written in arabic), Institute of National Planning, memo. no. 237, 1972, P. 8.

² Ibid. P. 5.

The study will be organized as follows: introduction will form the first part of the paper. The second part will consist of an over-all view on the components of the matrix. The assets and liabilities of the financial sector and the financial assets and liabilities of the real sectors will be discussed in the third and fourth parts of the paper respectively. The Conclusion will form, then, part five in the study.

II- An Overall View on the Components of the Matrix.

The gross Financial Stocks Interrelation Matrix consists of the consolidated financial assets and liabilities of the financial and real sectors in the economy. It is a sectoral classification of the sources and uses of funds. These matrices have been constructed for Egypt for the years 1952, 56, 60, 62, 64, 66, 68, and 70. During this Period, 1952-70, the economic, system in Egypt has undergone considerable structural changes, which have been considered in the assumptions underlying the formulation of the Matrices before 1961 and comparing them with the matrices formulated after 1961, one can perhaps discover the pattern changes in the financial flows over the period between 1952 and 1970.

The Gross Financial Stocks Interrelation Matrix of Egypt has been constructed as a 7 by 7 matrix, except in 1952(5 by 5 matrix) and in 1956(6 by 6 matrix) because of the lack of data for some institutions. Its columns and rows represent the financial and the real sectors as sources and users of funds, respectively. In other words, the columns of the matrix show the assets of the different sectors whereas the rows represent the liabilities of the same sectors. These sectors, comprise the following: the financial sector, divided into the central bank, the commercial banks, the specialized banks¹ and the non-banks²; the private sector³; the government sector and the foreign sector. To formulate the Matrix, we estimated the assets and liabilities distributed within the financial sector, the assets and liabilities distributed between the financial sector and the real sectors(the government, the private and the foreign sectors), and

¹The agricultural bank, the industrial bank, and the real estate bank.

²The Public Social Insurance Fund, the Public Insurance and Pension Fund, the Egyptian General Insurance Organization and the Post Office fund.

³The private sector includes government enterprises.

the assets and liabilities distributed among the real sectors themselves. The first two classes of financial stocks are derived from the balance sheets of the financial institutions. The latter class, the financial stocks owned and used by the real sectors, should be derived from the balance sheets of the government, the private and the foreign sectors. We shall discuss the construction of the Matrix in two steps. First, the estimation of the assets and liabilities distributed within the financial sector and between the financial sector and the real sectors; and second, the estimation of the assets and liabilities distributed among the real sectors themselves.

III- The Assets and Liabilities of the Financial Sector

The first step in estimating the gross financial stocks of the financial sector in Egypt is to formulate the balance sheets of the central bank, the commercial banks, the specialized banks, and the non-banks on a comparable basis. Five sources of data were used to prepare the balance sheets of the financial institutions over the period 1952-1970. Minimal use was made of the International Financial Statistics (IFS) as our

main source because its data are not detailed enough to carry out the analysis in the thesis. Furthermore, the data for financial institutions other than banks are not included in IFS data. However, we have depended completely on the IFS in deriving the time series data for the central bank of Egypt (Table 4 in the Appendix). The commercial banks' series (Table 1 in the Appendix) and most of the series of the specialized banks (Table 2 in the Appendix) were derived from some issues published by the central bank of Egypt. The rest of the series of the specialized banks (Table 2' in the Appendix) were derived from the IFS. Several problems have emerged with respect to differences in the classification of items of the same financial institution over different periods, as is clear from the notes and the "Notes of Reconciliations" attached to the above mentioned Tables. The collection and the classification of the raw data for the non-banks has not been an easy task. There are four non-bank institutions in Egypt. Their data are available in three different sources: the annual Yearbook of the Egyptian General Insurance Organization; the annual Yearbook of the Public Social Insurance Fund; and the annual Yearbook of the Public Insurance and Pension Fund. The

components of the balance sheets of these institutions are not comparable. An effort was made to put these balance sheets in compatible form with the balance sheets of the banks. These data are presented in Table 3 in the Appendix. Tables 1-4, then, include the data, in a completely compatible form and in as much detail as possible, of all the financial institutions in Egypt.

The next step is to consolidate the balance sheets of the financial institutions into one matrix. Several problems arose in this respect. For example, the claims of the central bank on the commercial banks as they appear on the assets' side of the central bank's balance sheet are not necessarily equal to the corresponding item on the liabilities' side of the commercial banks' balance sheet since both balance sheets are derived from different sources. Another problem is the treatment of items which do not clearly belong to either the private or the government sector. Two alternative approaches were considered to solve this problem. The first approach is to apply some rules and assumptions in order to include the unclassified items and statistical errors due to inconsistencies in the different balance sheets

in either financial or real sectors¹. The second approach is to incorporate unclassified items and the statistical errors in a separate item, which we will call "residuals". The second approach was chosen for two reasons. First, it avoids any confusion which may be caused by mixing up the unspecified items and the statistical errors with the well defined items of the different sectors. Second, it corresponds to the tradition in flow of funds tabulation^{2,3}.

To estimate the consolidated assets and liabilities of the financial sector, the following assumptions and definitions were made:

¹For example, whenever specialized banks' "borrowing(credit) from the central bank" in Table 2 or 2' differs from central bank's "claims on specialized banks" in Table 4, we might adjust the central bank's claims to the specialized banks' borrowings. The sources of adjustment would be central bank's "claims on private sector" and central bank's "claims on government" before and after 1961 respectively, since the central bank was privately owned before 1961.

²See S.B. Packer, "Flow of Funds Analysis- Its Uses and Limitation", C.F.A. Reading in Financial Analysis the Institute of Chartered Financial Analysis(Homewood, Illinois: Richard D. Irwin Inc., 1966), PP. 152-163.

³To compare the effect of the approaches on our course of study, the Gross Financial Stocks Interrelation Matrix has been formulated using the first approach as well. It has been found that the difference is in the amounts of the sectoral financial flows, actual and forecasted, and not in the trends of these flows.

1- General Assumptions:

1. In all the cases(except one) whenever item "A", for example, has two different values in two different balance sheets, the largest value of A is the one which appears in the formulated matrix and the necessary adjustment is made from the unclassified items in the balance sheet with the lower value of A. This adjustment procedure¹ was chosen on the assumption that the source with the highest figure is the one which records all the relevent items that arise. Thus, the highest figure is assumed to be the accurate one. It is also chosen because it is preforable to decrease the value of the residual rather than to increase it. The single exception to this treatment is currency kept inside the banking system². Currency kept inside the banks is always based on the central bank's balance sheet whether

¹An alternative adjustment is to use the lower value of "A" in the matrix and adjust the higher value by adding the difference of the two values to the residual item in the relevant balance sheet.

²The currency kept inside banks is the difference between the items "reserve money" and "currency outside banks" which appear in the central bank's balance sheet(Table 4 in the Appendix).

or not it is greater than the summation of the items "cash" and "balance with C.B.E." as they appear in the commercial banks' balance sheet. As a result of this treatment, currency issued by the central bank, which is an important determinant of the money supply in the economy, can be derived directly by summing the central bank's liabilities to the private sector and to the banks as they appear in the Gross Financial Stocks Interrelation Matrix.

2. After the necessary adjustment is made from the unclassified items, the remainder is attributed to the "residuals" sector.

3. The "residuals" sector contains balancing items between the sources and uses of funds¹. It consists of two components: the items which could not be allocated to other sector, e.g., "other assets" and "other liabilities" and the statistical errors due to data inconsistencies in

¹"Historically, the sources and uses of funds are necessarily equalThe residual item, however labelled, is for past years the balancing item-all the sources of funds in the market which could not be specifically identified but must have come from somewhere in order to make the total equal the uses". S.B. Packer, op. cit., P. 161.